

of eye to the collum, black; pronotum reddish, becoming black on the basal half but not covering the basal angles; scutellum and hemelytra reddish, clavus and rather broadly across apical end of corium blackish; cuneus red, the apical one-third black; legs and ventral surface similar to those of the typical form.

New Haven, 12 July (M. P. Z.).

D. ruber var. segusinus Müller.

Cinex segusinus Müller, Manip. Ins. Taur., 191, 1766.

18th Rept. State Ent. Minn., 193, 1921.

Black, front of head, base of corium and embolium, and basal half of cuneus, reddish; ventral surface of body black, ostiolar peritreme pale; legs colored as in the typical variety or only slightly darker.

New Haven, 21 July (M. P. Z.).

Subfamily ORTHOTYLINAE.

Key to Tribes.

1. Eyes pedunculate, head very broad (p. 501) **Labopini**
Eyes not pedunculate, head not unusually broad 2
2. Pronotum with pleural area separated from dorsal part by a distinct suture; pronotal disk raised posteriorly and projecting above the scutellum; clothed with dense erect, bristly pubescence
(p. 498) **Semiini**
Pronotum not separated by a distinct lateral suture; base of pronotal disk not projecting above scutellum 3
3. Body robust, short oval or ovate, femora saltatorial; head strongly vertical, width of vertex greater than length of head when seen from above (p. 498) **Halticini**
Body usually elongate; length of head usually greater than width of vertex, if not then the head not sharply vertical, or the thorax sulcate-sinuate at the sides 4
4. Antennal segment iii equally thick as segment ii, or nearly so 5
Antennal segment iii distinctly more slender than segment ii 6
5. Thorax campanulate, apex of pronotum scarcely greater than width of vertex; slender species, hemelytra medially coarctate, abdomen slender at base; females usually brachypterous, abdomen very broad but narrowed at base (p. 545) **Systellonotini**
Thorax not distinctly campanulate, apex of pronotum wider than vertex; sometimes slender but in such case the hemelytra not medially coarctate, the abdomen broad at base; females frequently brachypterous but abdomen not at all narrowed at base
(p. 524) **Ceratocapsini**
6. Slender ant-like species, especially in the shape of the head; sides of pronotum more or less sulcate-sinuate, or greatly narrowed on the apical half; usually with silver markings composed of deciduous scale-like hairs (p. 537) **Pilophorini**
Form not ant-like; sides of pronotum not sulcate-sinuate; devoid of silver markings like the above 7
7. Head strongly produced vertically; genae high, usually as great as the height of an eye, but if not then the front above the tylus is prominent when seen from above, the outline of front describing a sinuate arc between the eyes, the width of vertex being greater than length of head (p. 501) **Lopidini**

Head not so strongly produced vertically; genae medium or low, not equal to the height of an eye; head usually as long or longer than the width of vertex (p. 509) *Orthotylini*

Tribe SEMIINI.

Semium Reuter.

S. hirtum Reuter.

Ofv. Kongl. Sv. Vet.--Akad. Förh., xxxii, No. 9, 80, 1876.

Length 2.8 mm., width 1 mm.; legs and antennae red; head. apex of pronotum and sides of thorax rosy red; basal half of pronotum, clavus, bar across apex of corium, and tip of cuneus, velvety brown, remaining parts of corium and cuneus white; densely clothed with erect bristly pubescence.

Occurs on *Euphorbia adenoptera*, living on the red underside of the leaves.

New Jersey.

Tribe HALTICINI.

Key to Genera.

1. Head with well defined sharp basal margin; black forms 2
Head without a well defined sharp basal margin; head and dorsum thickly clothed with closely appressed scale-like hairs and interspersed with more erect long pubescent hairs; small species, variously colored but never black (p. 498) *Parthenicus*
2. Antennae very long and slender, segment ii four or more times longer than segment i; brachypterous forms common; oval, strongly convex (p. 499) *Halticus*
Antennae shorter, segment ii little more than three times the length of segment i; usually larger and more oblong forms 3
3. Antennae with short fine pubescence, head and body nearly glabrous, shining black (p. 500) *Strongylocoris*
Antennae and head with long coarse black hairs; length of hairs on antennal segment iii equal to three times the thickness of segment (p. 500) *Orthocephalus*

Parthenicus Reuter.

P. vaccini (Van Duzee).

Pomona Jour. Ent, Zool., vii, 117, 1915.

Female: Length (macropterous) 2.7 mm., width 1.05 mm.; head strongly produced like a *Criocoris*, ecarinate; pale, tinged brown on pronotum and scutellum; dorsum, legs, and antennae speckled with brown, the brown on hind femora darker and with spots joining in patches; thickly clothed with silvery scale-like hairs, becoming golden brown on corium and black on parts of embolium and cuneus, also with much longer pale pubescent hairs on head, margins of pronotum and hemelytra.

Male: Length 3.5 mm., width 1 mm.; very similar to the female but more elongate.

Female: Length (brachypterous) 1.6 mm., width .9 mm.; oval, membrane scarcely extending beyond apex of cuneus and just attaining tip of abdomen; slightly paler but otherwise marked like the typical macropterous form.

Occurs on *Vaccinium*.

Massachusetts, Long Island, New York.

P. juniperi (Heidemann).

Jour. N. Y. Ent. Soc., xiii, 49, 1905.

Male: Length 3 mm., width 1 mm.; pale yellowish, cuneus, apical one-third of corium, and base of head, tinged with reddish, color sometimes separating into specks; femora sprinkled with reddish; scutellum and base of clavus darkened with fuscous; head shorter and more nearly vertical than in *vaccini*; clothed with fine erect, golden pubescence, intermixed with more closely appressed scale-like golden hairs, the latter more silvery on scutellum and transversely across corium at tip of clavus, becoming black across apex of corium and forming a spot on inner edge of cuneus at middle and at base; membrane uniformly infuscated and iridescent.

Female: Very similar to the male in form and color.

Food plant: Red cedar (*Juniperus virginiana*).

Massachusetts, New York.

Halticus Hahn.

H. apterus (Linnaeus).

Cicada aptera Linnaeus, Syst. Nat., Edn. 10, i, 438, 1758.

Reuter, Hem. Gymn. Eur., iv, 18, 161, pl. 1, fig. 5, 1891.

Length 2.7 mm., width 1.5 mm.; black, strongly shining, devoid of scale-like pubescence; usually brachypterous; antennae pale, segments iii and iv lightly infuscated; first two segments of tarsi, tibiae, and apices of femora, pale.

Maine, Canada.

H. citri Ashmead.

Ent. Amer., iii, 155, 1887.

Male: Length 1.9-2 mm., width .7 mm.; black, slightly shining; antennae fuscous, middle of segment ii and base of iii, pale; usually antennal segment i pale also, dark in the female; tarsi and tibiae except base of posterior pair, and apices of femora, pale; clothed with very fine pale pubescence, and with deciduous tomentose patches which give silvery and greenish reflections.

Female: Length (brachypterous) 1.5 mm., width 1 mm.; length (macropterous) 1.9 mm.; usually brachypterous but frequently winged like the male.

Food plants: White clover, beans, *Plantago lanceolata*; also recorded on many other plants.

Kent, 31 Aug., 1904 (W. E. B.); New Haven, 16 Oct., 1903 (H. L. V.); Southport, 9 Sept., 1904 (W. E. B.).

H. intermedius Uhler.

Proc. U. S. Natl. Mus., xxvii, 360, 1904.

Length 3.5 mm., width 2 mm.; black, moderately shining; clothed with fine pale pubescence, the dorsum with deciduous tomentose patches which give silvery or greenish reflections; antennae pale, apex of segment ii and most of iii and iv, fuscous; juga, tibiae, tarsi except apex, and apices of femora, pale.

Food plant: *Clematis virginiana*.

Branford, 28 July, 1905 (H. L. V.).

Strongylocoris Blanchard.

S. stygica (Say).

Compl. Writ., i, 344, 1859.

Length 4.2-4.5 mm., width 1.9-2.3 mm.; black, moderately shining; finely but densely punctured and somewhat rugulose; antennal segment ii pale on middle; apices of femora, tibiae, tarsi except the last segment, base of trochanters, pale yellowish; hind tibiae usually nearly black.

Food plant: *Solidago* spp.

Greens' Farms, 24 June, 1904 (W. E. B.); Killingworth, 27 June, 1920 (W. E. B.); New Haven, 26 June, 1905 (B. H. W.); West Haven, 27 June, 1905 (H. L. V.).

Orthocephalus Fieber.

O. mutabilis (Fallen).

Capsus mutabilis Fallen, Monog. Cim. Suec., 98, 1807.

Reuter, Hem. Gymn. Eur., iv, 48, 165, 166, pl. 4, figs. 2, 3, 1891.

Male: Length 4.8 mm., width 1.7 mm.; black, clothed with long black hairs, especially on the antennae, head, sides of pronotum and hemelytra; in addition to black hairs the dorsum bears rather sparse, short pale tomentose pubescence; inner half of corium and slender margin of clavus bordering claval suture, pale.

Female (macropterous): Length 4.9 mm., width 2.2 mm.; more robust than the male, very similar in color but narrowly pale along claval suture. This form of the female is comparatively scarce.

Female (brachypterous): Length 4.1 mm., width 2.3 mm.; broader and more ovate than the macropterous form; hemelytra not attaining apex of abdomen, membrane absent, uniformly black, claval suture scarcely developed. This is the common female form.

Food plant: *Chrysanthemum leucanthemum* Linnaeus.

Maine, New York.

Tribe LABOPINI.

Labops Burmeister.

L. hirtus Knight.

Can. Ent., liv, 258, 1922.

Length 5 mm., (brachypterous) 4.3 mm., width 2.4 mm.; easily recognized by the pedunculate eyes, width of head great as width of pronotum at base; black, narrow margin of hemelytra, marks on head, and coxae, pale yellowish to ivory-white; bands about middle and at apices of femora, tibiae excluding apices and knees, yellowish; clothed with coarse, long, erect pubescence.

Maine, Massachusetts, New York.

Tribe LOPIDINI.

Key to Genera.

1. Base of vertex without a ridge bearing bristles 2
Vertex with a high transverse ridge at base, running from eye to eye and bearing bristles; pronotum and hemelytra with sparsely set, erect black bristles (p. 501) *Hadronema*
2. Genae very high, height greater than the depth of an eye; without an oblique suture dividing the genae beneath the eyes; tylus strongly protruding, its base well below the lowest margin of the eye (p. 501) *Ilnacora*
Genae medium or high; with an oblique suture leading from base of antenna to beneath the eye and thus dividing the gena; base of tylus above a line drawn through the lowest margin of the eyes (p. 502) *Lopidea*

Hadronema Uhler.*H. militaris* Uhler.

Hayden's Surv. Terr., Rept. for 1871, 412, 1872.

Length 5-5.4 mm., width 2 mm.; black, outer margin of the hemelytra and cuneus, pale; basal margin, and sometimes basal half of pronotum, reddish; clothed with sparsely set, erect black bristles.

Food plant: *Baptisia tinctoria*.

Long Island, N. Y.

Ilnacora Reuter.*I. malina* (Uhler).

Bull. U. S. Geol. Geog. Surv., iii, 419, 1877.

Length 5.4 mm., width 1.6 mm.; head, body, and antennae mostly black; hemelytra and base of the pronotum bright green, apex of the pronotum, two stripes on scutellum, and legs, greenish yellow; a round black spot behind each callosity; membrane blackish.

Food plant: *Solidago rugosa*, growing in shaded damp places.

Litchfield, 22 July, 1920 (P. G.); Wilton, 24 July, 1920 (M. P. Z.).

I. stalii Reuter.

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 86, 1876.

Length 5.5 mm., width 1.8 mm.; pale greenish white; dorsum bearing patches of black scale-like hairs, forming a prominent spot behind each callus, one at base of scutellum, and one at inner angle of cuneus.

Occurs on Cocklebur and other weeds.

New York.

Lopidea Uhler.**L. confluens** (Say).

Capsus confluenta Say, Heter. N. Harm., 23, 1832; Compl. Writ., i, 341, 1859.

Ent. News, xxix, 211, 1918.

Male: Length 6.3 mm., width 2.1 mm.; yellowish orange and tinged with reddish, broadly each side of commissure, membrane,

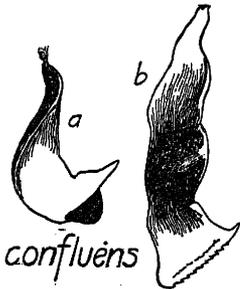


FIG. 67. *Lopidea confluens* Say,—male genital claspers, (a) left clasper, dorsal aspect, (b) right clasper, internal lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

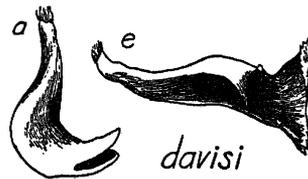


FIG. 68. *Lopidea davisi* Knight,—male genital claspers, (a) left clasper, dorsal aspect, (e) right clasper, internal lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

scutellum, and more or less on pronotal disk, darkened with fuscous; antennae, tylus, rostrum, base of head, and a stripe each side of front, black; legs blackish, trochanters and coxae except basally, yellowish; genital claspers (fig. 67), distinctive of the species.

Female: Length 6.5 mm., width 2.4 mm.; more robust than the male but very similar in coloration.

Breeds on *Polymnia uvedalia*, and probably *P. canadensis*.

Massachusetts, New Hampshire, New York.

L. davisi Knight.

Ent. News, xxviii, 458, 1917.

Male: Length 5.5 mm., width 2 mm.; yellowish orange to reddish; antennae, legs, front of head, and rostrum, black; calli, base

of pronotum, scutellum, clavus, inner half of corium, and membrane, fuscous; genital claspers (fig. 68), distinctive of the species.

Female: Length 5.6 mm., width 2.1 mm.; more robust than the male but very similar in coloration.

When described the food plant of this species was unknown, but in the short interval since that time, the insect has appeared as a serious pest on the cultivated Phlox, in Arkansas, Minnesota, and West Virginia. It may very well be called the "phlox plant bug." Long Island, N. Y.

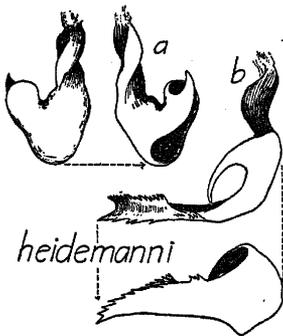


FIG. 69. *Lopidea heidemanni* Knight,—male genital claspers, (a) left clasper, dorsal aspect, (b) right clasper, dorsal aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.



FIG. 70. *Lopidea cuneata* Van Duzee,—male genital claspers, (a) left clasper, dorsal aspect, (b) right clasper, dorsal aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

L. heidemanni Knight.

Ent. News, xxviii, 456, 1917.

†*Lopidea marginata* Heidemann, Check List, Ins. Conn., 69, 1920.

Male: Length 6.7 mm., width 2.14 mm.; dark red, with more fuscous on pronotum and scutellum than *media*; larger and more elongate than *media*, the hemelytra always exhibiting a strong tendency to shrivel and wrinkle longitudinally; genital claspers distinctive (fig. 69), the right clasper showing a close relationship with *cuneata* and *salicis*.

Female: Length 6.2 mm., width 2.08 mm.; slightly more robust than the male, otherwise very similar; costal margins of hemelytra frequently pale as in *media*; in certain color phases, dull orange red with fuscous.

Breeds on elm (*Ulmus*); nymphs have also been reared from *Achillea millefolium*.

Durham, 15 June, 1919, New Haven, 29 May, 13 June, 1920 (M. P. Z.).

L. cuneata Van Duzee.

Trans. Am. Ent. Soc., xxxvi, 79, 1910.

Male: Length 6.1 mm., width 2 mm.; dorsum dark fuscous on a background of orange-red, cuneus, embolium, and base of radial vein, more strongly reddish; pronotum dark fuscous, lateral margins of disk pale to reddish; antennae, head and legs chiefly, black; mark along front margin of eye, juga, genae, trochanters, and coxae except basally, pale; propleura except surrounding coxal cleft, pale reddish; venter reddish and darkened with fuscous, genital segment blackish; genital claspers (fig. 70), distinctive of the species.

Female: Length 6 mm., width 2.1 mm.; similar to the male but the reddish coloration replaced chiefly by pale, frequently the inner margin and apical angles of corium becoming pale.

Collected on *Populus balsamifera* by Van Duzee, while the writer has found it to breed on *Populus deltoides* in Minnesota.

New York, Illinois, Minnesota.

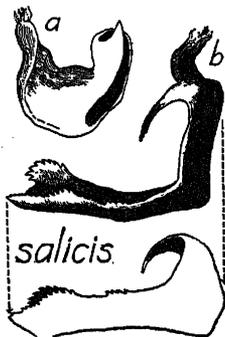


FIG. 71. *Lopidea salicis* Knight, —male genital claspers, (a) left clasper dorsal aspect, (b) right clasper, dorsal aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

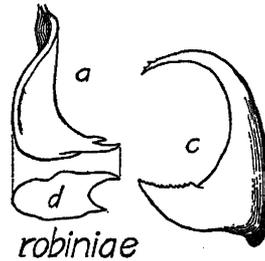


FIG. 72. *Lopidea robiniae* Uhler, —male genital claspers, (a) left clasper, dorsal aspect, (c) right clasper, posterior aspect, (d) left clasper, posterior aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

L. salicis Knight.

Ent. News, xxviii, 457, 1917.

Male: Length 5.7 mm., width 1.94 mm.; black, propleura and basal angles of pronotal disk orange colored; embolium and cuneus except inner apical margin, yellowish to orange; genital claspers (fig. 71), distinctive of the species.

Female: Very similar to the male in size and coloration, sometimes slightly more robust. Closely related to *cuneata* but differs in the genital claspers and in having more orange color on the pronotum and sides of hemelytra.

Breeds on *Salix nigra*.

New York.

L. robiniae (Uhler). (Plate xvi, 14.)

Capsus robiniae Uhler, Proc. Ent. Soc. Phila., i, 24, 1861.

Ent. News, xxix, 211, pl. 13, fig. 2, 1918.

Male: Length 6.8 mm., width 2.1 mm.; color orange-yellow, dorsum infuscated similarly to *confluens*; distinguished from the pale forms of *confluens* only by the genital claspers (fig. 72).

Female: Length 6.5 mm., width 2.14 mm.; usually slightly more robust than the male but very similar in coloration.

Breeds on *Robinia pseudacacia*.

Branford, 29, July, 1905 (H. W. W.); New Haven, 11 July, 1920 (B. H. W.), 3 Aug., 1905 (H. L. V.); Stratford, 9 July, 1920 (B. H. W.); Westville, 27 July, 1905 (W. E. B.).

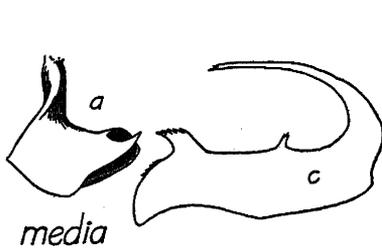


FIG. 73. *Lopidea media* Say,—male genital claspers, (a) left clasper, dorsal aspect, (c) right clasper, posterior aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

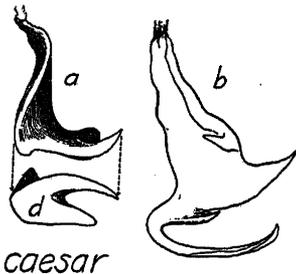


FIG. 74. *Lopidea caesar* Reuter,—male genital claspers, (a) left clasper, dorsal aspect, (b) right clasper, internal lateral aspect, (d) left clasper, posterior aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

L. media (Say).

Capsus media Say, Heter. N. Harm., 22, 1832; Compl. Writ., i, 341, 1859.

Ent. News, xxix, 210, pl. 13, fig. 1, 1918.

Male: Length 5.6 mm., width 1.7 mm.; orange-red to bright red, scutellum and rather broadly either side of commissure, darkened more or less with fuscous, the reddish always showing through the infuscation; legs fusco-brownish to blackish, femora exhibiting one or two rows of darker spots both above and below; genital claspers (fig. 73), very distinctive of the species.

Female: Length 5.7 mm., width 1.8 mm.; usually colored very similarly to the male but sometimes with the embolium and outer edge of cuneus pale or white as in *heidemanni*.

Breeds on *Solidago rugosa*, and probably other plants.

New Haven, 9 June, 1905 (B. H. W.); Portland, 14 July, 1914 (M. P. Z.); Rainbow, 30 June, 1914 (B. H. W.); South Meriden, 6 July, 1914 (H. L. J.); Woodbury, 14 July, 1913 (W. E. B.).

L. caesar (Reuter).

Lomatopleura caesar Reuter, Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 67, 1876.

Ent. News, xxix, 212, pl. 13, fig. 4, 1918.

Male: Length 7 mm., width 2.2 mm.; color deep carmine red, darkened with fuscous on scutellum and more or less broadly each side of commissure; front of head, base of vertex, antennae, and membrane dark fuscous to black; legs and venter dark fuscous through which a tinge of red is apparent; genital claspers (fig. 74), distinctive of the species. Antennae: Segment i, length .80 mm., width .10 mm.; ii, 2.8 mm., thickness .09 mm., tapering on apical half to more slender at apex, black and rather thickly clothed with recumbent coarse hairs as in segment i; iii, 1.66 mm., slender, finely pubescent; iv, .64 mm., more slender than iii.

Female: Length 7.9 mm., width 2.66 mm.; color and structure of antennae similar to that of the male.

Guilford, 13 July, 1920 (B. H. W.); Portland, 14 July, 1914 (M. P. Z.), 10 Aug., 1913 (B. H. W.).

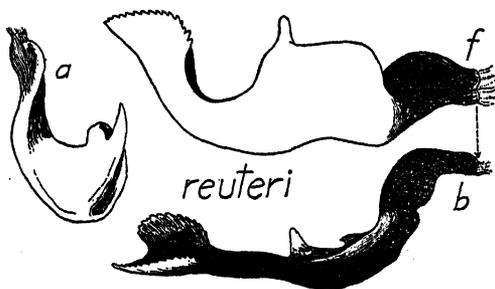


FIG. 75. *Lopidea reuteri* Knight,—male genital claspers, (a) left clasper, dorsal aspect, (b) right clasper, dorsal aspect, (f) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

L. reuteri Knight.

Ent. News, xxviii, 459, fig. 5, 1917.

Male: Length 7.1 mm., width 2.54 mm.; color a vivid carmine red, fuscous on calli, scutellum, and bordering the commissure; very similar to *caesar* but not so broadly fuscous on corium and cuneus; genital claspers (fig. 75) distinctive of the species. Antennae: Segment i, length .65 mm., thickness .17 mm.; ii, 2.42 mm., greatest thickness .14 mm., tapering from middle to more slender at apex; iii, 1.6 mm., linear and slender; iv, .60 mm.; black, first two segments clothed with prominent coarse hairs; almost identical in structure to *caesar*.

Female: Length 6.9 mm., width 2.5 mm.; structurally and in color very similar to the male; very similar to the female of *caesar* which species rarely has the calli darkened and usually has less fuscous shading on the scutellum.

Breeds on witchhazel (*Hamamelis virginiana*).

Massachusetts, New York, Pennsylvania.

L. staphyleae Knight.

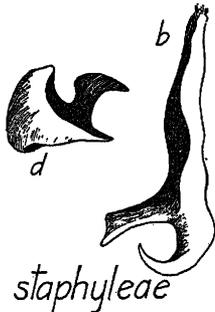
Ent. News, xxviii, 460, fig. 4, 1917.

Male: Length 6.5 mm., width 2.05 mm.; orange-yellow, fuscous on calli, narrowly at base of pronotum, scutellum, apical two-thirds of clavus, inner half of corium, and membrane; antennae, tylus, two bars on front, base of head, rostrum, and legs, black; the fuscous shading on the dorsum much paler than in *robimiae*; genital claspers (fig. 76), distinctive of the species. Antennae: Segment i, length .71 mm., thickness .15 mm.; ii, 2.48 mm., thickness .10 mm., tapering slightly smaller on apical half; iii, 1.82 mm., slender and almost linear; iv, .52 mm.

Female: Length 6.8 mm., width 2.2 mm.; similar to the male in structure and coloration, but usually slightly larger. Sometimes very similar in size and coloration to the female of *confluens*; but the length of antennal segment i in *confluens* is shorter than the width of vertex, while in *staphyleae* its length is as great as, or slightly longer than, the width of vertex.

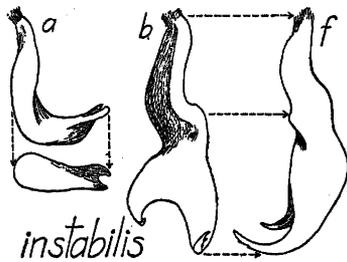
Food plant: American bladder nut (*Staphylea trifolia*).

New York.



staphyleae

FIG. 76. *Lopidea staphyleae* Knight,—male genital claspers, (b) right clasper, dorsal aspect, (d) left clasper, posterior aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.



instabilis

FIG. 77. *Lopidea instabilis* Reuter,—male genital claspers, (a) left clasper, dorsal aspect, (b) right clasper, dorsal aspect, (f) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

***L. staphyleae** var. *sanguinea* Knight.

Ent. News, xxviii, 461, 1917.

Male: Size, structure of the antennae and male genital clasper not differing appreciably from the typical *staphyleae*, but the yellow coloration replaced by bright red.

Female: Similar to the male in structure and coloration; very much resembling the females of *reuteri* and *caesar*, but the more slender form of the antennae will serve to distinguish this variety.

In Minnesota the writer has taken a large series of this variety

on *Staphylea trifolia* but not a single specimen of the typical species.

Mount Carmel, 24 July, 1904 (W. E. B.).

L. instabilis (Reuter).

Acta Soc. Sci. Fenn., xxxvi, No. 2, 72, 1909.

Male: Length 5.4 mm., width 2.02 mm.; bright red, apical half of clavus and inner half of corium darkened with fuscous; membrane uniformly blackish; tibiae blackish, becoming reddish at base; genital claspers distinctive (fig. 77). Antennae: segment i, length .58 mm., thickness .08 mm.; ii, 1.8 mm., greatest thickness (.07 mm.) at middle and tapering to smaller at each end; iii, 1.19 mm., slender; iv, .52 mm.; black, first two segments clothed with moderately short black hairs.

Female: Length 6 mm., width 2.4 mm.; similar to the male in coloration and in structure of the antennae.

District of Columbia, Maryland.

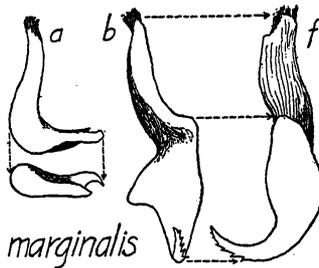


FIG. 78. *Lopidea marginalis* Reuter,—male genital claspers, (a) left clasper, dorsal aspect, (b) right clasper, dorsal aspect, (f) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

L. marginalis (Reuter).

Acta Soc. Sci. Fenn., xxxvi, No. 2, 72, 1909.

Male: Length 6 mm., width 2.2 mm.; very similar in form and coloration to *instabilis* but usually with the embolium pale and the scutellum darkened with fuscous; genital claspers distinctive of the species (fig. 78). In some specimens the embolium may be bright red as in *instabilis*, but usually the scutellum, calli, and base of head are distinctly blackish.

Female: Length 6.6 mm., width 2.5 mm.; very similar to the male in structure and in coloration.

This form was originally described as a variety of *instabilis* but proves on examination of the genital claspers to be a distinct species.

New Haven, 7 Aug., 1905 (W. F. B.).

Tribe **ORTHOTYLINI.***Key to Genera.*

1. Pronotal disk transversely sulcate behind the calli and extending over the sides; calli distinctly arched, separated by a depression
Pronotal disk without transverse sulcus; calli not so distinctly arched 2 3
2. Length of antennal segment i never exceeding width of vertex plus an eye; female with antennal segment ii distinctly thickened apically, usually brachypterous; black species with paler markings (p. 510) **Globiceps**
Length of antennal segment i nearly equaling width of head, thicker on basal half and tapering apically; antennal segment ii linear in both sexes; green species [**Blepharidopterus**]
3. Pronotal disk immarginate although sometimes forming a rather sharp angle; antennal segment ii linear; vertex scarcely margined and never fitting closely against front margin of pronotum 4
Pronotal disk margined at sides; antennal segment ii incrassate, fusiform, segment iii thickened but more slender than ii; vertex strongly margined, fitting closely against anterior margin of pronotum; clothed with closely appressed, scale-like pubescence, and intermixed with erect fine hairs (p. 524) **Heterocordylus**
4. Antennal segment i with black line on each side, and connected beneath near apex; eyes elongate as seen from above, their inner margins parallel; color white or greenish, clothed with rather long white pubescence (p. 523) **Reuteria**
Antennal segment i never marked with longitudinal black lines; eyes not so elongate when seen from above, their inner margins diverging 5
5. Head inclined, when viewed from the side not or scarcely projecting below base of head; sexes similar 6
Head vertical, strongly compressed apically, when seen from the side, projecting below base of head for a distance equal to one-half its height at base; pronotum sinuate at base and slightly so at the sides; male and female very dissimilar; female short winged, the abdomen very broad, macropterous forms rare (p. 510) **Mecomma**
6. Head not distinctly compressed apically, vertex margined although sometimes ecarinate; width of pronotum distinctly greater than width of head; vertex when black, never with a pale spot at each side 7
Head strongly compressed apically, vertex immarginate, declivitous behind; basal width of pronotum very little greater than width of head; usually a small pale spot each side of vertex (p. 511) **Cyrtorhinus**
7. Eyes set close to pronotal angles and nearly forming a straight line with base of vertex 8
Eyes rounded behind, thus bringing the center of eyes near middle of head and away from pronotal angles. Small, delicate, translucent pale green species (p. 522) **Diaphnidia**
8. Xyphus moderately sulcate, sides V-shaped; rostrum extending beyond hind margin of mesosternum; pubescence frequently of two types, but in such case the rostrum extends beyond mesosternum; vertex carinate but sometimes rather obtusely so, never beset with bristly hairs (p. 511) **Orthotylus**
Xyphus deeply excavated, sides U-shaped and elevated into a high carina; rostrum scarcely attaining hind margin of mesosternum; pubescence composed of two kinds of hairs, a closely appressed

scale-like type and interspersed with more erect pubescent hairs; vertex ecarinate but basal margin beset with bristly hairs, an alutaceous glabrous spot each side bordering eye; general aspect very similar to certain species of *Phytocoris*
(p. 523) *Noctuocoris* n. gen.

Globiceps Le Peletier and Serville.

G. dispar (Boheman).

Cyllocoris dispar Boheman, Ofv. Kongl. Vet.-Akad., ix, 72, 1852.

Reuter, Hem. Gymn. Eur., iii, 397, pl. 3, fig. 1, 1883.

Saunders, Hem. Het. Brit. Isds., 281, 1892.

Male: Length 4.3 mm., width 1.14 mm.; black, vertex with pale spot at each side; hemelytra fuscous but translucent, base of corium, somewhat invading clavus, and cuneus except dusky apex, pale translucent; membrane pale fuscous, veins slightly darker; legs and basal half of antennal segment i, yellowish, tarsi and hind tibiae dusky; calli distinctly convex or gibbus, margins of pronotal disk sharply flaring at basal angles.

Female (macropterous): Length 4.3 mm., width 1.17 mm., hemelytra extending well beyond apex of abdomen as in the male; head nearly globose, eyes scarcely raised from general outline of front and vertex; colored similarly to male. Head: Width .89 mm., vertex .42 mm. Antennae: Segment i, length .39 mm., yellowish, scarcely darker apically; ii, 1.57 mm., apical half strongly clavate (.14 mm. thick), black, basal half brownish black; iii, .91 mm., yellowish, dusky apically; iv, .43 mm., fuscous.

Female (brachypterous): Length 3.2 mm., width of abdomen 1.5 mm.; very similar to the macropterous form except hemelytra and abdomen; hemelytra attaining base of third abdominal segment, fuscous, large spot near base and apex pale, tips turned slightly upward; abdomen subglobose, black, shining, pleural fold prominent; antennal segment ii pale on basal half, clavate portion black.

Reported from England as occurring at the bases of grasses in moist situations.

New Hampshire, Canada.

Mecomma Fieber.

M. gilvipes (Stål).

Leptomeroicoris gilvipes Stål, Stet. Ent. Zeit., xix, 187, 1858.

Reuter, Hem. Gymn. Eur., iii, 386, pl. 2, fig. 6, 1883.

Male: Length 4.5 mm., width 1.4 mm.; black; hemelytra much longer than body, pale, fuscous on clavus and slightly darkened elsewhere; legs pale yellowish.

Female: Length 2.7 mm., width of abdomen 1.5 mm.; black, brachypterous; segment i of antennae and base of iii pale, segment ii slightly thicker toward apex, clothed with long pubescence; legs large in proportion to the body, pale yellowish; pronotum nearly

quadrate, anterior angles rounded; calli large, rounded, rather indistinct, two punctures set close together just between; hemelytra short and rounded, extending only to middle of abdomen, yellowish translucent, hind wings appear as mere pads beneath.

Maine, New Hampshire, New York.

Cyrtorhinus Fieber.

C. caricis Fallen var. *vagus* Knight, new variety.

Smaller and darker colored than *caricis* Fallen; hemelytra fuscous, translucent, slightly paler along embolium but not distinctly greenish.

Male: Length 2.8 mm., width 1.2 mm. Head: Width .60 mm., vertex .32 mm.; black, shining, pale spots on vertex scarcely apparent. Rostrum, length .78 mm., scarcely attaining hind margins of middle coxae, pale, blackish at apex.

Antennae: Segment i, length .27 mm., black, apex pale; ii, .82 mm., black. Pronotum: Length .34 mm., width at base .81 mm. Hemelytra: uniformly fuscous, slightly paler along embolium; cuneus and membrane uniformly pale fuscous. Legs: Pale, coxae, hind femora except base and more narrowly at apex, fuscous.

This is the form which the writer has previously recorded as *caricis* Fallen, but on comparison with limited material from Europe, it cannot be said that the forms are identical. Therefore, it seems best to give this American form a varietal name in order to avoid confusion in identity. A specimen is at hand from Colorado which in size, color, and other characteristics, agrees with a single specimen of *caricis* Fallen (Reuter determination) from Finland, and therefore the record for that species must still hold good for North America.

Holotype: Male, 10 Sept., 1917, Rockaway Beach, Long Island, N. Y. (W. A. Hoffman); author's collection. Paratypes: Males and females (8), taken with type. NEW JERSEY—Female, 30 Sept., Lakehurst (Wm. T. Davis). NEW YORK—Females (3), Aug., Sept., Sea Cliff (Nathan Banks). VIRGINIA—Male, 13 Aug., 1915, Oceanview (V. A. Roberts).

Orthotylus Fieber.

Key to Species.

1. Pubescence composed of two types of hairs; dorsum with closely appressed scale-like hairs and intermixed with more erect pubescent hairs 2
- Pubescence composed of a single type of hair; dorsum with erect pubescent hairs only 3
2. Veins and areoles green, antennae green (p. 513) *flavosparsus*
Veins and areoles infuscated, antennae infuscated apically
(p. 514) *concolor*
3. Ground color green, dark markings if present not clouding the corium 4
Ground color pale testaceous to black, sometimes greenish but in that case the hemelytra marked with fuscous and black areas .. 7

4. Small, length 3.8 mm.; membrane pale, veins about areoles green; antennal segments i and ii yellowish (p. 514) *chlorionis*
Larger, length 4.5 mm. or more; membrane more or less infuscated, veins sometimes green but in such case antennal segment i distinctly blackish 5
5. Tylus with small fuscous spot at base; antennal segment i yellowish to green, sometimes infuscated but when dark the membrane distinctly fuscous, or the calli practically flat and devoid of basal impression 6
Tylus without small fuscous spot at base; antennal segment i fuscous to black; membrane pale, veins about areoles green; calli moderately convex, an impressed line along basal margin; pubescence pale but rather coarse and prominent
(p. 515) *basicornis* n. sp.
6. Membrane pale, sometimes fumate basally, clavus never infuscated
(p. 519) *viridis*
Membrane uniformly fuscous; corium uniformly green, clavus sometimes with a dusky cloud ... *modestus* var. *immaculatus* n. var.
7. Form small, ovate; color a uniform whitish-testaceous, hemelytra translucent, head and callosities tinged with yellowish (p. 513) *catulus*
Form more elongate; hemelytra with fuscous areas, or at times nearly black 8
8. Color pale testaceous, hemelytra translucent and with fuscous markings very faint or nearly lacking in female; median line of head and scutellum, lateral margins of pronotum, and sides of body, black; antennae blackish, membrane slightly infuscated, veins brown (p. 517) *candidatus*
Ground color sometimes pale greenish or yellowish but dark markings of hemelytra distinct; other markings not as the above, sometimes the whole insect may become nearly black 9
9. Dorsum brownish black, slenderly pale only at base of corium and embolium, slightly translucent at base of cuneus; median line of pronotal disk and sometimes continued upon scutellum, pale; length 6.8 mm. (p. 517) *necopinus*
Hemelytra with more than slender base of corium and embolium pale; length usually less than 6 mm. (remainder of key for females only, see figures of genital claspers for males) 10
10. Female pronotum with lateral margins black, disk broadly pale or fulvous, sometimes with only median line pale 11
Female pronotum with lateral margins pale or greenish, disk usually blackish and frequently with median line pale 15
11. Pronotal disk with fulvous, sometimes the hemelytra also fulvous 12
Pronotal disk with pale or greenish 13
12. Hemelytra black, a broad pale stripe extending full length of corium and connecting with pale cuneus; legs fulvous, apical half of hind femora blackish (p. 516) *knighti*
Hemelytra chiefly fulvous or salmon colored; blackish each side of commissure and on embolium (p. 518) *submarginatus*
13. Pronotal disk broadly pale, scutellum black; basal half of corium and embolium, and slenderly bordering base of cuneus, pale; transversely blackish across apical half of hemelytra but leaving costal margin slenderly pale; membrane and apical half of cuneus uniformly dark fuscous (p. 516) *cruciatus*
Pronotal disk and hemelytra not so broadly pale 14
14. Embolium and outer margin of corium pale greenish, translucent; median line of scutellum pale (p. 522) *serus*
Corium blackish at outer margin except at base; scutellum black
(p. 521) *alni* n. sp.
15. Hind femora blackish except basally, scutellum broadly pale; clavus, apical half of corium, calli, and usually pronotal disk

- except median line and side margins, blackish; usually the paler parts of the dorsum tinged with reddish (p. 519) *ornatus*
 Femora greenish, sometimes the scutellum broadly pale but in such case the femora never dark 16
16. Pronotal disk with blackish rays each side of median line and thus connecting calli with basal margin 17
 Pronotal disk transversely pale behind calli, both the calli and basal margin of disk blackish but never joined to form rays each side of median line, dark color sometimes obsolete (p. 519) *modestus*
17. Smaller, length 5.2 mm.; veins paler than infuscation of membrane; corium with inner apical half infuscated but the pale color of basal half extending along claval suture and thus tending to separate dark color of corium from that of clavus (p. 520) *dorsalis*
 Larger, length 5.8 mm.; veins uniformly infuscated as the membrane; corium with inner apical half blackish, pale color of basal half not penetrating along claval suture to separate black of corium from that of clavus (p. 515) *neglectus* n. sp.

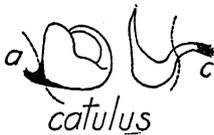


FIG. 79. *Orthotylus catulus* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.



FIG. 80. *Orthotylus flavosparsus* Sahlberg,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

O. catulus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 106, 1916.

Male: Length 4.2 mm., width 1.64 mm.; in form suggestive of *Megalocoleus* but the arolia similar to species of *Orthotylus*; uniformly whitish-testaceous or testaceo-grayish, head and calli tinged with yellowish; hemelytra sometimes slightly infuscated, membrane pale fumate; dorsum clothed with erect, moderately sparse dusky pubescence; genital claspers distinctive of the species (fig. 79).

Female: Length 4.1 mm., width 1.66 mm.; very similar to the male but in form more robust.

Breeds on *Gnaphalium uliginosum*.

Branford, 20 July, 1905 (H. W. W.); Mount Carmel (Hamden), 25 May, 1906 (B. H. W.).

O. flavosparsus (Sahlberg).

Phytocoris flavosparsus Sahlberg, Acta Soc. Sci. Fenn., i, 411, 1842.

Proc. Cal. Acad. Sci., ser. 4, vi, 97, 1916.

Male: Length 4.2 mm., width 1.4 mm.; oblong-ovate; clear green, becoming yellowish on callosities, head and lower surface; membrane slightly infumed, the areoles and veins green.

Female: Similar to the male but slightly more robust.

Food plant: *Chenopodium album*.

New Canaan, 29 Sept., 1909 (W. E. B.); New Haven, 26 July, 1905 (H. L. V.), 14 June, 1920 (W. E. B.); South Meriden, 16 July, 1915 (H. L. J.); Stratford, 9 July, 1920 (B. H. W.); Stratford, 21 July, 1908 (W. E. B.).

O. concolor (Kirschbaum).

Capsus concolor Kirschbaum, Jhrb. Ver. Nat. Herz. Nassau, x, 249, 315, 1855.

Reuter, Hem. Gymn. Eur., iii, 366, 553, 1883.

Male: Length 4.6 mm., width 1.5 mm.; deep green, head and femora tinged with yellowish, membrane uniformly infuscated; antennal segment ii strongly yellowish, infuscated apically, segments iii and iv blackish; clothed with erect black hairs, longest on head and anteriorly on pronotum, but pronotum, scutellum, and basally on hemelytra also clothed with closely appressed, silvery scale-like hairs.

Female: Length 4.2 mm., width 1.6 mm.; very similar to the male but more robust.

Massachusetts.

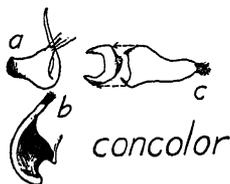


FIG. 81. *Orthotylus concolor* Kirschbaum,—male genital claspers, (a) left clasper, lateral aspect, (b) left clasper, dorsal aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

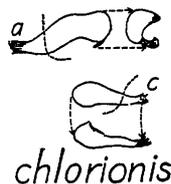


FIG. 82. *Orthotylus chlorionis* Say,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

O. chlorionis (Say).

Capsus chlorionis Say, Heter, N. Harm., 25, 1832; Compl. Writ., i, 346, 1859.

Proc. Cal. Acad. Sci., ser. 4, vi, 98, 1916.

Male: Length 3.8 mm., width .61 mm.; clear green, clothed with minute fuscous hairs, apparently destitute of pale scale-like hairs; membrane pale, veins only green; abdomen reaching to near apex of cuneus.

Female: Similar to the male but slightly more robust.

Occurs on honey locust (*Gleditsia tricanthos*).

New Haven, 22 June, 1905 (H. L. V.); Noroton, 21 June, 1913 (A. H. Renshaw).

Orthotylus basicornis Knight, new species.

Male: Length 5.6 mm., width 1.66 mm.; very similar to *viridis* but distinguished by the genital claspers (fig. 83), black antennal segment i, green veins about areoles, and by the more prominent, rather coarse pale pubescence.

Female: Length 5.7 mm., width 1.77 mm.; uniformly green like the male but slightly more robust; antennal segment i slightly paler but still distinctly blackish.

Breeds on *Salix longifolia*.

Holotype: Male, 10 Aug., 1916, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: taken with the type. Paratypes: Female, topotypic. ILLINOIS—Female, 30 June, 1906, male, 15 July (at light), Chicago; female, 24 July, 1908 (W. J. Gerhard). MALES (4) and female, 2 July, 1917, Freeport (J. R. Malloch). MICHIGAN—Male, 21 June, 1919, Berrien County (R. F. Hussey). MINNESOTA—Males (14) and females (7), 12 July, 1919, Hennepin County (H. H. Knight), on *Salix longifolia*. Males (2) and females (2), 6 July, male, 10 July, University Farm, St. Paul (H. H. Knight), collected at light. Males and females (72), 18 July, 1922, Ramsey County; males and females (98), 1 July, 1922, Winona County (H. H. Knight). QUEBEC—Female, 19 July, 1914, Hull (J. L. Beaulne). Male and females (2), 28 July, 1915, Roberval (G. Beaulieu).

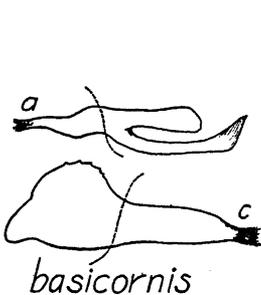


FIG. 83. *Orthotylus basicornis* Knight,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

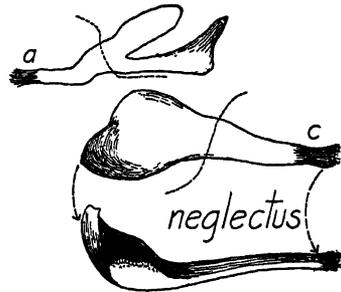


FIG. 84. *Orthotylus neglectus* Knight,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

***O. neglectus** Knight, new species.

Male: Length 5.4 mm., width 1.75 mm.; color pattern very similar to *dorsalis* but the genital claspers (fig. 84) indicate that it is more closely related to *basicornis* and *knighti*; black, rostrum except apex, slender lateral margin of pronotal disk, cuneus, embolium, and outer margin of corium, greenish; legs greenish, darkened at base of coxae and tips of tarsi; membrane and veins uniformly blackish. Rarely, pale forms may occur having median line of pronotum and scutellum pale.

Female: Length 5.8 mm., width 1.9 mm.; more robust than the male, usually more broadly pale; pronotal disk with blackish stripe each side of median line, extending from basal margin up to and including the calli; scutellum with median line pale; clavus black, corium with inner apical half blackish, pale color of basal half not penetrating along claval suture to separate black of corium from that of clavus.

Breeds on *Salix nigra*.

Holotype: Male, 3 July, 1920, McLean Bogs, Tompkins County, N. Y. (H. H. Knight); author's collection. Allotype: same data as type. Paratypes: CONNECTICUT—Females (2), 5 June, 1921, Cornwall (B. H. Walden). NEW YORK—Males (14) and females (8), 27 June, 1916, Honeoye Falls (H. H. Knight). Male, 1 July, 1917, Cranberry Lake (C. J. Drake). NOVA SCOTIA—Females (2), 13 July, 1913, Truro (R. Matheson); these specimens more broadly pale, the scutellum and pronotal disk with median line pale.

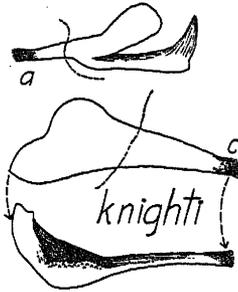


FIG. 85. *Orthotylus knighti* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

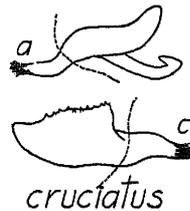


FIG. 86. *Orthotylus cruciatus* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

O. knighti Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 121, 1916.

Male: Length 5.4 mm., width 1.58 mm.; black, spot on pronotal disk, legs except apical half of hind femora, fulvous; a broad pale stripe extending full length of corium and connecting with pale cuneus, in darker specimens somewhat obscured; genital claspers distinctive of the species (fig. 85).

Female: Length 5.4 mm., width 1.66 mm.; very similar to the male but more robust; pronotum more broadly fulvous.

Food plant: *Populus candicans*.

New York.

O. cruciatus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 119, 1916.

Male: Length 5.7 mm., width 1.7 mm.; pronotal disk broadly

pale, scutellum black; basal half of corium and embolium, and slenderly bordering base of cuneus, pale; transversely blackish across apical half of hemelytra but leaving costal margin slenderly pale; membrane and apical half of cuneus uniformly dark fuscous; genital claspers (fig. 86) distinctive of the species.

Female: Length 5.6 mm., width 1.72 mm.; differing very slightly from the male, sometimes more broadly pale.

Farmington, 19 June, 1919 (M. P. Z.); Hamden, 18 July, 1920 (B. H. W.); Hartford, 25 June, 1914 (W. M.); New Haven, 23 June, 1911 (A. B. C.).

O. necopinus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 125, 1916.

Male: Length 6.6 mm., width 2.11 mm.; brownish black, juga, vertex and extending along front of eyes, median line of pronotal disk and frequently extending upon scutellum, base of embolium and slenderly at base of radius, bordering cuneal fracture, pale to pale translucent; basal half of venter beneath and coxae, pale; femora and tibiae testaceous to fuscous; genital claspers (fig. 87) distinctive of the species.

Female: Length 6.8 mm., width 2.2 mm.; very similar to the male but frequently more broadly pale.

Breeds on *Betula lutea* but only in cool, damp, shaded situations. New Hampshire, New York.

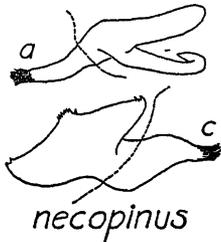


FIG. 87. *Orthotylus necopinus* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

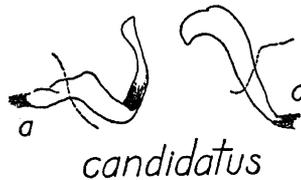


FIG. 88. *Orthotylus candidatus* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

O. candidatus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 124, 1916.

Female: Length 4.5 mm., width 1.53 mm.; testaceous, sometimes tinged with fulvous; sides of body, median line of head and scutellum, black; antennal segments iii and iv, and apex of ii, brownish black; membrane pale, fumate bordering veins.

Male: Length 4.3 mm., width 1.3 mm.; more slender than the female but very similar in coloration, although the pronotum and

scutellum somewhat more broadly black; head and antennae black, vertex with pale spot each side bordering the eye. Genital claspers (fig. 88) very distinctive, in fact indicating that this species should not be placed in this section of the genus *Orthotylus*.

Food plant: American aspen (*Populus tremuloides*).

Originally described from a single female specimen collected on Mt. Washington, N. H., by Mrs. A. T. Slosson. In Minnesota, the writer has collected nymphs and adults on aspen (*Populus tremuloides*) but only on certain trees found along the shore of Lake Superior, just north of Two Harbors. Other trees of the same species, standing only a few feet back from the edge of the high bank which forms the shore line, did not produce specimens of *candidatus*.

Mt. Washington, N. H., Minnesota.



FIG. 89. *Orthotylus submarginatus* Say,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

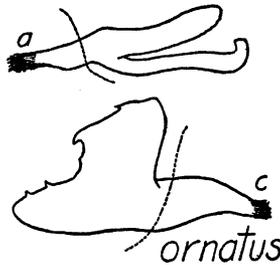


FIG. 90. *Orthotylus ornatus* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

O. submarginatus (Say).

Capsus submarginatus Say, Heter. N. Harm., 23, 1832: Compl. Writ., i, 344, 1859.

Proc. Cal. Acad. Sci., ser. 4, vi, 123, 1916.

Male: Length 4.6 mm., width 1.33 mm.; dorsum pale salmon yellow, antennae, front of head, lateral margins of pronotal disk, scutellum, rather broadly each side of commissure, embolium and invading corium apically, apex of cuneus, and membrane, blackish or black; rostrum except apex, and legs chiefly, pale; hind femora dusky, the tibiae more nearly black.

Female: Length 4.8 mm., width 1.44 mm.; very similar to the male but more broadly salmon yellow above; venter white beneath, the dorso-lateral margin black; ostiolar peritreme fuscous, epimera and sternum beneath blackish.

Breeds on *Robinia pseudacacia*.

Stratford, 9 July, 1920 (B. H. W.).

O. ornatus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 122, 1916.

Male: Length 5.6 mm., width 1.78 mm.; chiefly black or brownish black, tip of scutellum, basal angles of corium, pale to pale translucent; membrane fuscous, veins and spot on middle of apical half, slightly paler; legs pale to dusky, femora brownish black, the hind pair darker; genital claspers (fig. 90) distinctive of the species.

Female: Length 6 mm., width 2.05 mm.; chiefly pale, tinged with reddish and varied with fuscous; base of tylus and spot just above, sometimes an arc on front, basal margin of calli, pronotal disk except median line and lateral margins, basal angles of scutellum, apical half of corium, and clavus somewhat, fuscous to blackish; antennae pale fusco-brownish, segment i darker; hind femora brownish black. Sometimes this sex may be more broadly blackish and the paler parts not at all tinged with reddish.

Breeds on *Salix fragilis*.

Cornwall, 5 June, 1921 (B. H. W.); Guilford, 13 July, 1920 (B. H. W.).

O. viridis Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 103, 1916.

Male: Length 4.6 mm., width 1.47 mm.; pale green, with head, pronotum anteriorly, embolium, and femora, yellowish, base of tylus with small fuscous spot; antennae yellowish, segments i, iii, and iv, darkened with pale fuscous; membrane pale to fumate basally; genital claspers (fig. 91) distinctive of the species.

Female: Length 5 mm., width 1.58 mm.; very similar to the male in coloration but in form more robust.

Breeds on *Salix*.

Guilford, 13 July, 1920 (B. H. W.).

O. modestus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, vi, 109, 1916.

Male: Length 4.4 mm., width 1.44 mm.; fuscous to blackish, head and paler parts of hemelytra tinged with yellowish; embolium pale, base of corium and continuing rather broadly along radius, and cuneus, greenish yellow; membrane uniformly infuscated, the veins scarcely paler; antennae fusco-brownish, segment i darker; genital claspers (fig. 92) distinctive of the species.

Female: Length 4.5 mm., width 1.47 mm.; pale greenish, legs darker, dorsum marked with blackish; antennae, spot at base of tylus, transversely across base of calli, basal margin of pronotal disk but not attaining lateral angles, basal angles, and spot on median line at base of scutellum, clavus except basal angles, and spot on inner apical angle of corium, fuscous to black; membrane uniformly dark fuscous.

Breeds on *Salix fragilis* and *S. nigra*.

New York.

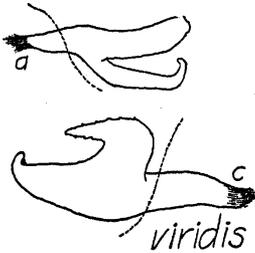


FIG. 91. *Orthotylus viridis* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

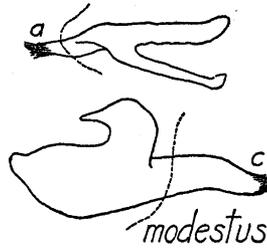


FIG. 92. *Orthotylus modestus* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

O. modestus var. immaculatus Knight, new variety.

Structurally not distinguishable from the typical *modestus* but uniformly green in color; corium always immaculate but sometimes the clavus with a dusky cloud; membrane uniformly fuscous; genital claspers similar to those of *modestus*.

Holotype: Male, 19 July, 1916, Batavia, N. Y. (H. H. Knight); author's collection. Paratypes: Females (5), taken with type. NEW YORK—Female, 2 Aug., 1916, Honeoye Falls (H. H. Knight). Male and female, 5 July, Cold Spring Harbor, Long Island (H. M. Parshley). ONTARIO—Male, 15 July, male, 21 July, 1914, Ottawa (G. Beaulieu).

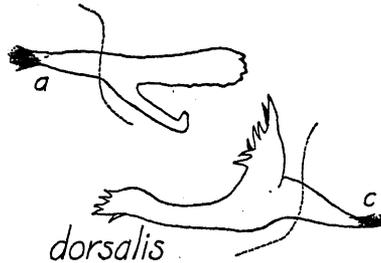


FIG. 93. *Orthotylus dorsalis* Provancher,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

O. dorsalis (Provancher).

Lygus dorsalis Provancher, Nat. Can., iv, 104, 1872.
Proc. Cal. Acad. Sci., ser. 4, vi, 110, 1916.

Male: Length 4.9 mm., width 1.49 mm.; elongate, costal margins of hemelytra nearly parallel; black, cuneus, embolium, corium basally and extending rather broadly along radius, greenish translucent, frequently median line of pronotum paler; rostrum except

apex and legs green, coxae paler; membrane fuscous, veins slightly paler.

Female: Length 5.2 mm., width 1.6 mm.; pale green to greenish yellow, juga, arc or spot each side of front, stripe each side of median line and extending from inner basal angles of calli to basal margin of disk, scutellum except median line (usually), clavus except basally, large spot on inner apical angles of corium, dark fuscous to black; pale color of corium extending along claval suture and thus tending to separate dark color of apical area from that of clavus; membrane infuscated but veins distinctly paler; body with lateral black stripe, more distinct on propleura, sometimes quite reduced on venter; legs green, femora more yellowish, tip of rostrum and apices of tarsi blackish.

This description and figures are drawn from specimens determined as *dorsalis* Provancher by Mr. Van Duzee in 1916, while working on a monograph of the genus *Orthotylus*.

Breeds on *Salix*.

Hamden, 11 June, 1921 (B. H. W.); Litchfield, 22 July, 1920 (P. G.); North Branford, 13 July, 1920 (B. H. W.).

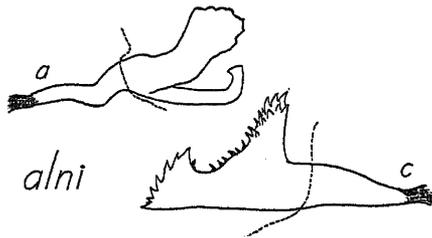


FIG. 94. *Orthotylus alni* Knight,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

Orthotylus alni Knight, new species.

Male: Length 6.1 mm., width 1.7 mm.; black, slenderly bordering front margin of eyes, median vitta on basal half of pronotal disk, bordering radial vein to beyond middle of corium, spot at base of cuneus, pale to translucent; rostrum except apex, and legs, dark green; tarsi, knees, and apically on tibiae, fuscous or blackish; membrane and veins uniformly dark fuscous.

Female: Length 5.6 mm., width 1.83 mm.; very little paler than the male, vitta on pronotal disk sometimes broader, embolium at base and the cuneus more broadly translucent.

Food plant: *Alnus rugosa*.

Holotype: Male, 3 July, 1920, McLean Bogs, Tompkins County, N. Y. (H. H. Knight); author's collection. Allotype: same data as type. Paratypes: NEW YORK—Males (2) and females (18), taken with the types. MAINE—Male, 15 July, 1909, Eastport (C. W. Johnson).

O. serus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, xi, 131, 1921.

Male: Length 5.3 mm., width 1.58 mm.; black, median line of pronotal disk and scutellum, pale; embolium, outer margin of corium and cuneus, pale greenish, translucent; genae, gula, bucculae, rostrum except apex, sternum, and legs, greenish yellow; membrane and veins uniformly dark fuscous.

Female: Length 5.56 mm., width 1.61 mm.; very similar to male in form and coloration; hemelytra with costal margins nearly parallel; sometimes the pronotal disk, vertex, and front bordering eyes, more broadly pale than male.

Breeds on *Crataegus* and cultivated apple.

New York.

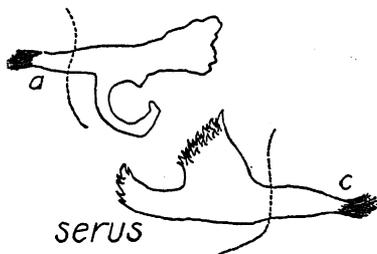


FIG. 95. *Orthotylus serus* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

Diaphnidia Uhler.**D. pellucida** Uhler.

Uhler, Hemiptera Colo., 44, 1895.

Length 4.3 mm., width 1.4 mm.; uniformly pellucid greenish white, the antennae included; eyes and tips of tarsi fuscous.

Food plants: Apple, *Ostrya virginiana*, and probably other plants.

New Haven, 7 July, 1920 (B. H. W.).

D. provancheri (Burque).

Pet. Faune Ent. Can., iii, 144, 1887.

Length 5 mm., width 1.2 mm.; pellucid greenish yellow, more green on hemelytra than elsewhere; tibiae lightly infuscated; antennal segment ii black, following segments fuscous.

Food plants: White oak, and probably other plants.

Massachusetts, New York.

D. capitata Van Duzee.

Bull. Buffalo Soc. Nat. Sci., x, 490, 1912.

Length 3 mm.; pale, smaller than *pellucida*; distinguished by the black head and fuscous basal segment of the antennae.

Food plant: Witchhazel (*Hamamelis virginiana*).

Long Island, N. Y.

Reuteria Puton.

R. irrorata (Say).

Compl. Writ., i, 346, 1859.

Length 4.3 mm., width 1.5 mm.; pale whitish, usually marked with marbled green spots; distinguished by the longitudinal black marks on antennae.

Food plants: Basswood (*Tilia*), and white oak (*Quercus*).

New York.

Noctuocoris Knight, new genus.

Arolia erect and converging at the apices as in *Orthotylus*; general aspect more nearly that of certain species of *Phytocoris*. Head distinctly oblique in female but much less so in the male; vertex ecarinate, beset with a row of erect bristles at base; an alutaceous glabrous spot each side of vertex bordering eye; clypeus large and prominent, facial angle a right angle or slightly greater; front only slightly convex. Eyes large, prominent, viewed from the side a little oblique in female, larger and more nearly vertical in male. Rostrum short, scarcely attaining hind margin of mesosternum. Pronotum moderately sloping, very little convex, sides nearly straight, forming a line which would, if projected, strike inner half of eye; callosities moderately convex, delimited behind by an impressed line which continues to an impression between the calli. Pubescence composed of two kinds of hairs, a closely appressed scale-like type, and interspersed with more erect pubescent hairs. Legs long, suggesting *Phytocoris* but femora not distinctly broader at base. Abdomen with a lateral line formed by a series of impressed glabrous spots, one on each segment (genital segments excepted) situated just below the spiracle; both sexes with abdomen reaching to about middle of cuneus. Genital claspers distinctive in type (fig. 96).

Genotype: *Orthotylus fumidus* Van Duzee.

N. fumidus (Van Duzee).

Proc. Cal. Acad. Sci., ser. 4, vi, 127, 1916.

Male: Length 5.7 mm., width 1.7 mm.; color uniformly fuscous-brown, slender apex of scutellum pale; clothed with sericeous, closely appressed, silvery and black, scale-like pubescence, and interspersed with more erect pubescent hairs, longer and more bristly at anterior margin of pronotum and on head; anterior face of femora with a more or less broken fuscous line, dorsal margin at base and frequently the posterior face with a series of dark

spots; sternum nearly black, ventral aspect of face and lower margin of propleura pale grayish; membrane uniformly fuscous, veins slightly paler at apex of brachium; genital claspers distinctive of the species (fig. 96).

Female: Length 6 mm., width 2 mm.; very similar to the male in coloration but in form slightly larger and more robust.

In habit this species appears to be largely nocturnal; all specimens thus far collected have been taken at light.

Allotype: Male, 7 July, 1913, Batavia, N. Y. (H. H. Knight); author's collection.

New York, Pennsylvania, Michigan, Minnesota, South Dakota, Colorado.

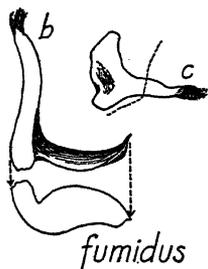


FIG. 96. *Noctuocoris fumidus* Van Duzee,—male genital claspers, (b) left clasper, dorsal aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

Heterocordylus Fieber.

H. malinus Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 71, 1909.

Length 5.7-6.1 mm., width 2.2 mm.; black, usually marked with red; males black, usually with a patch of red on basal angles of pronotum and on basal angles of hemelytra; clothed with very fine yellowish pubescence and intermixed with rather sparsely placed tufts of white, deciduous, tomentose pubescence. Females usually with the basal half of pronotum, embolium, inner half of corium, base and exterior margin of clavus, and cuneus, red; more rarely, entirely black as in the male.

Food plants: *Crataegus* and apple; pest on apple in New York. New Hampshire, New York.

Tribe CERATOCAPSINI.

Key to Genera.

1. Pronotum anterior to middle, nearly cylindrical, rather abruptly flaring behind middle, basal half of disk strongly convex; embolar margins sulcate on basal half (p. 535) *Pamillia*
- Pronotum regularly narrowed anteriorly, its sides not constricted at middle; embolar margins not distinctly sulcate *Ceratocapsus*

Ceratocapsus Reuter.

Key to Species.

1. Clothed only with simple pubescence, sometimes with prominent long pilose hairs 2
Clothed with two types of pubescence, bearing more or less closely appressed sericeous, or scale-like pubescence, and usually intermixed with more erect pubescent hairs 5
2. Head largely, and the antennae, red; dorsum uniformly yellowish; length 4.5 mm. (p. 527) *lutescens*
Head and antennae not distinctly red; dorsum more or less darkened 3
3. Dorsum without transverse fascia 4
Dorsum dark brownish, a broad pale or yellowish fascia across hemelytra just beyond tip of scutellum (p. 526) *fasciatus*
4. Robust; head and thorax not or scarcely darker than hemelytra; brownish black, basal half of hemelytra frequently paler; length 4.3 mm. (p. 527) *modestus*
Slender; head and thorax black, hemelytra yellowish but with fuscous cloud on corium; length 4.5 mm. (p. 534) *nigrocephalus* n. sp.
5. (1) Dorsum without transverse pale fascia 6
Dorsum dark brownish, a broad pale fascia across hemelytra just beyond tip of scutellum (p. 526) *pilosus* n. sp.
6. Pronotum impunctate, somewhat alutaceous 7
Pronotum punctate, sometimes rather finely so yet distinct 10
7. Dorsum sparsely clothed with fine short pubescence, sometimes with a few scattering long hairs on scutellum and hemelytra 8
Dorsum clothed with rather sparsely set, prominent, long erect pilose hairs; dark brownish black, legs and antennal segments i and ii yellowish; length 4.1 mm. (p. 530) *sericus* n. sp.
8. Antennal segment iii, in length, greater than width of vertex plus dorsal width of an eye 9
Antennal segment iii, in length, not equal to width of vertex plus dorsal width of an eye; dorsum uniformly yellowish (p. 527) *luteus* n. sp.
9. Antennal segment iii, in length, not equal to width of head; thorax reddish, basal half of hemelytra paler than apical half; legs yellowish; smaller, length 3.4 mm. (p. 529) *vicinus* n. sp.
Antennal segment iii, in length, equal to width of head; thorax blackish, hemelytra brownish black except for small spot at basal angle of corium and embolium; legs dark reddish brown or blackish; larger, length 4.4-4.7 mm. (p. 528) *nigellus* n. sp.
10. (6) Antennal segment iii, in length, greater than width of vertex plus dorsal width of an eye 11
Antennal segment iii, in length, not exceeding width of vertex plus dorsal width of an eye 13
11. Antennal segment iii, in length, equal to or greater than width of head 12
Antennal segment iii, in length, not equal to width of head (p. 531) *pumilus*
12. Smaller, length, female 2.5 mm., male 3.1 mm.; male cuneus colored similarly to corium; female ovate, brachypterous .. (p. 535) *setosus*
Larger, length, male 4.5 mm.; cuneus red, corium yellowish brown (p. 533) *drakei* n. sp.
13. (10) Width of vertex greater than dorsal width of an eye; female femora greenish or yellowish, not distinctly reddish on apical half
Width of vertex (male) less than dorsal width of an eye; female hind femora reddish on apical half, cuneus red, corium yellowish brown translucent (p. 531) *fuscinus* n. sp. 14

14. Dorsum densely clothed with erect, rather bristly pubescence; apical half of membrane scarcely darker than basal half; basal prong of right genital clasper taking the form of a small finger-like process (p. 533) *digitulus* n. sp.
 Dorsum more sparsely clothed with semierect pubescence, nearly as in *pumilus*; apical half of membrane distinctly infuscated; basal process of right genital clasper taking the form of a thin chitinous plate, notched at apex, the dorsal portion drawn out to a slender point (p. 532) *incisus* n. sp.

C. fasciatus (Uhler).

Bull. U. S. Geol. Geog. Surv., iii, 421, 1877.

Length 3.2 mm., width 1.4 mm.; dark chestnut brown with legs and antennae paler; hemelytra with a broad transverse pale yellowish band just beyond tip of scutellum, scarcely paler on cuneal fracture; clothed only with fine recumbent yellowish pubescence.

Occurs on hickory (*Carya*).

New York.

Ceratopsus pilosus Knight, new species.

Very similar to *fasciatus* in size and coloration but readily distinguished by the long pilose hairs on head and dorsum.

Male: Length 3.4 mm., width 1.3 mm. Head: Width .71 mm., vertex .33 mm.; yellowish brown to dark brown, clothed with fine pubescence, the front beset with several prominent erect hairs. Rostrum, length 1.17 mm., attaining hind margins of posterior coxae, brownish.

Antennae: Segment i, length .28 mm., thickness .10 mm., yellowish; ii, 1.01 mm., tapering gradually thicker from base toward apex (.10 mm. thick), yellowish brown; iii, .64 mm., thickness .09 mm., brownish; iv, .48 mm., thickness .08 mm., dark brown.

Pronotum: Length .58 mm., width at base 1.16 mm.; calli scarcely apparent, transversely rugulose near anterior margin, lateral margins of disk moderately yet distinctly sulcate; thickly clothed with fine yellowish pubescence, margins of disk beset with prominent pilose hairs; color dark brown, moderately shining. Scutellum dark brown, transversely rugulose, finely pubescent and beset with several erect pilose hairs. Sternum and episterna dark brown, shining; epimera and meta-episterna pruinose; ostiolar peritreme strongly protruding, white.

Hemelytra: Embolar margins very slightly arcuate; dark fusco-brownish, a broad transverse, pale yellowish fascia just beyond apex of scutellum, cuneal fracture also pale; clothed with very fine, closely appressed, sericeous pubescence, intermixed with longer recumbent pubescence and sparsely set erect pilose hairs, pubescence taking color of surface beneath. Membrane pale, apical half and central area fuscous.

Legs: Pale brownish to fusco-brownish. Venter dark brown,

shining, a pruinose area on middle of ventral surface; clothed with prominent yellowish pubescent hairs; genital claspers distinctive.

Female: Length 3.6 mm., width 1.6 mm.; colored very similarly to the male but in form more robust, embolar margins more strongly arcuate on apical half.

Holotype: Male, 28 July, 1916, Pigeon Cove, Mass. (Chris E. Olsen); author's collection. *Allotype*: same data as the type. *Paratypes*: MASSACHUSETTS—Males (3), taken with the types. MINNESOTA—Males (3) and females (2), 20 July, 1920, Gray Cloud Island, collected on *Ostrya virginiana*; males (2), 8 July, males and females (12), 5 Aug., males and females (18), 11 Aug., 1920, University Farm, St. Paul, collected on *Quercus macrocarpa*; male and female, 9 July, males and females (10), 24 July, Minnehaha Creek, Hennepin County (H. H. Knight).

C. lutescens Reuter.

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 87, 1876.

Length 4.5 mm., width 1.9 mm.; uniformly yellowish, antennae, head chiefly, and two vittae on anterior angles of propleura, red; sparsely clothed with yellowish pubescence.

Long Island, N. Y.

C. modestus Uhler.

Ent. Amer., iii, 69, 1887.

Length 4.4 mm., width 1.8 mm.; dark chestnut brown with yellowish, sometimes dark fuscous brown; larger than *pumilus* and without distinct punctures on dorsum; surface very finely alutaceous; scutellum, clavus, and inner apical margin of corium, beset with a few long erect hairs, but devoid of closely appressed sericeous pubescence.

Occurs on basswood (*Tilia*), and grapevine (*Vitis* sp.).

East River, 30 July, 1910, 5 Aug., 1908 (C. R. E.); New Haven, 8 July, 1909 (B. H. W.).

C. luteus Knight, new species.

Suggestive of *lutescens* but differs in structure of antennae and pubescence, likewise in color of antennae and head.

Female: Length 4 mm., width 1.64 mm. Head: Width .87 mm., vertex .34 mm.; yellowish, eyes brownish black. Rostrum, length 1.32 mm., nearly attaining hind margins of middle coxae, yellowish, darker apically.

Antennae: Segment i, length .31 mm.; ii, 1.14 mm., slender at base, becoming gradually thicker apically but not attaining thickness of segment i, yellowish, somewhat dusky near apex; iii, .51 mm., thickness .08 mm., just equal to apex of segment ii, dusky yellow; iv, .43 mm., equal in thickness to segment iii, dusky brown.

Pronotum: Length .73 mm., width at base 1.34 mm.; lateral margins nearly straight; impunctate, somewhat alutaceous, yellowish, clothed with very fine recumbent yellowish pubescence. Scutellum transversely rugulose, clothed with closely appressed, silvery scale-like pubescence, and intermixed with a few very short simple pubescent hairs. Sternum and pleura yellowish, ostiolar peritreme pale yellowish.

Hemelytra: Embolar margins slightly sinuate; uniformly yellowish translucent, impunctate; pubescence as on scutellum, scale-like pubescence more abundant on clavus and inner half of corium. Membrane uniformly pale fumate, becoming more nearly pale fuscous at apex, veins tinged with yellowish.

Legs: Uniformly yellowish. Venter uniformly yellowish, yellowish pubescent.

Male: Length 3.8 mm., width 1.46 mm.; very similar to the female in form and coloration. Head: Width .80 mm., vertex .26 mm. Antennae: Segment i, length .28 mm., yellowish; ii, 1.03 mm., yellowish, brownish on apical half; iii, .50 mm., fusco-brownish; iv, brownish black; similar in structure to antennae of female.

Holotype: Female, 18 July, 1915, White Plains, N. Y. (J. R. T. Bueno); author's collection. Allotype: Male, 20 Aug., 1891, Berkeley, W. Va. (O. Heidemann); Cornell Univ. collection.

Ceratocapsus nigellus Knight, new species.

Resembles dark forms of *modestus* but readily distinguished by the type of pubescence; scutellum and basal half of hemelytra bearing closely appressed, sericeous or scale-like pubescence.

Male: Length 4.5 mm., width 1.7 mm. Head: Width .83 mm., vertex .34 mm.; brownish black, front coarsely alutaceous, shallow groove on median line above, basal carina raised to a sharp angle. Rostrum, length 1.7 mm., attaining hind margins of middle coxae, dark brownish.

Antennae: Segment i, length .43 mm., thickness .11 mm.; ii, 1.56 mm., gradually thickened from base to apex (.11 mm. thick); iii, .84 mm., thickness .13 mm.; iv, .63 mm., thickness .13 mm.; clothed with short, closely set pubescence, dark reddish brown to blackish.

Pronotum: Length .93 mm., width at base 1.66 mm.; alutaceous, finely and sparsely pubescent, lateral margins of disk very slightly sulcate; dark brownish black. Scutellum blackish, transversely rugulose, clothed with closely appressed, silvery scale-like hairs, and intermixed with a few fine erect pubescent hairs. Sternum dark brownish black, shining, meta-episterna pruinose; ostiolar peritreme coarsely alutaceous, dark reddish brown.

Hemelytra: Embolar margins slightly sinuate; dark brownish black, cuneus frequently more reddish brown; clavus and basal half of corium clothed with closely appressed scale-like hairs as on scutellum, and sparsely interspersed with more erect, simple pubescent hairs. Membrane and veins uniformly fuscous, slightly paler bordering apex of cuneus.

Legs: Dark reddish brown to blackish, anterior and middle pair of tibiae more yellowish brown. Venter dark reddish brown to black, genital segment strongly shining and beset with rather prominent pubescent hairs; genital claspers distinctive of the species.

Female: Length 4.6 mm., width 1.84 mm.; very similar to the male in form and color.

Holotype: Male, 14 July, 1916, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (30), taken with the types on hickory. GEORGIA—Male and female, July, 1910, Rabun County (Wm. T. Davis). MARYLAND—Male, 21 June, 1914, Plum Point (W. L. McAtee). MINNESOTA—Female, 20 July, 1920, Gray Cloud Island (H. H. Knight). NORTH CAROLINA—Female, 14 June, 1915, Southern Pines (A. H. Manee). Males and females (8), July, 1912, Black Mountains (Beutenmuller). NEW JERSEY—Female, 2 July, Jamesburg (Wm. T. Davis). NEW YORK—Males and females (7), 17 July, males and females (12), 31 July, female, 6 Aug., 1916, females (2), 13 Aug., 1915, Batavia (H. H. Knight), collected on hickory. Males and females (5), 16 July, 1916, Conesus Lake; males and females (6), 23 July, 1916, Ithaca (H. H. Knight). Female, 7 Aug., 1915, White Plains (J. R. T. Bueno). Males (4) females (3), 30 June, 1922, Kings Bluff, Winona Co., Minn. (H. H. Knight).

Collected most frequently on hickory (*Carya* sp.). Nymphs have been taken on the trunks and larger limbs of trees, indicating that the species may be largely predaceous.

C. vicinus Knight, new species.

Fulvous to reddish, scutellum and apical half of hemelytra dark brownish to blackish, legs and antennae yellowish; dorsum clothed with rather inconspicuous simple pubescence, scutellum and basal half of hemelytra thickly clothed with closely appressed, scale-like silvery pubescence.

Male: Length 3.4 mm., width 1.4 mm. Head: Width .78 mm., vertex .31 mm.; yellowish to reddish, front coarsely alutaceous, vertex and front beset with a few erect yellowish hairs. Rostrum, length 1.43 mm., reaching upon hind coxae, reddish, yellowish apically.

Antennae: Segment i, length .31 mm., yellowish, frequently a red mark on ventral surface; ii, 1.23 mm., thickness at apex .10 mm., yellowish, more brownish at apex; iii, .66 mm., thickness .08 mm., reddish brown, paler at base; iv, .48 mm., reddish brown.

Pronotum: Length .71 mm., width at base 1.23 mm.; lateral margins of disk nearly straight; fulvous to reddish, moderately shining; calli outlined but inconspicuous, alutaceous; sparsely clothed with fine yellowish pubescence. Scutellum dark reddish brown, transversely rugulose, thickly clothed with closely appressed, silvery scale-like pubescence. Sternum and pleura reddish to brownish, meta-episterna pruinose; ostiolar peritreme reddish.

Hemelytra: Embolar margins slightly sinuate; yellowish to fulvous, apical half dark brownish to blackish; sparsely clothed with simple yellowish pubescence, clavus and basal half of corium covered with closely appressed, silvery scale-like pubescence. Membrane pale, apical half fuscous.

Legs: Uniformly yellowish, scarcely darker at base of coxae. Venter dark reddish brown to black, shining, genital segment

clothed apically with prominent yellowish hairs; genital claspers distinctive.

Female: Length 3.6 mm., width 1.6 mm.; more robust than the male but very similar in coloration; embolar margins more distinctly arcuate on apical half.

Holotype: Male, 8 July, Staten Island, N. Y. (Wm. T. Davis); author's collection. *Allotype*: 21 Aug., 1917, Wyandanch, Long Island, N. Y. (Chris E. Olsen). *Paratypes*: NEW JERSEY—Male, 11 July, 1908, female, 19 July, female, 23 July, female, 27 July, Lakehurst (Wm. T. Davis). NEW YORK—Female, 11 Aug., Pinelawn; female, Aug., 1916, Yaphank (Wm. T. Davis). Female, 21 Aug., 1917, Wyandanch, Long Island (C. E. Olsen).

Ceratocapsus sericus Knight, new species.

Dark brownish black, legs and antennae yellowish; form and size suggestive of *pumilus* but distinguished by the rather sparsely set, erect long pilose hairs.

Female: Length 4.1 mm., width 1.66 mm. Head: Width .77 mm., vertex .37 mm.; brownish, coarsely alutaceous, set with several long erect hairs. Rostrum reaching upon hind coxae (apex covered), brownish to dark brown.

Antennae: Segment i, length .39 mm., thickness .11 mm., yellowish; ii, 1.4 mm., slender at base and tapering to .10 mm. thick at apex, yellowish; iii, .74 mm., thickness .10 mm., dark reddish brown, yellowish at base; iv, .58 mm., thickness .09 mm., dark reddish brown.

Pronotum: Length .74 mm., width at base 1.34 mm.; lateral margins of disk slightly sulcate; dark brownish black, alutaceous, disk sparsely set with long erect pilose hairs. Scutellum dark brownish black, transversely rugulose, clothed with closely appressed, silvery scale-like pubescence, and interspersed with erect long pilose hairs. Sternum dark reddish brown, pleura blackish and somewhat alutaceous, meta-episterna pruinose; ostiolar peritreme yellowish to brown.

Hemelytra: Embolar margins slightly sinuate, somewhat arcuate on apical half; dark brownish black, somewhat translucent on embolium; rather sparsely beset with long erect, yellowish pilose hairs, clavus and basal half of corium clothed with closely appressed, silvery scale-like pubescence. Membrane and veins uniformly pale fuscous, a small clear spot bordering apex of cuneus.

Legs: Uniformly yellowish, coxae more brownish. Venter dark brownish black, somewhat shining, genital segments clothed with prominent yellowish hairs.

Male: Length 4 mm., width 1.57 mm.; very similar to the female in color. *Antennae*: Segment i, length .36 mm.; ii, 1.28 mm., yellowish, fuscous on apical one-third; iii, .67 mm., fuscous, narrowly yellowish at base. Genital segment distinctive.

Holotype: Female, 28 July, 1906, Newfoundland, N. J. (Wm. T. Davis); author's collection. *Allotype*: Male, 27 June, 1921, Ann Arbor, Mich. (R. F. Hussey). *Paratypes*: Female, taken with type. Female, 23 Aug., Mosholu, N. Y.

C. pumilus (Uhler).

Ent. Amer., iii, 69, 1887.

Length 3.6 mm., width 1.5 mm.; yellowish brown to dark brown; antennae and legs pale yellowish brown; dorsum distinctly punctured, thickly clothed with prominent yellowish pubescence and with shorter, silvery yellow, sericeous pubescence.

Occurs on grapevine (*Vitis* spp.).

East River 7 Sept., 1910 (C. R. E.).

C. fuscinus Knight, new species.

Closely related to *pumilus* but antennal segment iii shorter, eyes of male larger, vertex narrower; pubescence on dorsum heavier, more erect and prominent than in *pumilus*.

Male: Length 3.7 mm., width 1.61 mm. Head: Width .78 mm., vertex .26 mm.; yellowish; eyes larger and more coarsely granulate (facets larger) than in *pumilus*. Rostrum, length 1.14 mm., scarcely attaining hind margins of middle coxae, yellowish, basal segment and apex darker.

Antennae: Segment i, length .27 mm., yellow, a red spot on inner side at base; ii, 1.01 mm., slender at base and becoming gradually thicker toward apex, attaining the thickness (.08 mm.) of segment i, dusky pubescent, yellowish; iii, .51 mm., thickness .07 mm., yellowish, becoming darker on apical half; iv, .40 mm., equal to segment iii in thickness, fusco-brownish.

Pronotum: Length .68 mm., width at base 1.13 mm.; nearly as in *pumilus* but pubescence longer and more prominent; brownish black, basal one-fourth or more of disk yellowish. Scutellum yellowish brown, darker at base, clothed with prominent yellowish pubescent hairs; mesoscutum narrowly exposed. Sternum brownish, episterna and pleura blackish; ostiolar peritreme yellowish, becoming brownish above.

Hemelytra: Embolar margins slightly arcuate; yellowish brown translucent, somewhat fuscous on corium; punctures fine, blackish, clothed with prominent yellowish pubescent hairs and intermixed with shorter, closely appressed, sericeous or scale-like pubescence; cuneus reddish. Membrane pale fumate, a slightly darker but distinct cloud occupying middle of apical half.

Legs: Yellowish, hind femora reddish on apical half. Venter brownish black, more yellowish beneath; genital claspers very similar to those of *pumilus* but basal prong of right clasper twice as long as wide; both right and left claspers composed of three prongs each, hence the name.

Female: Length 3.6 mm., width 1.6 mm.; very similar to the male but embolar margins more strongly arcuate; pronotum more yellowish, only the calli and a ray across top of coxal cleft blackish; venter reddish to brownish.

Head: Width .73 mm., vertex .33 mm. Antennae: Segment i,

length .27 mm.; ii, .96 mm., slender, thickness at apex equal to segment iii; iii, .46 mm.; iv, .37 mm.; colored as in the male.

Holotype: Male, 2 Aug., 1916, Honeoye Falls, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males (10) and females (4), taken with the types on *Salix nigra*. DISTRICT OF COLUMBIA—Male, 10 July, 1898, Washington (O. Heidemann). MARYLAND—Male, 10 July, Glen Echo (O. Heidemann). MINNESOTA—Males (2) and female, 12 July, 1921 (A. Hertig), male and female, 20 July, 1920, Gray Cloud Island, Ramsey County (H. H. Knight). NEW YORK—Males (4) and female, 4 Aug., males (2) and females (4), 6 Aug., males (3) and females (2), 10 Aug., female, 17 Aug., 1916, Batavia, New York (H. H. Knight). OHIO—Male, 17 July, 1915, Bay Point (C. J. Drake).

Ceratocapsus incisus Knight, new species.

General aspect very similar to *pumilus* but antennal segment iii shorter, apical half of membrane more distinctly infuscated while the femora remain uniformly yellowish or greenish; genital claspers distinctive.

Male: Length 3.7 mm., width 1.49 mm. Head: Width .71 mm., vertex .30 mm.; blackish, reddish beneath. Rostrum, length 1.38 mm., nearly attaining hind margins of middle coxae, yellowish, basal segment reddish, apex blackish.

Antennae: Segment i, length .28 mm., yellowish, tinged with reddish; ii, 1.07 mm., slender at base and gradually thickened toward apex, but not attaining the thickness of segment i, yellowish, dusky at apex; iii, .49 mm., brownish, nearly equal to thickness of segment ii; iv, .39 mm., brownish, equal to segment iii in thickness.

Pronotum: Length .64 mm., width at base 1.26 mm.; more blackish than in *fuscinus* but with pubescence very similar. Scutellum brownish black. Sternum reddish to blackish, pleura black; ostiolar peritreme pale, tinged with reddish.

Hemelytra: Nearly as in *fuscinus* but the corium darker, cuneus dark reddish brown. Membrane and veins fumate, apical half fuscous, margins slightly paler.

Legs: Yellowish to greenish, not distinctly darker on apical half. Venter dark reddish brown to piceous, scarcely paler beneath; genital claspers distinctive, basal prong of right clasper incised at apex, the dorsal portion drawn out to a slender point.

Female: Length 4 mm., width 1.7 mm.; very similar to the male. Head: Width .72 mm., vertex .33 mm. Antennae: Segment i, length .33 mm.; ii, 1.11 mm., slender, slightly thicker at apex, yellowish; iii, .49 mm., brownish, paler at base; iv, .39 mm., brownish.

Occurs on *Salix*.

Holotype: Male, 26 July, 1916, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males (6) and females (2), taken with the types on *Salix*. NEW YORK—Males (2) and females (3), 29 July, male, 30 July, male, 6 Aug., 1916, Batavia; males (8), 23 July, 1916, Ithaca; male, 13 Aug., 1916, Cattaraugus County (H. H. Knight).

C. digitulus Knight, new species.

Antennae nearly as in *fuscinus* but dorsum more densely clothed with erect, rather bristly pubescence; dorsum dark brownish to blackish while the legs remain uniformly greenish yellow; genital claspers distinctive.

Male: Length 3.4 mm., width 1.6 mm. Head: Width .70 mm., vertex .30 mm.; brownish black. Rostrum, length 1.14 mm., scarcely attaining hind margins of middle coxae, yellowish, apex and basal segment darker.

Antennae: Segment i, length .27 mm., yellowish; ii, 1 mm., yellowish, thickened on apical half but not quite attaining thickness of segment i, clothed with prominent pale pubescence; iii, .48 mm., scarcely equal to thickness of segment ii, yellowish, apical half more brownish; iv, .36 mm., brownish.

Pronotum: Length .67 mm., width at base 1.26 mm.; dark brownish, more nearly black on calli. Scutellum brownish black; erect yellowish pubescence even more prominent than on pronotum. Sternum and pleura brownish black; ostiolar peritreme yellowish to brownish.

Hemelytra: Embolar margins distinctly arcuate; dark brownish with a reddish tinge, embolium more yellowish translucent; cuneus reddish brown; rather densely clothed with erect, somewhat bristly pubescence, and intermixed with closely appressed, silvery tomentose, scale-like pubescence. Membrane rather uniformly fusco-brownish, scarcely paler bordering cuneus.

Legs: Uniformly greenish or yellowish. Venter brownish black, shining, yellowish pubescent; genital claspers distinctive, basal prong of right clasper taking the form of a small finger-like process.

Female: Length 3.5 mm., width 1.7 mm.; very similar to the male in structure and coloration, but the embolar margins slightly more arcuate. Head: Width .73 mm., vertex .34 mm. Antennae: Segment i, length .28 mm.; ii, 1.11 mm., slender, gradually thickened on apical half but not attaining thickness of segment i; iii, .51 mm., thickness nearly equal to apex of segment ii, yellowish to brownish; iv, .37 mm., brownish.

Holotype: Male, 29 July, 1916, Batavia, New York (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Male and female, taken with types. NEW YORK—Male and female, 13 Aug., 1916, Cattaraugus County, alt. 2300 ft. (H. H. Knight). Male, 21 Aug., 1917, Wyandanch (C. E. Olsen). Female, 26 July, 1908, Yaphank (Wm. T. Davis). Male, 1-7 Aug., 1917, Wanakena (C. J. Drake).

C. drakei Knight, new species.

Elongate, more slender than *pumilus*, most closely related to *nigrocephalus* and *setosus*; the female probably brachypterous as in *setosus*.

Male: Length 4.5 mm., width .68 mm. Head: Width .71 mm., vertex .27 mm.; reddish, darker on vertex. Rostrum, length

1.42 mm., reaching to near hind margins of posterior coxae, yellowish, apex blackish, basal segment reddish.

Antennae: Segment i, length .41 mm., yellowish; ii, 1.43 mm., slender, only very slightly thickened apically, yellowish, fusco-brownish on apical half; iii, .88 mm., about equal in thickness to segment ii, dark fusco-brownish; iv, .51 mm., fuscous.

Pronotum: Length .57 mm., width at base 1.14 mm.; rich brown, becoming piceous on calli, punctures show black; sparsely clothed with long erect, yellowish pubescent hairs. Scutellum dark brown, beset with about sixteen erect yellowish hairs, and between with short, closely appressed, sericeous scale-like pubescence. Sternum and pleura reddish to brownish black; ostiolar peritreme pale reddish.

Hemelytra: Embolar margins nearly straight; yellowish brown translucent, punctures black; each puncture with a short, closely appressed, silvery, sericeous pubescent hair, and interspersed between with rows of sparsely set, erect yellowish hairs; cuneus red, more yellowish on outer margin, beset with rather long yellowish pubescent hairs. Membrane and veins pale, apical half and margins of veins pale fuscous.

Legs: Yellowish brown, bases of coxae reddish, apices of tarsi fuscous. Venter brownish black; right genital clasper with two prongs, nearly forming a semicircle, the hook at base slender and sharply bent, the terminal hook above more broadly curved.

Holotype: Male, 1-7 Aug., 1917, Wanakena, N. Y. (C. J. Drake); author's collection. Paratype: Male, 3 Aug., 1920, The Plains, N. Y. (Osborn and Drake). ALBERTA—Male, 24 July, 1921, Nordegg (J. McDunnough).

Ceratocapsus nigrocephalus Knight, new species.

Elongate, slender, black, legs and hemelytra yellowish, apical half of corium and of cuneus pale fuscous; sparsely clothed with erect pilose hairs.

Male: Length 4.5 mm., width 1.48 mm. Head: Width .73 mm., vertex .31 mm.; black, median line of vertex slightly impressed, somewhat alutaceous. Rostrum, length 1.36 mm., reaching to middle of hind coxae, dark brownish.

Antennae: Segment i, length .37 mm., thickness .086 mm., yellowish, fuscous at base; ii, 1.53 mm., linear, slightly thicker apically (.07 mm. thick), yellowish to dusky, darker apically; iii, .88 mm., linear, thickness .06 mm., fuscous; iv, .60 mm., thickness .06 mm., fuscous.

Pronotum: Length .57 mm., width at base 1.12 mm.; black, shining, lateral margins of disk very slightly sulcate; calli apparent as slightly raised ovals, coarsely alutaceous; sparsely clothed with moderately long, erect pubescent hairs. Scutellum black, transversely rugulose, sparsely beset with erect pilose hairs. Sternum dark brownish to black, shining; pleura brownish to blackish;

ostiolar peritreme yellowish, dorsal lobe strongly protruding, fuscous just above.

Hemelytra: Embolar margins nearly straight; yellowish translucent, apical half of corium and the cuneus darkened with fuscous; finely pubescent and interspersed with erect, yellowish pilose hairs, pubescent hairs apparently arising from fine punctures. Membrane pale, a large somewhat rounded fuscous cloud occupying central area between areoles and including the apical half.

Legs: Pale yellowish brown, front coxae reddish to fuscous. Venter reddish brown to blackish, darker distally, shining, clothed with yellowish pubescence; genital claspers distinctive.

Female: Length 5 mm., width 1.43 mm.; slightly more robust than the male but very similar in coloration, embolar margins more arcuate distally.

Holotype: Male, 15 July, 1915, Parry Sound, Ontario, Canada (H. S. Parish); author's collection. Allotype: same data as the type. Paratypes: Male, taken with types. MICHIGAN—Male, 22 July, 1916, Pentwater (E. Liljeblad). NEW HAMPSHIRE—Female, Franconia (Mrs. A. T. Slosson). QUEBEC—Male, 11 July, 1920, Cascades (H. G. Crawford). SOUTH DAKOTA—Male, 16 July, 1920, Brookings (H. C. Severin).

C. setosus Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 70, 1909.

Female: Length 2.5 mm., width 1.3 mm.; dark brownish with yellowish; distinguished by the small size and oval shape; hemelytra shorter than the abdomen, membrane absent, tips broadly rounded, finely and closely punctured, clothed with short, closely appressed, sericeous pubescence and interspersed with long erect setose hairs.

Male: Length 3 mm., width 1.3 mm.; wings fully developed, suggestive of *pumilus* but smaller; distinguished by the small size and erect setose hairs on dorsum.

New Jersey, Maryland, North Carolina.

Pamillia Uhler.

P. davisii Knight, new species.

Distinguished from *behrensi* by the glabrous and strongly shining area on apical one-third of corium, also by the dark reddish brown color.

Female: Length 3.8 mm., width 1.5 mm. Head: Width .86 mm., vertex .44 mm.; front more nearly flat and more sharply declivitous than in *behrensi*, in form very similar to certain species of *Pilophorus*; dark reddish brown, nearly black on vertex, front and vertex alutaceous, lower half of face more strongly shining; finely pubescent, a few longer hairs on front. Rostrum, length 1.36 mm., scarcely attaining hind margins of intermediate coxae, dark reddish brown.

Antennae: Segment i, length .26 mm., with two or three bristles on anterior aspect, testaceous; ii, 1 mm., more slender at base and gradually enlarged apically (.11 mm. thick) to equal thickness of segment i, yellowish brown, darker brown apically; iii, .61 mm., exceeding thickness (.13 mm. thick) of segment ii, more slender on basal one-fourth, dark brown; iv, .61 mm., equal in thickness to segment iii, fusiform, dark brown; closely covered with very fine, short, golden pubescence.

Pronotum: Length .86 mm., width at base 1.11 mm., anterior angles .72 mm., sides sulcate, anterior half approaching cylindrical form, rather abruptly flaring to basal angles; basal half of disk strongly convex, declivitous behind, basal margin regularly arcuate and fitting far down over mesonotum; collar very fine and narrow, nearly covered by sharp basal margin of head; calli not apparent, disk finely alutaceous, minutely and sparsely pubescent, a few prominent hairs near anterior angles. Scutellum flattened, dark brown, transversely rugose except apical one-third which is opaque; not distinctly separated from the strongly arched and shining mesonotum. Sternum reddish brown, shining, meta-episterna pruinose as viewed in certain lights; ostiolar peritreme pale, projecting slightly at dorsal extremity of the prominent ostiole.

Hemelytra: Greatest width 1.5 mm., embolar margins parallel on basal half (width 1.14 mm.) then abruptly flaring but rounding to base of cuneus; embolium and apical one-third of corium glabrous, convex and strongly shining, dark brown to piceous, basal half of embolium amber brown and translucent; corium, just before glabrous area and apically on clavus, blackish, opaque, a paler brownish, pruinose, transverse band across middle; basal half of clavus reddish to cinnamon brown, opaque; sparsely set with erect short black bristles. Cuneus sharply deflected, strongly shining, practically glabrous, fracture deep, broader at base than long, outer margin arcuate. Membrane dark brownish black, paler at apex, veins inconspicuous; larger areole slender, paralleling inner margin of cuneus, smaller areole scarcely discernible.

Legs: Reddish brown, trochanters and tips of coxae paler, tarsi infuscated, pale basally; pubescent, tibiae with three rows of distinct spines; hind femora slightly flattened and bent as if to fit against sides of venter; arolia free and converging apically.

Venter: Dark brownish to piceous, strongly shining, third segment pruinose on ventral surface; distinctly broader on apical half, finely and rather sparsely yellowish pubescent.

Holotype: Female, 4 Sept., Lakehurst, N. J. (Wm. T. Davis); author's collection. Paratype: Female, 15 Sept., 1902, Manumuskinn, N. J.

Named in honor of the collector, Mr. Wm. T. Davis, who had favored the author with several rare and interesting Miridae.

Tribe PILOPHORINI.

Key to Genera.

1. Vertex compressed posteriorly, slightly overlapping the pronotum; length of antennal segment i not exceeding width of vertex; posterior tibiae usually compressed 2
- Vertex not compressed posteriorly; length of antennal segment i nearly equaling width of head; posterior tibiae cylindrical; anterior half of pronotum constricted, its sides at that point nearly parallel (p. 537) *Pseudoxenetus*
2. Antennal segment ii scarcely thickened toward apex; width of head across eyes greater than the width of pronotum at base; hemelytra with embolar margins parallel, destitute of white pubescent bands (p. 537) *Alepidia*
- Antennal segment ii thickened toward apex; width of head less than width of pronotum at base; hemelytra medially coarctate, bearing white pubescent bands (p. 538) *Pilophorus*

Pseudoxenetus Reuter.*P. scutellatus* (Uhler). (Pl. xvi, 13.)

Trans. Md. Acad. Sci., i, 81, 1890.

Length 6.5 mm., width 1.2 mm.; black, scutellum yellow except narrow base, cuneus with white translucent band at base; posterior coxae pale, legs dark brownish, the anterior and middle tibiae more yellowish.

Food plants: *Quercus Muhlenbergii*, *Q. alba*, and occasionally *Fraxinus*.

New Haven, 21 June, 1909 (B. H. W.); 12 June, 1910 (A. B. C.).

P. scutellatus (Uhler). (Pl. xvi, 13.)

Trans. Md. Acad. Sci., i, 80, 1890.

Length 6.5 mm., width 2 mm.; very similar to *scutellatus* but having the scutellum black; basal half of pronotum, sternum, and the pleura largely red.

Occurs on live oak (*Quercus virginiana*).

Long Island, N. Y.

Alepidia Reuter.*A. gracilis* (Uhler).

Hemip. Colo., 42, 1895.

Length 4.2 mm., width 1.3 mm.; black, slightly shining; hemelytra ferruginous black, membrane uniformly infuscated, pale bordering the cuneus; antennae and legs pale yellowish, the femora sometimes darkened; abdomen each side near base with a patch of silvery scales.

Breeds on *Pinus resinosa*.

Long Island, N. Y.

Pilophorus Westwood.

Key to Species.

1. Scutellum strongly convex, almost conically produced 2
Scutellum nearly flat or only moderately convex 4
2. Hemelytra cinnamon brown to fulvous, the polished apical area only, dark brown or piceous 3
Hemelytra dark brownish black, apex of clavus as well as corium polished behind posterior silvery line; silvery bar on clavus nearly or quite connecting with posterior silvery line of corium, directed somewhat obliquely distad; length 4.1 mm. (p. 539) *furvus* n. sp.
3. Antennal segment ii in length equal to little more than width of vertex; smaller, length 3 mm. *heidemanni*
Antennal segment ii in length almost equal to width of head; larger, length 3.5 mm. (p. 539) *depictus* n. sp.
4. Hemelytra polished over entire width behind posterior silvery line 5
Hemelytra polished behind posterior silvery line but exterior to radial vein only 11
5. Hemelytra beset with erect, short black bristles 6
Hemelytra clothed only with fine recumbent pubescence, sometimes black but not erect and bristle-like 7
6. Antennal segment iii black, nearly as thick as segment i
(p. 540) *vanduzeei* n. sp.
Antennal segment iii pale, the apical half only infuscated, slender, scarcely thicker than segment iv (p. 541) *uhleri* n. sp.
7. Hemelytra yellowish brown to dark brown except behind posterior silvery line 8
Hemelytra bright cinnamon fulvous except behind posterior silvery line 9
8. Antennal segment iii pale, scarcely infuscated at apex; hind tibiae strongly compressed, almost carinate (p. 542) *crassipes*
Antennal segment iii reddish brown to piceous, slightly paler at base; hind tibiae only very slightly compressed *cinnamopterus*
9. Small, length not exceeding 3.7 mm.; posterior silvery line interrupted on corium but not dislocated at claval suture 10
Larger, length 4.5 mm.; posterior silvery line not interrupted on corium but slightly dislocated at claval suture; antennal segment ii gradually thickened toward apex (p. 542) *amoenus*
10. Antennal segment ii strongly clavate on apical one-third, in length exceeding distance between tip of tylus and hind margin of pronotum (p. 543) *laetus*
Antennal segment ii gradually thickened from middle toward apex, in length not equal to distance between tip of tylus and base of pronotum (p. 543) *juniperi* n. sp.
11. (4) Transverse silvery line of clavus and corium dislocated at claval suture 12
Transverse silvery line of clavus and corium forming nearly a straight line, although that of the clavus bent slightly forward but never disconnected (p. 544) *perplexus*
12. Antennal segment ii, in length, equal at least to distance between tip of tylus and basal margin of pronotum 13
Antennal segment ii, in length, not equal to distance between tip of tylus and basal margin of pronotum; length 3.5 mm *walshi*
13. Antennal segment ii, in length, equal to or only slightly greater than distance between tip of tylus and basal margin of pronotum; clavus of the same brown color as corium; smaller, length 4 mm. (p. 544) *brunneus*
Antennal segment ii, in length, distinctly greater than distance between tip of tylus and basal margin of pronotum; clavus distinctly darker bordering scutellum and commissure; larger, length 4.5-5 mm. (p. 544) *clavatus*

P. furvus Knight, new species.

Female: Length 4.1 mm., width 1.61 mm. Head: Width 1.12 mm., vertex .61 mm., basal margin to tip of tylus .89 mm.; dark reddish brown to piceous, smooth, shining; gula beset with erect, bristly pubescent hairs. Rostrum, length 1.4 mm., scarcely attaining hind margin of sternum, rufo-piceous.

Antennae: Segment i, length .25 mm.; ii, 1.03 mm., thickness (.08 mm.) equal to segment i, more slender on basal one-fourth, minutely pubescent, dark reddish brown, slightly paler at base; iii, .41 mm., slender, pale, apical half dark brown; iv (missing).

Pronotum: Length .83 mm., width at base 1.33 mm., anterior angles .77 mm.; lateral margins sulcate, flaring sharply to basal angles, a distinct bristle just before each anterior angle; uniformly dark brownish black; xyphus convex, lateral margins scarcely carinated, reddish brown. Scutellum strongly convex, almost taking the form of a truncate pyramid but rounded above, apex flattened, basal angles and apex with a tuft of silvery scale-like pubescence; mesonotum broadly exposed, flattened above but abruptly declivitous at each side. Sternum brownish black, polished; epimera with posterior margin covered by silvery scale-like pubescence; ostiolar peritreme pale to dusky, polished just above, a tuft of scale-like pubescence at posterior margin of metasternum just beneath that on embolium.

Hemelytra: Embolar margins sulcate-sinuate, greatest width (1.61 mm.) just before cuneal fracture; from anterior to posterior silvery line, opaque, dark brownish black; behind posterior silvery line, brownish black to piceous, polished, apex of clavus and all of the cuneus included; posterior silvery line sinuate, perhaps interrupted (mutilated?), nearly or quite connecting with that of clavus which is directed slightly distad; basal silvery line similar to that of *amoenus*; very finely pubescent, longer on apical margin bordering membrane. Cuneus sharply deflected, piceous and polished similar to apex of corium, a silvery scale-like spot near inner basal angle. Membrane pale fuscous, a large opaque blackish cloud involving apical half of areoles and middle of membrane.

Legs: Dark brownish black, tibiae more yellowish brown, trochanters except on front legs, two basal segments of tarsi, and apical half of hind coxae, pale.

Venter: Dark brown to piceous, polished, finely pubescent, prominent bristly hairs bordering ovipositor.

Holotype: Female, 30 June, Lakehurst, N. J. (Wm. T. Davis); author's collection.

Pilophorus depictus Knight, new species.

Closely related to *furvus* but smaller, length of antennal segment ii scarcely equaling width of head; hemelytra, anterior to posterior silvery line, cinnamon fulvous as in *amoenus*.

Female: Length 3.5 mm., width 1.53 mm. Head: Width 1.05 mm., vertex .55 mm., from basal margin to tip of tylus .84 mm.; dark brownish to piceous, more brownish on juga and lora, polished, gula beset with erect bristles as in *furvus*. Rostrum, length 2 mm., reaching to middle of intermediate coxae.

Antennae: Segment i, length .25 mm., brownish; ii, .1 mm., greatest thickness .096 mm., more slender on basal one-third, black, basal one-fourth brownish, minutely pubescent; iii, .44 mm., slender, fuscous, basal one-third pale; iv, .38 mm., fuscous, slightly paler at base.

Pronotum: Length .77 mm., width at base 1.25 mm.; dark brownish black, shining. Scutellum almost identical with *furvus* in structure, a silvery bar in each basal angle, with a transverse one on the flattened apical one-third. Sternum brownish black to piceous, polished; ostiolar peritreme pale to brownish; episternum brown, darker at basal angle bordering the silvery scale-like spot.

Hemelytra: Embolar margins nearly parallel on basal half, equal in width to base of pronotum, apical half with margin flaring to widest (1.53 mm.) just before cuneal fracture; from anterior to posterior silvery line, cinnamon fulvous in color as in *amoenus*, shaded with fuscous on anterior side bordering anterior silvery line, also a dusky spot at base of clavus, minutely golden pubescent; posterior silvery band broken into three spots, silvery bar on clavus directed somewhat obliquely distad; piceous and polished behind posterior silvery band, the cuneus included. Cuneus and membrane nearly as in *furvus*, the blackish opaque cloud larger and involving nearly all of larger areole.

Legs: Dark brownish black, tibiae uniformly colored as the femora, apical half of hind coxae, and the trochanters, white; two basal segments of tarsi, tips of femora, spot on front of anterior coxae, and middle trochanters, pale.

Venter: Similar to *furvus*, apparently the sides never with silvery, scale-like pubescence.

Holotype: Female, 12 July, 1909, Washington, D. C. (O. Heidemann); Cornell Univ. collection.

Pilophorus vanduzeei Knight, new species.

Male: Length 5 mm., width 1.66 mm. Head: Width 1.25 mm., vertex .66 mm., from tip of tylus to basal margin of head 1.11 mm.; sharp basal margin of vertex beset with six black bristles, front sparsely clothed with silvery, deciduous, scale-like pubescent hairs, and interspersed with erect bristles. Rostrum, length 2.27 mm., scarcely attaining hind margins of middle coxae.

Antennae: Segment i, length .44 mm., thickness .11 mm.; ii, 2.22 mm., gradually thickened from base toward apex (.15 mm. thick), dark brownish black, clothed with short black pubescence; iii, .80 mm., thickness .08 mm., uniformly black; iv, .72 mm., pale, infuscated apically.

Pronotum: Length .94 mm., width at base 1.53 mm., anterior angles .83 mm.; anterior half of disk sparsely clothed with silvery, deciduous, pubescent hairs similar to those on front of head. Scutellum with apical half and slender lateral margins flat, abruptly convex on basal half but flattened basally, flattened apical half more or less covered with silvery, scale-like pubescence.

Hemelytra: Dark fusco-brownish, opaque anterior to posterior silvery line, basal half with a silvery sheen apparent in certain lights; beset with erect, short black bristles; posterior silvery line nearly straight, slender, behind this distinctly polished, apex of clavus included. Membrane uniformly darkened with fuscous, an opaque black cloud bordering apex of larger areole.

Legs: Uniformly brownish black, a pale spot on anterior aspect of front coxae near base; hind tibiae strongly flattened and distinctly curved. Venter with a patch of silvery, scale-like pubescence laterally on third segment.

Female: Length 5.3 mm., width 1.8 mm.; very similar to the male but antennal segment iii perceptibly thicker (.10 mm. thick), nearly equal to thickness of segment i.

Breeds on *Pinus resinosa*.

Holotype: Male, 11 July, 1920, Taghanic, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (16), taken with the types on *Pinus resinosa*. MASSACHUSETTS—Female, 15 July-6 Aug., 1918, Woods Hole (Chris E. Olsen).

P. uhleri Knight, new species.

Closely related to the preceding species but differs in color and thickness of antennal segment iii, in having patches of silvery scale-like pubescence on sides of fourth and fifth abdominal segments, and by the fact that the hind tibiae are not so distinctly compressed.

Male: Length 5 mm. Head: Width 1.14 mm., vertex .53 mm., from tip of tylus to vertex .94 mm.; front without silvery scale-like pubescence. Rostrum, length 1.8 mm., nearly attaining hind margins of middle coxae.

Antennae: Segment i, length .38 mm., thickness .10 mm.; ii, 1.86 mm., gradually thickened apically (.14 mm. thick); iii, .66 mm., thickness .06 mm., pale, apical half infuscated, sometimes the whole segment tinged with pink; iv, .61 mm., pale, apex dusky.

Pronotum: Length .83 mm., width at base 1.44 mm.; uniformly black, beset with black pubescence but devoid of silvery scale-like hairs. Scutellum nearly as in *vanduzeei* but with sides and base thickly covered with silvery, scale-like pubescence.

Hemelytra: Very similar to *vanduzeei* but the posterior silvery line distinctly broader.

Legs: Hind tibiae slightly compressed but not distinctly flattened as in *vanduzeei*.

Venter: With a distinctive patch of silvery, scale-like pubescence on the sides, extending obliquely across segments 3-6 inclusive.

Female: Length 4.8 mm., width 1.77 mm.; very similar to the male but slightly more robust; antennal segment ii, length 2.15 mm., greatest thickness .166 mm., segment iii pale, apical half infuscated.

Breeds on *Larix laricina* and *Pinus sylvestris*.

Holotype: Male, 30 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: NEW YORK—Males and females (12), 14 July, 1916, Batavia; female, 27 June, males (2) and females (2), 30 June, males (2), 2 July, male and females (2), 5 July, males (2) and females (2), 8 July, Ithaca (H. H. Knight). Male, 4 July, 1919, White Plains (J. R. T. Bueno). ONTARIO—Female, 15 July, 1914, Ottawa (G. Beaulieu).

P. crassipes Poppius.

Ann Soc. Ent. Belg., lviii, 242, 1914.

Male: Length 5.1 mm. Head: Width 1.06 mm., vertex .50 mm. Antennae: Segment i, length .39 mm.; ii, 1.94 mm., gradually thickened apically (.13 mm. thick), dark fusco-brownish, apical half black; iii, .66 mm., pale, infuscated at apex; iv, .61 mm., pale fuscous.

Front of head and the pronotum clothed with fine silvery pubescence while that on the hemelytra is more nearly golden; scutellum clothed with silvery, scale-like pubescence, more thickly on basal angles and apex; hemelytra polished behind posterior silvery line but rather thickly clothed with recumbent golden pubescence; posterior tibiae distinctly compressed; venter with an oblique patch of silvery, scale-like pubescence on sides of segments 3-6 inclusive.

Female: Length 5 mm., width 1.61 mm.; antennal segment ii, length 2.19 mm., greatest thickness .166 mm., more distinctly thickened on apical one-third than in the male.

Breeds on *Pinus strobus*.

New Hampshire, New York.

P. amoenus Uhler.

Ent. Amer., iii, 30, 1887.

Male: Length 5 mm., width 1.64 mm.; hemelytra anterior to posterior silvery line, cinnamon fulvous in color, distad of this, polished and piceous; posterior silvery line nearly straight, not interrupted on corium; hind tibiae distinctly compressed.

Antennae: Segment i, length .39 mm., fuscous; ii, 1.83 mm., greatest thickness .12 mm., gradually thickened from base toward apex, black, fusco-brownish on basal half; iii, .72 mm., slender, pale; iv, .64 mm., pale, dusky on apical half.

Female: Length 4.8 mm., width 1.7 mm.; very similar to the male in structure and coloration. Antennae: Segment i, .39 mm.; ii, 1.72 mm., greatest thickness .14 mm., slightly thicker on apical half than in the male; iii, .72 mm., pale; iv, .64 mm., pale, dusky apically.

Breeds on *Pinus virginiana*.

Massachusetts, Long Island, N. Y.

P. laetus Van Duzee.

Proc. Cal. Acad. Sci., ser. 4, viii, 294, 1918.

Male: Length 3.7 mm., width 1.27 mm.; coloration similar to that of *amoenus*; posterior silvery line interrupted on corium. Antennae: Segment i, length .28 mm., brownish; ii, 1.39 mm., slender, pale, abruptly clavate (.13 mm. thick) and black on apical one-third; iii, .53 mm., pale, dusky at apex; iv, .55 mm., dusky.

Female: Length 3.7 mm., width 1.33 mm.; very similar to the male in structure and coloration, but clavate portion of antennal segment ii very slightly thicker (.15 mm. thick).

Breeds on *Pinus virginiana*.

Allotype: Male, 10 Aug., Washington, D. C. (O. Heidemann); author's collection.

Pilophorus juniperi Knight, new species.

Very similar to *laetus* but darker in coloration; differs in the shorter and more gradually thickened antennal segment ii, and by the narrower head.

Male: Length 3.7 mm., width 1.3 mm. Head: Width .91 mm., vertex .49 mm.; dark brownish black, more brownish below. Rostrum, length 1.06 mm., attaining middle of intermediate coxae, brownish black.

Antennae: Segment i, length .28 mm., brownish; ii, 1.11 mm., gradually thickened from middle toward apex (.10 mm. thick), in length not equal to distance between tip of tylus and base of pronotum, brown, apical half black; iii, .44 mm., pale, infuscated apically; iv, .42 mm., infuscated.

Pronotum: Length .71 mm., width at base 1.11 mm.; dark brownish black, sides more gradually sulcate than in *laetus*. Scutellum nearly as in *laetus* but not so strongly convex on disk.

Hemelytra: Nearly as in *laetus* but darker in color. Membrane blackish on basal half, pale fuscous on apical half and bordering cuneus.

Legs: Dark fusco-brownish, distinctly darker than in *laetus*.

Venter: Dark brownish black, each side with a patch of silvery hairs on segments 3-5 inclusive.

Female: Very similar to the male in structure and coloration.

Breeds on *Juniperus virginiana*.

Holotype: Male, 18 July, 1915, White Plains, N. Y. (J. R. T. Bueno); author's collection. Allotype: same data as the type. Paratypes: MARYLAND—Female, June, 1913, Forest Glen; male, 30 June, 1905, Plummers Island (O. Heidemann). MASSACHUSETTS—Male, 15 July-6 Aug., 1918, Woods Hole (C. E. Olsen). MINNESOTA—Males and females (17) 20 July, 1920, Gray Cloud Island, Ramsey County (H. H. Knight), collected on *Juniperus virginiana*. NEW JERSEY—Female, 25 July, 1911, Bear Swamp, Ramapo Mts. (Wm. T. Davis). NEW YORK—Males (2), 18 July, male, 24 July, male and female, 27 July, White Plains (J. R. T. Bueno), collected on *Juniperus virginiana*.

P. perplexus Douglas and Scott.

Pilophorus perplexus Douglas and Scott, Ent. Mon. Mag., xii, 101, 1875. Saunders, Hem. Het. Brit. Isds., 265, 1892.

Male: Length 4 mm., width 1.38 mm.; hemelytra nearly uniformly brown, clothed with minute golden pubescence; very similar to *brunneus* but distinguished by the continuous, transverse posterior silvery band; scutellum, thorax, and head, dark brown to blackish. Antennae: Segment i, length .30 mm., brownish; ii, 1.44 mm., scarcely thicker (.09 mm. thick) than segment i, slightly more slender on basal one-third, brownish, dark brown on apical half, minutely pubescent; iii, .58 mm., pale, apical half infuscated; iv, .53 mm., infuscated, pale at base.

Female: Length 4 mm., width 1.5 mm.; very similar to the male but slightly more robust. Antennae: Segment i, length .30 mm.; ii, 1.47 mm., greatest thickness .11 mm., gradually thickened from base toward apex; iii, 1.11 mm.; iv, .50 mm.; colored similarly to the male.

In New York the writer collected specimens on goldenrod (*Solidago*). Specimens upon which this record is based have been compared with European material of *perplexus* D. & S. and found to be identical. The writer also has at hand European specimens of *cinnamopterus* Kirsch but as yet no American representatives have been examined.

Storrs, 5 Aug., 1920 (M. P. Z.).

P. brunneus Poppius.

Ann. Soc. Ent. Belg., lviii, 244, 1914.

Male: Length 4 mm., width 1.37 mm., from tip of tylus to basal margin of pronotum 1.38 mm.; very similar to *walshii* but slightly larger and darker colored, more nearly the size and color of *perplexus* but the silvery line on clavus dislocated and set slightly forward. Antennae: Segment i, length .28 mm., fusco-brownish; ii, 1.47 mm., dark brownish, more nearly black at apex; iii, .61 mm., fuscous, basal one-fourth pale; iv, .61 mm., fuscous, narrowly pale at base.

Female: Length 3.6 mm., width 1.36 mm., from tip of tylus to basal margin of pronotum 1.33 mm.; more robust than the male but similar in coloration; antennal segment ii, length 1.33 mm., slightly thicker toward apex but scarcely exceeding thickness of segment i.

Occurs on *Salix*.

New York.

P. clavatus (Linnaeus).

Cimex clavatus Linnaeus, Syst. Nat., Edn. 12, i, 729, 1767. Reuter, Hem. Gymn., Eur., iv, 114, tab. 4, fig. 3, 1891.

Male: Length 4.6 mm., width 1.53 mm., from tip of tylus to basal margin of pronotum 1.5 mm.; brownish black, hemelytra

brown, clavus darker than corium except bordering claval suture. Antennae: Segment i, length .33 mm., fusco-brownish; ii, 1.75 mm., greatest thickness .11 mm., gradually thickened from base toward apex, slightly exceeding thickness of segment i, dark brownish black, more nearly black on apical half; iii, .66 mm., fuscous, more nearly pale on basal half; iv, .39 mm., fuscous, paler at base.

Female: Length 4.6 mm., width 1.67 mm., from tip of tylus to basal margin of pronotum 1.55 mm.; very similar to the male in form and coloration; antennal segment ii, length 1.75 mm., thickness and coloration similar to that of male.

Occurs on *Quercus*.

New York, Minnesota.

Tribe SYSTELLONOTINI.

Sericophanes Reuter.

S. heidemanni Poppius.

†*Sericophanes ocellatus* Osborn, Proc. Iowa Acad. Sci., v, 238, fig. 16, 1898.

Sericophanes heidemanni Poppius, Ann. Soc. Ent. Belg., lviii, 260, 1914.

Sericophanes noctuans Knight, Ent. News., xxviii, 4, 1917.

Male: Length 3.4 mm., width 1 mm.; color dark chestnut to black, legs yellowish brown, tibiae darker, posterior coxae pale; antennae yellowish brown, darker on segments iii and iv, segment iv slightly compressed; hemelytra velvety brown, darker on base of clavus, two transverse irregular silvery sheen bars over the brown, a cream-colored round spot on the clavus just beyond scutellum; membrane lightly infumed, pale bordering apical one-third of cuneus.

Female: (brachypterous): Length 3.1 mm., width of abdomen .97 mm.; ant-like in form, yellowish brown, prothorax subglobose; hemelytra much reduced, only reaching to base of third abdominal tergite, cream-colored spot present just beyond scutellum; abdomen nearly subglobose, pleural margin prominent, segments 4-7 dark brownish to piceous, paler beneath bordering ovipositor.

Macropterous and brachypterous females are described and figured by Osborn (1898); found to occur on grassy ridges.

Males are frequently collected at light. In New York, Dr. C. P. Alexander reports this species as flying up in large numbers from the grass after sundown.

New Haven, 26 July, 1910, 30 May, 1911, 28 June, 7 July, 1920 (B. H. W.).

Subfamily MIRINAE.

Key to Genera.

- | | |
|--|---|
| 1. Pronotum distinctly swollen at the middle, as wide there or wider than at the hind margin | 2 |
| Pronotum widest at the base, not noticeably swollen at the middle | 3 |

2. Antennal segment i shorter than width of vertex; pronotum not extending back to basal angles of hemelytra; base of scutellum poorly defined (p. 546) **Pithanus**
 Antennal segment i, in length, greater than width of vertex; pronotum extending back to basal angles of hemelytra; hemelytra usually depressed near base and tip of scutellum, arched over middle of abdomen (p. 546) **Mimoceps**
3. Head strongly exserted, eyes placed near middle and thus far removed from anterior margin of pronotum (p. 547) **Collaria**
 Head not or only slightly exserted; eyes usually in contact with pronotum or nearly so 4
4. Pronotum impunctate or nearly so 5
 Pronotum coarsely and deeply punctured 7
5. Antennal segments clothed with very fine pubescence; body nearly glabrous, at most with very short pubescence 6
 Antennal segments thickly covered with erect black hairs; body covered with fine long erect pubescence; eyes slightly removed from anterior angles of pronotum (p. 547) **Miris**
6. Head short and greatly flattened, front scarcely protruding beyond base of antennae; median sulcus of head replaced by a broad and shallow basin; antennal segment i slender and curved, thickest near base, tapering to slender then slightly enlarged at apex (p. 547) **Teratocoris**
 Head long and pointed, front projecting sharply beyond base of antennae; median sulcus deep; antennal segment i not so long and attenuate as the above (p. 548) **Trigonotylus**
7. (4) Segment i of antennae with very short pubescence, practically glabrous; pronotum and scutellum sparsely covered with deep punctures (p. 549) **Mesomiris**
 Segment i of antennae thickly covered with long pubescent hairs; punctures of pronotum and scutellum deep and closely placed ... (p. 549) **Stenodema**

Pithanus Fieber.

P. maerkelii (Herrich-Schaeffer).

Capsus maerkelii Herrich-Schaeffer, Wanz. Ins., iv, 78, fig. 406, 1839.
 Saunders, Hemip. Het. Brit. Isds., 219, pl. 20, fig. 1, 1892.

Length 3-3.8 mm., width hemelytra 1.2 mm., width abdomen 1.5 mm.; black, lateral margins of the short hemelytra and apex of first antennal segment pale; legs and rostrum chiefly yellowish brown, darker spots evident on the femora.

Occurs on grasses.

Maine, Long Island, N. Y.

Mimoceps Uhler.

M. gracilis Uhler.

Trans. Md. Acad. Sci., i, 85, 1890.

Length 4 mm., width 1.2 mm.; black, legs, rostrum, and antennae, reddish yellow, paler at the joints; hemelytra shorter than the abdomen, yellow at base, black bar on the middle and pale apically.

Occurs on sedges.

New York.

Collaria Provancher.**C. meilleurii** Provancher.

Nat. Can., iv, 79, 1872; Pet. Faune Ent. Can., iii, 102, 1886.

Length 6-7 mm., width 1.7 mm.; black, front of head shining; legs yellowish brown, femora with small black spots; hemelytra yellowish translucent, clavus and irregularly on apical half of corium, fuscous to black; calli strongly convex, nearly as high as the base of pronotum; posterior angles of pronotum with two opaque black spots but scarcely noticeable on the black background; antennae longer than the body.

Occurs on *Calamagrostis canadensis* and other grasses in damp situations.

Colebrook, 21 July, 1905 (H. L. V.).

C. oculatus Reuter.

Ofv. Kongl. Sv. Vet.-Akad., xxxii, No. 9, 61, 1876.

Length 6-6.8 mm., width 1.7 mm.; brownish with fuscous; very similar to *meilleurii* but the calli less convex and the opaque black spots prominent on a brown background; hemelytra chiefly brown.

Occurs on grasses in dry sandy meadows.

Cheshire, 8 July, 1904 (H. L. V.); New Haven, 1 June, 1904 (W. E. B.); 8 July, 1911 (B. H. W.).

Miris Fabricius.**M. dolabratus** (Linnaeus). (Pl. xvi, 23.)

Cimex dolabratus Linnaeus, Syst. Nat., Edn. 10, i, 449, 1758.

Saunders, Het. Brit. Isds., 227, pl. 20, fig. 10, 1892.

Length 7.3-8.5 mm., width 2.4 mm.; pale greenish with fuscous and black; brachypterous females common; pronotum with two black stripes which run over the scutellum; vestiture of fine long erect pubescence; males frequently with hemelytra tawny brown.

Food plants: Blue grass (*Poa pratensis*), timothy, and frequently other grasses.

Branford, 27 June, 1904 (H. L. V.); Brooksville, 30 June, 1902 (W. E. B.); New Haven, 16, 24 June, 1902 (E. J. S. Moore); 8 June, 1904 (W. E. B.); 9 June, 1914 (Q. S. Lowry); 1 July, 1914 (M. P. Z.).

Teratocoris Fieber.**T. discolor** Uhler.

Ent. Amer., iii, 68, 1887.

Length male 4.8 mm., width 1.2 mm.; female, length 6.2 mm., width 1.6 mm.; fuscous to black, with basal angles of pronotum, base of hemelytra and full length of embolium, pale or greenish; legs and antennae reddish; female with hemelytra and venter much paler than in the male, only slightly fuscous along the claval

suture and inner angles of the corium; hemelytra sometimes reddish to fuscous.

Occurs on sedges; frequently attracted to lights.

Massachusetts, New York.

T. paludum J. Sahlberg.

Acta Soc. Fain. Fl. Fenn., i, 28, 1875.

Length 5.2-5.6 mm., width 1.2-1.5 mm.; green; antennal segment i except basally, and segment ii, red, segments iii and iv fuscous; hind tibiae red, apices of femora more or less red.

Occurs on *Carex vesicaria* in Finland; also taken on the same plant in Minnesota by the writer; frequently attracted to lights.

Minnesota, New York.

Trigonotylus Fieber.

Key to Species.

1. Head not distinctly elongated between the eyes and base of antennae; eyes usually prominent as seen from above, oval or nearly round 2
- Head distinctly elongated between front margin of eyes and base of antennae, the sides at this point parallel; eyes as seen from above not at all prominent, distinctly longitudinal. Very small slender species, hind tibiae and tarsi reddish, antennae pink confusus
2. Apices of posterior tibiae, and the tarsi, black tarsalis
- Apices of posterior tibiae not black, tarsi usually reddish 3
3. Antennal segment i, in length, not greater than distance between basal margin of pronotum and a line drawn through middle of eyes 4
- Antennal segment i longer, length equal to distance between basal margin of pronotum and a line drawn through point of insertion of antennae; eyes elongate oval; pronotum with four longitudinal pale orange stripes, the same often noted on the scutellum and hemelytra uhleri
4. Hind tarsi with segment i slightly longer than remaining two united (measured on ventral surface); pronotum usually with longitudinal fuscous stripes; antennae reddish (at least ordinarily) ruficornis
- Hind tarsi with segment i slightly shorter than remaining two united; body and antennae uniformly pale brevipes

T. confusus Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 6, 1909.

Length 4.3-5 mm., width .7 mm.; well described in the key.

Maryland.

T. tarsalis Reuter.

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 60, 1876.

Length 5.4-6.2 mm., width 1.5 mm.; pale green to bright green; apices of posterior tibiae, and the tarsi, black; antennae usually reddish from middle of segment ii to apex of segment iv.

Breeds on slough grass (*Spartina michauxiana*).

Colebrook, 20 July, 1905 (W. E. B.).

T. uhleri Reuter.

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 60, 1876.

Length 6.2-7.5 mm., width 1.5 mm.; species well described in the key.

Stratford, 29 June, 1908 (W. E. B.); 9 July, 1920 (B. H. W.); Woodmont, 9 July, 1904 (P. L. B.).

T. ruficornis (Geoffroy).

Cimex ruficornis Geoffroy in Fourcroy, Ent. Paris., 209, 1785.
Douglas and Scott, Brit. Hemip., 290, 1865.

Length 5.5-6 mm., width 1.2 mm.; usually distinguished by having the antennae reddish from base to apex; pronotum usually with four fuscous stripes with a slender pale line between the two middle stripes.

Food plants: Cultivated oats and closely related wild grasses.

Branford, 21 June, 1904 (H. L. V.); Colebrook, 20 July, 1905 (W. E. B.).

Mesomiris Reuter.**M. curtulus** Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 4, 1909.

Length 5-5.5 mm., width 1.5 mm.; yellowish brown to dark brown; dorsum rather sparsely punctured with deep coarse punctures; antennae with very short fine pubescence; antennae, legs, and venter, sometimes with reddish brown.

New Haven, 25 July, 1919 (M. P. Z.).

Stenodema Laporte.**S. trispinosum** Reuter. (Pl. xvi, 22.)

Ofv. Finska Vet.-Akad., Forh., xlvi, No. 15, 3, 8, 1904.

Length 7-7.5 mm., width 1.7 mm.; pale yellowish to greenish, hemelytra sometimes bright green; distinguished by the three spines near apex on posterior margin of hind femora, one of the three spines much reduced in size.

Occurs on grasses in moist meadows; adults hibernate.

Hamden, 20 May, 1920 (M. P. Z.); New Haven, 10 May (A. B. C.), 30 May (B. H. W.), 1911; 6 July, 1904, 16 Oct., 1903 (H. L. V.); Putnam, 12 July, 1905 (H. L. V.).

S. vicinum (Provancher).

Nat. Can., iv, 77, 1872.

Length 7-7.5 mm., width 1.7 mm.; yellowish to greenish with fuscous; femora devoid of spines; a median pale stripe with fuscous each side, extending from tylus back over pronotum and scutellum to the hemelytra; clavus and inner half of corium dark fuscous to blackish in the male; antennal segment ii, and the apical segments, more or less reddish.

Occurs on grasses in moist meadows; adults hibernate.

Branford, 11 May (H. W. W.), 28 July (H. L. V.), 1905; Canterbury, 14 Aug., 1905 (B. H. W.); Cornwall, 29 May (K. F. C.); New Haven, 10 May, 1911 (A. B. C.); 6 July (H. L. V.), 20 July (W. E. B.), 1904.

Subfamily CAPSINAE.

Key to Tribes.

1. Slender ant-like species, abdomen constricted at base; lateral margins of pronotum indistinct, more or less sinuate; hemelytra medially coarctate (p. 655) **Myrmecorini**
Form not ant-like, abdomen not distinctly constricted; pronotum with lateral margins distinct, frequently finely carinate; hemelytra with embolar margins straight or slightly arcuate 2
2. Ostiolar peritreme small, poorly developed, its dorsal margin scarcely extending dorsad as far as ventral margin of epimeron of mesothorax; tibiae destitute of spines but sometimes strongly nigro-pubescent; body impunctate; pronotal collar broad, strongly convex, width of collar (measured cephalo-caudally) usually as great as width of calli; genae high, head vertical, rarely inclined; segment i of hind tarsi twice as long and thicker than the second (p. 550) **Resthenini**
Ostiolar peritreme prominent, its dorsal margin extending well above ventral margin of epimeron of mesothorax; tibiae bearing rows of spines, sometimes rather fine; dorsum frequently punctate; pronotal collar not so broad and prominent as the above; genae of medium height or low, rarely high but in such case the vertex, frons and tylus are sub-confluent in a wide arc, the gula long; segment i of hind tarsi rarely longer than segment ii, but if so, never thicker than segment ii (p. 560) **Capsini**

Tribe RESTHENINI.

Key to Genera.

1. Stricture of pronotal collar joining base of coxal cleft; head when viewed from the side oblique, gula rather long, oblique .. **Opistheuria**
Stricture of pronotal collar interrupted at side, not joining directly with base of coxal cleft; head short, vertical, gula short, scarcely apparent **Platytyellus**

Opistheuria Reuter.

Key to Species and Varieties.

1. Pronotum, and ventral surface except genital segments, orange red; scutellum and hemelytra black, embolium and outer margin of clavus and cuneus, orange red typical **clandestina**
(a) Pronotal disk largely black; ventral surface except genital segment, orange red variety **dorsalis**
(b) Pronotal disk largely black; ventral surface chiefly black variety **ventralis**

O. clandestina Van Duzee.

Pomona Jour. Ent. Zool., vii, 110, 1915.

Length 7.4 mm., width 3.3 mm.; embolar margins distinctly arcuate on apical half; color orange-red, antennae, tylus and front,

scutellum, hemelytra except outer margins, and genital segments, black; legs black, coxae reddish, femora more or less pale at base.

New York.

O. clandestina var. **dorsalis** Knight.

Bull. Brook. Ent. Soc., xiii, 115, 1918.

Length 7.1 mm., width 2.8 mm.; black; base of head, juga, lora, genae, sides of pronotum, median vitta on basal half of scutellum, and venter except genital segments, orange colored; bases of middle and posterior femora pale to orange.

This variety is a pest on lima beans in Louisiana.

New York, Ohio.

O. clandestina var. **ventralis** Knight.

Bull. Brook. Ent. Soc., xiii, 115, 1918.

Similar to variety *dorsalis* except that the venter is fuscous to black; orange color being replaced by yellowish to pale.

New York.

Platytylellus Reuter.

Key to Species.

1. Length of antennal segment i not equal to width of vertex 2
 Length of antennal segment i equal to or greater than width of vertex 3
2. Pronotal disk with median red vitta extending to join with red scutellum; antennal segment i, in length, not equal to more than one and one-half times the lateral width of an eye
 (p. 552) *rubrovittatus*
 Pronotal disk without median red vitta; antennal segment i, in length, equal to twice the lateral width of an eye.. (p. 553) *nigricollis*
3. Pronotum uniformly orange or fulvous, hemelytra black 4
 Pronotum with black, sometimes bright red but in such case the hemelytra red or pale on lateral margins 6
4. Scutellum orange-yellow; tibiae clothed with short hairs, length of hairs not equal to thickness of segment; male genital segment without tubercles 5
 Scutellum black; tibiae thickly clothed with prominent long hairs, length of certain hairs greater than thickness of segment; male genital segment with a prominent tubercle at base of each clasper
 (p. 557) *nigroscutellatus* n. sp.
5. Width of pronotal collar slightly greater than width of head; larger, length 8.7 mm. (p. 556) *insitivus*
 Width of head greater than width of pronotal collar; smaller, length 6.8-8 mm. *insitivus* var. *angusticollis* n. var.
6. Male with a prominent lateral tubercle near base of left genital clasper; pronotal disk uniformly red, or red and black, in the latter case the black always formed along median line but sometimes spreading to cover all but narrow lateral margins; lateral margins of hemelytra frequently red 7
 Male without tubercle near base of left genital clasper; pronotal disk black, or frequently with red but in that case the red color developing along median line, thus leaving a black ray each side or even reduced to form spot near basal margin; lateral margins of hemelytra sometimes red but in that case the median line of pronotum also red 8

7. Hemelytra uniformly black; pronotum red, median line of disk, and including the calli, black, thus leaving lateral margins of disk broadly red (p. 557) *fraternus* n. sp.
 Hemelytra with lateral margins pale or red
 (a) Pronotal disk with broad median ray extending from the black scutellum to anterior margin; calli and spot on dorsal surface of collar, black, variety *rubromarginatus* n. var.
 (b) Pronotum and scutellum uniformly bright red; head, except tylus and the calli, red variety *regalis* n. var.
 (c) Head except tylus, and the calli, red; scutellum black, central area of pronotal disk black, in dark specimens spreading to involve all but lateral margins and the calli ..
 variety *discifer* n. var.
8. Hemelytra uniformly black 9
 Hemelytra with lateral margins red; pronotal disk red on median line, leaving a black or fuscous vitta at each side, sometimes the vitta reduced to form black spot near basal margin
 (p. 555) *circumcinctus*
9. Antennal segment i, in length, only slightly greater than width of vertex, not equal to vertex plus one-third dorsal width of an eye; length 7.7 mm., or less 10
 Antennal segment i, in length, equal to width of vertex plus one-third dorsal width of an eye; length 7.9 mm.
 (p. 555) *rubellicollis* n. sp.
 (a) Scutellum black; collar, xyphus, lower half of propleura, and a short, clearly defined vitta extending from collar back between calli but not beyond middle of disk, orange to pink typical *rubellicollis*
 (b) Scutellum with reddish vitta; vitta on median line of pronotal disk not attaining basal margin of disk
 variety *vittiscutis* n. var.
 (c) Scutellum with orange or reddish vitta; orange colored vitta on median line of pronotal disk extending from collar to basal margin variety *confluens* n. var.
10. Head red, tylus, and more or less on juga and lora, blackish; pronotum red, basal half of disk with blackish; surface very finely granulate (p. 554) *insignis*
 (a) Venter black, with not more than a red tinge at base; scutellum red, lateral margins blackish; pronotal disk with central area red, broadly invading the black but not as a clearly defined vitta typical *insignis*
 (b) Venter red; scutellum black; basal half of pronotal disk black variety *fraterculus* n. var.
 Head black, basal margin of vertex slenderly red; scutellum black; pronotal collar red but usually blackish above; base of venter red beneath, but the gula never red; surface coarsely granulate
 (p. 553) *borealis* n. sp.

P. rubrovittatus (Stål).

Stett. Ent. Zeit., xxii, 318, 1862.

Female: Length 5.3 mm., width 2 mm.; embolar margins moderately arcuate; surface distinctly granulate; black; head except tylus and eyes, basal segment of rostrum, pronotum except a flaring ray on each side of disk extending from callus to basal margin, scutellum, mesoscutum except outer angles, sternum except cloud each side, pleura, venter except vagina exterior, coxae, femora except narrowly at base and apical one-third, red or orange red.

Head: Width 1.12 mm., vertex .59 mm., lateral width of eye .31 mm. Antennae: Segment i, length .49 mm.; ii, 1.54 mm., tapering slightly thicker toward apex; iii, 1.14 mm.; iv, .68 mm.

Male: Length 5 mm., width 1.7 mm.; very similar to the female in coloration, antennal segment ii slightly thicker and more nearly cylindrical.

Head: Width 1.08 mm., vertex .51 mm. Antennae: Segment i, length .44 mm.; ii, 1.71 mm., cylindrical, nearly as thick as segment i; iii, 1.26 mm.; iv, .81 mm.

Originally described from a single male specimen.

Allotype: Female, 4 July, 1909, Lakehurst, N. J. (C. E. Olsen); author's collection.

Maine, Massachusetts, New Jersey, New York, Nova Scotia.

***P. nigricollis* (Reuter).**

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 65, 1876.

Male: Length 6 mm., width 2.3 mm.; rather coarsely and thickly granulate; black, head except tylus, collar, xyphus and sides of pronotum, scutellum except basal angles, sternum except cloud each side of median line, pleura, venter except beneath on genital segment, red; legs black, coxae and basal one-third of hind femora pale to red.

Head: Width 1.14 mm., vertex .66 mm., lateral width of eye .28 mm. Antennae: Segment i, length .58 mm.; ii, 1.76 mm.; iii, 1.14 mm.; iv, .90 mm.

Female: Length 6.4 mm., width 2.6 mm.; very similar to the male in coloration. Head: Width 1.17 mm., vertex .66 mm., lateral width of eye .28 mm. Antennae: Segment i, length .61 mm.; ii, 1.74 mm.; iii, 1.22 mm.; iv, .94 mm.

Cornwall, 10 Aug., 1918 (B. H. W.); Goshen, 4 July, 1919 (M. P. Z.); Salem, 10 July, 1914 (H. W. F.).

***Platytylellus borealis* Knight, new species.**

Related to *nigricollis* but distinguished by the longer antennal segment i, and body surface more finely granulate; differs in color by the black scutellum, gula and xyphus, while the base of venter beneath is red.

Male: Length 6.6 mm., width 2.3 mm. Head: Width 1.24 mm., vertex .64 mm.; black, slenderly red at base of vertex. Rostrum, length 2 mm., reaching slightly beyond middle of coxae, black.

Antennae: Segment i, length .64 mm.; ii, 1.86 mm., nearly cylindrical; iii, 1.23 mm.; iv, .91 mm.; black.

Pronotum: Length 1.14 mm., width at base 1.9 mm., collar 1.07 mm.; collar, from above lower margin of eye, red, usually invaded with blackish above, a lateral stripe just beneath lateral margins of disk also red; finely granulate, short pubescent, pubescence dusky over the dark surface. Scutellum, sternum and pleura, black; ostiolar peritreme very small and inconspicuous, a group characteristic.

Hemelytra: Embolar margins only very slightly arcuate on

apical half; black, opaque, finely granulate, short pubescent. Membrane black, scarcely paler bordering apex of cuneus.

Legs: Black; tibiae with three rows of short spines, pubescence short.

Venter: Black, opaque, clothed with rather short pale to dusky pubescence; first four ventral segments orange or reddish beneath; genital claspers distinctive.

Female: Length 6.3 mm., width 2.7 mm.; slightly more robust than the male but very similar in coloration. Head: Width 1.18 mm., vertex .63 mm. Antennae: Segment i, length .67 mm.; ii, 1.86 mm.; iii, 1.33 mm.; iv, .97 mm.

Holotype: Male, 13 July, 1920, Cranberry Lake, N. Y. (C. J. Drake); author's collection. Allotype: 10 Aug., 1917, type locality (C. J. Drake). Paratypes: MAINE—Male, 1 Aug., 1910, Penobscot County (J. A. Cushman). MICHIGAN—Males and females (14), 6-31 July, 1919, Cheboygan County (E. P. Butler). MINNESOTA—Males (2) and females (3), 10 July, 1920, Morrison County (A. A. Nichol). Males (2), 25 Aug., 1920, Cross River, Cook County (H. H. Knight). NEW YORK—Male, 5 July, 1920, female, 10 Aug., 1917, Cranberry Lake (C. J. Drake). Male, 3 July, 1904, McLean (A. D. MacGillivray). NORTH DAKOTA—Male, 19 July, male, 2 Aug., male and female, 4 Aug., 1920, Turtle Mts. (T. H. Hubbel). VERMONT—Male, 12 July, 1891, Newport (A. P. Morse). ALBERTA—Male, 2 July, 1919, Edmonton (F. S. Carr). ONTARIO—Males (2), 27 July, Parry Sound (H. S. Parish); male, 8 Aug., 1915, Bondville (G. A. Moore).

P. insignis (Say).

Compl. Writ., i, 342, 1859.

Male: Length 6.7 mm., width 2.6 mm.; black, opaque, very finely granulate; head red, tylus and more or less on juga and lora blackish; pronotum red, basal half of disk largely blackish but central area of disk red, broadly invading the black but not as a clearly defined vitta; scutellum red, lateral margins blackish; venter black, with not more than a red tinge at base.

Head: Width 1.19 mm., vertex .67 mm. Antennae: Segment i, length .74 mm.; ii, 2.2 mm.; iii, 1.54 mm.; iv, .97 mm.

Female: Length 7.6 mm., width 2.8 mm.; larger and more robust than the male but very similar in coloration. Head: Width 1.21 mm., vertex .38 mm. Antennae: Segment i, length .77 mm.; ii, 2.28 mm.; iii, 1.45 mm.; iv, 1.03 mm.

Cheshire, 8 July, 1904 (H. L. V.); Colebrook, 21 July, 1905 (H. L. V.); Guilford, 13 July, 1920 (B. H. W.).

P. insignis var. *fraterculus* Knight, new variety.

Male: Length 5.1 mm., width 1.9 mm. Head: Width 1 mm., vertex .51 mm.; red, tylus blackish. Rostrum, length 1.69 mm., black, basal segment red. Antennae: Segment i, length .51 mm.; ii, 1.9 mm.; iii, 1.43 mm.; iv, .80 mm.

Pronotum: Length .90 mm., width at base 1.6 mm.; bright red, pronotal disk from just behind calli to basal margin black, with very slight indication of median vitta. Scutellum black; sternum and pleura red.

Hemelytra: Black, very slightly shining; thickly clothed with fine dusky pubescence, hairs recumbent on apical half.

Legs: Black; coxae red. Venter: uniformly red; genital claspers black.

Female: Length 6.6 mm., width 2 mm.; slightly larger and more robust than the male but similar in coloration. Head: Width 1.07 mm., vertex .51 mm. Antennae: Segment i, length .61 mm.; ii, 2.07 mm.; iii, 1.54 mm.; iv, .79 mm.

Holotype: Male, 2 Aug., Ann Arbor, Mich. (R. F. Hussey); author's collection. Allotype: 9 July, 1921, Minnehaha Creek, Hennepin County, Minn. (H. H. Knight). INDIANA—Male, 26 June, 1903, Crawford County; female, 7 July, 1903, Posey County (W. S. Blatchley). MINNESOTA—Male, 15 July, 1911, Chisago County. Male, 28 June, 1922, University Farm, St. Paul (H. H. Knight).

***P. circumcinctus* (Say).**

Compl. Writ., i, 343, 1859.

Male: Length 7.1 mm., width 2.7 mm.; head red, front and tylus blackish, juga and lora more or less black; pronotum red, calli blackish, a flaring black ray behind each callus and extending to basal margin of disk; scutellum and mesoscutum red, basal angles black; pleura red, sternum reddish but becoming blackish each side of median line; hemelytra black, embolium, outer margin of corium and cuneus, red; legs black, tinged with reddish near bases of femora; venter chiefly red, genital segment and more or less at the sides, becoming black.

Head: Width 1.28 mm., vertex .71 mm. Antennae: Segment i, length .77 mm.; ii, 2.34 mm.; iii, 1.54 mm.; iv, .95 mm.

Female: Length 7.4 mm., width 2.7 mm.; more robust than the male but very similar in coloration. Head: Width 1.2 mm., vertex .62 mm. Antennae: Segment i, length .76 mm.; ii, 2.03 mm.; iii, 1.34 mm.; iv, .91 mm.

New Jersey, New York, Massachusetts, Maine.

***Platytylillus rubellicollis* Knight, new species.**

Male: Length 7.5 mm., width 2.8 mm. Head: Width 1.27 mm., vertex .68 mm.; black, base of vertex and bucculae reddish. Rostrum, length 2.43 mm., black.

Antennae: Segment i, length .83 mm., thickness .17 mm.; ii, 2.54 mm., thickest (.12 mm.) near base and tapering to slightly more slender at apex, thickly clothed with short black hairs which in length do not equal thickness of segment; iii, 1.52 mm.; iv, .83 mm.; black.

Pronotum: Length 1.43 mm., width at base 2.37 mm., collar 1.14 mm.; calli impressed on basal margin, disk strongly convex; black, opaque, finely granulate, finely and closely pubescent; collar, lower half of propleura, narrow anterior margin of disk and extending between calli, fulvous to pink. Scutellum black; sternum and pleura velvety black.

Hemelytra: Embolar margins moderately arcuate on apical half; black, opaque, minutely granulate, finely and closely dusky pubescent.

Legs: Black; tibiae clothed with short heavy black hairs, length of hairs not equal to thickness of segment, hind pair with one row of short spine-like hairs on outer surface.

Venter: Velvety black; finely pubescent but with longer pubescent hairs beneath and bordering caudal margins of segments; genital segment without tubercle.

Female: Length 7.7 mm., width 2.9 mm.; very similar to the male in form and coloration.

Holotype: Male, 21 June, 1919, University Farm, St. Paul, Minn. (H. H. Knight); Minn. Univ. coll. Allotype: taken with the type. Paratypes: Males and females (38), taken with types. Both adults and nymphs were collected on *Scrophularia leporella*, but the conditions were such it was not possible to observe the bugs feeding on the plant.

***P. rubellicollis* var. *vittiscutis* Knight, new variety.**

Similar to the typical form but having a distinct reddish orange vitta on scutellum; calli becoming red, and the short median vitta extending to near middle of disk.

Holotype: Male, 21 June, 1919, University Farm, St. Paul, Minn. (H. H. Knight); Minn. Univ. coll. Paratypes: Males (5) and females (5), taken with the type. MAINE—Male, 31 July, 1920, Peaks Island (G. A. Moore). Female, 26 Sept., 1897, Mt. Kineo (F. Eddy).

***P. rubellicollis* var. *confluens* Knight, new variety.**

Similar to the typical form but the pink color more nearly orange; the broad orange vitta on scutellum connected with anterior margin of pronotal disk by a distinct orange vitta.

Holotype: Male, 24 July, 1920, Peaks Island, Me. (G. A. Moore); author's collection. Paratypes: MAINE—Female, 27 July, male, 28 July, female, 31 July, male and female, 4 Aug., 1920, type locality (G. A. Moore).

***P. insitivus* (Say).**

Compl. Writ., i, 340, 1859.

Male: Length 8.7 mm., width 3.6 mm.; black, pronotum and scutellum orange-yellow; surface very finely granulate, opaque, short pubescent; width of collar greater than width of head.

Head: Width 1.36 mm., vertex .81 mm. Width of collar 1.4 mm. Antennae: Segment i, length 1.07 mm.; ii, 3 mm. nearly cylindrical, length of hairs not equal to thickness of segment; iii, 1.98 mm.; iv, .94 mm.

Female: Length 8.7 mm., width 3.5 mm.; very similar to the male in form and coloration. Head: Width 1.41 mm., vertex .81 mm. Width of collar 1.44 mm. Antennae: Segment i, length 1.02 mm.; ii, 2.85 mm.; iii, 1.86 mm.; iv, 87 mm.

Lyme, 20 Aug., 1910 (B. H. W.).

***P. insitivus* var. *angusticollis* Knight, new variety.**

Color and form very similar to *insitivus* but smaller in size, width of head greater than width of collar.

Male: Length 6.9 mm., width 2.6 mm. Head: Width 1.24 mm., vertex 1.01 mm. Width of collar 1.17 mm. Antennae: Segment i, length .76 mm.; ii, 2.29 mm.; iii, 1.49 mm.; iv, .91 mm.

Female: Length 8 mm., width 2.9 mm.; similar to the male in form and color. Head: Width 1.26 mm., vertex .74 mm. Width of collar 1.18 mm. Antennae: Segment i, length .88 mm.; ii, 2.31 mm.; iii, 1.51 mm.; iv, .92 mm.

Holotype: Male, 31 July, 1920, Peaks Island, Me. (G. A. Moore); author's collection. Allotype: same data as the type. Paratypes: MAINE—Male, 29 July, female, 4 Aug., 1920 (G. A. Moore).

Platytyellus nigroscutellatus Knight, new species.

Suggestive of *insitivus* but with scutellum always black; male genital segment with a very prominent tubercle at base of left clasper and with a smaller one at base of right clasper.

Male: Length 9.2 mm., width 3.7 mm. Head: Width 1.71 mm., vertex .94 mm.; black; gula, genae, bucculae, and margins of lora and juga, orange-yellow. Rostrum, length 3.1 mm., extending to slightly beyond hind margins of middle coxae, black.

Antennae: Segment i, length 1.19 mm., clothed with erect almost pilose hairs, length of hairs not exceeding thickness of segment; ii, 3.43 mm., cylindrical, strongly pubescent, a few erect hairs near base equal to thickness of segment; iii, 1.66 mm.; iv, .94 mm.; black.

Pronotum: Length 1.89 mm., width at base 2.94 mm., collar 1.36 mm.; uniformly orange-yellow, finely granulate, clothed with short erect pale pubescence. Scutellum black; sternum blackish, pleura orange-yellow but becoming fuscous on central area of meta-episternum.

Hemelytra: Embolar margins very slightly but broadly arcuate; black, faintly shining, clothed with very fine short pubescence.

Legs: Black; tibiae clothed with erect prominent hairs, length of many hairs exceeding thickness of segment, spines not evident.

Venter: Black, with a velvety lustre; clothed with erect, fine dusky pubescence; genital segment with a large and prominent tubercle situated just above base of left clasper, and with a second but smaller tubercle near base of right clasper.

Female: Length 9.7 mm., width 3.5 mm.; very similar to the male in form and color. Head: Width 1.63 mm., vertex .91 mm. Width of collar 1.4 mm. Antennae: Segment i, length 1.14 mm.; ii, 2.87 mm.; iii, 1.76 mm.; iv, 1.31 mm.

Holotype: Male, 26 July, 1916, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: 3 Aug., 1914, Batavia, N. Y. (H. H. Knight). Paratypes: NEW YORK—Female, 1 Aug., 1918, Ithaca (H. Yuasa). Female, July, 1921, Ithaca (P. B. Lawson). PENNSYLVANIA—Male, 1 July, 1917, Conewago (J. G. Sanders).

**P. fraternus* Knight, new species.

Color pattern suggestive of *confraternus* but size larger, also the

length of antennal segment i is equal to width of vertex plus one-half dorsal width of an eye.

Male: Length 9.4 mm., width 3.5 mm. Head: Width 1.56 mm., vertex .86 mm.; red, tylus, front, and vertex, chiefly black; pubescence, finely granulate. Rostrum, length 2.85 mm., reaching to middle of hind coxae, black.

Antennae: Segment i, length 1.06 mm., clothed with moderately heavy and slightly reclining hairs which in length about equal thickness of segment; ii, 3.23 mm., thickest near base and tapering to more slender at apex, clothed with short stiff black hairs and fine pubescence, length of longest hairs not exceeding thickness of segment; iii, 1.71 mm.; iv, 1.28 mm.

Pronotum: Length 1.74 mm., width at base 2.92 mm., collar 1.31 mm.; surface very slightly shining, thickly clothed with short pale pubescence; basal margin of calli distinctly impressed; red, dorsal area of collar, calli except outer angles, and a broad band extending to basal margin of disk, black. Scutellum black; sternum blackish, median line red; pleura red, or becoming dusky.

Hemelytra: Embolar margins only slightly arcuate; black, opaque, surface somewhat scabriculous, clothed with short dusky pubescence, hairs somewhat decumbent on apical half.

Legs: Black; tibiae thickly clothed with prominent erect hairs, length of several exceeding thickness of segment, spines not evident.

Venter: Red, genital segment becoming black; clothed with prominent pale pubescence; genital segment with a large and prominent, erect tubercle just above base of left genital clasper, also another but smaller tubercle directed distad from near base of right clasper. In *confraternus* the right tubercle is scarcely raised from the segment wall.

Female: Length 9.1 mm., width 3.5 mm.; similar to the male in form and color. Head: Width 1.56 mm., vertex .87 mm. Width of collar 1.30 mm. Antennae: Segment i, length 1.02 mm.; ii, 2 mm., clothed with pubescence as in the male but beset with several exserted hairs which in length exceed thickness of segment; iii, 1.71 mm.; iv, 1.24 mm.

Holotype: Male, 2 July, 1917, White Sulphur Springs, W. Va. (Wm. T. Davis); author's collection. Allotype: 1 Aug., 1914, type locality (W. Robinson); author's collection. Paratypes: CONNECTICUT—Female, 25 July, 1920, Portland (B. H. Walden). DISTRICT OF COLUMBIA—Male, 22 June, Washington (N. Banks). MICHIGAN—Male, 25 June, female, 28 June, 1919, male, 3 July, 1920, Berrien County (R. F. Hussey). MINNESOTA—Female, 7 July, 1916, Lake City. NEW YORK—Male, 23 June, 1918, Fort Montgomery (F. M. Shott). PENNSYLVANIA—Male, 4 July, 1920, Enterline (Champlain). Female, 12 July, 1920, North Bloomfield (F. M. Trimble). NORTH CAROLINA—Male, 4 June, Male, 17 June, 1919, Southern Pines (A. H. Manee).

P. fraternus var. *rubromarginatus* Knight, new variety.

Not differing structurally from the typical form, but with

cuneus, embolium, and lateral margins of corium, red like the lateral margins of pronotal disk.

Holotype: Male, 1 July, 1919, Berrien County, Mich. (Hubbel and Hussey); author's collection. Paratypes: NEW HAMPSHIRE—Male, 12 Aug., 1922, Contoocook. NEW YORK—Male, 24 June, 1917, Fort Montgomery (F. M. Schott). PENNSYLVANIA—Male, 20 Aug., 1909, Greely, Pike County, alt. 2300 ft. (Einer Olsen).

P. fraternus var. **regalis** Knight, new variety.

Male: Length 8.7 mm., width 3.4 mm. Head: Width 1.57 mm., vertex .86 mm.; red, eyes black. Rostrum, length 2.9 mm., nearly attaining hind margins of posterior coxae, brownish black.

Antennae: Segment i, length .83 mm., clothed with erect pilose hairs, length of certain hairs equal to thickness of segment; ii 3.09 mm., pubescent, a few hairs near base equal to thickness of segment; iii, 1.69 mm.; iv, 1.23 mm.

Pronotum: Length 1.71 mm., width at base 2.6 mm., collar 1.28 mm.; uniformly bright red, pale pubescent, surface very finely granulate. Scutellum bright red like the pronotal disk; sternum and pleura bright red.

Hemelytra: Surface finely rugulose granulate, opaque; black, embolium, outer half of cuneus, and outer margin of corium, pale to light red.

Legs: Brownish black, coxae red; tibiae thickly clothed with long pilose hairs, spines not evident.

Venter: Bright red, pale pubescent; genital segment with prominent tubercle at base of left clasper, and a smaller one at base of right clasper. Slight differences may be noted between this form and the typical *fraternus* but until more material is studied, and better structural characters are found, it is perhaps better to use a varietal name.

Female: Length 9.5 mm., width 3.6 mm.; more robust than the male but very similar in coloration.

Holotype. Male, 5 May, 1918, Gainesville, Fla. (C. J. Drake); author's collection. Allotype: 30 May, 1918, type locality (C. J. Drake). Paratypes: DISTRICT OF COLUMBIA.—Female, 4 May, 1884, Washington (O. Heidemann). FLORIDA—Female, 5 May, 1918, female, 7 July, 1918, Gainesville (C. J. Drake). NEW JERSEY—Female, 27 June, 1908, Malaga (Wm. T. Davis). VIRGINIA—Female, 21 June, 1914, Nelson County (W. Robinson). Female and nymph, 19 June, 1906, "Va." (D. H. Clemons). NORTH CAROLINA—Male, 19 May, Male, 24 May, 1919, Southern Pines (A. H. Maney).

P. fraternus var. **discifer** Knight, new variety.

Similar to *regalis* but the pronotal disk, except lateral margins and calli, black; between calli, and the dorsal area of collar, sometimes black, calli always red.

Holotype: Female, 6 May, 1912, Lakeland, Fla. (Wm. T. Davis); author's collection. Paratypes: FLORIDA—Females (2), 5 May, 1918, Gainesville (C. J. Drake). MARYLAND—Female, 26 June, 1882, Blandensburg (O. Heidemann). Female, 26 June, 1911, Cabin John Bridge (Wm. T. Davis).

Tribe CAPSINI.

Key to Genera.

1. Pronotum punctate, sometimes only very finely punctate but usually distinctly so; strongly shining, calli usually prominent 2
Pronotum impunctate, or with fine aciculate punctures only 9
2. Antennal segment ii linear or practically so 3
Antennal segment ii clavate; juga tumidly convex; vertex broad, transversely striolate each side near eyes; short oval, convex, black species (p. 571) **Capsus**
3. Antennal segment ii distinctly thinner at base than apex, sometimes sublinear but then distinctly thinner than segment i 4
Antennal segment ii linear although noticeably thickened, nearly as thick as segment i, entirely sublinear (male) or slightly antennuate toward base (female); both segments bearing heavy black pubescence 8
4. Pronotum between calli and anteriorly before collar, punctate ... 5
Pronotum between calli and anteriorly before collar, impunctate, subelevated 7
5. Lateral margins of pronotum carinate, form more ovate 6
Lateral margins of pronotum ecarinate, form more elongate and sub-parallel (p. 567) **Xenoborus**
6. Antennal segment i distinctly thicker than segment ii, both segments black; color, red and black (p. 561) **Tropidosteptes**
Antennal segment i slender, scarcely equaling thickness of segment ii at apex; if colored reddish, then antennal segments i and ii pale or yellowish (p. 561) **Neoborus**
7. Frons transversely striolate, dorsum practically glabrous; rostrum attaining base of seventh abdominal segment (p. 572) **Platylygus**
Frons nonstriolate, but if so, then the dorsum distinctly pubescent; rostrum rarely extending beyond tips of hind coxae .. (p. 572) **Lygus**
8. (3) Vertex convex, polished, carina nearly obsolete; form broad and rather convex, distinctly widened behind middle; large red species (p. 571) **Coccobaphes**
Vertex with base more flattened, distinctly carinate; body oblong, hemelytra subparallel (p. 569) **Lygidea**
9. (1) Antennal segment i thickened and clothed with numerous flattened hairs (p. 615) **Neurocolpus**
Antennal segment i devoid of flattened hairs 10
10. Pronotum with two subexcavated, opaque black spots situated behind the callosities; antennal segment i clothed with long black hairs and setae (p. 610) **Paracalocoris**
Pronotum without black spots, or if present, superficial and segment i of antennae without prominent long black hairs or setae; length of hairs on antennal segment i rarely exceeding thickness of the segment 11
11. Antennal segment ii strongly incrassated, fusiform (p. 615) **Garganus**
Antennal segment ii linear, or only very slightly thickened at tip 12
12. Hind femora long, extending much beyond tip of abdomen, flattened, broadest before middle and tapering to more slender at apex (p. 615) **Phytocoris**
Hind femora shorter, not or scarcely extending beyond tip of abdomen 13
13. Segment i of hind tarsi shorter than segment iii 14
Segment i of hind tarsi distinctly longer than segment iii (p. 614) **Stenotus**
14. Dorsal surface distinctly pubescent, opaque or nearly so 15
Dorsal surface glabrous, highly polished 18

15. Body above and below clothed with silky, sericeous or tomentose pubescence (p. 598) *Polymerus*
 Body clothed only with simple pubescence, never tomentose 16
16. Head broad, eyes practically in contact with pronotal angles, hind margin of eyes sulcate and forming an arcuate line with base of vertex (p. 597) *Dichrooscytus*
 Head not unusually broad, eyes convex behind and well removed from pronotal angles 17
17. Antennal segment iv at least equal to thickness of segment ii at base; width of collar (measured cephalo-caudally) scarcely greater than thickness of antennal segment iv (p. 610) *Adelphocoris*
 Antennal segment iv distinctly thinner than segment ii at base; width of collar (measured cephalo-caudally) distinctly greater than thickness of segment iv (p. 610) *Calocoris*
18. Rostrum short, scarcely surpassing the anterior coxae (p. 607) *Poecilocapsus*
 Rostrum longer, at least reaching to posterior margin of middle coxae (p. 607) *Horcias*

Tropidosteptes Uhler.

T. cardinalis Uhler.

Proc. Bost. Soc. Nat. Hist., xix, p. 404, 1878.

Length 5.5 mm., width 2.6 mm.; bright red; antennae, tylus, legs except apices of front and middle femora, hemelytra for a space either side of the commissure, and membrane, black.

Food plant: White ash (*Fraxinus americana*), and occasionally other ash trees; occurs most frequently on young ash trees.

Hamden, 28 May, 1911 (B. H. W.), 9 June, 1915 (Q. S. L.); Lyme, 16 June, 1918 (M. P. Z.); Meriden, 3 June, 1910 (W. E. B.); New Haven, 3 June, 1908 (B. H. W.); North Branford, 8 June, 1907 (B. H. W.); Yalesville, 27 June, 1907 (B. H. W.).

Neoborus Reuter.

Key to Species.

1. Dorsum practically glabrous 2
 Dorsum strongly pubescent or hairy 5
2. Rostrum not extending beyond posterior margin of sternum 3
 Rostrum attaining hind margins of middle coxae; line bordering outer margin of radius, widening apically, and curving mesad across apical area of corium, black *palmeri*
3. Antennal segment i pale, rarely somewhat dusky 4
 Antennae brownish black; scutellum brownish black, basal angles pale; hemelytra brownish black to piceous, basally on corium and embolium and extending farther along radius, pale or yellowish *glaber* n. sp.
4. Dorsum uniformly black, cuneus pale except apically; sometimes with a small pale spot at base of corium *geminus*
 Dorsum more or less pale, frequently marked with red, scutellum always with some pale or yellow *amoenus*
 (a) Chiefly pale, apical area of corium, and frequently marks on pronotum, reddish; membrane pale variety *amoenus* typical
 (b) Chiefly blackish, lateral and median vittae on pronotal disk, scutellum except basal angles and median line at base, and corium

- more or less, pale; membrane pale variety *signatus*
 (c) Chiefly black, cuneus and sometimes narrow base of corium
 pale; scutellum pale yellowish; membrane pale fumate, paler
 bordering apex of cuneus variety *scutellaris*
5. Antennal segment i blackish 6
 Antennal segment i pale 7
6. Scutellum testaceous, sometimes brownish on middle at base, never
 blackish with median line paler; frequently with clavus bordering
 scutellum, and apical area of corium, fusco-brownish, but cuneus
 always yellowish translucent *canadensis*
 Scutellum brownish black each side of median line, basal angles
 paler; hemelytra reddish brown translucent, cuneus colored simi-
 larly to the corium *rufusculus* n. sp.
7. Dorsum more or less pale, scutellum always with yellowish 8
 Dorsum uniformly black, cuneus clear, legs pale *tricolor*
8. Scutellum with median line black and extending from base to apex;
 (female) embolium and outer margin of corium blackish while
 inner apical angle of corium remains testaceous *vittiscutis* n. sp.
 Scutellum yellow, sometimes dark at middle of base but never with
 median line black; (female) inner apical angle of corium black
 while the embolium remains chiefly pale *pubescens*

N. geminus (Say).

Compl. Writ., i, 344, 1859.

Length 4.8-5.3 mm., width 2.2 mm.; deep black, shining; legs,
 antennal segment i and base of ii, cuneus except apex, pale; front
 of head usually marked with pale.

Food plants: White ash (*Fraxinus americana*). Usually occurs
 with *amoenus* during June.

Eastford, 12 June, 1919 (B. H. W.).

N. amoenus (Reuter).

Acta Soc. Sci. Fenn., xxxvi, No. 2, 48, 1909.

Length 4.3-5 mm., width 2 mm.; pale yellowish, marked with
 reddish and fuscous, and sometimes with black; pronotum with
 five to seven fuscous or reddish rays, clavus and apical area of
 corium marked with bright red, sometimes tinged with fuscous;
 apex of antennal segment ii, and sometimes iii and iv, fuscous.

Food plants: White ash (*Fraxinus americana*) and red ash
 (*F. pennsylvanica*), especially the latter. Nymphs occur on the
 trees from May to September; apparently two broods.

New Haven, 28 Sept., 1905; 4 Aug., 20 Sept., 1920 (B. H. W.).

N. amoenus var. *signatus* (Reuter).

Acta Soc. Sci. Fenn., xxxvi, No. 2, 49, 1909.

Pronotal disk black, median line, slender basal and lateral mar-
 gins, calli except for transverse mark, line leading from outer
 margin of callus to basal margin of disk, and a second short vitta
 just behind the callus, yellowish; scutellum yellowish, basal angles,
 small mark at middle of base, and the mesoscutum, blackish;
 clavus and corium blackish, or merely tinged with red, pale yellow-
 ish along claval vein and corium just inside of radius from base to
 about middle; cuneus pale translucent, dusky at apex; membrane

pale fuscous, veins and within larger areole, darker, paler bordering inner margin of cuneus.

New York.

N. amoenus var. scutellaris (Reuter).

Acta Soc. Sci. Fenn., xxxvi, No. 2, 49, 1909.

Dorsum piceous black, cuneus and small spot near base of corium, pale translucent; scutellum yellow, mesoscutum black; membrane pale, fuscous at base and on veins.

New York.

N. palmeri (Reuter).

Can. Ent., xl, 112, 1908.

Length 5.7 mm., width 2.4 mm.; pale yellowish with a brown shellac-like gloss; calli with a transverse mark, line along lateral margin of pronotal disk, and usually a second one parallel to it, line along outer margin of radius which widens apically and crosses the corium to inner angle of cuneus, fuscous to black; in pale specimens the black color showing only on the corium; sides of pleura frequently black; antennal segments iii and iv, and apex of ii, fuscous to black.

Food plant: *Fraxinus americana*, and probably other ash trees.

New Haven, 28 Sept., 1905 (B. H. W.); Washington, 24 June, 1914 (Mrs. G. Vaillant).

**Neoborus glaber* Knight, new species.

In coloration suggestive of *canadensis* but differs in the glabrous surface of the dorsum.

Male: Length 4.6 mm., width 1.9 mm. Head: Width 1.04 mm., vertex .43 mm.; yellowish, tylus, front each side of median line, joining above and sometimes transverse line between, brownish black. Rostrum, length 1.08 mm., reaching to middle of intermediate coxae, yellowish, apex black.

Antennae: Segment i, length .53 mm., brownish black; ii, 1.6 mm., brownish to dark fuscous, cylindrical, nearly equal to thickness of segment i, finely pale to dusky pubescent; iii, .51 mm., slender, fusco-brownish; iv, .38 mm., fusco-brownish.

Pronotum: Length .93 mm., width at base 1.57 mm.; glabrous, shining, coarsely punctate, lateral margins sharply defined but not prominently carinate; yellowish testaceous, propleura except line just below dorsal margin, calli, a large flaring ray behind each callus and extending to subbasal margin, brownish black, leaving median line more or less broadly and the slender basal margin yellowish. Scutellum brownish black, basal angles yellowish, coarsely punctate and transversely wrinkled; a minute short pubescent hair may be observed set in each coarse puncture; mesoscutum moderately exposed, dark brownish to blackish. Sternum and pleura brownish black, ostiolar peritreme pale.

Hemelytra: Embolar margin slightly sinuate, widest between middle and cuneal fracture; brownish black to piceous, shining,

coarsely and rather closely punctate, glabrous or with only a minute pubescent hair set in pit of coarse punctures; base of corium and embolium, and extending for a space along radius, yellowish testaceous; cuneus yellowish translucent, apical half and extending along inner margin to basal angle, fusco-blackish. Membrane and veins uniformly fuscous, a small pale spot bordering apex of cuneus.

Legs: Pale to yellowish, femora with two subapical brownish bands, obsolete on anterior pair; tibiae with brownish streak on knee; tarsi fuscous. Venter yellowish, two subdorsal lateral lines dark brownish, genital segment brownish; finely pale pubescent, more prominent on genital segment.

Female: Length 4.8 mm., width 2.2 mm.; more robust than the male and usually more broadly pale; basal half of corium and more than basal half of cuneus, yellowish; antennal segment ii, length 1.2 mm., slender at base, gradually thickened apically but not attaining thickness of segment i.

Holotype: Male, 24 June, 1915, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: 27 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Paratypes: CONNECTICUT—Female, 22 June, 1920, Orange (M. P. Zappe). MICHIGAN—Female, 28 June, 1920, Washtenaw County (R. F. Hussey). NEW HAMPSHIRE—Female, 18 June, 1912, Bretton Woods (C. W. Johnson). NEW YORK—Female, 7 June, 1914, Ithaca (H. H. Knight). Females (2), 3 June, 1918, Ithaca (H. H. Knight). NORTH DAKOTA—Female, 11 July, 1922, Fargo (R. L. Webster). OHIO—Male, 18 June, 1917, Tiffin (C. J. Drake). SOUTH DAKOTA—Male, 1 June, 1921, Brookings (H. C. Severin). ONTARIO—Males (2), 11 June, 1920, Ottawa (J. McDunnough).

Neoborus rufusculus Knight, new species.

Male: Length 4.6 mm., width 1.86 mm. Head: Width 1.07 mm., vertex .36 mm.; vertex narrower and carina more prominently developed than in *canadensis*; yellowish, tylus, median line of front and joining arc above, and juga except sutural margins, blackish. Rostrum, length 1.28 mm., only attaining middle of intermediate coxae, yellowish, apex black.

Antennae: Segment i, length .48 mm., black; ii, 1.59 mm., cylindrical, constricted just before base, nearly as thick as segment i, pale pubescent, fusco-blackish; iii, .51 mm., fuscous; iv, 34 mm., fuscous.

Pronotum: Length .94 mm., width at base 1.69 mm.; coarsely and rather closely punctate, shining, clothed with erect pale yellowish pubescence; brownish black, collar, median line of disk but narrowed near basal margin, spot behind outer angle of each callus, and slender basal margin, yellowish testaceous; carinate lateral margins of disk only moderately distinct, slightly more sulcate than in *canadensis*. Scutellum rather coarsely punctate, clothed with erect yellowish pubescence; brownish black, median line and basal angles paler; mesoscutum brownish, with prominent pubescence. Sternum brownish black, median line yellowish, pleura

blackish, clothed with prominent pubescence; ostiolar peritreme pale.

Hemelytra: Embolar margins nearly straight but curved at each end; reddish brown translucent, darker on clavus bordering scutellum and commissure; rather coarsely and closely punctate, shining, clothed with prominent erect yellowish pubescence; cuneus reddish brown translucent, scarcely paler at base. Membrane and veins fusco-brownish, a small pale spot bordering apex of cuneus.

Legs: Yellowish, apical half of hind femora, somewhat on apex of middle pair, base of tibiae and somewhat on middle of hind pair, blackish; apices of tarsi fuscous. Venter blackish, ventral surface except on genital segment, yellowish, pale pubescent.

Female: Length 4.9 mm., width 2 mm.; larger and more robust than the male but very similar in coloration; pronotal disk more broadly yellowish, but not so the cuneus and scutellum; antennal segment ii, length 1.2 mm., more slender than in the male, gradually thickened from base toward apex but not attaining thickness of segment i, black, pale pubescent.

Food plant: *Fraxinus americana*.

Holotype: Male, 16 June, 1916, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as type. Paratypes: New York—Males (3), 31 May, males and females (5), 7 June, male, 13 June, male, 14 June, 1914, male and female, 14 June, females (2), 16 June, 1916, females (4), 25 June, females (8), 27 June, 1920, Ithaca; females (2), 13 June, female, 25 June, 1915, Batavia; females (2), 22 June, 1916, Portageville; male and female, 16 June, 1915, Wyoming County (H. H. Knight). Males and females (26), 3 June, 1918, Ithaca (H. H. Knight).

N. canadensis (Van Duzee).

Bull. Buff. Soc. Nat. Sci., x, 486, 1912.

Male: Length 4.7 mm., width 2 mm.; yellowish testaceous, clavus, apical area of corium, two subapical bands on hind femora, and calli dark brownish black; pronotal disk each side of median line, obscure brownish to fuscous; base of scutellum at middle brownish, the brown color somewhat notched by paler on median line; dorsum coarsely and rather closely punctate, clothed with erect yellowish pubescence.

Head: Width 1.08 mm., vertex .41 mm. Antennae: Segment i, length .48 mm., black; ii, 1.46 mm., fusco-brownish, more nearly black at base, dusky pubescent, cylindrical, constricted at base, nearly attaining the thickness of segment i; iii, .49 mm., fuscous; iv, .34 mm., fuscous.

Female: Length 5.3 mm., width 2.4 mm.; more robust than the male, the dark color more brownish than blackish.

Food plant: *Fraxinus americana*.

Allotype: Male, 2 Aug., 1915, Batavia, N. Y. (H. H. Knight); author's collection. Originally described from two females collected at Ottawa, Ontario.

New York, Canada.

N. pubescens Knight.

Bull. Brook. Ent. Soc., xii, 81. 1917.

Length 4.6 mm., width 1.7 mm.; blackish and marked with pale; clothed with prominent erect pubescence; more coarsely punctured than in *amoenus*; pronotum with lateral margins distinctly carinate only on anterior half, black, top of collar, rather widely on median line of disk, one and sometimes two rays behind each callus, pale yellow; scutellum yellow, black at the middle of base and on the mesoscutum; sternum and pleura black, ostiolar peritreme pale; hemelytra pale, inner half of clavus, along claval suture, large apical spot on corium and slightly invading the embolium, black; membrane pale, female dark fuscous to black within the cells and margining the veins, dark fuscous in the male and extending to include the middle of membrane; venter black, sometimes paler in the female.

Food plant: *Fraxinus americana*, but found developing only on young plants in much shaded situations.

Massachusetts, New Hampshire, New York.

Neoborus vittiscutis Knight, new species.

Very suggestive of *pubescens* but with a different arrangement of the black color.

Male: Length 4 mm., width 1.86 mm. Head: Width 1.03 mm., vertex .37 mm.; blackish, bucculae, and margins of juga and lora, paler, front more brownish each side of median line. Rostrum, length 1.16 mm., reaching to middle of intermediate coxae, pale, apex black.

Antennae: Segment i, length .57 mm., pale; ii, 1.63 mm., cylindrical, nearly attaining thickness of segment i, slightly more slender toward base, pale pubescent, a few hairs equal to thickness of segment, pale, becoming reddish or dusky apically; iii, .66 mm., pale; iv, .38 mm., pale.

Pronotum: Length .94 mm., width at base 1.59 mm.; coarsely punctate, with an erect pale pubescent hair arising from each puncture; black, shining, spot on median line, an obsolete ray behind each callus, and carinate lateral margin, pale. Scutellum pale, narrow base, median line from base to apex but more slender apically, black; mesoscutum black, clothed with pale pubescent hairs. Sternum and pleura black, the latter clothed with erect pale pubescence; ostiolar peritreme pale.

Hemelytra: Embolar margins slightly sinuate; black, shining, coarsely punctate, an erect pale pubescent hair arising from each puncture; along claval veins and a spot near base of corium, slightly paler and somewhat translucent; cuneus pale translucent, narrowly fuscous at apex. Membrane uniformly fuscous, scarcely paler bordering apex of cuneus.

Legs: Uniformly pale, scarcely dusky on tips of tarsi. Venter black, moderately shining pale pubescent.

Female: Length 5 mm., width 2.3 mm.; more robust than the male and more broadly pale. Head: Width 1.06 mm., vertex .48 mm.; front, except median line, largely testaceous. Antennae: Pale; segment i, length .58 mm.; ii, 1.57 mm., slightly more slender than in the male. Pronotum: Disk yellowish testaceous, a blackish line bordering lateral carina, an obsolete fuscous line behind outer margin of callus. Scutellum colored similarly to the male, median line black from base to apex but more broadly so nearer base. Sternum and pleura black, ostiolar peritreme pale. Hemelytra: Pale testaceous, embolium and outer margin of corium, exterior to radial vein, black, tip of embolium pale; cuneus uniformly pale translucent. Membrane pale, areoles except small spot near basal angle of cuneus, veins and somewhat invading membrane bordering areoles, dark fuscous.

Holotype: Male, 13 June, 1908, Great Falls, Va. (O. Heidemann); Cornell Univ. collection. Allotype: taken with type. Paratype: Female, taken with types. MISSOURI—Female, 22 June, 1916, Charleston (E. H. Gibson).

N. tricolor (Van Duzee).

Bull. Buff. Soc. Nat. Sci., x, 487, 1912.

Female: Length 5.7 mm., width 2.8 mm.; black, antennae, rostrum except apex, legs, ostiolar peritreme, and cuneus, pale; antennal segment ii fuscous on apical one-fourth, segments iii and iv dusky; front of head reddish to brownish; dorsum rather coarsely punctured, with an erect, prominent, pale hair arising from each puncture.

New Jersey, Missouri.

Xenoborus Reuter.

Key to Species.

- | | |
|---|----------------------|
| 1. Membrane uniformly fuscous or black | 3 |
| Membrane pale, or if fuscous, paler on middle | 2 |
| 2. Dorsum uniformly pale greenish yellow, fuscous along commissure of hemelytra; length 6.4 mm. | commissuralis |
| Dorsum more broadly blackish; calli, spot each side of median line on pronotal disk, clavus except along claval vein, and spot on apical area of corium, fusco-blackish; membrane fuscous, but an oval spot on middle of apical half, and within the areoles, distinctly paler; length 5 mm. | plagifer |
| 3. Posterior tibiae uniformly pale, femora pale or only rarely dusky near apex; embolium and basal half of corium pale in both sexes | neglectus |
| Posterior tibiae fuscous, blackish near base, posterior femora blackish apically or with dark color forming two bands; embolium and basal half of corium only rarely pale in certain female specimens | pettiti |

X. commissuralis Reuter.

Can. Ent., x1, 112, 1908.

Length 6.4 mm., width 2.3 mm.; uniformly pale greenish, becoming yellowish after death; antennae, a narrow streak along commissure of hemelytra, tips of tarsi, and tip of rostrum, fusco-

blackish; membrane pale translucent, brachium and a streak beyond apex of larger areole, dusky.

Food plant: Black ash (*Fraxinus nigra*); occurs during August. Canada, Minnesota, New York.

X. plagifer (Reuter).

Acta Soc. Sci. Fenn., xxxvi, No. 2, 51, 1909.

Length 5 mm., width 1.9 mm.; pale yellowish testaceous; antennae, calli, usually (male) spot each side of median line on pronotal disk, clavus except claval vein, and spot on apical area of corium, fusco-blackish; scutellum yellow; membrane fuscous, but an oval spot on middle of apical half, and within the areoles, distinctly paler; female more broadly pale, the infuscation on apical half of membrane forming a ray at each side behind areoles.

Food plant: Black ash (*Fraxinus nigra*); occurs during August. Canada, Minnesota, New York.

X. neglectus Knight.

Bull. Brook. Ent. Soc., xii, 82, 1917.

Resembles certain pale forms of *pettiti* but with left genital clasper much longer and more spatulate toward apex.

Male: Length 5.4 mm., width 2.1 mm.; black with pale; antennae fusco-blackish, paler on base of segment i; head with lower half of face fuscous, front pale and flecked with reddish; carina and a small median dash at middle of vertex, blackish. Pronotum ecarinate, punctuation and pubescence nearly as in *plagifer*; collar and large median spot or ray on disk, white or pale yellow; pale ray extending from outer angle of callus along lateral margin of disk to include basal angle; scutellum pale yellowish, mesoscutum blackish. Hemelytra blackish, embolium, basal angle of corium, and cuneus, pale translucent; membrane uniformly fuscous, in the female slightly paler on middle, but in that case a black ray behind each callus while the lateral margin and basal angle of disk remain yellowish. Legs pale yellowish, hind femora sometimes dusky near apices but never distinctly banded.

Occurs during June and probably breeds on *Fraxinus nigra*.

Michigan, New York.

X. pettiti (Reuter).

Acta Soc. Sci. Fenn., xxxvi, No. 2, 50, 1909.

Length 5.7 mm., width 2.1 mm.; black; scutellum yellow; sometimes with embolium, basal half of corium, and cuneus except apex, pale; front of head and pronotal disk sometimes reddish, lateral margins and basal angles of disk never pale as the median line, except in teneral specimens killed before any black color develops on pronotum; legs pale, posterior femora blackish apically, or with dark color forming two subapical bands.

Food plant: *Fraxinus americana*; occurs during June.

Massachusetts, New York.

Lygidea Reuter.

Key to Species.

1. Rostrum reaching to near apices of hind coxae 3
Rostrum scarcely attaining posterior margins of intermediate coxae 2
2. Antennal segment i, in length, not or scarcely exceeding width of vertex; hemelytra with pubescence dense and closely appressed; cuneus chiefly red, female frequently with dorsum red *rosacea*
Antennal segment i, in length, equal to width of vertex plus one-half dorsal width of an eye; hemelytra with pubescence chiefly suberect, set moderately close; cuneus chiefly pale, red only along inner margin and apex *viburni* n. sp.
3. Color orange-red, basal margin of pronotum, hemelytra except outer margins more or less, fuscous to blackish *mendax*
Color chiefly fuscous to blackish, ground color pale to greenish, never reddish *obscura*

L. viburni Knight, new species.

Male: Length 7 mm., width 2.3 mm. Head: Width 1.2 mm., vertex .52 mm. Rostrum, length 3 mm., scarcely attaining posterior margins of intermediate coxae. Antennae: Segment i, length .74 mm., brownish black, more brownish above; ii, 2.3 mm., brownish black, black at base, cylindrical, scarcely equal to thickness of segment i, clothed with suberect hairs which in length about equal thickness of segment; iii, 1.14 mm., black; iv, .51 mm., black.

Pronotum: Length 1.12 mm., width at base 2 mm.; disk more coarsely punctate than in *mendax*, clothed with nearly erect yellowish pubescence; pale yellowish to brownish, calli, spot across top of coxal cleft, basal margin of disk each side of median line, and sometimes a ray each side of median line extending from calli to join basal margin of disk, blackish. Scutellum yellowish brown, more nearly black each side of pale median line; mesoscutum broadly exposed, brownish.

Hemelytra: Embolar margins nearly parallel, curving inward apically to meet base of cuneus; yellowish brown and in places darkened with fuscous; clothed with moderately close, suberect golden yellow pubescence. Cuneus yellowish translucent, reddish along inner margin and apex but not attaining basal angle. Membrane fusco-brownish, veins and a spot near apex of cuneus somewhat paler.

Legs: Yellowish to brown, apical half of femora reddish and brown; coxae pale yellowish, tarsi becoming infuscated. Venter pale yellowish beneath, sides with dorsal half and the genital segment brownish black; clothed with prominent pale yellowish pubescence, longer on genital segment.

Female: Length 7 mm., width 2.6 mm.; very similar to the male although more uniformly brownish in color. Head: Width 1.28 mm., vertex .64 mm. Antennae: Segment i, length .80 mm.; ii, 2.3 mm.; iii, 1.31 mm.; iv, .77 mm.

Holotype: Male, 24 June, 1915, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (90), taken with the types on *Viburnum Lentago*. NEW YORK—Males (2), females (2), 12 July, 1914; females (3), 27 July, 1915, Batavia; male and female, 6 July, 1915, Wyoming County (H. H. Knight).

Food plant: Nannyberry (*Viburnum Lentago*); breeds especially on young growth.

Massachusetts, New York.

L. rosacea Reuter.

Lygidea rubecula var. *rosacea* Reuter, Acta Soc. Sci. Fenn., xxxvi, No. 2, 46, 1909.

Male: Length 6.7 mm., width 2 mm. Head: Width 1.26 mm., vertex .63 mm. Rostrum, length 1.85 mm., reaching to middle of intermediate coxae. Antennae: Segment i, length .60 mm.; ii, 2.1 mm.; iii, .88 mm.; iv, .57 mm.

Hemelytra densely clothed with closely appressed, golden yellow pubescence; clavus and apical half of corium fuscous to black, basal half of corium and embolium yellowish translucent. Cuneus red, yellowish at base but extending to middle along outer margin.

Female: Length 6.5 mm., width 2.6 mm. Head: Width 1.34 mm., vertex .68 mm. Rostrum, length 1.97 mm., reaching to middle of intermediate coxae. Antennae: Segment i, length .60 mm.; ii, 1.9 mm.; iii, .80 mm.; iv, .60 mm. Dorsum chiefly red although in dark forms the clavus and apical half of corium becoming infuscated.

In Minnesota the writer has found this species to breed abundantly on the sand bar willow (*Salix longifolia*), but only on this species of willow. Typical specimens are also at hand from Illinois, the type locality. *Lygidea rubecula* (Uhler), described from Colorado, was collected on willow at Steamboat Springs; this species may be distinguished from *rosacea* by the longer rostrum.

Illinois, Minnesota.

L. obscura Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 46, 1909.

Male: Length 6 mm., width 2.2 mm.; smaller and darker colored than *rubecula*; dark fuscous to black, genae, apices of jugs, median line on frons, median line and slender basal margin of pronotum, lateral margins of scutellum and median line except basally, sternum and lower half of venter except on genital segment, coxae, basal half of femora, tibiae except base and apex, pale to yellowish; cuneus pale translucent, inner half reddish, apex dark red to blackish.

Female: Length 6 mm., width 2.4 mm.; very similar to the male but with less blackish; yellowish to brownish and darkened with fuscous; head yellowish, base of jugs, broad mark on frons each side of median line, black; pronotum brownish, broadly at lateral margin and a ray behind callus at each side of pale median line,