

A REVISION OF HYMENOPTEROUS INSECTS OF THE TRIBE CREMASTINI OF AMERICA NORTH OF MEXICO.

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As defined by Ashmead, the tribe Cremastini is distinguished from the Porizonini by the obsolescence in the latter tribe of the base of the middle vein in the hind wing and by the thickening of the anterior end of the basal vein in the front wing. Aside from the question as to whether these characters, as interpreted by Foerster, who proposed them, are good or not, the fact remains that the genotype of *Cremastus* has the middle vein obliterated at the base, and by no means all of the genera at present referred to the Porizonini exhibit the thickening of the basal vein. Foerster¹ made use, also, of the angulation of the radial abscissae, ascribing to the Porizonini a right angle and to the Cremastini an obtuse angle. The strict interpretation of this character separates species much more closely allied to each other and to *Cremastus* as represented by the genotype, than either is to *Porizon* as represented by the genotype.

The relation between the length and breadth of the stigma as used by Foerster to separate his Cremastoidae from the families which follow it in his arrangement can not be used, since several species of *Cremastus* have the stigma distinctly less than half as wide as long. Also the occipital carina varies in Cremastini from widely interrupted above to complete.

The genera of these two tribes, however, form two rather well-defined groups, separated by propodeal, abdominal, and venational characters, as indicated in the following tabulation:

Propodeum not extending beyond base of hind coxae; abdomen usually short and stout, not or but weakly compressed, the second tergite not very much longer than wide, most frequently transverse, and with the sides widely divergent; angle of radius right or acute, touching or very close to cubitus, the intercubitus being very short and not or but very little longer than that portion of cubitus between it and recurrent, most frequently shorter, all veins at this point being nearly interstitial; ovipositor most frequently short and upcurved. *Porizonini*.

¹ Verh. Nat. Ver. Preuss. Rheinl., vol. 25, 1868, p. 141.

Propodeum extending beyond base of hind coxae; abdomen long and slender, strongly compressed beyond second tergite, the latter very much longer (two to six times) than wide and with its sides subparallel or weakly divergent; angle of radius right or obtuse, far removed from cubitus, the intercubitus much longer than that portion of cubitus between it and recurrent, the latter occasionally interstitial; ovipositor most frequently long and straight.....*Cremastini*.

None of the species available for study agree in all particulars with any of the genera proposed by Szepligeti, nor with *Celor*, Semenov, although a number of the species of *Cremastus* might with propriety be referred to certain of these genera.

Demophorus Thomson seems not to occur in the North American fauna. It should be remarked, however, that certain species allied to the genotype of *Zaleptopygus* Viereck, here considered a subgenus of *Cremastus*, have the upper portion of the intercubitus slightly thickened and angulate, and occasionally a wing is found in which the second intercubitus is represented by a stump of a vein arising from this angle.

One new genus is described below for the reception of Cresson's *Porizon stigmaterus*.

KEY TO NORTH AMERICAN GENERA OF CREMASTINI.

Thorax very long and slender, nearly cylindrical; propodeum with areola very long and petiolar area very short, areola usually much longer than petiolar area; thorax and head clothed with a very dense, short, pubescence, which gives a silky lustre; stigma narrow, radius arising far beyond the middle; radial cell very long and narrow, its lower angle very broadly obtuse; second abscissa of radius curving gradually outward, then sharply forward; eyes slightly convergent towards the narrow, strongly convex clypeus; spiracle of first tergite at or not far beyond middle; orbits immaculate except for an obscure brownish mark at level of antennae....*Pseuderipternus* Viereck.

Thorax not subcylindrical, much stouter in front or short and thick; petiolar area seldom shorter than areola, usually much longer; thorax and head with different vestiture; stigma, if narrow, with radius arising at about middle; eyes parallel or slightly divergent toward clypeus; spiracle of first tergite far beyond middle; orbits more or less distinctly pale marked or the head is entirely pale.....1.

1. Palpi very long, the maxillary palpi reaching to middle coxae; abdomen weakly compressed.....*Dolichoselephus* Ashmead.

Palpi normal; abdomen usually strongly compressed.....2.

2. Head small, scarcely as wide as thorax; eyes large, parallel within; face much narrower than eye is long; malar space very short; lateral ocelli distant from the eyes by much less than their own diameter; stigma very broad, the radius originating in the middle, its first abscissa strongly curved; nervulus antefurcal (male unknown)*Neocremastus*, new genus.

Head at least as wide as thorax, face broad, malar space not especially short; lateral ocelli distant from the eyes by at least their own diameter (in some males the eyes and ocelli are very large, the malar space, the ocell-ocular line, and the width of the face being much reduced); stigma various, if broad, with the radius usually arising beyond the middle, first radial abscissa not strongly curved, nervulus interstitial or postfurcal, very rarely distinctly antefurcal.....*Cremastus* Gravenhorst.

Genus PSEUDERIPTERNUS Viereck.

Pseuderipternus VIERECK, Conn. State Geol. and Nat. Hist. Survey Bull. 22, p. 269.

Genotype.—*Podogaster radiolata* Provancher (Monobasic).

Since its description in *Podogaster*, the genotype has been placed in *Limnerium* by Cresson,¹ who considered *Podogaster* a synonym of *Limnerium*; in *Eripternus* by Ashmead,² under the manuscript name *primus* Ashmead; in the last genus by Viereck,³ where he used it as a basis for comparison of his genus *Eripternimorpha* with *Eripternus*; and more recently Viereck has erected for it the present genus, which he treats as a subgenus of *Casinaria*, a Campoplegine genus.

To the present writer the placing of the genus in the Campoplegini seems entirely erroneous. In Cresson's synopsis it runs to *Cremastus* Gravenhorst by virtue of its separated clypeus, a character in which it differs markedly from the Campoplegini. Its completely areolated propodeum is also out of place in the latter tribe. In Szepligeti's key to the genus⁴ it runs to *Pseudocremastus* Szepligeti. From *Cremastus* and from *Dolichoselephus* Ashmead it differs principally in the characters used in the above table to genera, the most striking of which are the nearly middle position of the spiracles of the first abdominal segment, the great length of the areola, the very narrow stigma accompanied by the distally originating radius, and the long, narrow, very obtusely angled radial cell.

From *Dolichoselephus* it also differs in having the palpi normal.

From the description of *Pseudocremastus* it differs principally in the very low propodeum.

From *Eripternus* (Foerster) Szepligeti it differs by the characters used by Szepligeti in his group synopsis and by nearly all the characters in his generic description of *Eripternus*.

Head strongly transverse, roundly narrowed posteriorly, occipital carina broadly interrupted in middle, eyes slightly convergent below face convex, clypeus narrow and strongly convex, clypeal foveae deep, malar space very short, ocelli in both sexes small, antennae long, filiform, the flagellar joints gradually decreasing in length from base to apex where they are nearly as wide as long, palpi normal, thorax long, subcylindrical, nearly straight above, notauli very weak, propodeum elongate, low, prolonged about one-third length of coxae, completely areolated, even the posterior abscissa of lateral carina being more or less distinctly present, areola occupying half or more of the length and the petiolar area very short, spiracle nearer to lateral than to pleural carina; front wings with stigma and radial cell elongate, the former with the radius arising far beyond middle, hind wings with median vein obliterated basally, nervellus

¹ Synop. Hym., 1887, p. 204.

² Proc. U. S. Nat. Mus., vol. 44, 1913, p. 645.

³ Smith's Ins. New Jersey, 1899.

⁴ Gen. Ins., fasc. 34, 1905, p. 49.

distinctly broken at or somewhat below middle and postfurcal; first tergite with the spiracle at or but slightly beyond the middle, petiole rather thick and deeply sulcate laterally, ventral edges of tergite widely separated and subparallel, tergites beyond second strongly compressed; head and thorax very finely punctate and clothed with very short, dense, silky pubescence.

KEY TO NORTH AMERICAN SPECIES.

Petiolar area nearly as long as areola; first and second tergites tipped with red, the postpetiole strongly longitudinally rugulose; second tergite much less than twice as long as basal width, its sides widely divergent; second abscissa of radius nearly straight at base; ovipositor less than twice as long as first tergite.....*brevicauda*, new species.

Petiolar area a third or less as long as areola; first and second tergites entirely black; the postpetiole at most weakly aciculate; second tergite about twice as long as basal width with sides nearly parallel; second abscissa of radius distinctly outcurved at base; ovipositor about three times as long as first tergite

1. Malar space much less than half as long as basal width of mandible in female, sometimes half as long in male; hind legs stout, femur nearly one-third as broad as long, basitarsus much less than half as long as tibia, all tarsal joints together in female about as long as tibia, in male slightly longer

radiolatus (Provancher).

Malar space about as long as basal width of mandibles in female, longer in male; hind legs slender, femur hardly one-fourth as broad as long, basitarsus nearly half as long as tibia, all tarsal joints together in both sexes much longer than tibia

gracilipes, new species.

PSEUDERIPTERNUS BREVICAUDA, new species.

Female.—Length 7 mm., antennae 5.5 mm., ovipositor 1.6 mm. Head, except occiput, very finely, densely granular; face elevated in middle, weakly impressed below antennae, with prominent, median tubercle above; malar space scarcely a third as long as basal width of mandible; interfoveal line (shortest distance between clypeal foveae) twice as long as foveo-ocular line (shortest distance between fovea and eye); eyes very weakly emarginate opposite antennae; postocellar and ocell-ocular lines equal and scarcely twice as long as diameter of a lateral ocellus. Thorax very minutely punctate, mesonotum subpolished; mesopleural suture broadly foveolate; propodeal carinae very strong, the areola scarcely a half longer than petiolar area, apical areas strongly rugulose; wing with radial cell rather acute at apex, base of second discoidal cell scarcely half as long as second recurrent vein; nervellus interstitial, broken at middle; legs, especially hind legs, short, the hind femur about a third as broad as long; hind basitarsus about two-fifths as long as tibia, fifth joint nearly as long as third. Abdomen barely a third longer than head and thorax united; first tergite rather stout, its sides nearly straight, about half as wide at apex as long, its spiracle distinctly beyond middle, carinae and foveae of petiole very strong; second tergite

scarcely twice as long as wide at base, distinctly wider at apex, it and the postpetiole longitudinally rugulose; ovipositor about a half longer than first tergite.

Black; a small spot between insertion of antenna and eye brown; clypeus at apex, mandibles, palpi, and legs (largely) rufo-testaceous; antennae black, paler below; hind trochanters, last tarsal joints, and apices of hind tibiae (faintly) infuscated; tergites, 1 to 5, black at base, reddish at apex, third largely reddish, remaining tergites black.

Male.—Very like female, but with eyes scarcely divergent, malar space slightly wider, ocelli slightly larger, and black color of tergites more extensive.

Type-locality.—Hanover, New Hampshire.

Other locality.—Canada.

Type.—Cat. No. 20251, U.S.N.M.

Described from one female and one male, the former captured by C. M. Weed and the latter by C. F. Baker.

Distinct from the other two species in its short ovipositor, short areola, short second tergite, and abdominal coloration.

PSEUDERIPTERNUS GRACILIPES, new species.

Female.—Length 10 mm., antennae 7.5 mm., ovipositor 5 mm. Head finely, densely granular; face scarcely elevated in middle, more evenly convex throughout, with minute median tubercle above; malar space about half as long as basal width of mandible; interfoveal line twice as long as foveo-ocular line; inner line of eye concave for most of its length; postocellar and ocell-ocular lines equal and about a half longer than diameter of a lateral ocellus. Thorax densely, minutely punctured, mesonotum subpolished; mesopleural suture sharp, foveolate only at its upper extremity; propodeal carinae strong, the areola more than three times as long as petiolar area, all areas granularly punctuate, petiolar with a few short longitudinal rugae apically; wings with radial cell obtusely pointed, base of second discoidal cell about two-thirds as long as second recurrent vein, nervellus slightly postfurcal and broken slightly below middle; hind legs slender, the femur hardly one-fourth as wide as long; hind basitarsus nearly half as long as tibia, fifth joint nearly as long as third. Abdomen one-third longer than head and thorax united, sculpture granular, subpolished toward apex, postpetiole weakly aciculate; first tergite about two-fifths as wide at apex as long, sides of petiole concavely and of postpetiole convexly arcuate, spiracle at middle, carinae and foveae of petiole strong; second tergite about two and one-half times as long as wide at base, its sides nearly parallel; ovipositor about three times as long as first tergite.

Black; a small spot between antenna and eye brown; mouth parts, antennae, and legs colored as in *brevicauda* except a little darker

throughout, especially the hind tibia and all tarsi; tergites 1 and 2 black throughout, 3 largely reddish, 4 and 5 reddish with median black spot, 6 reddish with black apical spot, others black.

Male.—Very like female, but with eyes nearly parallel within, malar space considerably longer, tergites slightly narrower, and hind tibiae darker.

Type-locality.—Massachusetts.

Other locality.—Camden, New Jersey.

Type.—Cat. No. 20252, U.S.N.M.

Very closely allied to *radiolatus* Provancher, the principal distinguishing characters being those given in the table to species. Apparently these characters are quite variable and the two species may prove to be the same when a larger series of specimens is available for study. The species seems to average slightly larger than *radiolatus*.

Described from two females and two males, the paratype female from Cape May, New Jersey, and all others from Massachusetts. The paratypes differ from the types principally in having the reddish color of the abdomen largely replaced by blackish.

PSEUDERIPTERNUS RADIOLATUS (Provancher).

Podogaster radiolata PROVANCHER, Nat. Can., vol. 7, 1875, p. 329, female.

In the United States National Museum collection is a female specimen from Long Island, designated as a homotype by Mr. A. B. Gahan, who compared it with the type of *Podogaster radiolata* Provancher. In addition to the characters given in the table to species, this differs from the type of *gracilipes* in having the eyes slightly more convergent; the diameter of the ocelli only about half as long as postocellar line; the postpetiole relatively somewhat longer and the petiole shorter, the second tergite wider, the hind tibiae black with their tarsi by contrast paler. In a number of males from New Hampshire, Massachusetts, and Connecticut there is considerable variation with respect especially to the length of the malar space, from about as long as in the female to about half as long as basal width of mandible, in the relative length of hind tibiae and tarsi, and in the stoutness of the hind femora. The color is the same and varies in the same way as in *gracilipes*.

Genus DOLICHOSELEPHUS Ashmead.

Dolichoselephus ASHMEAD, Bull. 1, Colo. Biol. Soc., 1890, p. 23.

Szepligeti¹ considers this genus a synonym of *Heterocola* Foerster. Such may be the case, but since the unique specimen of the genotype (*Dolichoselephus cockerelli* Ashmead) differs from Szepligeti's description of *Heterocola* in possessing well-marked lateral fovea on the

¹ Gen. Ins., fasc. 34, 1905, p. 56.

petiole and the compression of the abdomen is not especially conspicuous, it seems hardly advisable to synonymize the two genera without a comparison of the genotypes. This is not possible at this time.

The great length of the palpi renders this genus easily separable from *Cremastus*, although this character is really the only positive one that has been discovered.

The propodeum extends but a short distance over the coxae, and is completely areolated. The ventral edges of the first tergite are widely separated and not at all inclosing the sternite. The second tergite is about twice as long as wide with sides weakly divergent, and the abdomen as a whole moderately long and rather weakly compressed. The hind legs are rather long and stout. The difference in length between the transverse cubitus and the second abscissa of the cubitus is rather less, and the basal vein rather more strongly incurved than is usually the case in *Cremastus*.

Genus NEOCREMASTUS, new genus.

Genotype.—(*Porizon*) *Neocremastus stigmaterus* Cresson.

Allied to *Cremastus* Gravenhorst from which it differs principally in head characters. Head in front view nearly circular, small, scarcely as wide as thorax; eyes large, parallel within; face much narrower than eye is long; malar space very short; lateral ocelli distant from the eyes by much less than their own diameter; propodeum not extending to middle of hind coxae, carinae rather weak; stigma very broad, the radius originating in the middle, its first abscissa strongly curved, radial cell very short; nervulus antefurcal; first tergite with its ventral margins parallel, not inclosing the sternite; abdomen strongly compressed beyond second tergite.

NEOCREMASTUS STIGMATERUS (Cresson).

Porizon stigmaterus CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 174.

This species is represented in the United States National Museum by a paratype female minus the abdomen and another female from the Belfrage collection minus the ovipositor.

Genus CREMASTUS Gravenhorst.

Cremastus GRAVENHORST, Ichn. Eur., vol. 3, 1829, p. 730. = *Temelucha* FOERSTER, Verh. Nat. Ver. Preuss. Rheinl., vol. 25, 1868, p. 148 = *Zaleptopygus* VIERECK, Proc. U. S. Nat. Mus., vol. 41, 1911, p. 294.

As here defined, *Cremastus* is, in the general appearance of its species, rather heterogeneous. It embraces, in addition to the more typical forms, Viereck's genus *Zaleptopygus*, as well as species, which with a little more liberal interpretation of characters might be referred to Szepliget's genera *Paracremastus* and *Pseudocremastus*. These are, however, not separable except on comparative or widely variable

characters, and there is apparently ground for doubt as to the validity of Szepligeti's two genera above mentioned. At least the characters used are of very doubtful generic value. *C. rostratus*, new species, and *C. longigenalis*, new species, display the characters peculiar to *Paracremastus* Szepligeti but to a less marked degree, while several species placed toward the end of the key to species run in Szepligeti's table and agree fairly well with the description of *Pseudocremastus* Szepligeti. But the characters which ally them with those genera prove, upon examination of a large series of species, to be subject to great variation.

Temelucha plutellae Ashmead, the genotype of *Temelucha* Foerster is conspecific with a specimen in the United States National Museum determined by Schmiedeknecht as *Cremastus decoratus* Gravenhorst, which all European authorities concede to be a true *Cremastus*. The genotype, *Cremastus spectator* Gravenhorst, I have not seen.

Zaleptopygus, erected by Viereck for his species *obereae* and *Porizon orbitalis* Cresson, is really not at all closely related to *Leptopygus* Foerster. The propodeum, in which Viereck says it is more closely allied to the latter genus than to *Cremastus*, differs essentially from that of a typical *Cremastus* only in being more robust, shorter, and in having the areola and petiolar area separated by a carina. In *Leptopygus*, as represented by the genotype, *L. harpurus* (Gravenhorst) the basal transverse carina and the basal portion of the lateral carina are obsolete, while that portion of the lateral carina that separates the apical lateral and apical pleural areas is strong. In *Cremastus* the opposite is true.

The principal characters which distinguish this genus from *Pseudopripternus* Viereck are indicated in the table to genera, and the more striking ones designated in the discussion of the latter genus. The only character separating it from *Dolichoselephus* Ashmead is found in the normal palpi as distinguished from the abnormally long palpi of the latter genus. It is easily distinguished from *Neocremastus* Cushman by the characters used in the generic key.

In secondary sexual characters the males of some species differ very little from the females, while others exhibit very striking modifications. The eyes and ocelli in some species are but little larger in the male than in the female, while in others the eyes occupy the whole sides of the head and the ocelli occupy nearly the entire vertex. The postpetiole in most males is more depressed than in the females, and the petiolar carinae and foveae are stronger, being sometimes present in the male when absent in the female.

In using the key for the determination of species no character in a group should be given precedence over any other, but a majority of characters should be considered as indicating the way in which

the species should be run. In the first dichotomy, for example, agreement with two of the three characters allies a species with a group indicated thereby. These groups of characters, rather than single characters, are used in the table because, by their use, the species arrange themselves in a manner more in accord with their apparent natural affinities.

The extent of secondary sexual modification is so variable in the males that it seems inadvisable to attempt, in most cases, to associate the sexes in the material at hand. This can, with assurance of correctness, be done only by biological observations, either in regard to mating or by rearing the sexes at the same time and from the same host. On this account and because a number of species have been described only in the male, the two sexes are tabulated separately.

KEY TO NORTH AMERICAN SPECIES (FEMALES).

- Petiole with ventral margins of tergite approximating below and nearly enclosing sternite, never parallel; propodeum reaching to or beyond middle of dorsal surface of hind coxae; stigma narrow with radius originating at or near the middle (subgenus *Cremastus* Gravenhorst)..... 1.
- Petiole with the ventral margins of tergite widely separated, parallel or nearly, not enclosing sternite; propodeum not reaching to middle of dorsal surface of hind coxae; stigma broad and with radius originating beyond middle (subgenus *Zaleptopygus* Viereck)..... 19.
1. Head subrostriform; malar space much longer than basal width of mandible.
longigenalis, new species.
- Head not subrostriform; malar space rarely as long as basal width of mandible, most frequently much shorter..... 2.
2. Thorax testaceous or yellow, sometimes more or less black dorsally or ventrally..... 3.
- Thorax black, sometimes with yellow markings dorsally or laterally..... 14.
3. Eyes distinctly, though slightly, divergent below..... 4.
- Eyes parallel within..... 8.
4. Second tergite nearly six times as long as wide, at base; malar space as long as basal width of mandible; ovipositor sheath scarcely longer than first tergite.
longiventris, new species.
- Second tergite distinctly less than six times as long as basal width; malar space usually less than basal width of mandible, occasionally subequal; ovipositor sheath much longer than first tergite..... 5.
5. Scutellum with strong lateral carinae extending nearly or quite to apex; head in front view subtriangular..... 6.
- Scutellum with carinae developed only at base; head in front view suboval.. 7.
6. Clypeus little more than half as long as interfoveal line (shortest distance between clypeal foveae) and subacutely rounded at apex; malar space subequal to basal width of mandible; spiracles of second tergite distinctly before middle; areola and petiolar area separated by a strong carina.
ruficeps, new species.
- Clypeus about three-fourths as long as interfoveal line, evenly strongly rounded at apex; malar space distinctly less than basal width of mandible; spiracles of second tergite in middle; carina separating areola and petiolar area subobsolete..... *gracilis*, new species.

7. Head mostly ferruginous with black markings on vertex and occiput broadly confluent; face and clypeus in profile strongly convex, clypeal suture deep, clypeus with apex depressed.....*gracilipes*, new species.
Head mostly yellow with black markings on vertex and occiput not confluent, that of occiput obsolescent; face and clypeus in profile weakly convex, clypeal suture shallow, clypeus with apex prominent....*ferrugineus* Davis.
8. Dorso-lateral carinae of first tergite entirely obsolete..... 9.
Dorso-lateral carinae of first tergite present at least for a distance in front of the spiracles..... 10.
9. Thorax rather stout, propodeum barely reaching middle of coxae; stigma broad with radius originating slightly beyond middle; head except black ocellar spot and brownish occiput, yellow; malar space nearly as long as basal width of mandible.....*flaviceps*, new species.
Thorax slender, propodeum reaching distinctly beyond middle of coxae; stigma narrow with radius originating at middle; head with yellow, if present, confined to orbits; malar space distinctly shorter than basal width of mandible.....*graciliventris*, new species.
10. First tergite not or scarcely longer than dorsal length of propodeum..... 11.
First tergite distinctly longer than propodeum..... 12.
11. Clypeus compressed from the sides, inflexed and broadly rounded at apex; scutellum strongly convex; propodeum black, at least in basal middle; second tergite not striate, shagreened; small, 7 mm. or less.... *minor*, new species.
Clypeus nearly convex, not compressed from the sides, apex sharply rounded and not inflexed; scutellum somewhat flattened; propodeum not marked with black; second tergite striate; large, 10 mm..... *brevipetiolus*, new species.
12. Lateral carinae of scutellum strong to apex; clypeal suture arched slightly above level of foveae; malar space as long as basal width of mandible.
platynotae, new species.
Lateral carinae of scutellum weak toward apex; clypeal suture not arched above level of foveae; malar space shorter than basal width of mandible..... 13.
13. Eyes distinctly longer than width of face; compressed portion of abdomen scarcely three times as long as deep, the third tergite much less deep than fourth.
facilis (Cresson).
Eyes not longer than width of face; compressed portion of abdomen slightly more than three times as long as deep, the fourth tergite scarcely deeper than the third..... *tortricidis*, new species.
14. All coxae black at least basally..... 15.
Coxae pale, at most the posterior pair black at base..... 17.
15. Thorax with notauli and scutellum yellow, pleura more or less yellowish; orbital ring broad and complete; ovipositor about twice as long as first tergite.
decoratus Gravenhorst.
Thorax entirely black; orbital ring narrow and incomplete..... 16.
16. Front coxae only white at apex; postpetiole not elevated above level of petiole, scarcely twice as wide as petiole; ovipositor but little longer than first tergite.
brevicauda, new species.
All coxae white at apex; postpetiole elevated above level of petiole, twice as wide as petiole; ovipositor one and one-half times as long as first tergite; tergites beyond second more or less yellow at apex and below.
eveltriae, new species.
17. Stigma fully half as wide as long; dorso-lateral carinae of petiole entirely obsolete; wings milky hyaline with veins except stigma and costa very pale.
cookii Weed.
Stigma barely one-third as wide as long; dorso-lateral carinae of petiole distinct; wings clear hyaline with dark veins..... 18.

18. Compressed portion of abdomen distinctly more than three times as long as deep, third tergite nearly as deep as fourth; diameter of posterior ocelli as long as ocell-ocular line and much more than half as long as postocellar line; portion of propodeum beyond insertion of coxae, viewed from above, deeply, concavely emarginate laterally, the posterior lateral angle nearly right.

forbesii Weed.

Compressed portion of abdomen barely three times as long as deep, third tergite distinctly less deep than fourth; diameter of posterior ocelli distinctly shorter than ocell-ocular line and barely more than half as long as postocellar line; portion of propodeum beyond insertion of coxae shallowly concave, the posterior lateral angle obtuse..... *epagoges*, new species.

19. Head subrostriform; malar space much longer than basal width of mandible.

rostratus, new species.

Head not subrostriform; malar space rarely as long as basal width of mandible, most frequently shorter..... 20.

20. All coxae pale, the hind pair not at all black or blackish at base..... 21.

At least the hind coxae black or blackish at base 26.

21. Prothorax much paler than surrounding areas 22.

Prothorax concolorous with surrounding areas 25.

22. Mesoscutum entirely black 23.

Mesoscutum with notauli or lateral lobes differently colored..... 24.

23. Scutellum black; clypeus very weakly rounded at apex, nearly truncate; interfoveal line but little greater than foveo-ocular line (shortest distance from fovea to eye)..... *cleridivorus*, new species.

Scutellum red; clypeus strongly rounded apically; interfoveal line nearly twice as long as foveo-ocular line..... *similis*, new species.

24. Thorax laterally largely black or blackish..... *plesius*, new species.

Thorax laterally largely red..... *rosae*, new species.

25. Ovipositor sheath little more than twice as long as first tergite; malar space much shorter than basal width of mandible; eyes large, much longer than width of face..... *tetralophae*, new species.

Ovipositor sheath nearly four times as long as first tergite; malar space subequal to basal width of mandible; eyes smaller, not much longer than width of face..... *terebratus*, new species.

26. Small species (6 mm. or less) with abdomen black throughout, sometimes obscurely reddish in middle..... 27.

Large species (7 mm. or more) with first two tergites (occasionally only first one) black, the others red or piceous, sometimes more or less yellow or black or both..... 28.

27. Face fully a third wider than length of eye; eyes strongly divergent below; clypeus and mandibles piceous, the former very weakly separated, rather narrow, and much more than half as long as wide; ocelli scarcely half as wide as ocell-ocular line; temples broad, strongly rounded.

mordellistenae, new species.

Face scarcely wider than eye length; eyes scarcely divergent; clypeus and mandibles yellow, the former distinctly separated and scarcely half as long as broad; ocelli nearly as wide as ocell-ocular line; temples narrow, flattened; orbital ring interrupted at top of eye with a large triangular spot in the interruption which nearly reaches the lateral ocellus.

incompletus (Provancher).

28. Scutellum strongly convex, without lateral carinae or ridges; tergites beyond third strongly compressed..... 29.

Scutellum carinate or ridged laterally and usually flattened; tergites not strongly compressed..... 30.

29. Propodeum extending beyond middle of coxae; first tergite with ventral edges parallel, not enclosing sternite; orbits broadly yellow; second tergite nearly six times as long as basal width, nearly parallel-sided; tergites beyond second bright red.....*rohweri*, new species.
 Propodeum not extending to middle of coxae; first tergite with ventral edges approximating below and nearly enclosing sternite; orbits narrowly yellow; second tergite only about four times as long as basal width, much wider at apex; tergites beyond second piceous.....*anomalous*, new species.
30. Wings very dark; first two tergites black, others red with ventral and apical margins yellow; ovipositor twice as long as first tergite; petiolar area twice as long as areola, carinae strong; mandibles stout; eyes divergent below, face distinctly wider than length of eye.....*fuscipennis* (Cresson).
 Wings hyaline or faintly dusky..... 31.
31. Clypeus much more than half as long as interfoveal line, strongly rounded at apex..... 32.
 Clypeus not or but little more than half as long as interfoveal line, very weakly rounded at apex..... 34.
32. Face and clypeus entirely black, the latter long, strongly convex, densely punctate; petiole without carinae or foveae; antennae short, hardly longer than head and thorax together.....*nigriclypealis*, new species.
 Face at sides and clypeus yellow, the latter broad, weakly convex, weakly punctate, polished; petiole with strong carinae and deep foveae; antennae much longer than head and thorax together..... 33.
33. All legs slender; notauli and scutellum marked with yellow; ovipositor as long as abdomen.....*bilineatus*, new species.
 Legs stout, especially hind femora; notauli not marked; ovipositor scarcely half as long as abdomen.....*hyalinipennis* (Cresson).
34. Tergites beyond second contrastingly colored with black, red, and whitish; orbits narrowly yellow, broadly interrupted below and above antennae, not swollen above antennae.....*gallaecola*, new species.
 Tergites beyond second entirely red; orbits broadly yellow, complete except for brief interruption opposite ocelli, swollen above antennae..... 35.
35. Scutellum with lateral carinae weak except at base, narrowly rounded at apex; areola much shorter than petiolar area, broadly pentagonal; wings hyaline; postpetiole strongly swollen above level of petiole; cheeks behind mandibles very strongly rounded.....*orbitalis* (Cresson).
 Scutellum with lateral carinae strong to apex, nearly quadrate; areola nearly as long as petiolar area, elongate pentagonal; wings slightly dusky; postpetiole hardly swollen above level of petiole, cheeks not especially strongly rounded.
oberea (Viereck).

MALES.

- Petiole with ventral margins of tergite approximating below and nearly enclosing sternite, never parallel; propodeum reaching to or beyond middle of dorsal surface of hind coxae; stigma narrow with radius originating at or near the middle (subgenus *Cremastus* Gravenhorst)..... 1.
 Petiole with ventral margins of tergite widely separated, parallel or nearly, not enclosing sternite; propodeum not reaching to middle of dorsal surface of hind coxae; stigma broad and with radius originating beyond middle (subgenus *Zaleptopygus* Viereck)..... 9.
1. Thorax testaceous or yellow, sometimes more or less black dorsally or ventrally. 2.
 Thorax black, sometimes with yellow markings dorsally or laterally..... 6.
2. Eyes and ocelli small, neither ocell-ocular line nor malar space especially reduced in length..... 3.
 Eyes and ocelli very large, both ocell-ocular line and malar space very much reduced in length..... 4.

3. Diameter of lateral ocellus longer than ocell-ocular line; malar space shorter than basal width of mandible; ocellar and occipital black spots much reduced; thorax largely pale yellow, the mesoscutum and propodeum marked with brown..... *flaviceps*, new species.
Diameter of lateral ocellus shorter than ocell-ocular line; malar space as long as basal width of mandible; ocellar and occipital black spots broadly confluent, the former extending to base of antennae; thorax testaceous with black markings above..... *platynotae*, new species.
4. Diameter of posterior ocellus distinctly shorter than postocellar line; areola and petiolar area distinctly separated..... *minor*, new species.
Diameter of posterior ocellus equal to or greater than postocellar line, at least not distinctly shorter; areola and petiolar area confluent or only indistinctly separated..... 5.
5. Diameter of posterior ocellus equal to postocellar line; petiole subequal in length to dorsal length of propodeum..... *facilis* (Cresson).
Diameter of posterior ocellus greater than postocellar line; petiole distinctly shorter than dorsal length of propodeum..... *brevipetiolus*, new species.
6. Hind and middle coxae throughout and front coxae broadly black; orbital ring very narrow behind the eyes and broadly interrupted above and below; face black medially, this mark confluent with the black of malar space. *brevicauda*, new species.
Hind and middle coxae at most black at base, front coxae entirely yellow; orbital ring broad and complete or at most narrowly interrupted behind the eye; face entirely yellow or if marked with black the malar space is yellow.... 7.
7. Stigma nearly half as wide as long; wings milky hyaline with veins except stigma and costa very pale..... *cookii* Weed.
Stigma barely one-third as wide as long; wings clear hyaline with dark veins.. 8.
8. Eyes and ocelli not large, former hardly longer than width of face, latter subequal to ocell-ocular line; malar space subequal to basal width of mandible; pronotum and mesoscutum laterally yellow marked... *epagoges*, new species.
Eyes and ocelli very large, former much longer than width of face, latter much broader than length of ocell-ocular line; malar space very short; pronotum and mesoscutum black except a small, obscurely brownish spot in front of tegula..... *forbesii* Weed.
9. All coxae pale, the hind pair not at all black or blackish at base..... 10.
At least the hind coxae black or blackish at base..... 12.
10. Eyes and ocelli not especially large, malar space and ocell-ocular line not especially reduced, face broad..... *tetralophae*, new species.
Eyes and ocelli very large, malar space and ocell-ocular line much reduced, face narrow..... 11.
11. Thorax and propodeum, especially the latter more or less black... *retinae* Cresson.
Thorax and propodeum entirely testaceous..... *delicatus* (Cresson).
12. Small species with abdomen black throughout or obscurely reddish in middle, tergites never apically yellow..... 13.
Larger species with first two tergites (occasionally only first one) black, the others red or piceous, sometimes more or less yellow or black or both, occasionally almost entirely black but with apical tergites narrowly yellowish.. 14
13. Clypeus rather narrow, much more than half as long as wide, and weakly separated from face; posterior ocellus narrower than ocell-ocular line; tergites 3 and 4 piceous or reddish; orbital ring with a broad interruption opposite ocelli, the yellow color not touching the lateral ocellus... *mordellistenae*, new species.
Clypeus broad, distinctly less than half as long as wide, and with suture deeply impressed; posterior ocellus fully as wide as ocell-ocular line; all tergites entirely black; orbital ring extended triangularly and touching the lateral ocellus, interrupted on each side of the triangular spot.
incompletus (Provancher).

14. Wings very dark; lateral ocellus about twice as great in diameter as length of ocell-ocular line.....*audax* (Cresson).
Wings hyaline or very faintly dusky; ocelli distinctly either larger or smaller.. 15
15. Clypeus much more than half as long as interfoveal line, strongly rounded at apex; diameter of lateral ocellus scarcely as long as ocell-ocular line..... 16
Clypeus not or but little more than half as long as interfoveal line, very weakly rounded at apex..... 18
16. Wings clear hyaline, venation strong; notauli and scutellum marked with yellow.....*bilineatus*, new species.
Wings milky hyaline; notauli and scutellum black..... 17
17. Venation, except stigma, very pale; clypeus and face convex; eyes deeply convex; temples flattened, sloping; vertex abruptly sloping backward from ocelli, not elevated above ocelli; petiolar area little longer than areola.
vierecki (Cockerell).
Venation dark; clypeus and face flat; eyes shallowly convex; temples strongly rounded; vertex behind ocelli elevated above ocelli; petiolar area nearly twice as long as areola.....*hyalinipennis* (Cresson).
18. Tergites beyond second varied with black, red, and yellow, occasionally almost entirely black, with only the third reddish and the apical ones narrowly tipped with yellow; orbits narrowly yellow, broadly interrupted below and above antennae, not swollen above antennae; diameter of lateral ocellus shorter than ocell-ocular line.....*gallaecola*, new species.
Tergites beyond second entirely red; orbits broadly yellow, complete except for brief interruption opposite ocelli, swollen above antennae..... 19
19. Eyes and ocelli very large, former much longer than width of face and parallel within, malar space and ocell-ocular line very short.....*orbitalis* (Cresson).
Eyes and ocelli small, former about as long as width of face and divergent below, malar space and ocell-ocular line long.....*obereae* (Viereck).

CREMASTUS (CREMASTUS) LONGIGENALIS, new species.

Female.—Length 10 mm., antennae 6 mm., ovipositor 1.7 mm. Head in front view subtriangular, the malar space distinctly longer than basal width of mandible, clypeus long and subacutely rounded at apex, the suture weak; face longitudinally elevated in middle, finely and densely punctate, slightly wider than greatest eye-length; temples nearly flat; occipital carina broadly interrupted above; post-ocellar line distinctly longer than ocell-ocular line and nearly twice as long as diameter of a lateral ocellus. Thorax, especially propodeum long, the latter gradually sloping from base to apex and reaching distinctly beyond middle of hind coxae; pronotum laterally polished above, irregularly rugulose below; mesoscutum and scutellum finely opaquely punctate, notauli deep and more strongly sculptured, broadening posteriorly; prescutum prominent; mesopleura with longitudinal impression transversely rugulose, the area above polished and that below finely punctate, as are also the sternum and meta-pleura; propodeum with areola and petiolar area not separated, all dorsal and lateral areas except basal areas transversely rugulose, basal and pleural areas punctate; legs slender, hind basitarsus about three-fifths as long as tibia and about as long as next three tarsal joints together; stigma less than half as wide as long, radius originat-

ing very slightly behind middle; angle of radius very widely obtuse, second abscissa sinuate. Abdomen very slender, slightly more than twice as long as head and thorax united; petiole cylindrical, without carinae or foveae, ventral margins of tergite meeting below and inclosing sternite; postpetiole weakly striate, hardly more than half as long as petiole; second tergite nearly five times as long as wide at base, its sides nearly parallel, obscurely longitudinally striate, as is also the base of third tergite; ovipositor only about as long as first tergite.

Black and rufous; head black, mandibles, palpi, clypeus at each side, anterior and superior orbits narrowly, and scape beneath yellow, malar space piceous; thorax black with upper posterior part of mesopleura, metapleura except lower margin, and propodeum, except large basal median spot and small apical spot, rufous; scutellum, tegulae, and wing bases yellow; coxae black at base, testaceous at apex, as are also hind trochanters, middle and hind femora, except at apex; hind tibiae and tarsi, rufofuscous, rest of legs testaceous; abdomen with petiole, second tergite, except at apex, and all tergites beyond fourth black, otherwise rufous.

Type-locality.—Mount Washington, New Hampshire, 5,000–5,500 feet.

Other locality.—Hanover, New Hampshire.

Type.—Cat. No. 20253, U.S.N.M.

Described from two females. The paratype differs from the type only in having the yellows and reds slightly paler.

CREMASTUS (CREMASTUS) LONGIVENTRIS, new species.

Female.—Length 13 mm., antennae 7 mm., ovipositor 2 mm. Head in front view subtriangular, eyes distinctly divergent, scarcely as long as greatest width of face, face scarcely elevated in middle, occipital carina broadly interrupted in middle, temples nearly flat, strongly sloping, malar space slightly longer than basal width of mandible, mandibles about two-thirds as wide at apex as at base, interfoveal line about a fourth longer than foveo-ocular line, clypeus subangular at apex, rather strongly convex both longitudinally and in profile, slightly shorter than interfoveal line, suture nearly straight between foveae; lateral ocellar, postocellar, and ocell-ocular lines in about the proportions of 1:2:1.5, the ocelli equal in size, their diameter equal to the lateral ocellar line; face and clypeus finely but distinctly punctate, head otherwise granular, except polished occiput. Thorax strongly tapering, the propodeum sloping nearly from base and extending distinctly beyond middle of coxae; pronotum strongly ruguloso-punctate; mesoscutum finely, densely punctate, more strongly so in position of weakly impressed notauli; mesopleura polished and weakly rugulose in longitudinal impression, otherwise as well as sternum densely punctate, sternauli weak; scutellum with distinct

well separated punctures, strongly convex, not margined; metapleura sculptured much like lower part of mesopleura; propodeum with areola and petiolar area separated, the former about four-fifths as long as latter and about twice as long as wide, both areas transversely rugose, basal areas punctate, lateral and pleural areas rugoso-punctate; legs very slender, hind basi-tarsus distinctly more than half as long as tibia and about equal to next three joints united, last joint hardly more than half as long as third; wings hyaline; stigma about two-fifths as wide as long, radius arising slightly beyond middle, second abscissa of radius sinuate; second recurrent nearly interstitial, basal vein nearly straight, second discoidal cell about two-fifths as wide at base as at apex, nervulus interstitial, nervellus slightly antefurcal, hardly broken. Abdomen strongly impressed beyond second segment, slightly more than twice as long as head and thorax, petiole cylindrical, without carinae or foveae, much longer than postpetiole, and with the sternite inclosed by the tergite; second tergite about six times as long as wide at base, parallel-sided, longitudinally aciculate, its spiracles in the middle; ovipositor slightly shorter than first tergite.

Rufo-testaceous with lighter and darker markings as follows: Orbits, clypeus, mandibles, palpi, scape below, lower edge of pronotum, notauli, scutellum, coxae at apex, trochanters above, a broad longitudinal band on mesopleura, tegulae, wing bases various shades of yellow, darker on thorax; antennae, facial tubercle, occiput, ocellar triangle, area between scutellum and wings, postscutellum, large triangular spot in basal middle of propodeum and reaching apex of areola, sternauli, petiole at base, second tergite except at apex, third at base, fifth in dorsal middle, and others entirely, hind trochanters at base, and hind tibiae above, black or infuscated.

Type-locality.—Vienna, Virginia.

Other locality.—Wellesley, Massachusetts.

Type.—Cat. No. 20254, U.S.N.M.

Described from two females, the type taken by Mr. W. F. Turner, May 12, 1915, and the paratype captured June 24, 1892. Except for its slightly paler color, especially in the legs, the paratype is like the type.

CREMASTUS (CREMASTUS) RUFICEPS, new species.

Female.—Length 10.5 mm., antennae 6.5 mm., ovipositor 4 mm. Closely related to *longiventris* Cushman from which it differs as follows: Malar space barely as long as basal width of mandibles, which are somewhat broader relatively at apex; face more strongly elevated in middle; interfoveal line nearly a half longer than foveo-ocular line; clypeus only about two-thirds as long as interfoveal line; lateral ocellar, postocellar, and ocell-ocular lines in proportion of 1:1.5:1, ocelli nearly 1. Thorax similarly but less strongly sculptured

throughout; notauli deep anteriorly; scutellum less strongly convex, with strong lateral carinae extending to apex; areola relatively slightly shorter, nearly without rugae, other areas simply punctate; hind basitarsus three-fifths as long as tibia, last joint distinctly more than half as long as third; second recurrent not nearly interstitial, nervellus rather strongly antefurcal. Abdomen hardly twice as long as head and thorax; petiole with dorso-lateral carinae developed toward apex, subparallel-sided, longitudinally aciculate, its spiracles slightly before middle, ovipositor somewhat more than twice as long as first tergite.

Rufous with mandibles, palpi, scape below (orbits not pale) tegulae, and legs, except hind tibiae and tarsi, paler; antennae, occiput, ocellar triangle, a spot above each antenna, longitudinal spot on prescutum, area surrounding scutellum, triangular spot on propodeum reaching to apex of areola, prepectus, first three tergites at base, sixth entirely, and venter black or piceous; hind tibiae subannulate with fuscous at apex and near base, hind tarsi fuscous, pale at base.

Type-locality.—Milwaukee, Wisconsin.

Type.—Cat. No. 20255, U.S.N.M.

Described from a single female.

CREMASTUS (CREMASTUS) GRACILIS, new species.

Female.—Length 9 mm., antennae (broken), ovipositor 3 mm. Closely related to *ruficeps* Cushman, with which it agrees in most of the characters distinguishing that species from *longiventris* Cushman, but differing principally as follows: Temples more strongly rounded; clypeus straight in profile, about three-fourths as long as interfoveal line, strongly, evenly rounded at apex; mandibles narrower at apex; malar space distinctly less than basal width of mandible; eyes as long as greatest width of face; lateral ocellar, postocellar, and ocell-ocular lines in proportion of 1:2:1.5, ocelli 1.25; sternauli strong; scutellum with carinae not extending to apex; propodeum with carinae weaker, that separating areola and petiolar area subobsolete; nervellus very slightly postfurcal; abdomen almost exactly twice as long as head and thorax; second tergite distinctly less than four times as long as basal width, distinctly wider at apex, spiracles in middle; ovipositor almost exactly twice as long as first tergite.

Paler testaceous with pale color of head and its appendages, including anterior and lower orbits, yellow; legs pale testaceous, the entire front legs, middle coxae, middle and hind trochanters being nearly yellow, and the hind tibiae and tarsi infuscated, the former paler in middle; antennae brown; dark color of head confined to occiput and ocellar triangle; thorax slightly paler anteriorly but without markings; dark color of abdomen confined to median basal spots on tergites 2 to 6, that of the fourth very weak.

Type-locality.—Lexington, Kentucky.

Type.—Cat. No. 20256, U.S.N.M.

A single female.

CREMASTUS (CREMASTUS) GRACILIPES, new species.

Female.—Length 9 mm., antennae 5.5 mm., ovipositor 3.5 mm. Allied to the three preceding species. Compared with *longiventris* Cushman, it differs as follows: Head in front view more oval; eyes less strongly divergent, fully as long as width of face; face rather strongly elevated in middle, temples strongly rounded; malar space slightly shorter than basal width of mandibles; foveo-ocular line about two-thirds as long as interfoveal line; clypeus broadly rounded at apex, about two-thirds as long as interfoveal line. Thorax stouter, propodeum extending barely beyond middle of coxae; thorax throughout similarly but less strongly sculptured; notauli rather strong anteriorly; sternaui weak; areola only about a half longer than wide and about three-fifths as long as petiolar area; petiolar area only distinctly rugose, others punctate to rugoso-punctate; legs slender; radius arising from very near middle of stigma; second abscissa of radius nearly straight; second recurrent distinctly, though briefly, postfurcal; second discoidal cell nearly half as wide at base as at apex; nervellus strongly antefurcal; mediella entirely obsolete before nervellus. Abdomen almost exactly twice as long as head and thorax; petiole flattened above and with distinct dorso-lateral carinae; second tergite about four times as long as wide at base, considerably wider at apex, finely aciculate; ovipositor about twice as long as first tergite.

Rufo-testaceous with following paler and darker markings; mandibles, palpi, scape below, tegulae and wing bases, notauli, scutellum, legs, except basal and apical annulations of hind tibiae and hind tarsal joints, stramineous (no distinct orbital markings); antennae, occiput, vertex and frons in middle, longitudinal spot on prescutum, spot embracing region about scutellum and base of propodeum as in *longiventris*, all tergites except at apex and at sides beyond second black or piceous.

Type-locality.—East Marsh, District of Columbia.

Host.—*Dicymolomia julianalis*.

Type.—Cat. No. 20257, U.S.N.M.

One female reared from cattail by E. S. G. Titus, July 16, 1903.

CREMASTUS (CREMASTUS) FERRUGINEUS Davis.

Cremastus ferrugineus DAVIS, Trans. Amer. Ent. Soc., vol. 24, 1897, p. 364.

A single female from southern Illinois agrees with the description in all respects except that the occipital black spot is obsolescent. This specimen was used in placing the species in the key.

CREMASTUS (CREMASTUS) FLAVICEPS, new species.

Female.—Length 7 mm., antennae 4 mm., ovipositor 2 mm. Distinct from the first two species described above in its much shorter malar space and from the last four in its inwardly parallel eyes. Head from in front broadly oval; temples weakly rounded, strongly sloping; eyes straight and parallel within and about as long as width of face; face elevated in middle, impressed at sides, minutely sparsely punctate, foveo-ocular line three-fourths as long as interfoveal line, clypeus about as long as the former, broadly, evenly rounded at apex; malar space equal to basal width of mandible; lateral ocellar, postocellar, and ocell-ocular lines in proportions of 1:2:1.25, ocelli 1; occipital carina weak and broadly interrupted above. Thorax stout, propodeum rather steeply sloping from near base and barely reaching middle of coxae; notauli fairly strong anteriorly; mesonotum distinctly punctate, more sparsely in middle and more densely in positions of notauli; scutellum punctate, strongly convex and with weak lateral carinae extending to apex; thorax laterally rather weakly, sparsely punctate except polished longitudinal, mesopleural impression, sternauli weak, metapleura more strongly punctate; propodeal carinae rather weak, areola and petiolar area not distinctly separated but both transversely rugulose, the combined areas about four times as long as wide at costulae; other areas, especially basal lateral and middle pleural, punctate; legs slender, hind basitarsus little more than half as long as tibia and scarcely as long as next three joints; stigma about half as wide as long, radius distinctly beyond middle; second abscissa of radius straight nearly to apex; second recurrent very nearly interstitial, basal vein nearly straight, its inner angle with median acute; nervellus interstitial; second discoidal cell slightly less than half as long at base as at apex; all veins of hind wing pale and weak, the nervellus straight and perpendicular. Abdomen less than twice as long as head and thorax; first tergite distinctly longer than second, petiole cylindrical without carinae or foveae, sternite inclosed by tergite; second tergite three times as long as basal width, much wider at apex, longitudinally aciculate; remaining tergites laterally weakly punctate; ovipositor one and one-half times as long as first tergite.

Testaceous; head, including mouth parts and scape beneath, flavous with ocellar triangle black, occiput and spot above each antenna brownish; rest of antennae dark brown; prescutum with a longitudinal dark spot which is nearly black at its anterior and posterior ends and pale brownish in the middle, lateral lobes of mesoscutum brownish; scutellum pale testaceous, surrounded by blackish which extends backward to form a large, subtriangular spot at base of propodeum; prepectus blackish; petiole and second and third tergites blackish at base, the second nearly to apex in middle; wings hyaline.

Male.—Differs from female principally as follows: Ocelli distinctly greater than ocell-ocular line; second recurrent distinctly postfurcal; hind legs, especially tibiae, stouter, postpetiole much narrower and parallel-sided; petiole with weak dorso-lateral carinae; testaceous color of thorax, and to some extent that of abdomen, replaced by yellow; prescutal spot more nearly uniformly brownish; all tergites more or less brownish at base.

A single paratype male differs from the allotype in having the stigma narrower with radius nearly in middle, second recurrent strongly postfurcal, and all tergites beyond third entirely yellow.

Type-locality.—Grand Junction, Colorado.

Other locality.—Port Lavaca, Texas (allotype).

Type.—Cat. No. 20258, U.S.N.M.

Described from one female reared June 2, 1904, from *Pulvinaria bigeloviae* by E. S. G. Titus at the type locality and two males, the allotype collected August 27, 1907, by J. D. Mitchell. The allotype has lost both antennae.

CREMASTUS (CREMASTUS) GRACILIVENTRIS, new species.

Female.—Length 9 mm., antennae 6 mm., ovipositor 3 mm. Related to *flaviceps* Cushman in the entire lack of carinae on the petiole and in the parallel eyes, but otherwise differing as follows: Temples nearly flat; eyes distinctly longer than width of face; foveo-ocular line about two-thirds as long as interfoveal line; clypeus slightly longer, subacutely rounded at apex; malar space slightly less than basal width of mandibles; lateral ocellar, postocellar, and ocell-ocular lines 1:2:1.5, ocelli 1. Thorax more slender, propodeum less steeply sloping, and reaching beyond middle of coxae; mesoscutum nearly uniformly, sparsely punctate; scutellum rather flat above, carinae strong; thorax laterally densely strongly punctate, the longitudinal impression finely rugulose; propodeal carinae rather strong, all areas except basal areas more or less transversely rugulose, median most strongly and pleural least strongly so, the latter also punctate as are the basal areas, the combined areola and petiolar area more than four times as long as wide at costulae; hind basitarsus about three-fifths as long as tibia and fully as long as next three joints; stigma about one-third as wide as long, radius at middle; second recurrent distinctly postfurcal; basal vein rather strongly bent inward; veins of hind wing stronger. Abdomen twice as long as head and thorax; first tergite not distinctly longer than second; second tergite somewhat more than four times as long as basal width, not much wider at apex; ovipositor considerably more than one and one-half times as long as first tergite, though less than twice as long.

Testaceous; head testaceous with mouthparts and orbits yellow, ocellar triangle and small occipital spot blackish; antennae piceous, paler toward base, scape beneath yellowish; thorax nearly uniform

testaceous, without markings, though slightly paler on the prothorax and scutellum; tergites 1 to 3 at base and 5 and 6 entirely piceous or blackish; wings faintly yellowish hyaline.

Type-locality.—Washington, District of Columbia.

Other localities.—Rosslyn, Virginia, Southern Illinois, Ohio, Pennsylvania, Biscayne Bay, Florida.

Type.—Cat. No. 20259, U.S.N.M.

Described from three specimens from the District of Columbia (type and paratypes *a* and *g*), one from Rosslyn, Virginia (paratype *b*), two from Biscayne Bay, Florida (paratypes *c* and *d*), one from Ohio (paratype *e*), one from Pennsylvania (paratype *f*), and one from southern Illinois (paratype *h*). Paratypes *a* and *d* are very like the type, differing slightly in size and in intensity of color at apex of abdomen. Paratype *e* also differs in having the head darker without distinct pale markings (possibly stained); paratypes *f*, *g*, and *h* show progressive degrees of development of a black spot at the base of the propodeum and around the scutellum, and enlargement of the occipital and ocellar spots until in *h* these are broadly united.

CREMASTUS (CREMASTUS) MINOR, new species.

Female.—Length 7 mm., antennae 4 mm., ovipositor 2 mm. Head in front view nearly oval, cheeks below eyes slightly rounded; face in middle elevated, clypeus convex, both transversely and in profile, about two-thirds as long as interfoveal line and about equal to foveo-ocular line, suture curved above foveae; malar space slightly shorter than basal width of mandible; eyes slightly longer than width of face, parallel within; temples strongly rounded; lateral ocellar, postocellar, and ocell-ocular lines 1:1.75:1, ocelli 1. Thorax slender, propodeum gently sloping and reaching distinctly beyond middle of coxae; thorax as a whole rather weakly punctate, polished in the longitudinal impression of mesopleura, notauli distinct anteriorly and more heavily sculptured, sternauli weak; scutellum convex, without carinae; propodeum with areola separated from petiolar area and distinctly shorter, apical areas transversely rugulose, others punctate; legs slender, hind basitarsus about three-fifths as long as tibia and about as long as next three united, last tarsal joint nearly as long as third; stigma two-fifths as wide as long, radius slightly behind middle; second abscissa of radius nearly straight; second recurrent distinctly postfurcal; basal vein nearly straight; nervulus interstitial; nervellus perpendicular, not broken. Abdomen distinctly less than twice as long as head and thorax; first tergite barely longer than propodeum, petiole flattened above, with strong carinae and with sternite nearly inclosed by tergite; second tergite nearly four times as long as basal width of first, not longitudinally aciculate; first two tergites together about as long as rest combined; ovipositor about twice as long as first tergite.

Rufo-testaceous; head yellow with face reddish in middle, occipital and ocellar spots black; antennae dark brown, four basal segments pale beneath; thorax with black V-shaped spot extending from anterior wings to nearly middle of propodeum; scutellum yellowish; prepectus blackish; legs pale testaceous, hind tibiae near base and at apex and tarsi, except at base, infuscated; wing veins rather pale especially in hind wings, where they are nearly colorless. Abdomen with all tergites more or less infuscate dorsally at base, weakly so beyond third, second with black median stripe extending nearly to apex.

Male.—Length 5.5 mm., antennae 4 mm. Eyes nearly one and one-half times as long as width of face; malar space very short; ocelli large, more than twice as great in diameter as ocell-ocular line and nearly equal to postocellar line. Face entirely yellow; dark markings more extensive throughout and more contrasting with pale colors. Otherwise like female.

Type-locality.—New Jersey.

Other localities.—Whitesbog, New Jersey; Pennsylvania; Washington, District of Columbia; Benton Harbor, Michigan; Chicago, Illinois; and Onaga, Kansas.

Type.—Cat. No. 20260, U.S.N.M.

Described from six females and four males as follows: The type female reared by Miss Murtfeldt, June 22, 1890, under Bureau of Entomology No. 928°, as a parasite of *Rhopobota vacciniana*; the allotype reared by H. B. Scammell, August 2, 1915, under Quaintance No. 12681 from the same host, at Whitesbog, New Jersey, paratypes *a* (female) and *h* (male) from Onaga, Kansas; paratype *b* (female) reared July 2, 1902, at Chicago, Illinois, from *Gnorimoschema artemisiella*; paratype *c* (female) reared from an unknown lepidopterous stem borer in Aster (locality unknown); paratype *d* (female) reared by H. G. Ingerson, August 15, 1915, under Quaintance No. 12525, from *Gelechia*, species at Benton Harbor, Michigan; paratype *e* (female) reared May 6, 1912 from pecan cigar case bearer at Victoria, Texas, by J. D. Mitchell; paratype *f* (male) from Pennsylvania; and paratype *g* (male) reared August 8, 1904, from *Eucosma strenuana* on *Ambrosia trifida* at Washington, District of Columbia, by W. D. Kearfott.

Except for some variation in size, the most striking differences displayed by the paratypes in both sexes consist in a gradual increase in the extent of the dark color markings with the addition in *c*, *d*, and *g* of a prescutellar black spot. The beginnings of this black spot are visible in all of the other paratypes.

CREMASTUS (CREMASTUS) BREVIPETIOLUS, new species.

Female.—Length 9.5 mm., antennae 6 mm., ovipositor 3.5 mm. Eyes very slightly longer than width of face; clypeus narrowly rounded at apex, about two-thirds as long as interfoveal line, foveo-ocular line about three-fifths as long as interfoveal; malar space about two-thirds as long as basal width of mandible; cheeks below eyes straight, not at all rounded; face densely, minutely punctate, head otherwise impunctate; temples weakly rounded; lateral ocellar, postocellar, and ocell-ocular lines in proportion of 1:1.5:1.25, ocelli 1. Thorax rather slender, propodeum gently sloping and reaching about three-fourths of way to apex of coxae; pronotum polished, somewhat weakly rugulose; notauli distinct and more densely sculptured than surrounding area, prescutum more densely punctate than lateral lobes; scutellum polished, sparsely punctate, flattened above and with strong lateral carinae; mesosternum and mesopleura rather densely punctate except in polished longitudinal impression; sternauli weak; metapleura very weakly punctate; propodeum with all, except basal, areas more or less transversely rugulose, especially apically, basal areas very sparsely punctate, shagreened; areola and petiolar area separated, the latter much the longer; hind legs, especially femora, rather stout, basitarsus about two-thirds as long as tibia and nearly as long as remaining four joints together, last joint barely two-thirds as long as third; stigma about two-fifths as wide as long, radius slightly beyond middle; second abscissa of radius nearly straight; second recurrent postfurcal; basal vein nearly straight; nervulus interstitial; nervellus perpendicular, nearly straight. Abdomen distinctly less than twice as long as head and thorax united; first tergite barely as long as propodeum; petiole with lateral carinae strong in front of spiracle, but fading out toward base; sternite inclosed by tergite; postpetiole rising but little above level of petiole; second tergite fully as long as first, slightly more than three times as long as basal width, scarcely wider at apex, longitudinally aciculate; first and second tergites together much longer than remaining tergites united; ovipositor twice as long as first tergite.

Rufo-testaceous; head with face, mouth parts, and orbits yellowish-testaceous, occiput and ocellar triangle black; scape and pedicel pale, flagellum brown, paler at base; prescutum and lobes of mesoscutum slightly infusate; scutellum yellow, area surrounding it and faintly involving basal middle of propodeum slightly infusate; legs nearly uniform pale rufo-testaceous, the front coxae and all trochanters slightly paler and hind tibiae and tarsal slightly fuscous; first three tergites infusate at base, second with longitudinal median stripe reaching about two-thirds of its length.

Male.—Length 8 mm., antennae 5.5 mm. Eyes one and one-half times as long as width of face; malar space practically obsolete; foveo-ocular line less than half as long as interfoveal; lateral ocelli greater in diameter than postocellar line, nearly touching the eyes. Propodeum barely reaching middle of coxae, more weakly sculptured, the rugulosity confined to apical areas; tarsal joints beyond first relatively longer, the basitarsus being barely as long as next three joints; nervulus antefurcal (obliterated below in both wings). First tergite distinctly shorter than propodeum and than second tergite, the two combined not longer than remaining tergites united. Lacks almost entirely infuscation of thorax, and occiput is rufous instead of black.

Type-locality.—Rosslyn, Virginia.

Type.—Cat. No. 20261, U.S.N.M.

Described from one female and one male collected at type locality by H. H. Smith.

CREMASTUS (CREMASTUS) PLATYNOTAE, new species.

Female.—Length 6 mm., antennae 3 mm., ovipositor 2 mm. Head from above more than twice as wide as long, temples weakly rounded; eyes parallel, about as long as width of face; malar space about as long as basal width of mandible; clypeus strongly rounded at apex, about two-thirds as long as interfoveal line, which is nearly twice as long as foveo-ocular line; face shining, weakly punctate, densely so at sides; head otherwise shagreened; diameter of ocelli slightly less than half as long as postocellar line, which is about a third longer than ocell-ocular line. Thorax slender, propodeum gently, arcuately sloping and reaching distinctly beyond middle of coxae; pronotum laterally shagreened, impunctate; mesoscutum sparsely punctate, prescutum more densely so, notauli strong, scutellum punctate, with strong lateral carinae; mesosternum and pleura rather densely punctate, the latter polished, impunctate above; metapleura similarly punctate; propodeal carinae strong, areola and petiolar areas confluent, areas shagreened, very sparsely, weakly punctate, petiolar area sparsely transversely rugose; stigma about two-fifths as wide as long, radius arising in middle; second discoidal cell about one-third as wide at base as at apex; hind basitarsus barely half as long as tibia and much shorter than remaining joints united. Abdomen twice as long as head and thorax, compressed portion less than three times as long as deep, fourth tergite much deeper than third, first and second tergites together slightly longer than rest of abdomen; first longer than second; petiole with carinae obsolete toward base, flattened above toward apex, tergite inclosing sternite, postpetiole strongly elevated above level of petiole; second tergite obscurely striately shagreened, about four times as long as wide at base, slightly wider at apex; ovipositor a little less than twice as long as second tergite.

Head yellow with occiput, vertex, and front black, the spots broadly confluent, scape and pedicel pale below, flagellum black; thorax rufo-testaceous; scutellum yellow; notauli faintly yellowish; tegulae and wing bases whitish; prescutum medially, depression before scutellum, space between scutellum and wings, basal middle of propodeum, metasternum and prespectus black; wings hyaline, veins brown; legs testaceous, front and middle coxae, apices of hind coxae, and all trochanters whitish, hind femora darker, their tibiae and tarsi infuscated. Tergites 1 and 2 and basal middle of others black or piceous, tergites otherwise reddish, paler below.

Male.—Length 5 mm., antennae (broken). Differs from female as follows: Eyes slightly divergent below, shorter than greatest width of face: foveo-ocular line two-thirds as long as interfoveal line; ocelli very little larger; punctuation of thorax throughout less dense; sculpture of propodeum somewhat stronger; petiolar carinae stronger toward base, tergite not completely encircling sternite; postpetiole barely elevated above level of petiole.

Colored like female except that the pronotum is yellow, the depression in front of scutellum is darker; the whole propodeum black; metapleura darker; red color of abdomen replaced by yellowish and dark color more sharply defined.

Type-locality.—Tempe, Arizona.

Host.—*Platynota flavedana*.

Type.—Cat. No. 20262, U.S.N.M.

Described from two females and two males reared from the host by R. N. Wilson under Webster No. 7205, August, 1914.

Paratype *a* (female) differs from the type in being smaller and in having the prescutal spot less distinct and the petiole piceous, although otherwise generally slightly darker. Paratype *b* (male) is slightly smaller than the allotype, has the propodeum less extensively black, and the matapleura colored like the mesopleura.

CREMASTUS (CREMASTUS) FACILIS (Cresson).

Porizon facilis CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 175.

Porizon macer CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 175.

Both *facilis* and *macer* are represented by paratypes in the United States National Museum, the former only by males and the latter by both sexes. A large series of males from the Belfrage collection and other sources shows that, as suggested by Cresson in his description of *macer*, the two species are undoubtedly the same, at least in the male sex. Whether or not Cresson had the sexes properly associated I do not know, as I have not seen the types of either species, and the only female available is the paratype of *macer*. The males vary in color from those in which the thorax is black or piceous except for the pronotum, notauli, scutellum, and a yellow stripe on the meso-

pleurum to those in which the black is reduced to a small spot at the base of the propodeum and the space between scutellum and wings, and in one specimen even this is obsolete. The head and abdomen vary to almost as great a degree. Besides the Texas specimens, this species is represented from Pennsylvania, Ohio, Iowa, Kansas, District of Columbia, Virginia, North Carolina, Alabama, and New Mexico.

CREMASTUS (CREMASTUS) TORTRICIDIS, new species.

Female.—Length 7 mm., antennae 4 mm., ovipositor 3 mm. Related to *platynotae* Cushman, but differing from it as follows: Diameter of ocelli slightly more than half as long as postocellar line, the latter twice as long as ocell-ocular line. Pronotum laterally weakly striate; second discoidal cell half as wide at base as at apex. Compressed portion distinctly three times as long as deep, third tergite nearly as deep as fourth.

In color very like *platynotae*, but occipital and ocellar spots are separated; prescutum, prepectus, and metasternum not black; black marking of propodeum less extensive; first tergite largely testaceous, black at base, all others black, testaceous at apex.

Host.—*Epagoges sulfureana*.

Type-locality.—Nashville, Tennessee.

Type.—Cat. No. 20263, U.S.N.M.

Described from one female reared with a number of specimens of *C. epagoges*, new species by C. C. Hill under Webster No. 11331.

CREMASTUS (CREMASTUS) DECORATUS Gravenhorst.

Cremastus decoratus GRAVENHORST, Ichn. Eur., vol. 3, 1829, p. 734.

Temelucha plutellae ASHMEAD, Can. Ent., vol. 36, 1904, p. 101.

This species has apparently been introduced into the United States with one of its European hosts, *Evetria buoliana*, a specimen having been reared from that host on Long Island, New York, under Hopkins U. S. No. 13905 L. It is readily distinguished from the American species most closely allied to it by its larger size and highly ornamented thorax. The lateral ocelli in the female are about as broad as the length of the ocell-ocular line and more than half as great as the post-ocellar line. There is considerable variation in the thoracic color; in the European specimen this is largely black, the type of *plutellae* (Ashmead) has the thorax quite largely yellowish and reddish laterally, while the American specimen is midway between these two in color.

CREMASTUS (CREMASTUS) BREVICAUDA, new species.

Female.—Length 6 mm., antennae 4 mm., ovipositor 1.3 mm. Eyes divergent below, scarcely longer than greatest width of face, face medially elevated and punctate; clypeus nearly as long as interfoveal line which is but little longer than foveo-ocular line; malar space about as long as basal width of mandibles, in front view straight; temples nearly flat; lateral ocellar, postocellar, and ocell-ocular

lines in proportion of 1:1.5:1, ocelli slightly less than 1. Thorax slender, propodeum reaching distinctly beyond middle of coxae; pronotum polished laterally, punctate in upper posterior corner, the punctuation spreading out along dorsal and posterior margins; mesoscutum rather sparsely punctate, more densely so in the weakly impressed notauli; scutellum strongly convex, punctate, with lateral carinae extending weakly to apex; mesosternum and mesopleura punctate except longitudinal impression which is polished and weakly transversely rugulose; metapleura punctate; propodeal carinae weak, all except basal areas and areola, which are very weakly punctate, weakly transversely rugulose, areola and petiolar area separated, the areola slightly the shorter; legs slender, hind basitarsus two-fifths as long as tibia; stigma nearly half as wide as long, radius in middle; angle of radius nearly right; second recurrent postfurcal, cubitus nearly obsolete from shortly beyond recurrent; second discoidal cell scarcely a third as wide at base as at apex; nervulus interstitial; nervellus perpendicular, strongly curved outward. Abdomen only about one and two-thirds times as long as head and thorax, first and second tergites subequal in length, first tergite inclosing sternite, petiole with carinae obsolete toward base, post petiole not rising above level of petiole, only about one and one-half times as wide as petiole; second tergite nearly four times as long as basal width, much wider at apex, longitudinally striate; remaining tergites distinctly shorter than 1 and 2 united; ovipositor little longer than first tergite.

Black; head and thorax with white vestiture; orbits narrowly in front and behind eye, clypeus at apex, mandibles, and palpi yellowish; scape and pedicel ferruginous, paler below; flagellum black; tegulae and wing bases whitish; coxae black, anterior pair pale at apex; legs pale ferruginous, trochanters, except blackish basal segment of hind pair, yellowish; hind legs especially tibiae and tarsi darker; front and middle tibiae whitish above; abdomen black at base and apex, piceous in middle, with apical tergites narrowly yellow ventrally and apically.

Male.—Length 6 mm., antennae 4.5 mm. Eyes parallel within, semiglobose, much longer than width of face; malar space shorter than basal width of mandibles; ocelli nearly as great in diameter as postocellar line, ocell-ocular line very short; postpetiole but little wider than widest portion of petiole; second tergite more than four times as long as basal width, subparallel-sided; orbital ring broad and extending nearly to bottom of eye, clypeus largely yellow; front legs and middle femora yellow in front. Otherwise much as in female.

Type-locality.—Bernadillo County, New Mexico.

Type.—Cat. No. 20264, U.S.N.M.

Described from one female and one male collected May, 1896, by B. Brown.

CREMASTUS (CREMASTUS) EVETRIAE, new species.

Female.—Length 6 mm., antennae 3 mm., ovipositor 2 mm. Allied to *C. brevicauda* Cushman, but differing as follows: Eyes parallel, about as long as width of face; temples rounded; lateral ocellar, post-ocellar, and ocell-ocular lines in proportion of 1:2:1, ocelli slightly less than 1. Mesoscutum more densely, uniformly punctate; all propodeal areas punctate, the petiolar in addition weakly transversely striate, areola considerably shorter than petiolar; hind basitarsus half as long as tibia; stigma fully half as wide as long, radius arising slightly beyond middle; nervellus slightly antefurcal, straight. Petiole with carinae entirely obsolete, postpetiole swollen and slightly elevated above level of petiole, nearly twice as wide as petiole; ovipositor about one and two-thirds times as long as first tergite.

All coxae black at base, whitish at apex; trochanters pale and legs otherwise darker with same arrangement of colors as in *brevicauda*; abdomen black with yellow ventral and apical markings broad and distinct.

Host.—*Evetria bushnelli* Busck.

Type-locality.—Fort Bayard, New Mexico.

Type.—Cat. No. 20265, U.S.N.M.

Described from one female reared from the host June 25, 1914, by Carl Heinrich under Hopkins U. S. No. 12101h.

CREMASTUS (CREMASTUS) COOKII Weed.

Cremastus cookii WEED, Ent. Amer., vol. 4, 1888, p. 150.

This species, originally described from specimens reared from *Ancyliis comptana* is well represented in the United States National Museum collection, a number of the specimens reared from the type host. These are from Lansing, Michigan, Lexington, Kentucky, Atlantic City and Camden, New Jersey, and Jackson County (State not given). From its nearest relatives, *forbesii* Weed and *epagoges* new species, it is readily distinguished by the very broad stigma, the entire lack of carinae and foveae on the petiole, and the weak-veined, milky white wings. Apparently the orbital ring is always interrupted in the lower posterior orbit, the interruption sometimes extending below the eye, while in the species above mentioned, it is entire, or if interrupted only obscurely so and higher up on the posterior orbit. There is usually a small brown spot at the origin of each notaulus. In the male the lateral ocellus is about equal in breadth to the length of the ocell-ocular line and scarcely half as long as the postocella line. In the male variety *rufus* Weed the only difference is a mixture of more or less red with the yellow of the head.

CREMASTUS (CREMASTUS) EPAGOGES, new species.

Female.—Length 7 mm., antennae 4 mm., ovipositor 3 mm. Head viewed from above much more than twice as wide as long, temples weakly rounded, narrowed; face about as wide as length of eye, elevated in middle, weakly punctate; clypeus rounded at apex, about two-thirds as long as interfoveal line, and slightly longer than foveo-ocular line, the suture straight; malar space subequal to basal width of mandible; diameter of lateral ocellus distinctly less than ocellocular line and barely half as long as postocellar line. Thorax less than twice as long as high, propodeum gently rounded and reaching to middle of hind coxae, generally rather densely, strongly punctate; pronotum rugulose in impression; mesopleurum polished below hind wing, striate nearly to posterior margin of mesoscutum; scutellum weakly convex, strongly carinate laterally; propodeal carinae strong, areola and petiolar area separated, the former slightly the shorter, apical areas transversely rugulose, others sparsely punctate; stigma narrow, radius arising in middle; second discoidal cell nearly half as wide at base as at apex; nervellus straight, perpendicular; legs slender, hind basitarsus about equal to three following joints. Abdomen slightly less than twice as long as head and thorax, first two tergites about equal in length and together longer than remaining segments; first tergite inclosing the sternite, postpetiole swollen, more than twice as wide as petiole, the latter with carinae weak toward base; second tergite narrow, subparallel-sided, striate; compressed portion of abdomen fully a third as deep as long, the third tergite distinctly less deep than fourth; ovipositor scarcely twice as long as first tergite.

Black; occiput, vertex, and front black, face brownish in middle; clypeus, mandibles, and orbits (broadly and completely) yellow; antennae black, scape and pedicel pale beneath; tegulae and lower angle of pronotum yellow; upper hind angle of pronotum, parapsidal lobes anteriorly and laterally, and notauli (obscurely) brownish; scutellum reddish; wings hyaline, venation fuscous; front and middle legs pale testaceous, the coxae and trochanters especially so; hind coxae testaceous, pale at apex and piceous at base; basal joint of trochanter piceous, apical joint pale; femur fusco-testaceous, pale at base and apex; tibia and tarsus fuscous, the former with a pale band in the middle; all tergites black or piceous, yellowish at apex, those beyond second broadly yellow at sides.

Male.—Length 6 mm., antennae 3.5 mm. In addition to the usual secondary sexual characters, differs from female in having the face entirely yellow, the color markings of the thorax yellow instead of brown and more extensive, embracing the entire prothorax, except narrowly in the middle and a broad, interrupted, longitudinal stripe on the mesopleurum; posterior ends of the notauli are broadly

brownish; abdomen more largely black, tergites laterally barely pale margined, second and third obscurely yellowish at apex.

Host.—*Epagoge sulfureana*.

Type-locality.—Nashville, Tennessee.

Type.—Cat. No. 20266, U.S.N.M.

Described from 11 females and 6 males reared under Webster No. 11331, by C. C. Hill.

The paratype females *a-j* exhibit a progressive decrease of the color markings of thorax and abdomen, paratypes *i* and *j* having only the scutellum and narrow lateral margins of the compressed tergites paler than the surrounding areas. Structurally the paratypes differ only minutely from the type. The smallest specimen, paratype *j*, is slightly less than 5 mm. long.

The male paratypes *k* to *o* vary both ways from the allotype, *k*, *l*, and *m* having more yellow and *o* and *p* less. Paratype *k* has a large, quadrate spot of yellow on the mesoscutum, the sternauli also yellow, and the third and fourth tergites largely of that color. Paratype *m* has the notauli black but otherwise it is more yellow than the allotype. The darkest specimen, paratype *o*, lacks the pale notauli and the yellow of the mesopleurum, the pronotum is dark in the lateral impression and the markings of the abdomen are very obscure.

CREMASTUS (CREMASTUS) FORBESII Weed.

Cremastus forbesii WEED, Bull. Ill. Lab. Nat. Hist., vol. 4, 1888, p. 150.

Described by Weed from specimens reared from *Acleris minuta*, this species is represented in the United States National Museum by specimens reared from *Gelechia trialbamaculella* at Pemberton, New Jersey (Quaintance No. 12684), *Rhopobota vacciniana* at the same locality (Quaintance No. 12681), *Gelechia confusella* at Benton Harbor, Michigan (Quaintance No. 12532), and from *Episimus argutanus* at East River, Connecticut. In addition there is one specimen from Colorado.

Except for the characters given in the key the species is very close to *epagoges* Cushman. In some specimens the parapsidal lobes are reddish brown, this color also embracing more or less of the pronotum and mesopleura. The larger ocelli in both sexes furnish the best character for distinguishing the species from its near relatives.

CREMASTUS (ZALEPTOPYGUS) ROSTRATUS, new species.

Female.—Length 7 mm., antennae 4.5 mm., ovipositer 2.5 mm. Head subrostriform; malar space distinctly longer than basal width of mandible, weakly converging; clypeal foveae below level of lower eye margin; clypeus strongly convex transversely, straight in profile, about as long as interfoveal line, the suture arched above foveae, apex

broadly, subangulately rounded; mandibles nearly twice as wide at base as at apex; face flat, slightly narrower than greatest eye length, finely opaquely punctate, a minute median tubercle above; eyes parallel within; ocelli of equal size, diameter about two-thirds as long as ocell-ocular line, which is slightly shorter than postocellar line; occipital carina weakly complete. Thorax short, plump, rather densely clothed with short, white pubescence; pronotum polished, almost without sculpture; notauli and sternaui weakly impressed; mesoscutum opaquely granular with small, well separated punctures; scutellum similarly sculptured, strongly convex and not laterally margined; mesopleura polished above, densely punctate below, this sculpture embracing the sternum; metapleura densely punctate; propodeum short, rounded, not reaching middle of coxae; carinae strong, areola pentagonal, half as long as petiolar area, from which it is strongly separated; apical areas transversely rugulose, others punctate; legs rather stout (both hind tarsi and one hind tibia missing); stigma about three-fifths as wide as long, radius originating well beyond middle, angle of radius about 110° , second abscissa nearly straight, basal vein somewhat incurved, second recurrent well beyond intercubitus; nervellus interstitial, base of second discoidal cell slightly more than half as long as apex, nervellus antefurcal, broken about one-third of the way up, abdomen nearly twice as long as head and thorax, petiole flattened above with dorso-lateral carinae and foveae strong, ventral margins of tergite distant, subparallel; post-petiole polished, rounded, about as long as petiole; second tergite about two and one-half times as long as basal width, considerably wider at apex, longitudinally aciculate; third tergite aciculate at base; ovipositor somewhat less than twice as long as first tergite.

Rufous and black; head with occiput and a broad band embracing vertex and middle of frons and face to a point somewhat below antennae black to brownish, otherwise, including clypeus and mandibles, yellow, slightly darker in middle of face; palpi pale brownish; antennae black with scape and pedicel beneath and apices of flagellar joints pale; prothorax, mesopleura, and apex of propodeum rufous; mesoscutum with prescutum black, lateral lobes fusco rufous, notauli, tegulae, a spot below, and wingbases yellow; mesosternum black; scutellum testaceous, the impression in front, axillae, postscutellum, basal portion of propodeum, and metapleura blackish; abdomen generally blackish with tergites more or less reddish apically and laterally; legs testaceous, the hind one somewhat darker and the hind tibiae lightly infuscated at apex.

Type-locality.—New York, New York.

Type.—Cat. No. 20252, U.S.N.M.

Described from a single female collected by E. B. Southwick, August 20, 1895.

CREMASTUS (ZALEPTOPYGUS) CLERIDIVORUS, new species.

Female.—Length 7 mm., antennae 5 mm., ovipositor 2.7 mm. Head in dorsal view half as long as wide; temples strongly rounded; occipital carina faintly complete; eyes about as long as width of face, fully three-fourths as wide as long, parallel; face punctate, slightly elevated in middle; clypeus broad, nearly straight at apex, about two-thirds as long as interfoveal line and equal to foveo-ocular line; malar space about two-thirds as long as basal width of mandible; cheeks from in front slightly rounded below eyes; ocell-ocular and postocellar lines about equal and nearly twice as long as diameter of ocelli; thorax stout, propodeum strongly arched and not nearly reaching middle of coxae; pronotum laterally shagreened and weakly punctate; notauli strong and strongly, densely punctate, mesoscutum otherwise finely, rather sparsely, punctate; scutellum likewise, without lateral carinae; mesopleura finely punctate, except in longitudinal impression which is polished; sternauli very weak; metapleura rather more densely punctate; propodeal carinae strong, areola and petiolar areas punctate, the latter slightly the shorter and transversely striate, other areas punctate, areola barely half as wide as petiolar area; head and thorax with short, dense, silvery pubescence; stigma about three-fifths as wide as long, radius far beyond middle; second abscissa of radius and basal vein nearly straight; second recurrent postfurcal; nervulus interstitial; nervellus antefurcal and weakly broken below middle; legs slender, hind basitarsus about two-thirds as long as tibia, and nearly as long as other four joints combined. Abdomen barely one and one-half times as long as head and thorax united; first tergite longer than second, its ventral edges subparallel and not enclosing the sternite, the lateral foveae very strong and extending to middle, evenly curved above, the postpetiole not elevated above level of petiole, gradually increasing in width from basal fourth to about apical fourth where the sides become parallel to end, about one-third as wide at apex as long; second tergite slightly less than three times as long as basal width, slightly wider at apex, longitudinally striate; first two tergites slightly longer than others united; ovipositor twice as long as first tergite.

Black; orbits and mouth region yellow; face brown in middle; pronotum rufo-testaceous; tegulae and wing bases stramineous; tergites one and two black, others brownish piceous more or less yellowish apically and laterally; wings hyaline, veins and stigma brown, front and middle legs nearly stramineous; hind legs fusco-testaceous, trochanter and apex of femur pale, tibia in middle and tarsus at base somewhat paler.

Type-locality.—Kanawha Station, West Virginia.

Other localities.—Tryon, North Carolina, Lawrence, Kansas.

Type.—Cat. No. 20267, U.S.N.M.

Described from three females. The type was reared from a clerid larva under Hopkins U. S. No. 2884g by Dr. A. D. Hopkins; paratype *a* from Tryon, North Carolina, was reared from the larva of *Enoclerus quariguttatus*, under Hopkins U. S. No. 3635; paratype *b* from Hugo, Kansas, August 13, 1896, No. 557. Both paratypes are much like the type, except that *a* is somewhat smaller with abdomen darker and face paler; and *b* has the mesosternum and pleura reddish piceous with a rufous spot at the upper hind angle, and face paler.

The meager description of *granulatus* Davis gives an impression of an insect very closely related to this and the following species, and one or the other may be found to be synonymous with it. The present species differs from the description of *granulatus* in size, in relative length of ovipositor, in having the propodeal carinae strong at apex, and in the darker pale markings.

CREMASTUS (ZALEPTOPYGUS) SIMILIS, new species.

Female.—Length 7 mm., antennae 4.5 mm., ovipositor 2.7 mm. Very closely related to *cleridivorus* Cushman, from which it differs principally as follows: Head from above more than twice as wide as long; temples less strongly rounded and more sloping; eyes longer than width of face, only two-thirds as wide as long; clypeus strongly rounded at apex; interfoveal line nearly twice as long as foveo-ocular line; ocell-ocular and postocellar lines equal, but diameter of ocelli about three-fourths as great as former. Thorax more slender, propodeum weakly arched, and extending nearly to middle of coxae, areola and petiolar area subequal in length and breadth, each scarcely more than half as wide as long; vestiture of head and thorax not conspicuous. Abdomen twice as long as head and thorax; first and second tergites subequal, first with postpetiole slightly elevated above petiole, of similar conformation but barely one-fourth as wide at apex as long, second nearly four times as long as wide, parallel-sided. Colored almost exactly like *cleridivorus* except that hind legs are paler and scutellum is red.

Type-locality.—Collins, Idaho.

Type.—Cat. No. 20268, U.S.N.M.

One female collected July 27, 1898 by C. V. Piper.

Comparison of the types may show this species to be the same as *granulatus* Davis, but it lacks the dark middle of hind femora, has the propodeal carinae distinct apically, the yellow color is darker than indicated in the description of *granulatus* and the ovipositor is relatively shorter. Also apparently *granulatus* has the scutellum black instead of red.

CREMASTUS (ZALEPTOPYGUS) PLESIUS, new species.

Female.—Length 7 mm., antennae 4 mm., ovipositor 2 mm. Allied to the last two preceding new species. Compared with *cleri-*

divorus Cushman differs as follows: Head in dorsal view more than twice as wide as long; temples less strongly rounded and more sloping; eyes distinctly longer than width of face, parallel, only about two-thirds as wide as long; clypeus broadly but strongly rounded at apex, but little more than half as long as interfoveal line; malar space barely half as long as basal width of mandible; cheeks not rounded below eyes; ocell-ocular line barely half as long as postocellar line, diameter of ocelli distinctly greater than former; propodeum less strongly arched and extending only about one-third of way over coxae; mesopleural impression distinctly, transversely striate; sternauli rather strong; metapleura less densely punctate than mesopleura; areola and petiolar area subequal in length, the areola slightly narrower, petiolar area nearly as wide as long, rather strongly, transversely striate; vestiture of head and thorax inconspicuous; stigma slightly narrower; nervulus briefly postfurcal; hind basitarsus relatively shorter. Abdomen nearly twice as long as head and thorax; postpetiole slightly elevated above level of petiole; ovipositor only about one and one-half times as long as first tergite.

Black; yellow color of head embracing also the face; pronotum, sternauli and lateral edges of mesoscutum yellow; mesopleura and metapleura piceous with an obscure yellowish spot at base of each coxa; scutellum yellowish red; tergites 1 and 2 black, becoming piceous toward apex; other tergites broadly yellowish laterally; legs colored as in *cleridivorus*, but hind legs, especially coxae, paler.

Type-locality.—Probably Michigan.

Type.—Cat. No. 20269, U.S.N.M.

One female from A. J. Cook, Lansing, Michigan, July 30, 1887.

CREMASTUS (ZALEPTOPYGUS) ROSAE, new species.

Female.—Length 6 mm., antennae 4 mm., ovipositor 2.3 mm. Very closely allied to *pleisus* Cushman and differing from that species as follows: Eyes barely as long as width of face, about three-fourths as wide as long; clypeus two-thirds as long as interfoveal line; malar space about three-fourths as long as basal width of mandible; cheeks slightly rounded below eyes; ocell-ocular line nearly as long as postocellar line, diameter of ocelli nearly as long as former. Propodeum extending about two-fifths of way over hind coxae, areola much narrower than petiolar area, the latter distinctly longer than wide. Abdomen but little more than one and one-half times as long as head and thorax; first and second tergites subequal in length and together but little longer than rest of abdomen; postpetiole only about as long as petiole and rather abruptly swollen.

Color similar to *pleisus* except that entire mesopleura, metapleura, and propodeum, except basal areas, are red.

Type-locality.—Vienna, Virginia.

Type.—Cat. No. 20270, U.S.N.M.

One female reared by the author May 28, 1911, from rose hips in company with *Rhynchytes bicolor*, but which were also apparently infested by a lepidopterous larva, and under Quaintance No. 7084.

CREMASTUS (ZALEPTOPYGUS) DELICATUS (Cresson).

Porizon delicatus CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 176.

The unique type male is in the United States National Museum, as well as two other males also from the Belfrage collection. It is very like *retiniae* (Cresson), and the latter may be merely a darker form of the present species.

The principal characters of the species are given in the key to males.

CREMASTUS (ZALEPTOPYGUS) RETINIAE Cresson.

Cremastus retiniae CRESSON, Rept. Ent. U. S., for 1879, 1880, p. 238.

This species was originally described from a single male specimen reared from (*Retinia*) *Evetria rigilana* (Fernald) at Ithaca, New York. This specimen, minus the head, is in the United States National Museum. In addition there are seven other males, one each from Washington, District of Columbia, and Falls Church, Virginia, and five from Plummers Island, Maryland. The loss of the head of the type makes it impossible to state definitely that these are the same, but the other characters leave little doubt that the determination is correct. About the only difference between this and *delicatus* (Cresson) consists in color, the present species having the propodeum, abdomen, and sometimes the prescutum and mesosternum more or less black or piceous. The specimen that has the dark color most extensively developed has the occiput, vertex, front, prescutum, propodeum, area around scutellum, mesosternum, mesopleura above, metapleura, metasternum, tergites 1, 2, 5, and 7 entirely and 3 and 4 partly black or blackish. The pronotum is yellow, this character allying it to *rosae* Cushman and its close relatives.

CREMASTUS (ZALEPTOPYGUS) TETRALOPHAE, new species.

Female.—Length, 9 mm., antennae 5 mm., ovipositor 3.5 mm. Head from above distinctly more than twice as wide as long; temples weakly rounded and strongly sloping; eyes about a third longer than width of face, parallel within; malar space scarcely half as long as basal width of mandible; clypeus broadly rounded at apex, about two-thirds as long as interfoveal line, which is fully twice as long as foveo-ocular line; ocelli about equal in diameter to ocell-ocular line which is only slightly shorter than postocellar line; occipital carina briefly interrupted above. Thorax stout, the propodeum steeply, arcuately sloping from near the base and extending about two-fifths of way to apex of coxae; pronotum laterally punctate except in middle; mesoscutum rather sparsely punctate, prescutum more

densely so, notauli deep; scutellum sparsely punctate, with lateral carinae extending to apex; mesoscutum and pleura below densely punctate, polished and obliquely striate above; sternauli rather strong; metapleura also densely punctate; propodeum with carinae strong throughout, areola and petiolar area separated, the latter somewhat the longer, about two-thirds as wide as long, areola a little narrower; apical areas obscurely transversely rugose, others densely punctate, except basal lateral areas, which are very sparsely so; stigma about half as wide as long with radius at apical third; second discoidal cell about three-fifths as wide at base as at apex; nervellus antefurcal, broken very near base; hind legs rather stout, basitarsus three-fifths as long as tibia and as long as rest of joints united. Abdomen twice as long as head and thorax, first two tergites slightly longer than rest united, first longer than second; petiole strongly carinate above, sternite not inclosed, lower edges of tergite parallel; postpetiole elevated above level of petiole, striate; second tergite nearly four times as long as wide at base, sides parallel, striate; ovipositor about twice as long as first tergite.

Rufo-testaceous; head darker with mandibles and clypeus inclined to yellowish and vertex slightly infuscated; antennae black, scape and pedicel paler; thorax nearly uniform rufo-testaceous with notauli and scutellum inclined to yellowish; tegulae and wing bases stramineous; wings hyaline, veins and stigma blackish; front and middle legs yellowish stramineous; hind coxae testaceous, trochanters and apices of femora stramineous, femora otherwise brown, tibiae and tarsi fuscous, the latter slightly paler; first and second tergites black, postpetiole piceous, remaining tergites considerably darker than thorax with more or less black in basal middle.

Male.—Length 7.5 mm., antennae 6 mm. Differs from female as follows: Eyes scarcely longer than width of face; postpetiole narrow, parallel-sided beyond spiracles, not swollen, and not elevated above level of petiole; second tergite only about three times as long as wide at base, distinctly wider at apex; hind basitarsus relatively shorter.

Face, orbits, mouth parts, scape and pedicel yellow; occiput, vertex, and front black; prescutum spot in front of scutellum, space between wings and scutellum, and propodeum above black or blackish, scutellum yellow.

Type-locality.—Monticello, Florida.

Host.—*Tetralopha subcanalis* Walker.

Type.—Cat. 20271, U.S.N.M.

Described from three females and three males, all reared from the same host by A. I. Fabis, under Quaintance Nos. 10563, 10564, and 10565. The male is rather remarkable for the genus in that the ocelli are not especially larger than in the female.

Paratype *a* (female) is homotypic and paratype *b* (female) differs in having the orbits and mouthparts distinctly yellow. Paratype *c* (male) is like the allotype except that the propodeum is entirely black, and paratype *d* (male) has the head and mesoscutum colored as in the female paratype *b*.

CREMASTUS (ZALEPTOPYGUS) TEREBRATUS, new species.

Female.—Length 9 mm., antennae 5 mm., ovipositor 6 mm. Compared with *tetralophae* Cushman differs as follows: Eyes scarcely longer than width of face; malar space as long as basal width of mandible; clypeus strongly rounded at apex, about as long as interfoveal line, which is only about a third longer than foveo-ocular line; post-ocellar line about twice as long as ocell-ocular line, ocelli about equal in diameter to latter. Propodeum precipitate beyond middle and extending barely a third of way over coxae; pronotum laterally punctate throughout; mesoscutum densely punctate throughout, notauli weak; scutellum densely punctate, carinae obsolete toward apex; ster-nauli obsolete; petiolar area much longer than areola, sculpture of areas similar to that of *tetralophae*, but basal areas are more densely punctate; second recurrent interstitial; second discoidal cell scarcely a third as wide at base as at apex; nervellus unusually strongly ante-furcal and broken at lower third; legs slender, hind basitarsus shorter than remaining joints united. Abdomen very slender, twice as long as head and thorax; first two tergites together shorter than rest united; first tergite about as long as second, carinae of petiole obsolete toward base; second tergite about four times as long as wide at base, much wider at apex; ovipositor as long as entire abdomen.

Rufo-testaceous; orbits, mouth parts, and cheeks yellow, head otherwise testaceous; antennae black, scape reddish; tegulae and wingbases yellow; space between wings and scutellum and basal areas of propodeum black; thorax otherwise rufo-testaceous with scutellum slightly paler; wings hyaline, veins and stigma brownish; front and middle coxae and trochanters in front, both joints of hind trochanters at apex yellowish; middle and hind trochanters basally black or piceous; hind tibiae with apical half and basal annulus and hind tarsi infuscated, tibiae in middle and at extreme base pale; legs otherwise testaceous, hind coxae and femora much the darkest; abdomen colored as in *tetralophae*.

Type-locality.—Boulder, Colorado.

Type.—Cat. No. 20272, U.S.N.M.

One female collected by Prof. T. D. A. Cockerell at light July 28.

CREMASTUS (ZALEPTOPYGUS) MORDELLISTENAE, new species.

Female.—Length 6 mm., ovipositor 2.5 mm. Head viewed from above about twice as broad as long, temples strongly rounded; face

fully a third wider than length of the rather small eyes, slightly elevated in middle, weakly punctate; clypeus weakly separated from face, about two-thirds as long as wide, weakly rounded at apex; malar space about as long as basal width of mandible; ocelli very small, barely more than half as long as ocell-ocular line, which is but little shorter than postocellar line; antennae (broken). Thorax rather stout, about half as deep as long, the propodeum strongly arched and extending about a third of the way over the coxae; clothed with short white pubescence, sculpture rather weak; notauli nearly obsolete; scutellum strongly convex, narrowly rounded at apex, and with lateral carinae weak; propodeal carinae fairly strong, areola and petiolar area separated and about equal in length, the latter transversely rugulose and other areas punctate; stigma about half as broad as long, radius arising distinctly beyond middle; second discoidal cell about a third as wide at base as at apex; legs slender, hind basitarsus about three-fourths as long as tibia and slightly shorter than remaining tarsal joints. Abdomen about one and one-half times as long as basal width, sides gently divergent, weakly longitudinally striate; first two tergites together slightly longer than rest of abdomen; ovipositor slightly more than twice as long as first tergite.

Black; mandibles, clypeus at apex and orbits (narrowly) piceous, the last broadly interrupted below and narrowly so above eyes; antennae black, piceous below toward base; tegulae piceous; legs reddish testaceous, hind coxae entirely and middle coxae at base black, hind tibiae apically and their tarsi fuscous; wings hyaline, venation brownish; abdomen black, obscurely reddish in the middle.

Male.—Length 6 mm., antennae 5 mm. Differs from the female in having the eyes and ocelli somewhat larger, the former only slightly shorter than the width of face, and the latter nearly as long as ocell-ocular line, which is about half as long as postocellar line; malar space narrower than basal width of mandible; the piceous color of head and tegulae is replaced by yellow, and the legs are somewhat paler.

Host.—*Mordellistena morula* LeConte.

Type-locality.—Colorado.

Type.—Cat. No. 20273, U.S.N.M.

Described from one female reared from the host July 9, 1891, and labeled "Ac. Cat. 78" and four males from the same State without host records.

CREMASTUS (ZALEPTOPYGUS) INCOMPLETUS (Provancher).

Mesoleptus incompletus PROVANCHER, Nat. Can., vol. 7, 1875, p. 270.

Atractodes fusiformis PROVANCHER, Nat. Can., vol. 7, 1875, p. 335.

Cremastus fusiformis PROVANCHER, Faun. Can., Hym., 1883, pp. 376 and 788.

Described originally in the genus *Mesoleptus*, this species was redescribed by Provancher later in the same year as *Atractodes fusiformis*.

Eight years later the same writer synonymized the two species and called it *Cremastus fusiformis*. Since *incompletus* has page precedence over *fusiformis*, the earlier name must be used. The fact that Provancher described another species under the name *Atractodes incompletus* does not alter the case, since the present species was never referred to *Atractodes* nor has the name *incompletus* ever been used in *Cremastus*.

From most of the species which fall near it, this species is readily separable by its small size and entirely black thorax and abdomen, and from the few species which approach it in these characters by the very characteristic arrangement of color in the orbits.

CREMASTUS (ZALEPTOPYGUS) ROHWERI, new species.

Female.—Length 8.5 mm., antennae 5 mm., ovipositor 3.3 mm. Head from above more than twice as wide as long, temples strongly rounded; eyes slightly divergent below, slightly shorter than greatest width of face; malar space about as long as basal width of mandible; clypeus little more than half as long as interfoveal line, very weakly rounded at apex; interfoveal line little longer than foveo-ocular line; face weakly elevated in middle, sparsely punctate at sides; anterior orbits swollen; lateral ocelli about half as wide as postocellar line, the latter about one and one-half times as long as ocell-ocular line; occipital carina narrowly interrupted in middle. Thorax rather slender, propodeum declivous beyond middle, but reaching beyond middle of coxae, pronotum laterally deeply impressed and strongly punctate; mesoscutum coarsely punctate, notauli strong; scutellum more finely punctured without lateral carinae; mesosternum and mesopleura coarsely, densely punctured except small polished area immediately below wings; metapleura more finely, sparsely punctured; propodeal carinae strong, areola and petiolar area separated, the latter slightly the longer; apical areas transversely rugulose, areola and basal lateral areas sparsely punctate, other areas densely punctate; stigma half as wide as long, radius at apical third, second discoidal cell scarcely a third as wide at base as at apex; nervellus strongly antefurcal, not broken; hind legs slender, basitarsus three-fifths as long as tibia and about as long as other four joints united. Abdomen not quite twice as long as head and thorax, first and second tergites subequal in length and together slightly longer than rest of abdomen; petiole with carinae strong to base, ventral edges of tergites separated, parallel, not inclosing sternite, postpetiole elevated slightly above level of petiole; second tergite between five and six times as long as wide at base, its sides almost parallel, longitudinally striate; tergites beyond second strongly compressed; ovipositor about two and one-half times as long as first tergite.

Black with tergites beyond second red; orbits, clypeus, mandibles and scape and pedicel below yellow, and a spot in middle of face yellowish red; flagellum black; tegulae and wing bases whitish; wings hyaline, veins and stigma dark brown; coxae black at base, hind pair largely black, white at apex; all trochanters except basal joint of hind trochanter, which is blackish, white; front legs otherwise stramineous with tarsi paler; hind femora and tibiae fuscous, their tarsi paler, especially at base, middle legs midway in color between front and hind legs; first and second tergites and basal median spot on third black, abdomen otherwise reddish.

Type-locality.—Mount Union, Pennsylvania.

Type.—Cat. No. 20274, U.S.N.M.

One female (Hopkins No. 7557) reared June 17, 1908, by R. W. Van Horn, from a red maple stump infested by Cerambycidae and Eucnemidae and also containing the clerid, *Cymatodera undulata*.

Named for Mr. S. A. Rohwer.

This species presents a rather peculiar combination of characters. The head is of the type shown in *oberea* Viereck and its closest allies, as is also the thorax except for its slenderness and the fact that the propodeum extends beyond the middle of the coxae, both of which, together with the very slender strongly compressed abdomen ally it with the more typical species, but the unclosed first sternite and broad stigma with distally originating radius refer it without doubt to *Zaleptopygus*.

CREMASTUS (ZALEPTOPYGUS) ANOMALUS, new species.

Female.—Length 7 mm., antennae 3.5 mm., ovipositor 2.3 mm. In the strong compression of the abdomen and lack of scutellar carinae this species is allied to *rohweri* Cushman, but is otherwise abundantly distinct, as follows: Eyes parallel below, distinctly shorter than width of face; malar space distinctly shorter than basal width of mandible; clypeus about two-thirds as long as interfoveal line, weakly convex, strongly rounded at apex; interfoveal line much longer than foveo-ocular line; face evenly, moderately punctate throughout, except narrowly in orbits; anterior orbits not swollen; lateral ocelli much less than half as wide as postocellar line, the latter slightly longer than ocell-ocular line. Thorax stout, the propodeum declivous behind and reaching but a short distance over coxae; thorax throughout much less strongly punctate; scutellum unusually deeply convex, almost appearing swollen; propodeal carinae rather weak, areola and petiolar area weakly separated, the former short, pentagonal much shorter than latter; sculpture of all areas weak, apical areas obscurely rugulose, others punctate; radius arising very shortly beyond middle of stigma; second discoidal cell nearly half as wide at base as at apex; second recurrent interstitial; nervellus perpendicular; hind basitarsus relatively as long compared with tibia but shorter than other joints

united. Petiole with carinae obsolete, the ventral edges of the tergite inclosing the sternite; post-petiole strongly elevated above level of petiole; second tergite about four times as long as basal width, slightly wider at apex, striate.

Color about as in *rohweri*, but face entirely black, scape and pedicel piceous, middle and hind legs paler, hind tibia with whitish stripe above, tergites beyond second dark piceous red.

Type-locality.—Colorado.

Type.—Cat. No. 20275, U.S.N.M.

One female collected by C. F. Baker.

Peculiar in having the petiole as in the more typical species, while otherwise but distantly related to them.

CREMASTUS (ZALEPTOPYGUS) FUSCIPENNIS (Cresson).

Porizon fuscipennis CRESSON, Proc. Ent. Soc. Phila., vol. 4, 1865, p. 287.

A single female specimen in the United States National Museum collection agrees fairly well with the description of this species. It is from Garden City, Kansas, while the type is from Colorado. This specimen was used in placing the species in the table.

CREMASTUS (ZALEPTOPYGUS) AUDAX (Cresson).

Porizon audax CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 174.

This species, described from the male, is represented in the United States National Museum collection only by that sex, one specimen being a paratype. Its dark wings ally it with *Cremastus fuscipennis* (Cresson) but it differs from that species in having the wings paler and the propodeum less precipitous.

CREMASTUS (ZALEPTOPYGUS) NIGRICLYPEALIS, new species.

Female.—Length 9.5 mm., antennae 4.5 mm., ovipositor 3.5 mm. Head from above strongly transverse, much more than twice as wide as long, temples slightly rounded, from in front subtriangular, malar space as long as basal width of mandible, forming with each other if extended a sharply acute angle, mandibles strongly protruding, clypeus convex, sharply rounded and margined apically, nearly as long as interfoveal line, which is about a half longer than foveo-ocular line; foveae slightly below level of lower eye margins; eyes parallel, barely as long as width of face; face and clypeus strongly, sparsely punctate, polished; cheeks opaque, sparsely punctate; orbits above antennae swollen; antennae inserted slightly below middle of eyes; front subpolished, with a small elevation below anterior ocellus; vertex and posterior orbits sparsely punctate; anterior ocellus distinctly larger than posterior, diameter of latter only about half as long as ocell-ocular line, which is about three-fifths as long as post-ocellar line; antennae but little longer than head and thorax. Tho-

rax stout, propodeum sharply, convexly declivous and reaching to about middle of coxae; thorax densely, coarsely punctate except in polished impressions of pronotum and mesopleura; notauli broad and deep; prescutum flattened above; scutellum with lateral carinae extending to and encircling apex; sternauli and prepectal carina strong; propodeal carinae strong, areola and petiolar area separated, the latter nearly twice as long as areola, about two-thirds as wide as long, widest behind middle; areola hexagonal, as broad as long; stigma more than half as wide as long, radius beyond middle; second discoidal cell about two-fifths as wide at base as at apex; second recurrent interstitial; legs stout, hind basitarsus two-thirds as long as tibia, slightly shorter than rest of tarsus. Abdomen less than one and one-half times as long as head and thorax; first tergite much longer than second, its ventral edges parallel, not inclosing sternite; lateral carinae distinct for only a short distance in front of spiracles, petiole slender, less than half as wide as postpetiole, which is elevated above level of petiole, petiole shining, postpetiole subopaque; second tergite about three and one-half times as long as wide at base, much wider at apex, shagreened and sparsely minutely punctate; ovipositor little more than half as long again as first tergite.

Black with tergites beyond second largely red; head including clypeus black; mandibles, a brief orbital line opposite antennae, and a long narrow line behind eyes yellow; antennae brown, segments paler at apex; palpi piceous; tegulae and wing bases yellow; all coxae and basal joint of hind trochanter below black to piceous; second joints of all trochanters, apices of first joints of front and middle, first joints of hind trochanters above, front and middle tibiae and tarsi above, hind tibiae above except at apex, and apices of all femora white; front and middle legs otherwise testaceous; hind legs otherwise reddish piceous; wings milky hyaline, veins and stigma brown, the latter with a yellow spot at base; tergites 1 and 2 black, others largely dark reddish.

Type-locality.—Las Cruces, New Mexico.

Type.—Cat. No. 20276, U.S.N.M.

One female taken by Prof. T. D. A. Cockerell on *Solidago*, where it had been caught by a *Phymata*, which is mounted on the same pin. Easily recognized by its intensely black clypeus, short antennae, and milky white wings.

CREMASTUS (ZALEPTOPYGUS) VIERECKII (Cockerell).

Porizon viereckii COCKERELL, Ann. and Mag. Nat. Hist., vol. 12, 1903, p. 200.

The badly mutilated male type of this species is in the United States National Museum. In color, pattern of legs, and color of wings it agrees with *nigriclypealis* Cushman, but differs in having the sculpture of head and thorax finer; the antennae long; the orbits broadly

and clypeus at sides yellow; and the propodeum more strongly convex, with the areola relatively longer and narrower, and not reaching so far over the coxae. The eyes are slightly divergent below, about as long as width of face. The ocell-ocular line is about half as long as postocellar line and the ocelli slightly less in diameter than the former, unusually small ocelli for a male of this genus.

CREMASTUS (ZALEPTOPYGUS) BILINEATUS, new species.

Female.—Length 9 mm., antennae 5.5 mm., ovipositor 7 mm. Head sparsely, weakly punctate, more densely on face, more than twice as wide as long, temples weakly rounded; eyes parallel, shorter than width of face; face elevated medially; malar space about as long as basal width of mandible; clypeus as long as foveo-ocular line, which is about two-thirds as long as interfoveal line; mandibles protruding. Thorax rather stout, propodeum strongly rounded and extending only a short distance over coxae; upper hind angle of pronotum punctate, rest subpolished; mesoscutum finely punctate, notauli weak; scutellum laterally carinate, flattened, punctate; pleura and sternum finely punctate, mesopleura polished above, sternauli weak; areola about two-thirds as long as petiolar area, elongate pentagonal; petiolar area but little wider than areola, weakly rugulose; other areas weakly punctate, except basal areas, which are smooth; stigma half as long as wide, radius at apical third; second recurrent interstitial; second abscissa of radius curving outward to near apex then forward to costa; second discoidal cell a third as wide at base as at apex; legs slender, hind basitarsus little more than half as long as tibia and about as long as next three joints united. Abdomen twice as long as head and thorax, slender, rather strongly compressed beyond third tergite, tergites 1 and 2 together shorter than remainder of abdomen; first tergite distinctly longer than second, petiole with carinae obsolete toward base, ventral edges of tergite curving toward each other below and partly covering the tergite, postpetiole elevated above level of petiole, nearly three times as broad as narrowest part of petiole; second tergite nearly four times as long as basal width, much wider at apex, striate; ovipositor slightly longer than abdomen.

Black with tergites beyond second largely reddish; head black with orbits broadly and completely, cheeks, clypeus, and mandibles yellow; antennae black, scape and pedicel piceous below; thorax black, notauli, scutellum, tegulae, and wing bases yellow; wings hyaline, veins and stigma brown, latter pale at base; all coxae whitish at apex and above, the amount of white increasing toward the front, black at extreme base, especially hind coxae, otherwise testaceous; front and middle trochanters and front femora whitish in front, otherwise front and middle legs testaceous; both joints of hind trochanter

blackish at base, reddish toward apex with a whitish spot above; hind femora and tibiae rufo-testaceous, the latter infuscated near base and at apex. First tergite entirely and all others more or less at base, black, abdomen otherwise red, paler toward apices and ventral margins of apical tergites.

Male.—Length 7.5 mm., antennae 6.5 mm. Malar space slightly shorter; eyes about as long as width of face; ocelli slightly larger; notauli yellow only in front, and yellow of scutellum confined to a nearly divided crescentic spot; middle as well as hind trochanters black basally, hind coxae almost entirely black; first tergite with carinae stronger and postpetiole relatively narrower and not elevated above level of petiole; black of abdomen more extensive, embracing the entire second, seventh, and eighth tergites and most of the sixth; antennae relatively longer.

Type-locality.—Clementon, New Jersey.

Type.—Cat. No. 20277, U.S.N.M.

One female and one male from type-locality.

In Szepligeti's table this species will run to *Pseudocremastus* Szepligeti, and differs from the description of that genus in minor details principally in venation.

CREMASTUS (ZALEPTOPYGUS) HYALINIPENNIS (Cresson).

Porizon hyalinipennis CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 174.

A paratype female of this species is in the United States National Museum and a male also from the Belfrage collection. It is easily separable from allied species by the characters employed in the key.

CREMASTUS (ZALEPTOPYGUS) GALLAECOLA, new species.

Female.—Length 8 mm., antennae 4.5 mm., ovipositor 3.5 mm. Head viewed from above considerably more than twice as wide as long, temples rather strongly rounded but much narrowed; viewed from in front much broader than long, face twice as broad as long and much broader than greatest length of eye, elevated in middle, rather densely, strongly punctured; clypeus short, broadly rounded at apex, the suture broad, straight, foveo-ocular line nearly as long as interfoveal line; malar space as long as basal width of mandible; eyes prominent, nearly as broad as long, parallel within; diameter of lateral ocellus shorter than ocell-ocular line and about half as long as postocellar line. Thorax about twice as long as high, the propodeum strongly arched above, declivous behind, and reaching barely a third the length of the coxae; thorax very finely pubescent, generally densely, finely punctate, especially the mesopleura below, the mesosternum, and the metapleura; pronotum obscurely striato-punctate; notauli distinct anteriorly; scutellum weakly convex, lateral carinae reaching apex; longitudinal furrow of mesopleurum

obscurely transversely striate; propodeal carinae strong, areola short, pentagonal about two-thirds as long as petiolar area, distinctly separated, apical areas strongly transversely rugulose, others sparsely punctate; stigma slightly more than half as broad as long, radius arising far beyond middle, its two abscissae forming nearly a right angle; second discoidal cell about four times as wide at apex as at base; nervellus slightly curved but unbroken, perpendicular; legs fairly stout, hind basitarsus three-fifths as long as tibia and nearly as long as remaining joints. Abdomen scarcely a half longer than head and thorax, very weakly compressed at apex, tergites 1 and 2 together much longer than remaining segments united; first tergite distinctly longer than second, not inclosing the sternite, its ventral edges parallel, increasing in width from before middle, post-petiole about three times as wide as petiole, not swollen, petiole strongly carinate and foveate; second tergite about three-fifths as broad at base as long, its sides strongly divergent, shagreened and obscurely striate; ovipositor twice as long as first tergite.

Black; clypeus, mandibles, orbits, except broad interruptions above eyes and in lower anterior orbits, narrowly in front and broadly below eyes, yellow; antennae black throughout; tegulae and wing bases yellow; legs generally reddish testaceous, front ones paler, hind coxae black at base, front legs in front, all trochanters, middle and hind tibiae above yellowish, hind tibiae otherwise and their tarsi infuscate; wings hyaline, venation brown, stigma with a longitudinal pale streak; tergites 1 and 2 black, others largely red with apical middle more or less yellow and inclining to black in basal middle, the yellow increasing apically and the black basally.

Male.—Length 7.5 mm., antennae 5 mm. Very like female, even in size of ocelli, and differing principally in color as follows: Orbits more broadly yellow and scarcely interrupted below, front and middle coxae black at base, hind coxae pale only at extreme apex; yellow color of abdomen confined to apex of seventh tergite and lateral edges of others beyond second, the tergites largely black except third and fourth, which are largely reddish. Hind tarsal joints beyond first relatively longer.

Host.—*Gnorimoschema gallae-solidaginis* (Riley).

Type-locality.—East Falls Church, Virginia.

Type.—Cat. No. 20278, U.S.N.M.

Described from 11 females and 6 males reared by the writer during the spring of 1916.

In color this species is very variable, especially in that of the abdomen. The female paratypes *a-j* show a gradual replacing of the red by black, while paratype *i* has the yellow almost entirely obsolete. In paratype *f* the three colors are beautifully arranged in alternating bands on tergites 3 to 6. Aside from color the

greatest degree of variation is shown in the form of the areola, which is sometimes nearly regularly pentagonal. Paratype *a* is most like the type, being practically identical. The male paratypes *k-o* exhibit less variation in color than the females, the extreme being in paratype *o*, in which the red is almost entirely replaced by black. All the male paratypes have the yellow orbits more broadly interrupted below than the allotype.

CREMASTUS (ZALEPTOPYGUS) ORBITALIS (Cresson).

Porizon orbitalis CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 174.

(*Porizon*) *Zaleptopygus orbitalis* (CRESSON) VIERECK, Proc. U. S. Nat. Mus., vol. 41, p. 294.

Originally described by Cresson in *Porizon*, this species is one of the two species referred by Viereck to his genus *Zaleptopygus*. It is represented in the United States National Museum collection by a paratype female and the allotype, the latter without the abdomen, as well as four other males from Texas, two of the latter from the Bel-frage collection. Its most striking characters are used in the keys. The specimens available display very little variation, the form of the propodeal areas being most subject to variation. In the male the areola is nearly or quite as long as the petiolar area, and the width of these areas varies considerably.

CREMASTUS (ZALEPTOPYGUS) OBEREAE (Viereck).

Zaleptopygus obereae VIERECK, Proc. U. S. Nat. Mus., vol. 41, 1911, p. 295.

As indicated by Viereck this species is most closely allied to *orbitalis* (Cresson), but is easily distinguished by the characters employed in the key. It is chiefly remarkable for the slight difference in respect to eyes and ocelli between the sexes.

SPECIES NOT TABULATED.

PORIZON ALBIPENNIS Cresson.

Porizon albipennis CRESSON, Proc. Ent. Soc. Phila., vol. 4, 1865, p. 287.

The type of this species has not been seen nor is there any specimen in the National Museum collection that agrees with the description. It is apparently, however, a *Cremastus* allied by its white wings to *viereckii* (Cockerell) and *bilineatus* Cushman. From both of these it differs in the white apical margins of the tergites. With *bilineatus* it agrees in the unusually long ovipositor.

CREMASTUS ACICULATUS Davis.

Cremastus aciculatus DAVIS, Trans. Amer. Ent. Soc., vol. 24, 1897, p. 364.

Evidently, from the description, this species is closely allied to *plesius* Cushman and *rosae* Cushman, but as it is described only in the male on practically nothing but color characters and as it is well nigh impossible to associate the sexes without biological evidence, it is im-

possible to make a definite statement in the matter. A male in the United States National Museum collection, which agrees in practically all respects with the description, is doubtfully referred to this species.

CREMASTUS GRANULATUS Davis.

Cremastus granulatus DAVIS, Trans. Amer. Ent. Soc., vol. 24, 1897, p. 365.

This species is apparently not represented in the United States National Museum. Judging from the description, however, it is allied to *cleridivora* Cushman and *similis* Cushman, the color pattern of the body being very similar to that of those species. But in its pale yellow legs and apically weak propodeal carinae as well as in its small size, it is distinct from both.

CREMASTUS HARTII Ashmead.

Cremastus hartii ASHMEAD, Bull. Ill. State Lab. Nat. Hist., vol. 4, 1895, p. 277. pl. 3.

In his description of this species Ashmead states "Hab., Havana, Ill.; Washington, D. C.; Lexington, Ky. Types, male and female, in the collections of the Illinois State Laboratory of Natural History, and in my collection."

In the United States National Museum collection there are only four specimens bearing this species label, but only one of these is from either of the localities mentioned in the description. The single exception is a male from Washington, District of Columbia, and is not *hartii* Ashmead, but *retiniae* (Cresson). The other three specimens are a female from Chicago, Illinois, and males from Onaga, Kansas, and New York. Aside from these specimens there are only two specimens from Washington and one from Lexington, Kentucky, which antedate the original description and which at all agree with the description. All three differ more or less from Ashmead's description. Moreover, they are representative of two different species, *C. gracilis* Cushman and *C. graciliventris* Cushman. These specimens and *minor* Cushman which agrees fairly well with the description, were sent to Mr. J. R. Malloch at the Illinois State Laboratory for comparison with the type. Mr. Malloch reported neither species to be *hartii* Ashmead. From his observations it differs from all three species in that the propodeum does not extend to the middle of the hind coxae, but does agree with them in stigmal and petiolar characters. It would therefore run in the table to species to the first part of dichotomy 2, but differs from all the species falling there in the short propodeal neck. Other characters mentioned by Mr. Malloch include: Eyes parallel; malar spaces with extended angle obtuse; areola and petiolar areas separated; petiole with carinae and foveae; second tergites not over two times as long as apical width; length of petiole and second segment barely more than equal the length of remaining segments; abdominal punctures very indistinct.

CREMASTUS NEMORALIS Davis.

Cremastus nemoralis DAVIS, Trans. Amer. Ent. Soc., vol. 24, 1897, p. 364.

From the description, based largely on color, this species is evidently allied to *cleridivora* Cushman and *similis* Cushman. The generally dark thorax with the pale prothorax is a very distinctive color pattern characterizing a small group of closely allied species. *C. nemoralis*, however, differs from all of these in its long ovipositor.

CREMASTUS RECTUS Provancher.

Cremastus rectus PROVANCHER, Nat. Can., vol. 6, 1874, p. 175.

According to notes made by Mr. A. B. Gahan, who has examined the type, this species is undoubtedly a *Cremastus*, and judging by the description of the color it is probably allied to *plesius* Cushman and *rosae* Cushman. From the former it differs in the color of the mesopleura and metapleura and of legs and abdomen, and from *rosae* in the color of the mesoscutum, the latter having the parapsidal lobes red.

LEPTOPYGUS ORBUS Davis.

Leptopygus orbus DAVIS, Trans. Amer. Ent. Soc., vol. 24, 1897, p. 365.

There is no specimen of this species at present available for study, nor is its mention in the present paper intended necessarily to definitely include it in the *Cremastini*. Mention of it is made to indicate that for a number of reasons it seems very doubtful if it is properly placed in *Leptopygus* and to call attention to a number of characters that seem to ally it more closely to *Cremastus*. All the conclusions in this connection are, of necessity, based on the original description. Four of the characters there given seem to exclude the species from *Leptopygus*: the long ovipositor, the basally narrowed discoidal cell, the completely areolated propodeum, and the opaquely sculptured abdomen. In *Leptopygus* the ovipositor is short and sharply up-curved, the discoidal (third) cell is rather unusually broad at base, the propodeum is not at all or only partially areolated basally, and the abdomen is very highly polished. The same characters that separate the species from *Leptopygus* ally it with *Cremastus*, while other characters, principally of color, remind one very strongly of those species of *Cremastus* placed by Viereck in his genus *Zaleptopygus*, *Cremastus obereae* (Viereck) and *C. orbitalis* (Cresson). It is the opinion of the writer that this is the proper disposition of the species.

SPECIES ERRONEOUSLY REFERRED TO CREMASTUS.

(CREMASTUS) PROCLITUS LONGICAUDUS (Provancher).

Cremastus longicaudus PROVANCHER, Faun. Can. Hym., 1883, p. 789.

This is a Plectiscine. In Foerster's table to the genera of that tribe it runs to *Eusternix* Foerster, but is certainly congeneric with *Proclitus grandis* Foerster, the genotype of *Proclitus* Foerster, as represented in the United States National Museum collection. It fails to run to the latter genus because of the unbroken nervellus, but the specimen of *P. grandis* examined has this only weakly broken in one wing and unbroken in the other, and this character is evidently not even of specific value.

A specimen of *longicaudus* Provancher compared with the type by Mr. A. B. Gahan and designated by him as a homotype is in the United States National Museum and is the basis of the above remarks.

(CREMASTUS) PROCLITUS MELLIPES Provancher.

Atractodes mellipes PROVANCHER, Nat. Can., vol. 7, 1875, p. 332.

Cremastus mellipes PROVANCHER, Faun. Can. Hym., 1883, p. 377.

According to notes by Mr. A. B. Gahan, who has examined the type, this species is congeneric with *Cremastus longicaudus* Provancher. It must, therefore, be referred to *Proclitus* Foerster.

CREMASTUS PICEUS Cresson.

Cremastus piceus CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 176.

The type of this species is apparently lost, and its exact status can, therefore, not be definitely ascertained. It is not, however, a *Cremastus*, but apparently a member of some genus in the Porizonini. Except for the upcurved ovipositor, the description of the species contains no character that can be considered as at all indicating its relationship.

(CREMASTUS) PROCLITUS ROYI (Provancher).

Cremastus royi PROVANCHER, Faun. Can. Hym., 1883, p. 788.

According to notes by Mr. A. B. Gahan, who has examined the type, this species is congeneric with *longicaudus* (Provancher), and is therefore referred to *Proclitus* Foerster.



Cushman, R. A. 1917. "A revision of the Hymenopterous insects of the tribe Cremastini of America north of Mexico." *Proceedings of the United States National Museum* 53, 503–551.

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