

GUIDE

TO THE

INSECTS OF CONNECTICUT

PREPARED UNDER THE DIRECTION OF

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PART IV

The Hemiptera or Sucking Insects of Connecticut

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HARTFORD

Printed for the State Geological and Natural History Survey

1923

Family MIRIDAE (CAPSIDAE).*

By HARRY HAZELTON KNIGHT, PH.D.

The family Miridae, or Capsidae of older authors, is distinguished by having four-segmented antennae, four-segmented rostrum of which the first segment is as long or longer than the head, by absence of ocelli, tarsi three-segmented, wing membrane with only two cells or areoles, one longitudinal vein (anal vein), and by having a well developed cuneus in the wing (Fig. 47). The four-segmented antennae are usually slender, nearly linear or segment ii only slightly thickened apically, but more rarely strongly incrassated; segments iii and iv usually slender but in some forms distinctly thickened. The hemelytra are typically separated into clavus, corium, cuneus, and membrane, the embolium usually not clearly separated from corium; veins of membrane forming two cells, a smaller and a larger areole. The arolia, or pulvillae-like structures between the tarsal claws, in their modifications furnish the most reliable characters for separating the subfamilies.

In general, the species of Miridae are small to medium in size, usually rather fragile, broader than high and longer than broad; as viewed from above ovate to oblong, but at times very slender. Usually the male is more slender than the female. The body is variously clothed with fine hairs or pubescence, sometimes modified to form sericeous, or scale-like, deciduous pubescence; frequently the dorsum practically glabrous and strongly shining. The numerous species exhibit the greatest variety of color patterns, ranging from the most obscure to forms which are vivid red. Color varieties within the species are frequent, and the two sexes are more often differently colored, the male usually darker than the female.

Brachypterous and apterous forms occur throughout the family, and individuals of a single species may exhibit variation in this respect. Usually the male is macropterous even when the female is apterous, but the male may in rare cases also be apterous. Mimetic forms are rather numerous among the Miridae, especially those species described in genera closely related to *Pilophorus*.

Perhaps a majority of the species of Miridae are plant feeders, but a large number are now known to be chiefly predaceous. The predaceous habit is only partially developed in certain species, and thus animal blood serves merely to supplement the sap obtained from particular food plants. Probably the greater number of species are limited to a single host plant, or to a genus of plants, while a very few, such as *Lygus pratensis* Linnaeus and *Halticus citri* Ashmead, have a wide range of food plants. Forms which are chiefly predaceous are more frequently found on miscellaneous

* Contribution from the Department of Entomology, University of Minnesota.

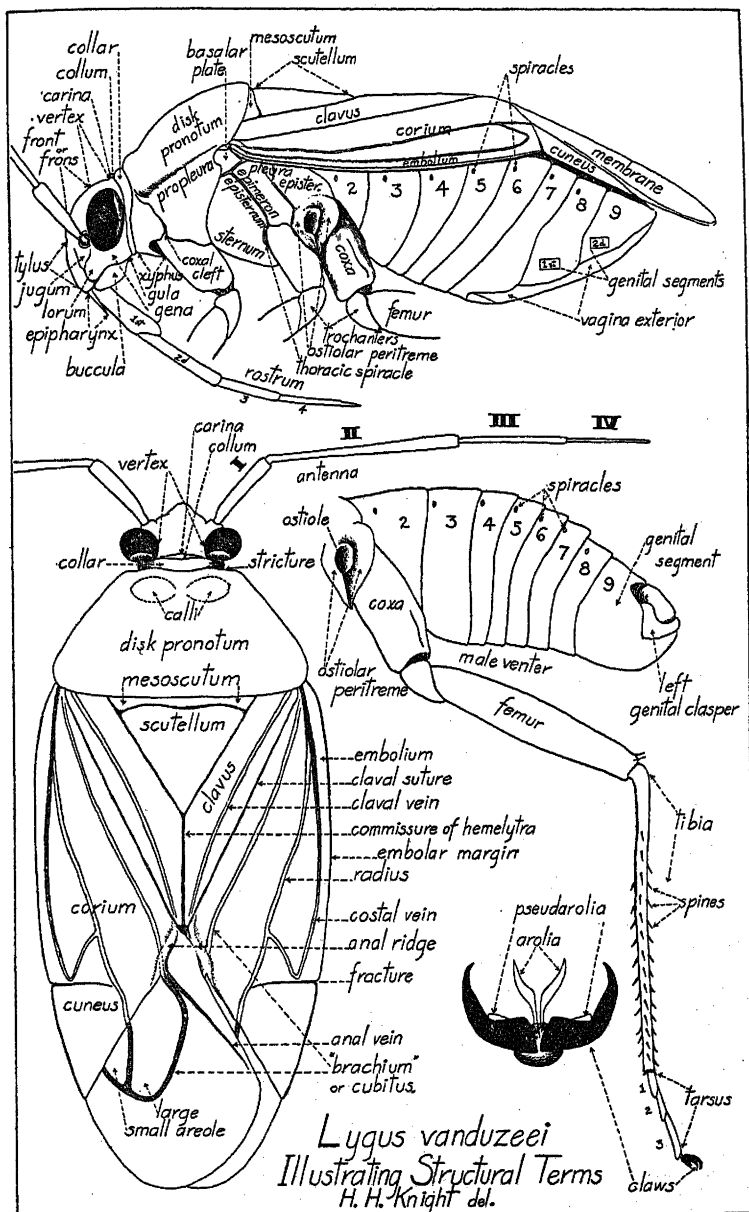


FIG 47. *Lygus vanduzeei* Knight,—illustrating the structural terms used in the classification of the Miridae. Greatly enlarged. Drawing by Dr. H. H. Knight.

plants. Even among species which always breed on a single host plant, a general dispersal of individuals usually takes place. Following the time of emergence and mating, individuals of *Tropidosteptes cardinalis* Uhler, *Lopidea staphyleae* Knight, and others, have been observed to migrate from their host plant to shrubbery in the general vicinity; from thence they doubtless become dispersed over wider territory and to new plants, although in the normal course of their life, eventually returning to suitable growth of the preferred host plant for the purpose of oviposition.

As regards the number of species, the Miridae by far outnumber all other families of Heteroptera. In the Palearctic region, where the total number of Heteroptera is best known,* one thousand

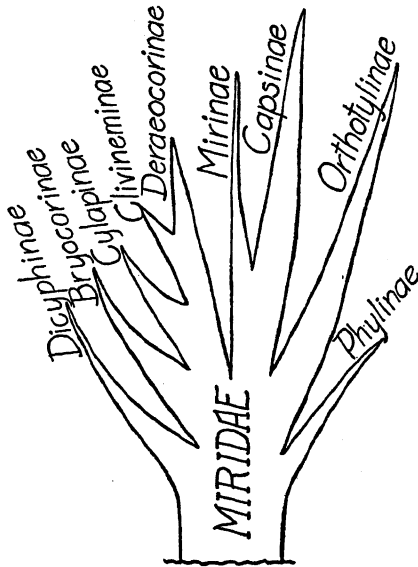


FIG. 48. A phylogenetic tree of the subfamilies of the Miridae. Drawing by Dr. H. H. Knight.

seventy-eight species are listed for the family Miridae while all other families of Heteroptera combined total but 2,486 species. The Oshanin Katalog enumerates 5,476 species of Heteroptera and Homoptera for the Palearctic region, from which it may be seen that the family Miridae forms nearly one-fifth of all the species of Hemiptera listed. This is perhaps a fair indication of what may be expected for the relative number of species of Miridae in North America, after our fauna has been more systematically collected and worked.

After considerable study of the arolia and genital structures in

* Katalog der palaarktischen Hemipteren (Heteroptera, Homoptera-Auchenorrhyncha und Psalloidae). 1912.

the family Miridae, the writer has arrived at certain conclusions regarding the relationships of the subfamilies. Perhaps the most significant change is in the elevation of the subfamily Orthotylinæ, from next to the lowest subfamily where Reuter placed it, to a place near the top of the series, or near to the Capsinæ and Mirinæ. When guided by the form of the arolia and the genital structures, we are dealing with the most fundamental characters yet proposed for classification of the subfamilies. On the basis of these structures, it may readily be seen from the figures accompanying this paper, that the subfamily Orthotylinæ is more closely related to the Capsinæ than any other subfamily. Reuter placed the Orthotylinæ next to the Phylinæ because of general similarity, chiefly on absence of pronotal collar, rather than relying on the form of the arolia. The present writer not only finds a close relationship between the erect, diverging and converging arolia (Fig. 49), but also in the highly developed and specialized character of the genitalia.

J. Sahlberg (1920) and Bergroth (1922) find reason to recognize in the Mirinæ of Reuter, two subfamilies, the Capsinæ and Mirinæ. Although both groups have erect arolia, divergent on the apical half, there are still very good characters for recognizing two subfamilies. Certainly the Mirinæ are more primitive than the Capsinæ. In addition to the characters given in the subfamily key, the Mirinæ may be judged more primitive as indicated by: (1) more generalized and little modified type of genitalia; (2) few genera and each with comparatively few species, but several of these are of world-wide distribution; (3) all the species breed on grasses or related lower plants. The Capsinæ, on the other hand, are more specialized and stand higher for the following reasons: (1) possess highly specialized genitalia; (2) numerous genera and species but having limited distribution; (3) the numerous species breed on a great variety of the higher plants, or plants of comparatively recent origin, also many species have developed predaceous habits.

The phylogeny of the Mirid subfamilies does not present a linear series of development, but more of a progression upward in several directions, and this perhaps may best be represented by a genealogical tree. A subfamily tree is appended (fig. 48) which will express more clearly the relationships within the family, based on the following characters which are listed in the order of their relative importance: (1) arolia; (2) genital structures; (3) biology; (4) modifications of the thorax.

Key to subfamilies of Miridae.

(Figure numbers refer only to Figure 49.)

1. Arolia present, erect and prominent (fig. 49: 33-60); or pseud-arolia very prominent, usually with bristle-like arolia also present (fig. 49: 13-20, 22-24) 6

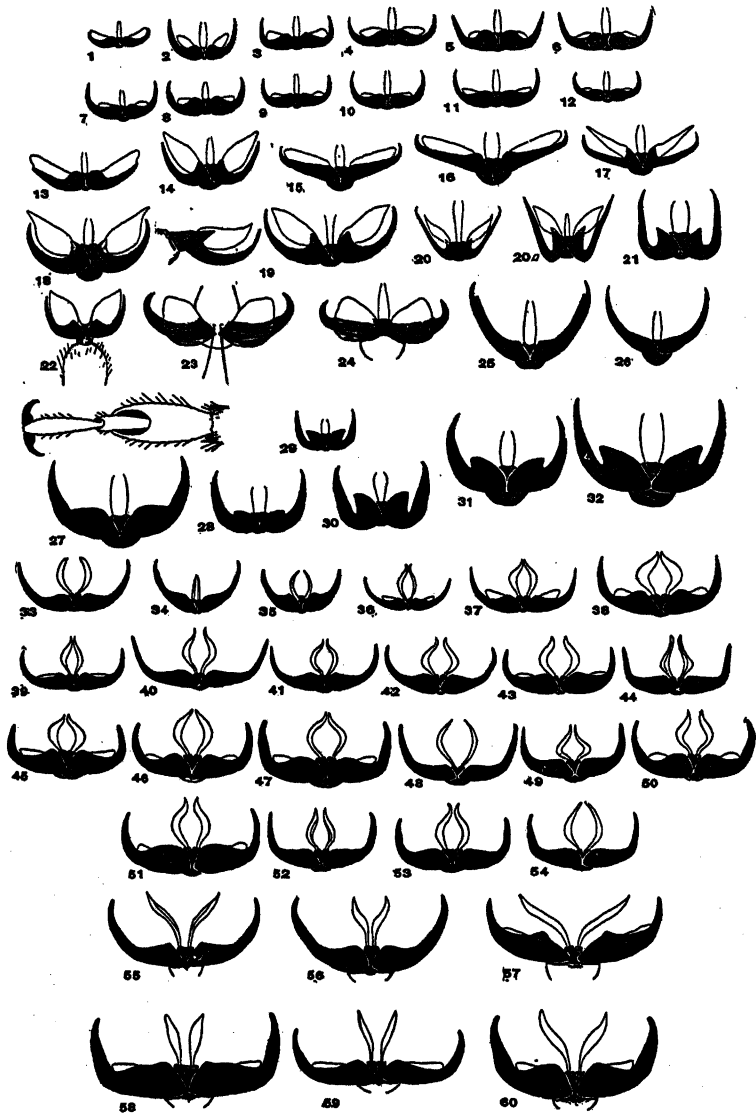


FIG. 49. Tarsal claws and arolia of Miridae. Greatly enlarged. PHYLINAE, tribe PHYLINI, Nos. 1-12.—(1) *Chlamydatius associatus* Uhler. (2) *Reuteroscopus ornatus* Reuter. (3) *Lepidopsallus rubidus* Uhler. (4) *Microsynamma bohemanii* Fallen. (5) *Rhinocapsus vanduzeei* Uhler. (6) *Criocoris saliens* Reuter. (7) *Psallus ancorifer* Fieber. (8) *Lepidopsallus minusculus* Knight. (9) *Campylomma verbasci* Meyer. (10) *Plagiognathus obscurus* Uhler. (11) *Plagiognathus annulatus* Uhler. (12) *Microphyllellus modestus* Reuter. PHYLINAE, tribe ONCOTYLINI, Nos. 13-14—(13) *Lopus*

- Arolia absent, or present but bristle-like in form (fig. 49: 25-32), sometimes difficult to distinguish from hairs on tarsus; pseudarolia absent, or present but small in size (fig. 49: 1-12) 2
2. Prothorax simple, destitute of an apical stricture, sometimes with a flattened apical area suggesting a collar but not separated off by a distinct incised line; male genitalia distinctive, the tip of the penis twisting to the left, lying closely within the bend of left clasper, extending downward and beyond it to the left side 2
- PHYLINAE, p. 428
- Prothorax provided with an apical stricture, sometimes fine and shallow, when apparent only at the sides an impressed line extends back to rear of calli; male genitalia not as the above 3
3. Claws thick, either sharply bent (fig. 49: 21), or broadly curved (fig. 49: 27), or more sharply curved and cleft near base (fig. 49: 28-32) 4
- Claws simple and slender, rarely widely spread (fig. 49: 25-26); tibiae weakly spinose, long and tapering apically or else greatly shortened; in the latter case segment i of the tarsi is unusually long, the head transverse and eyes strongly protruding 4
- CYLAPINAE, p. 479
4. Pronotum with annuliform apical stricture 5
- Pronotum with an apical gibbosely convex area; stricture apparent only at the sides from which an impressed line extends to rear of the calli CLIVINEMINAE, p. 480 ✓
5. Hemelytra hyaline, glassy, ovate, with a sharply defined inverted Y-shaped red or fuscous mark (*Hyalihodes*) 4
- DICYPHINAE (pars) p. 476 ✓
- Hemelytra not hyaline or glassy; claws usually cleft near base, arolia bristle-like but pseudarolia absent DERAECORINAE, p. 481 ✓
6. (1) Pseudarolia very prominent, obscure bristle-like arolia also present between claws at base (fig. 49: 13-20, 22-24) 7

decolor Fallen. (14) *Macrotylus sexguttatus* Provancher. PHYLINAE, tribe HALLODAPINI, Nos. 15-17. (15) *Teleorhinus davisi* Knight. (16) *Orectoderus obliquus* Uhler. (17) *Coquillettia mimetica* Osborn. DICYPHINAE, Nos. 18-21. (18) *Macrolophus separatus* Uhler. (19) *Dicyphus agilis* Uhler. (20) *Dicyphus discrepans* Knight. (20a) *Dicyphus fanelicus* Uhler. (21) *Hyalihodes vitripennis* Say. BRYOCORINAE, Nos. 22-24. (22) *Monalocoris filicis* Linnaeus. (23) *Pycnoderes dilatatus* Reuter. (24) *Sixeonotus insignis* Reuter. CYLAPINAE, Nos. 25-26. (25) *Cylapus tenuicornis* Say. (26) *Fulvius brunneus* Provancher. CLIVINEMINAE, No. 27. (27) *Largidea davisi* Knight,—claws and hind tarsus. DERAECORINAE, Nos. 28-32. (28) *Deraeocoris pinicola* Knight. (29) *Deraeocoris nebulosus* Uhler. (30) *Deraeocoris ruber* Linnaeus. (31) *Eurychiloptera luridula* Reuter. (32) *Eusictus venatorius* Van Duzee. ORTHOTYLINAE, Nos. 33-54. (33) *Labops hirtus* Knight. (34) *Semium hirtum* Reuter. (35) *Parthenicus vaccini* Van Duzee. (36) *Halticus citri* Ashmead. (37) *Halticus intermedius* Uhler. (38) *Strongylocoris stygicus* Say. (39) *Orthocephalus mutabilis* Fallen. (40) *Sericophanes heidemanni* Poppius. (41) *Alepidia gracilis* Uhler. (42) *Pilophorus amoenus* Uhler. (43) *Pseudoxenetes scutellatus* Uhler. (44) *Ceratocapsus modestus* Uhler. (45) *Lopidea robiniae* Uhler. (46) *Hadronema militaris* Uhler. (47) *Ilmacora malina* Uhler. (48) *Orthotylus flavosparvus* Sahlberg. (49) *Orthotylus catulus* Van Duzee. (50) *Orthotylus dorsalis* Provancher. (51) *Heterocordylus malinus* Reuter. (52) *Mecomma gilvipes* Stål. (53) *Reuteria irrorata* Say. (54) *Diaphmidia pellucida* Uhler. MIRINAE, Nos. 55-56. (55) *Pithanus maerkeli* Herrich-Schaeffer. (56) *Stenodema trispinosum* Reuter. CAPSINAE, Nos. 57-60. (57) *Barberella apicalis* Knight. (58) *Platytyellus insitivus* Say. (59) *Phytocoris lasiomerus* Reuter. (60) *Lygus vanduzeei* Knight.

Drawing by Dr. H. H. Knight.

- Arolia prominent, always arising approximate at base between the claws (fig. 49: 33-60), never connate with them but sometimes minute pseudarolia are also apparent on the inner curve of the claw (fig. 49: 45-47, 58-60); free, more or less linear, converging or diverging at the apices 9
7. Ultimate tarsal segment incrassate (fig. 49: 22), always thicker than the preceding; pseudarolia broadly involving the claws (fig. 49: 22-24); tibiae destitute of spines; lora confluent with genae BRYOCORINAE, p. 478
- Ultimate tarsal segment linear; pseudarolia not as the above; lora usually distinctly separated from the genae 8
8. Prothorax simple, without annuliform apical stricture, certain forms with a somewhat flattened apical collar but in such case the abdomen is constricted at base and the claws curved only at extreme tips (fig. 49: 15-17); male genitalia distinctive, the tip of penis twisting to the left, lying closely within bend of left clasper, extending downward and beyond it to the left side PHYLINAE, p. 428
- Prothorax with annuliform apical stricture, sometimes obsolete above in the middle but forming a distinct collar; claws usually sharply bent (fig. 49: 18-20); male genitalia not as the above DICYPHINAE, p. 476
9. (6) Arolia diverging at their apices (fig. 49: 55-60) 10
- Arolia converging at their apices (fig. 49: 33-54) ORTHOTYLINAE, p. 497
10. Prothorax without ring-like apical constriction, often with sulcus impressed near front margin of calli but never extending over the sides; lateral margins of disk usually carinate to anterior angles; first tarsal segment much longer than segment ii and equal in thickness; tarsal segments scarcely overlapping at joints and thus very flexible (straw-climbers) MIRINAE, p. 545
- Prothorax with a ring-like apical constriction which extends over the sides and beneath, sometimes obsolete on median line above, and more rarely it may be entirely absent but in such case the abdomen is constricted at base; lateral margins of disk frequently carinate but never extending forward upon collar; first tarsal segment short, rarely longer than segment ii except in the Resthenini, but when longer, the pronotal collar very distinct and segment i much thicker than segment ii; tarsal segments with tips overlapping at joints and thus practically inflexible (leaf-walkers) CAPSINAE, p. 550

Subfamily PHYLINAE.

Key to Tribes.

1. Pronotum without flattened apical collar; abdomen not constricted at base 2
- Pronotum with a more or less flattened apical collar but without distinct stricture separating it posteriorly; abdomen usually distinctly constricted at base, usually elongate forms (p. 474) **Hallodapini**
2. Prosternal xyphus convex, not distinctly margined, pseudarolia minute or wanting (fig. 49: 1-12), connate upon the inner angle of the claw and rarely projecting free for a space greater than the base of attachment, nor extending beyond tips of claws .. **Phylini**
- Prosternal xyphus depressed on its disk, its margins more or less elevated; pseudarolia connate for the full length and frequently projecting beyond tips of the claws (fig. 49: 13), or attached only at the basal angles and extending free and parallel with them to the tips (fig. 49: 14) (p. 473) **Oncotylini**

Tribe **PHYLINI.***Key to Genera.*

1. Pubescence normal, composed of a single type of fine, chiefly erect pubescent hairs, sometimes nearly glabrous 2
 Pubescence composed of closely appressed, tomentose or scale-like deciduous hairs, and usually interspersed with more erect pubescent hairs 7
2. Head more or less produced, facial angle (when viewed from the side, the angle formed by the contour line of the tylus and lower margin of the buccula) less than a right angle; length of antennal segment ii greater than width of head 4
 Head not or scarcely produced, facial angle forming a right angle or practically so; length of antennal segment ii not or scarcely exceeding width of head 3
3. *Pseudarolia* minute, not extending beyond middle of claw (fig. 49: 9); small, pale to yellowish species, the legs spotted
 (p. 430) *Campylomma*
Pseudarolia involving the claws to the apices or nearly so (fig. 49: 1); small black species but with legs more or less pale ..
 (p. 430) *Chlamydatus*
4. Vertex with an impression each side near margin of eye; hind tarsi with second and third tarsal segments subequal
 (p. 460) *Microsynamma*
 Vertex without impression at each side; hind tarsi with third segment slightly shorter than the second 5
5. Tibiae pale, spines dark but without black spot at base 6
 Tibiae chiefly pale, spines with black spot at base, or if not, then the dorsum and tibial spines also pale..... (p. 431) *Plagiognathus*
6. Antennal segment ii incrassated, at least equal in thickness to segment i; color chiefly reddish but hemelytra and venter darkened with fuscous (p. 459) *Rhinocapsus*
 Antennal segment ii more slender, never attaining the thickness of segment i; body chiefly blackish but sometimes with pale
 (p. 454) *Microphylellus*
7. (1) Antennal segment ii strongly incrassated, the female of *Criocoris* excepted, but in that case black in color and the head sharply produced beyond the eyes 8
 Antennal segment ii slender in both sexes, never exceeding thickness of segment i 9
8. Head sharply produced beyond the eyes; segment ii strongly incrassated in the male, slender in the female (p. 460) *Criocoris*
 Head not or scarcely produced, inclined or subvertical in position; segment ii incrassated in both sexes (p. 461) *Atractotomus*
9. *Pseudarolia* attached only at base of claw, tips free and extending to middle of claw (fig. 49: 2); greenish yellow species with fuscous on hemelytra (p. 462) *Reuteroscopus*
Pseudarolia minute, connate and not extending free for a space greater than the base of attachment 10
10. Antennae short, length of segment ii not equal to width of head; short ovate forms, clothed with closely appressed scale-like hairs but interspersed with erect pubescent hairs; tibiae black, strongly spinose (p. 470) *Lepidopsallus* n. gen.
 Antennae longer, length of segment ii equal to or greater than width of head; pubescence variable but always composed of two types of hairs; tibiae sometimes dark but more frequently pale and spotted with darker (p. 462) *Psallus*

Campylomma Reuter.**C. verbasci (Meyer).**

Capsus verbasci Meyer, Verz. Schw. Rhyn., 70, pl. 4, fig. 1, 1843.

Reuter, Hem. Gymn. Eur., i, 53, pl. 3, fig. 6, 1878.

Length male 2.5 mm., width 1.1 mm.; female length 2.9 mm., width 1.3 mm. Pale testaceous to yellowish, mesoscutum and base of scutellum becoming fulvous, disk of cuneus pale fuscous; tylus, apical half of antennal segment i and slender base of ii, large spots on femora and tibiae, black; body beneath dark fusco-brownish; clothed with simple, dusky to blackish pubescence; membrane uniformly pale fumate.

Breeds on mullein (*Verbascum* sps.); occasionally breeds on apple; sometimes is attracted to colonies of aphids where it feeds on honey dew.

Branford, 28 July, 1905 (H. W. W.); Hamden, 14 June, 1911 (W. E. B.); New Haven, 21 June, 1909 (B. H. W.); Westville, 6 Aug., 1905 (W. E. B.); North Haven, 3 Aug., 1905 (H. L. V.).

Chlamydatus Curtis.**C. associatus (Uhler).**

Hayden's Surv. Terr., Rept. for 1871, p. 419, 1872.

Length 2.5 mm., width 1 mm.; black; front and middle legs, hind tibiae, and first two segments of all the tarsi, yellowish; antennal segments iii and iv pale fuscous.

Food plant: Rag weed (*Ambrosia*).

Cornwall, 10 Aug., 1919 (B. H. W.); New Haven, 28 Aug., 1910, 12 Sept., 1904 (B. H. W.).

C. suavis (Reuter).

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 92, 1876.

Length 2.28 mm., width .97 mm.; slightly smaller than *associatus*, entirely black except the tibiae which are pale yellow.

Food plant: Rag weed (*Ambrosia*).

New Jersey. Staten Island, N. Y.

C. pulicarius (Fallen).

Lygaeus pulicarius Fallen, Mon. Cim. Suec., 95, 1807.

Reuter, Hem. Gymn. Eur., i, 60, pl. 3, fig. 8, 1878.

Male: Length 2.8 mm., width 1.69 mm.; ovate, embolar margin distinctly arcuate; membrane short, its area not exceeding size of cuneus; black, apical half of femora more or less, tibiae, and tarsi, pale; antennae pale, segment ii except apex, and base of segment i, black; tibial spines black, a fuscous spot at base of each; clothed with fine yellowish to dusky, adpressed pubescent hairs.

Female: Length 2.9 mm., width 1.61 mm.; very similar to the male but more robust, the legs and antennae usually more broadly pale.

Breeds on *Plantago*.

New York.

Plagiognathus Fieber.

Key to Species.

1. Tibial spines dark and with black spot at base of each, sometimes obsolete apically 2
 Tibial spines pale, without black spots at base; general color pale, with two black lines on antennal segment i and a slender black line on segment ii, also the dorsal and the ventral margins of femora with a black line forming apically (p. 443) *nigrolineatus* n. sp.
2. Antennal segment ii dark fuscous to black, sometimes slightly paler at middle but always more black than pale 3
 Antennal segment ii chiefly pale, blackish only at base 20
3. Cuneus with blackish, entirely black or blackish only at apex, never chiefly brown 4
 Cuneus pale, or uniformly fulvous to dark brown, sometimes dusky at apex but never distinctly black 15
4. Cuneus more or less pale at base 5
 Cuneus uniformly black like the corium, rarely somewhat pale at the fracture 10
5. Scutellum uniformly black 8
 Scutellum with pale, sometimes pale only on apex or along lateral margins 6
6. Scutellum pale along median line, sometimes pale only at apex, or broadly pale and leaving only the basal angles blackish 7
 Scutellum black along median line, thus leaving lateral margins more or less pale (p. 438) *obscurus*
7. Femora pale to fulvous, hind pair with two rows of prominent black spots, sometimes becoming obscured with darker but never distinctly blackish at base and with paler at middle; cuneus pale at base and along outer margin; length 3.9-4.5 mm.
 (p. 440) *flavoscutellatus* n. sp.
 Femora pale to black, usually blackish at base and paler on middle, in dark specimens the femora black with only apices pale; cuneus pale at base but not along outer margin; length 3.8-4 mm.
 (p. 434) *politus* var. *flaveolus* n. var.
8. (5) Pronotum and hemelytra black, a small pale lunule at base of cuneus 9
 Pronotum pale apically, corium chiefly pale testaceous or ivory-white, but with a large, somewhat ovate, fuscous spot on apical half; cuneus pale, with a small black spot at apex (p. 439) *fraternus*
9. Femora black, pale on apices; pubescence white; length 3.5 mm.
 (p. 434) *politus*
 Femora yellowish, with one or two rows of black spots on anterior face; pubescence yellowish to golden; length 4 mm.
 (p. 442) *annulatus* var. *cuneatus* n. var.
10. (4) Rostrum and legs black or obscured with blackish 12
 Rostrum and legs chiefly yellowish, femora spotted, or spotted and marked with black lines 11
11. Smaller, length 3-3.2 mm.; femora with a few small black spots visible but never forming black line above or below; hemelytra uniformly black, cuneus never pale at base .. (p. 453) *repetitus* n. sp.
 Larger, length 3.8-4.5 mm.; hind femora with four or five black spots on apical half of anterior aspect, a black line forming above and one on ventral margin of apical half (p. 442) *annulatus*
12. Femora black except on extreme tips, tibiae pale but with prominent black spots 13
 Femora, tibiae, and antennae obscured with brownish black; antennal segment iii dusky to fuscous, scarcely paler than segment ii;

- hemelytra brownish black, somewhat translucent, pubescence yellowish to dusky; length 4 mm. (p. 452) *laricicola* n. sp.
13. Length of antennal segment ii greater than width of head plus width of vertex; larger, length 4.2-4.5 mm. 14
 Length of antennal segment ii not equal to width of head plus width of vertex; deep black, strongly shining, pubescence white; smaller, length 3 mm. (p. 435) *nigronitens* n. sp.
14. Rostrum reaching upon hind coxae; brownish black, sometimes slightly translucent at cuneal fracture
 (p. 443) *annulatus* var. *nigrofemoratus* n. var.
 Rostrum only reaching to middle of intermediate coxae; black, cuneus uniformly black like the corium (p. 441) *nigritus* n. sp.
15. (3) Cuneus, and whole dorsum as well, chiefly fulvous, sometimes the scutellum and clavus slightly darker; tylus and lora black .. 16
 Cuneus and dorsum not distinctly fulvous, or with cuneus fulvous but apical half of corium black 17
16. Antennal segment ii exceeding width of pronotum at base
 (p. 446) *rosicola* n. sp.
 Antennal segment ii not equal to width of pronotum at base
 (p. 447) *fulvidus* n. sp.
17. Scutellum fuscous to blackish, or with a blackish median line .. 18
 Scutellum uniformly pale or green (p. 444) *blatchleyi*
 (a) Pronotum and hemelytra uniformly yellowish testaceous or greenish variety *blatchleyi* typical
 (b) Basal half of pronotal disk, apical half of corium, and disk of clavus, darkened with fusco-brownish or blackish
 variety *nubilus* n. var.
18. Rostrum extending beyond middle coxae, usually attaining hind margins of posterior coxae 19
 Rostrum not extending beyond middle coxae; hemelytra black, basal one-third to one-half of embolium and corium, pale; cuneus pale to fulvous, apex frequently dusky; length 4.3-4.7 mm. (p. 441) *brevirostris* n. sp.
19. Corium with pale area finding its distal limit along the claval suture; smaller forms, length 3.7-4.6 mm.
 (p. 438) *obscurus* var. *albocuneatus* n. var.
 Corium with pale area finding its distal limit along the radial vein; females with fuscous area on apical half of corium divided into two spots by the pale color which extends along radius and joins that of cuneus, larger forms, length 4.5-4.9 mm.
 (p. 439) *alboradialis* n. sp.
20. (2) Scutellum, and usually the whole dorsum as well, black 21
 Scutellum pale or fulvous, sometimes dark brownish, frequently the median line blackish but the basal angles distinctly paler; hemelytra more or less pale, in darkest forms brownish black but always somewhat translucent 26
21. Hemelytra uniformly black, or blackish with pale 22
 Hemelytra uniformly brownish translucent; thorax and scutellum black (p. 454) *suffuscipennis* n. sp.
22. Cuneus chiefly black, basal angle of corium not or scarcely pale 23
 Cuneus pale or reddish (p. 437) *albonotatus* n. sp.
 (a) Cuneus, and basal one-third or more of corium, pale; femora clouded with blackish, spots rarely visible
 variety *albonotatus* typical
 (b) Cuneus reddish, basal area of corium tinged with reddish; hind femora with two rows of distinct spots, scarcely clouded with fuscous variety *tinctus* n. var.
23. Femora black, pale only at the apices 25
 Femora pale or fulvous, usually spotted with black 24
24. Hind femora with two rows of prominent black spots on anterior face; antennal segment i black, slenderly pale at apex, segment

- ii black at base for a space equal to one-third the length of segment i (p. 450) *punctatipes* n. sp.
- (a) Cuneus uniformly black like the corium; length 3.6-3.8 mm. variety *punctatipes* typical
- (b) Cuneus narrowly pale at base; more slender, length 3.3 mm. variety *dispar* n. var.
- Hind femora pale, a single black spot on lower margin near apex; antennal segment i pale, blackish at base, segment ii black at base for a space equal to half the length of segment i (p. 452) *davisi* n. sp.
25. Cuneus pale at base; antennal segment ii blackish on basal one-fourth (p. 435) *politus* var. *pallidicornis* n. var.
- Cuneus uniformly black like the corium; antennal segment ii narrowly black at base, the apex dusky; more ovate, deep black, strongly shining (p. 436) *flavicornis* n. sp.
26. (20) Dorsum uniformly greenish yellow, clothed with prominent black pubescence; antennae with base of segments i and ii, and a second annulus forming before apex of segment i, black (p. 444) *chrysanthemi*
- Dorsum darkened or marked with fuscous, pubescence pale; antennae not marked as the above 27
27. Antennal segment ii black at base 28
- Antennal segment ii uniformly pale, sometimes narrowly dusky at base, segment i black; scutellum and cuneus pale; femora with black spots (p. 445) *albatus*
- (a) Scutellum and cuneus pale variety *albatus* typical
- (b) Median line of scutellum and apical half of cuneus blackish variety *vittiscutis* n. var.
28. Scutellum with median line blackish, pale or fulvous on each side 30
- Scutellum uniformly colored, or with median line paler than basal angles 29
29. Femora pale or fulvous, distinctly spotted in linear series with black; scutellum uniformly pale or with median line pale and basal angles dark; rosy pink or fulvous and tinged with dark brown .. (p. 448) *delicatus*
- Femora rather uniformly dark except apices, black spots indistinct; scutellum uniformly colored, usually dark fusco-brownish or ligneous, similar to the whole dorsum (p. 450) *cornicola* n. sp.
30. Cuneus uniformly pale 31
- Cuneus with fuscous or blackish apically 32
31. Rostrum scarcely attaining hind margins of middle coxae; propleura clothed only with slender pubescent hairs; femora distinctly spotted with black although at times slightly obscured apically with fuscous (p. 449) *repletus* n. sp.
- Rostrum extending beyond middle coxae; propleura clothed with sericeous pubescence; femora more or less black on apical half but scarcely forming distinct spots (p. 438) *albonotatus* var. *compar* n. var.
32. Rostrum not attaining hind margins of posterior coxae 33
- Rostrum attaining hind margins of posterior coxae; basal half of corium and more or less broadly each side of claval suture, white; pale areas never fulvous, dark areas distinctly black (p. 445) *albatus* var. *similis* n. var.
33. Hemelytra except along basal half of radius, dark brown or fusco-brownish; yellowish testaceous to fulvous, sides of pronotal disk and median line of scutellum dark fusco-brownish (p. 448) *caryae* n. sp.
- Hemelytra black, outer half of clavus, basal half of corium and extending along claval suture to apex, pale translucent (p. 449) *repletus* var. *apicatus* n. var.

P. politus Uhler.

Uhler, Hemip. Colo., 52, 1895.

Male: Length 3.5 mm., width 1.3 mm.; ovate, shining black, femora dark fuscous to black, apices pale; rostrum slightly surpassing hind coxae, yellowish on middle; antennae black, tip of segment i pale, iii and iv pale or only tinged with fuscous; tibiae pale or yellowish, knees, and spines with spots at base, black; clothed with simple, pale or white pubescence.

Female: Length 3.8 mm., width 1.6 mm.; very similar to the male but more robust.

Food plants: Ragweed (*Ambrosia* sps.); occurs on various weeds; reared from apple where the nymphs fed on the tender foliage.

The original description for *P. fuscus* (Provancher, 1872) agrees, in so far as it goes, with *politus* Uhler, except that the size is indicated slightly too large. Provancher states that the species is "commun sur les plantes" which is more evidence that the form he described probably refers to *politus* Uhler. The present writer has found no other species which agrees so well with the color characters given for *fuscus*, and at the same time it may be added that *politus* is found very commonly on several plants. Provancher's redescription for *fuscus* (1887) cannot apply to the originally described species, and that reference is very properly cited by Van Duzee (1912) as a misidentification of *obscurus* Uhler.

Cornwall, 5 July, 1919 (B. H. W.); Hamden, 17 July, 1920 (M. P. Z.); New Canaan, 17 Sept., 1918 (B. H. W.); New Haven, 7 July, 1920 (B. H. W.); Westport, 24 June, 1921 (W. E. B.).

***P. politus** var. *flaveolus* Knight, new variety.

Apparently not differing structurally from the typical *politus* but having a different color aspect.

Black; scutellum largely, base and apex of embolium, base of corium slightly, narrowly bordering claval suture, basal half of cuneus, and more or less broadly on middle of femora, somewhat pale or yellowish.

This form appears late in the season, no doubt belonging to the second brood of *politus*, breeding on Solidago and related herbaceous plants.

Holotype: Male, 1 Sept., 1915, Batavia, N. Y. (H. H. Knight); author's collection. Paratypes: CONNECTICUT—Female, Aug., 1910, East River (C. R. Ely). Female, 16 Oct., 1903, New Haven (H. L. Viereck). ILLINOIS—Female, 30 Aug., 1899, Algonquin; Females (2), 13 Sept., 1909, Urbana (C. A. Hart). MASSACHUSETTS—Male and female, 22 Aug., female, 27 Aug., males (4) and females (4), 31 Aug., 1914, females (2), Sept., 1915, Beach Bluff (H. M. Parshley). Female, 17 June, 1914, Boston; females (2), 21 Sept., 1914, Cohasset (H. M. Parshley). Female, 15 Aug., 1914, Farmington (C. A. Frost), at light. Female, 19 Sept., 1914, males and females, 14 Sept., males (2), 30 Sept., female, 4 Oct., 1915, Forest Hills; male and female, 13 Aug., 1918, Northampton; males (2) and females (2), 2 Sept., 1915, female, 5 Sept., female, 7 Sept., 1914, Saugus

(H. M. Parshley). Male, 10 July, 1915, Atherton, Mo. (C. F. Adams). NEW YORK—Males (2) and females (3), 1 Sept., females (2), 2 Sept., 1915, Batavia (H. H. Knight). Males and females (6), 9 Sept., 1917, Yorktown Heights; females (2), 2 Sept., 1916, Forest Hill, Long Island; Male and females (2), 16 Sept., 1917, Maspeth (C. E. Olsen). Males and females (6), 10 Sept., 1915, Honesdale, Pa. (C. E. Olsen).

**P. politus* var. *pallidicornis* Knight, new variety.

Structurally not differing materially from the typical *politus* but the unusual color combination makes it desirable to name this variety for reference in the key. Antennae pale, segment i and base of ii black; cuneus with only a pale lunule at base like the typical form; membrane uniformly fuscous, narrowly pale bordering cuneus and veins.

Holotype: Male, 27 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as type. Paratypes: CONNECTICUT—Male and female, 20 July, 1916, Guilford (B. H. Walden). Male, 13 July, 1920, North Branford (B. H. Walden). Female, 1 June, 1915, South Meriden (H. Johnson). Male, 22 July, 1920, Berrien County, Mich. (R. F. Hussey). MAINE—Male, 19 June, male and female, 26 June, 1909, Machias (C. W. Johnson). Male and female, 15 July, 1914, Monmouth (C. A. Frost). Female, 5 July, female, 14 July, 1905, Orono. MASSACHUSETTS—Female, 8 Aug., 1912, Washington (C. W. Johnson). MINNESOTA—Males and females (14), 12 July, 1919, Hennepin County (H. H. Knight). NEW HAMPSHIRE—Male, 28 Sept., 1916, Crawfords (H. M. Parshley). Male, 24 July, 1915, Glenhouse; male, 3 July, 1915, Hanover (C. W. Johnson). NEW YORK—Males and females (18), topotypic. Male, 30 July, 1913, male, 24 June, female, 30 June, male, 12 July, females (2), 13 July, 1914, male, 27 July, female, 14 Aug., 1915, female, 4 Aug., 1916, Batavia; males (3) and females (2), 27 July, 1916, McLean; female, 22 Aug., 1916, Whiteface Mt. (H. H. Knight). Male, 3 Aug., 1920, Wanakena (C. J. Drake). ONTARIO—Female, 6 Aug., 1915, Parry Sound (H. S. Parish).

Plagiognathus nigronitens Knight, new species.

Slightly smaller than *politus*, the rostrum shorter; shining black, the cuneus uniformly black like the corium.

Male: Length 3 mm., width 1.2 mm. Head: Width .64 mm., vertex .33 mm.; black, scarcely paler at vertex. Rostrum, length .91 mm., scarcely attaining hind margins of intermediate coxae.

Antennae: Segment i, length .22 mm., black; ii, .78 mm., black, extreme tip pale; iii, .66 mm., pale; iv, .45 mm., pale to dusky.

Pronotum: Length .53 mm., width at base 1.03 mm.; black, clothed with fine, pale yellowish pubescence, a prominent black hair at each anterior angle. Scutellum black, minutely transversely rugulose; sternum black, opaque; ostiolar peritreme black or only slightly yellowish.

Hemelytra: Embolar margins very slightly arcuate; uniformly black, shining, the cuneus not at all paler at basal margin; clothed with pale yellowish pubescence. Membrane uniformly pale fuscous, a pale triangular spot bordering apex of cuneus; veins scarcely paler except tip of brachium.

Legs: Black, femora paler at extreme tips; tibiae yellowish, spines with black spots at base, hind pair becoming infuscated on

basal one-third; tarsi pale, apical segment blackish. Venter shining black.

Female: Length 3 mm., width 1.3 mm.; very slightly more robust than the male but very similar in coloration.

Holotype: Male, 27 July, 1915, Batavia, N. Y. (H. H. Knight); author's collection. *Allotype*: same data as the type. *Paratypes*: Males and females (14), topotypic. MASSACHUSETTS—Female, 24 July, 1914, Beach Bluff (H. M. Parshley). Male, 3 July, 1914, Danvers (C. W. Johnson). Male and females (3), 26 July, 1916, Pigeon Cove (C. E. Olsen). Male, 13 July, 1905, Springfield (C. W. Johnson). MICHIGAN—Female, 5 July, 1919, Berrien County (R. F. Hussey). Males (2), 15 July, 1914, Grand Junction. MINNESOTA—Males and females (9), 12 July, 1919, Hennepin County (H. H. Knight). NEW JERSEY—Female, 27 June, 1908, Lakehurst (Wm. T. Davis). NEW YORK—Female, 6 July, 1915, Wyoming County (H. H. Knight). Males and females, 31 July, 1915, White Plains (J. R. Torre-Bueno). ONTARIO—Males and females, 10 July, 1915, Parry Sound (H. S. Parish).

Plagiognathus flavicornis Knight, new species.

Larger and more robust than *nigronitens*, about the size of *politus* but antennal segment ii pale except narrowly at base while the cuneus remains uniformly black like the corium.

Male: Length 3.5 mm., width 1.6 mm. Head: Width .73 mm., vertex .38 mm.; blackish, vertex and front yellowish brown. Rostrum, length 1.11 mm., scarcely attaining hind margins of intermediate coxae.

Antennae: Segment i, length .28 mm., black, apex pale; ii, 1.16 mm., pale yellow, narrowly black at base, the apex dusky; iii, .83 mm., fuscous, slightly paler at base; iv, .55 mm., fuscous.

Pronotum: Length .61 mm., width at base 1.16 mm.; black, shining, clothed with pale yellowish pubescence, a prominent black hair at each anterior angle. Scutellum black, minutely transversely rugulose. Sternum and ostiolar peritreme black, opaque.

Hemelytra: embolar margins moderately arcuate, more distinctly so than in *politus*; uniformly black, shining, the cuneus not at all paler on basal margin; clothed with yellowish to dusky pubescence. Membrane and veins uniformly dark fuscous, scarcely paler bordering cuneus.

Legs: Black, apices of femora pale; tibiae pale, knees, and spot at base of spines, black, spots much reduced or absent on apical one-third. Venter black, shining.

Female: Length 3.3 mm., width 1.6 mm.; very similar to the male in coloration but in form more robust; embolar margins distinctly arcuate, hemelytra much broader on apical half than at base.

Food plant: *Myrica gale*.

Holotype: Male, 27 July, 1915, Batavia, N. Y. (H. H. Knight); author's collection. *Allotype*: same data as the type. *Paratypes*: ILLINOIS—Male and females (6), 4 Aug., 1906, bog at Cedar Lake (C. A. Hart). MASSACHUSETTS—Male, 3 Aug., 1918, Oak Bluffs; male and female, 15 July-6 Aug., 1917, Woods Hole (C. E. Olsen). Female, 1 Aug., female, 13 Aug., female, 27 Aug., Swampscott (H. M. Parshley). MINNESOTA—Males and

females, 10 Aug., 1922, Cramer (H. H. Knight), collected on *Myrica gale*. NEW YORK—Male and female, topotypic. Female, 30 June, male, 8 July, females (2), 11 July, 1914, Batavia (H. H. Knight). ONTARIO—Male, 20 July, 1912, Ottawa (Beaulieu).

P. albonotatus Knight, new species.

Nearly the size of *politus* but slightly more robust; antennal segment ii except base, cuneus, and basal one-third or more of corium, pale.

Male: Length 3.5 mm., width 1.5 mm. Head: Width .71 mm., vertex .36 mm.; blackish, base of vertex slightly paler. Rostrum, length 1.33 mm., reaching upon the hind coxae.

Antennae: Segment i, length .28 mm., black; ii, 1 mm., pale, black at base; iii, .70 mm., pale; iv, .47 mm., pale.

Pronotum: Length .57 mm., width at base 1.11 mm.; black, moderately shining, clothed with pale yellowish pubescence. Scutellum black, sometimes with pale spot on each basal angle; sternum black, lower margin of propleura pale; ostiolar peritreme pale but becoming dusky about the ostiole and above.

Hemelytra: Embolus moderately arcuate; black, basal one-third of embolium and corium, and to some extent invading the clavus, pale; anal ridge and sometimes apex of embolium pale; cuneus pale, in darkest specimens becoming dusky; clothed with pale yellowish pubescence. Membrane uniformly fuscous, veins and bordering cuneus pale.

Legs: Black, apices of coxae, bases and narrow tips of femora, pale; tibiae pale, knees, spines and spot at base of each, black, spots absent or much reduced on apical one-third. Venter black, moderately shining.

Female: Length 3.4 mm., width 1.61 mm.; very similar to the male but slightly more robust; frequently the pronotal disk with pale spot on middle, sides of venter becoming more or less pale.

Holotype: Male, 27 July, 1916, McLean, N. Y. (H. H. Knight); author's collection. Allotype: same data as type. Paratypes: Males and females (24), taken with types on meadow-sweet (*Spiraea salicifolia*). COLORADO—Female, 1 Aug., 1898, Fort Collins (E. D. Ball). MAINE—Male, 10 July, 1909, Calais (C. W. Johnson). Male, 15 July, 1914, Monmouth (C. A. Frost). MINNESOTA—Female, 2 July, 1920, Hennepin County (H. H. Knight). NORTH DAKOTA—Female, 24 July, 1920, Nelson County (T. H. Hubbell). NEW YORK—Males and females (8), 4 July, males and females (5), 12 July, females (3), 28 July, males and females (6), 29 July, 1913, Batavia (H. H. Knight); specimens taken on the last two dates were found on squash vines. RHODE ISLAND—Female, 3 July, 1910, Cumberland.

P. albonotatus var. *tinctus* Knight, new variety.

Very similar to the typical species except that the pale areas are tinged with reddish; cuneus distinctly red; legs yellow to reddish, femora with two rows of prominent black spots on anterior face, the posterior face also spotted with black.

Holotype: Male, 20 June, 1920, Harrisburg, Pa. (A. B. Champlain); author's collection. Paratypes: Males (2) and females (2), taken with

type. MARYLAND—Female, 7 June, 1914, Plummer's Island (W. L. McAtee). NORTH CAROLINA—Female, Hot Springs (A. T. Slosson). PENNSYLVANIA—Female, Greensburg (Wirtner). Male, 5 June, 1907, Pennsylvania Station.

P. albonotatus var. *compar* Knight, new variety.

Apparently only a color form of *albonotatus* but more broadly pale, thus requiring accommodation in a different section of the key.

Color pattern suggestive of *albatrus* but smaller and more ovate in form. Distinguished from typical *albonotatus* by the pale scutellum which is dark only on median line; pronotal disk broadly pale on central area and between calli.

Holotype: Male, 10 Aug., 1916, Batavia, N. Y. (H. H. Knight); author's collection. Paratypes: NEW YORK—Females (2), 12 July, female, 29 July, 1914, male, 26 July, 1915, Batavia; female, 27 July, 1916, McLean (H. H. Knight). MAINE—Female, 27 Aug., 1917, Paris (C. A. Frost).

P. obscurus Uhler.

Hayden's Surv. Terr. for 1871, 418, 1872.

Female: Length 4.4 mm., width 1.69 mm.; larger and more elongate than *albonotatus*, moderately shining, clothed with pale yellowish pubescence; rostrum scarcely attaining hind margins of posterior coxae, yellowish, basal segment blackish; antennae fuscous to black, segment i pale at extreme apex, segments iii and iv dusky; pronotum blackish, calli and central area of disk pale; scutellum black, lateral margins more or less pale, and rarely, if ever, does the pale color replace the black on apex of median line; sternum, pleura, and ostiolar peritreme black; hemelytra nearly as in *albonotatus*, but cuneus pale and apex distinctly blackish; legs pale to yellowish, base of hind coxae, apical half of femora with line forming on dorsal margin, and beneath this line one or two rows of spots, knees, and spots at base of spines, black or blackish; venter blackish, becoming more or less pale on the sides.

Colorado, Maine, New Hampshire, New York, Vermont, Quebec, Nova Scotia.

**P. obscurus* var. *alboconneatus* Knight, new variety.

Very similar to the typical *obscurus* but the cuneus uniformly pale or yellowish; sometimes more broadly pale above but not ordinarily.

Holotype: Male, 26 July, 1916, Batavia, N. Y. (H. H. Knight); author's collection. Paratypes: a large series from the type locality. CONNECTICUT—Male, 18 July, 1921, Cornwall (B. H. Walden). Male, 9 July, 1920, Huntington; male, 22 July, 1920, Litchfield (P. Garman). Male, 27 June, 1914, females (2), 4 July, males (2), 5 July, 1920, New Haven (B. H. Walden). MASSACHUSETTS—Male, 3 Aug., 1907, Mt. Greylock (C. W. Johnson). Female, 4 Sept., 1919, Mt. Greylock (H. M. Parshley). NEW HAMPSHIRE—Females (2), 24 July, 1915, Glenhouse (C. W. Johnson). NEW YORK—Males (3) and females (4), 4 July, 1919, Cold Spring Harbor, Long Island; female, 25 July, 1919, Babylon, Long Island (H. M. Parshley). VERMONT—Male, 15 June, 1908, Brattleboro (C. W. Johnson).

P. fraternus Uhler.

Uhler, Hemip. Colo., 51, 1895.

Of all the material examined, the writer has found not more than three specimens which fit the original description as regards color of scutellum and pronotum. Where the pronotum agrees with *fraternus* the scutellum is likewise pale, thereby referring the specimen to *obscurus*; specimens having a black scutellum rarely have the pronotum pale as described for *fraternus*. For the present, the writer designates as *fraternus* those specimens having a black scutellum even though the pronotum may likewise be black, other characters as indicated in the key.

Judging by the large amount of material thus far examined, from Colorado as well as the eastern states, *fraternus* Uhler appears to be nothing more than a variety of *obscurus* Uhler.

Guilford, 13 July, 1920 (B. H. W.); Huntington, 9 July, 1920 (B. H. W.); New Haven, 4 July, 1920 (B. H. W.).

***Plagiognathus alboradialis** Knight, new species.

Larger than *obscurus*, distinguished readily by the pale color pattern of the hemelytra.

Male: Length 5 mm., width 1.66 mm. Head: Width .78 mm., vertex .38 mm.; black, slightly paler at base of vertex. Rostrum, length 1.83 mm., yellowish, basal segment blackish except apically.

Antennae: Segment i, length .38 mm., black, narrowly pale at apex; ii, 1.58 mm., black; iii, .97 mm., pale fuscous; iv, .51 mm., pale fuscous.

Pronotum: Length .74 mm., width at base 1.33 mm.; black, moderately shining, central area of disk sometimes slightly paler. Scutellum black, brownish at basal angles, more rarely yellowish with median line black; sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Embolar margins nearly straight; black, corium and embolium pale at base, corium with pale area finding its distal limit along the radial vein, usually reaching to near middle; embolium usually slenderly pale for its entire length; cuneus uniformly pale translucent; moderately clothed with pale yellowish pubescence. Membrane uniformly fuscous, spot bordering cuneus, and the apex of brachium, pale.

Legs: Nearly as in *obscurus*; hind femora with two very distinct rows of black spots on anterior face, not dusky beneath, and scarcely forming a dark line above. Venter black, moderately shining, very finely pale pubescent.

Female: Length 4.5 mm., width 1.66 mm.; more robust and more broadly pale than the male; pronotal disk broadly pale; scutellum with lateral margins basally, pale; corium with fuscous area on apical half divided into two spots by the pale color which extends along radius to join that of cuneus.

Holotype: Male, 25 June, 1915, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (24), taken with the types. CONNECTICUT—Male, 17 July, 1909, Middletown (C. W. Johnson). MAINE—Female, 10 July, 1907, Calais; Male, 20 July, 1907, Capens; male and females (3), 15 July, 1909, Eastport; Male, 26 July, 1906, Males (7) and females (4), 22 July, 1909, Machias; Males and females, 12 July, 1909, Princeton; male, 27 July, 1910, Traveller Mountain (C. W. Johnson). NEW HAMPSHIRE—Male, Mt. Washington (Mrs. A. T. Slosson). Males (2) and females (3), 15 July, male and females (2), 24 July, 1915, Glen House; male and female, July, 1913 (alt. 3000 ft.), female, 15 July, female, 28 July, 1915, Mt. Washington; male, 18 July, 1915, Halfway House, Mt. Washington (C. W. Johnson). NEW YORK—Females (2), 4 July, 1915, Four Mile; Female, 26 July, 1916, Ithaca; Females (4), 22 Aug., 1916, Whiteface Mountain (H. H. Knight). VERMONT—Male and females (2), 26 June, 1906, Montpelier (C. W. Johnson). ONTARIO—Females (3), 10 July, 1915, Parry Sound (H. S. Parish).

Plagiognathus flavoscutellatus Knight, new species.

Male: Length 4.4 mm., width 1.67 mm. Head: Width .80 mm., vertex .36 mm.; black, vertex and front more or less yellowish. Rostrum, length 1.57 mm., reaching to middle of hind coxae, black.

Antennae: Segment i, length .31 mm., black, narrowly pale at apex; ii, 1.43 mm., black, cylindrical, slightly thinner than segment i; iii, .88 mm., brownish black; iv, mutilated.

Pronotum: Length .68 mm., width at base 1.29 mm.; black, moderately shining, pale pubescent. Scutellum black, becoming pale at apex and along median line, sometimes only the basal angles remaining dark. Sternum and pleura black, ostiolar peritreme somewhat yellowish.

Hemelytra: Embolar margin very slightly arcuate; black, basal half of embolium and corium, apex of embolium, base and outer margin of cuneus, pale to yellow, pale color on corium finding its distal limit along radial vein rather than along claval suture. Membrane uniformly fuscous, a clear spot bordering apex of cuneus, veins pale or yellowish.

Legs: Fulvous to dark brown, femora with two rows of black spots on anterior face, irregularly spotted on posterior face; coxae blackish except apically; knees black, tibiae with prominent black spines, black spots at base of spines becoming obsolete apically. Venter black, moderately shining, pale pubescent; genital characters distinctive.

Female: Length 4.3 mm., width 1.7 mm.; more robust than the male, usually more broadly pale; scutellum except base, just before calli and a slight vitta on median line at base of pronotal disk, pale; embolium, claval suture, anal ridge and joining with base of cuneus, pale; dark color of cuneus reduced to a blackish spot bordering smaller areole; legs more fulvous than in the male.

Food plant: *Salix longifolia*.

Holotype: Male, 6 Aug., 1914, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: 12 July, 1919, Hennepin County, Minnesota (H. H.

Knight). Paratypes: MICHIGAN—Male, 13 July, 1920, Berrien County (R. F. Hussey). MINNESOTA—Males (4) and females (3), 18 July, 1922, Ramsey County (H. H. Knight), on *Salix longifolia*. OHIO—Females (3), 9 June, 1915, Columbus (C. J. Drake). Female, 24 June, 1921, Columbus (A. E. Miller). PENNSYLVANIA—Female, 13 July, 1918, Williamsport (J. G. Sanders). VERMONT—Females (2), 8 July, 1908, Norwich (C. W. Johnson). NOVA SCOTIA—Female, 2 Aug., 1917, Truro (W. H. Brittain). QUEBEC—Male and female, 19 July, 1914, Hull (J. I. Beaulne).

**P. brevisrostris* Knight, new species.

General aspect very similar to variety *albocuneatus* but larger, more elongate, cuneus usually tinged with fulvous; distinguished by the short rostrum which does not attain hind margins of middle coxae.

Male: Length 4.6 mm., width 1.8 mm. Head: Width .79 mm., vertex .37 mm.; black, vertex pale. Rostrum, length 1.36 mm., reaching upon middle of intermediate coxae, black.

Antennae: Segment i, length .35 mm., black; ii, 1.43 mm., black, cylindrical, more slender than segment i; iii, 1 mm., dark fuscous; iv, .54 mm., fuscous.

Pronotum: Length .63 mm., width at base 1.26 mm.; black, clothed with prominent pale yellowish pubescence. Scutellum black, minutely transversely rugulose, yellowish pubescent. Sternum and pleura black; ostiolar peritreme black, posterior margin somewhat yellowish.

Hemelytra: Embolar margin slightly arcuate, widest near the cuneus; black, moderately shining, embolium and basal half of corium pale, dark color frequently invading apical half of embolium, sometimes pale color extending along claval suture to anal ridge; cuneus pale, usually tinged with fulvous, apex sometimes dusky or pale fuscous; clothed with prominent yellowish pubescence. Membrane uniformly fuscous, pale bordering apex of cuneus; veins pale or fulvous.

Legs: Black, apices of coxae and femora, trochanters, and frequently rather broadly at base of femora, pale; tibiae pale, knees, spines and spots at base, black. Venter black, moderately shining, pale pubescent; genital structures distinctive of the species.

Female: Length 4 mm., width 1.89 mm.; shorter and more robust than the male; pale color along claval suture spreading to involve outer margin of clavus; legs more broadly pale.

Holotype: Male, 1 July, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: CONNECTICUT—Male, 22 July, 1920, Litchfield (P. Garman). MAINE—males (2) and females (2), 26 July, 1909, Machias (C. W. Johnson). MICHIGAN—Male, 28 June, 1920, Washtenaw County (R. F. Hussey). NEW HAMPSHIRE—Males (2) and female, 15 July, 1915, Glen House (C. W. Johnson). VERMONT—Female, 8 July, 1908 (C. W. Johnson). NEWFOUNDLAND—Males (4) and females (2), 9 Aug., Spruce Brook (G. P. Englehardt).

**P. nigritus* Knight, new species.

Black; distinguished by the short rostrum.

Male: Length 4.4 mm., width 1.6 mm. Head: Width .51 mm.,

vertex .37 mm.; black, vertex yellowish. Rostrum, length 1.26 mm., only reaching to middle of intermediate coxae, black, yellowish on third segment.

Antennae: Segment i, length .34 mm.; ii, 1.27 mm., cylindrical, not equal to thickness of segment i, clothed with fine dusky pubescence; iii, .59 mm., black; iv, mutilated; all the segments black.

Pronotum: Length .67 mm., width at base 1.31 mm.; black, shining, clothed with yellowish pubescence. Scutellum and mesoscutum black; sternum and pleura black, lower margin of epimeron and ostiolar peritreme, pale.

Hemelytra: Embolar margin only very slightly arcuate; black, shining, cuneus uniformly black like the corium. Membrane uniformly dark fuscous, scarcely paler bordering apex of cuneus, veins brownish.

Legs: Black, femora yellowish at apex, anterior pairs more broadly yellowish on posterior face; tibiae yellowish, spines and large spots at base black; tarsi blackish, first two segments brownish. Venter black, shining, yellowish pubescent; genital structures distinctive of the species.

Holotype: Male, 11 July, 1905, Thompson, Conn. (H. L. Viereck); author's collection. A specimen is at hand, male, 8 Aug., 1808, Fort Collins, Col. (E. D. Ball), which the writer is unable to separate from this species.

P. annulatus Uhler.

Uhler, Hemip. Colo., 51, 1895.

Male: Length 4.2 mm., width 1.5 mm.; brownish black, rather slender, shining; pubescence golden yellow; legs pale to yellowish, basal half of coxae, apical tarsal segment and the claws, spots and spines on tibiae, knees, a dorsal and ventral line and four or five spots on anterior face of femora, black; femora sometimes shaded with brownish; antennal segments iii and iv, rostrum except basal segment and extreme apex, basal carina of vertex, and sometimes front margin of pronotum, yellowish to brown or darker.

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

Originally described from a single female specimen from Colorado.

Allotype: Male, 16 July, 1909, Denver, Col. (W. J. Gerhard); author's collection.

Huntington, 9 July, 1920 (B. H. W.); New Haven, 4 July, 1905 (H. L. V.); 8 July, 1912 (B. H. W.), collected at light.

P. annulatus var. *cuneatus* Knight, new variety.

Smaller than *annulatus*, cuneus distinctly pale at base; femora yellowish, spotted with black but without forming black lines; pubescence yellowish to golden. This form may possibly represent a distinct species.

Male: Length 4 mm., width 1.5 mm. Head: width .75 mm., vertex .36 mm.; black, scarcely paler on vertex. Rostrum, length 1.61 mm., yellowish, basal segment blackish except apex, apical segment brownish toward apex.

Antennae: Segment i, length .30 mm., black, extreme tip pale; ii, 1.22 mm., black; iii, .83 mm., fuscous; iv, .47 mm., fuscous.

Pronotum: Length .61 mm., width at base 1.16 mm., brownish black. Scutellum, sternum; pleura, and ostiolar peritreme, black.

Hemelytra: Black, cuneus pale to yellowish at base; anal ridge pale; clothed with yellowish to golden pubescence. Membrane uniformly fuscous, veins pale, a small clear spot bordering apex of cuneus.

Legs: Pale to yellow, coxae fuscous at base; hind femora with two rows of small fuscous spots on anterior face, upper row near dorsal margin, the lower row less distinct and along median line; anterior femora with one row of small dots, hind pair somewhat dusky on anterior face; tibiae with small black spots at base, becoming obsolete toward apex. Venter uniformly black, finely pale pubescent.

Female: Length 4.2 mm., width 1.7 mm.; more robust but very similar to male in coloration.

Food plant: *Aster* sp.

Holotype: Male, 8 July, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as type. Paratypes: Female taken with types. NEW HAMPSHIRE—Female, 8 July, 1908, Hanover (C. W. Johnson). NEW YORK—Male, 29 July, 1915, Batavia; female, 26 July, 1916, Ithaca (H. H. Knight). VERMONT—Males (2), 8 July, 1908, Norwich; male, 23 July, 1912, Mt. Ascutney (C. W. Johnson).

P. annulatus var. **nigrofemoratus** Knight, new variety.

Similar to variety *cuneatus* but the femora black except on apices; cuneus black, fracture only very slightly translucent.

Holotype: Male, 8 July, 1920, Ithaca, N. Y. (H. H. Knight); author's collection.

***Plagiognathus nigrolineatus** Knight, new species.

Uniformly pale greenish, pale pubescent, distinguished by black lines on antennae and femora.

Male: Length 4.3 mm., width 1.58 mm. Head: width .75 mm., vertex .33 mm.; pale, apex of tylus black. Rostrum, length 1.5 mm., reaching to middle of hind coxae, pale, apex fuscous.

Antennae: Segment i, length .28 mm., pale, two longitudinal black lines on dorsal surface; ii, 1.38 mm., pale, a slender black line on anterior surface extending from base to near middle; iii, .69 mm., pale; iv, .31 mm., pale.

Pronotum: Length .64 mm., width at base 1.22 mm.; pale, somewhat greenish anteriorly.

Hemelytra: Embolar margin only very slightly arcuate; uniformly pale greenish translucent. Membrane and veins pale, streak on anal area bordering vein and spot in smaller areole, fuscous.

Legs: Pale; slender line on dorsal margin of femora, line on apical half of postero-ventral margin of hind femora, spot on knee, and a single dot on anterior face of hind femora at near

middle of apical half, black; tibiae pale, spines dusky but not dark at base. Venter pale greenish.

Female: Length 4.3 mm., width 1.66 mm.; similar to the male in coloration.

Food plant: *Quercus macrocarpa*.

Holotype: Male, 11 June, 1919, St. Paul, Minn. (H. H. Knight); Minn. Univ. Coll. Allotype: taken with type. Paratypes: Males and females (12), taken with types. CONNECTICUT—Female, 22 June, 1920, Orange (B. H. Walden). MINNESOTA—Males and females (28), 10 June, 1920, University Farm; males and females (6), 11 June, 1920, Anoka County (H. H. Knight), collected on *Quercus macrocarpa*. Males (5), females (9), 14 June, 1922, Lakeland (H. H. Knight).

P. chrysanthemi Wolff.

Miris chrysanthemi Wolff, Icones Cim., iv, 157, t, xv, f, 151, 1804.

Plagiognathus viridulus Reuter, Hem. Gymn. Eur., 1, 74, 1878.

Male: Length 4.3 mm., width 1.5 mm.; pale greenish testaceous, disk of pronotum more nearly green, clothed with prominent black pubescence; base of antennal segments i and ii, and a subapical ring on segment i, black; femora with two rather distinct rows of black spots on anterior face; membrane pale fuscous, a darker spot just beyond apex of smaller areole.

Female: Length 3.8 mm., width 1.6 mm.; shorter and more robust than the male but very similar in coloration.

Food plant: *Chrysanthemum leucanthemum* Linnaeus.

Canada, Maine, New Hampshire, New York, Vermont.

P. blatchleyi Reuter.

Ofv. Finska Vet.-Soc. Forh., liv, Afd. A. No. 7, 61, 1912.

Male: Length 4.6 mm., width 1.7 mm.; pale greenish testaceous, clothed with pale yellowish pubescence, hairs becoming dusky on cuneus and apical half of corium and embolium; antennae black, segments iii and iv pale fuscous, extreme apex of segments i and ii pale; tylus black, basal and apical segments of rostrum blackish; legs nearly as in *chrysanthemi* but black spots on femora less conspicuous; membrane fuscous, central area of apical half, veins and invading membrane each side, paler.

Female: Length 4.4 mm., width 1.7 mm.; very similar to the male in coloration although the membrane, and sometimes antennae, slightly paler.

New York.

P. blatchleyi var. *nubilus* Knight, new variety.

Apparently only a color form of *blatchleyi* but distinctive in general aspect.

Male: Length 4.5 mm., width 1.8 mm.; yellowish green, head except tylus, and anterior half of pronotum, brighter green; basal half of pronotum, disk of clavus, and apical half of corium fuscous to blackish; sternum, pleura more or less, and venter, fuscous to blackish; legs greenish yellow and suffused with fuscous, spots as usual form but with dark line forming above, also a shorter

but more distinct black line on lower margin of apical half; cuneus strongly yellowish, sometimes darker on its disk; membrane dark fuscous, veins yellowish, narrowly pale bordering veins, a clear spot by tip of cuneus.

Female: Length 4.2 mm., width 1.9 mm.; more ovate than the male but very similar in coloration; sometimes more broadly pale than male.

Holotype: Male, 26 July, 1916, Ithaca, N. Y. (H. H. Knight); author's collection. *Allotype*: same data as the type. *Paratypes*: Male taken with types. DISTRICT OF COLUMBIA—Females (2), 5 Sept., 1890, Washington (O. Heidemann). OHIO—Male, 17 Aug., Apple Grove; male, 23 Aug., 1915, Crown City (C. J. Drake). Females (2), 24 Aug., 1916, Springfield (W. S. Adkins). VIRGINIA—Male and females (3), 10 Aug., 1906, Great Falls (O. Heidemann).

P. albatius (Van Duzee).

Pomona Jour. Ent. Zool., vii, 116, 1915.

Length 4.2 mm., width 1.4 mm.; whitish, tylus, basal segment of antennae, more or less broadly on lateral margins of pronotal disk, inner half of clavus, subapical spot on corium or in darker specimens covering the apical half, sternum, and venter, black; calli and antennal segment ii frequently yellowish; membrane pale, a distinct fuscous ray along margin just beyond clear spot at tip of cuneus; hind femora with group of black spots on apical half, sometimes with a subdorsal row of spots extending upon basal half; tibiae with small and sometimes indistinct spots at base of spines; female more broadly pale than the male.

Food plant: Sycamore (*Platanus occidentalis*).

Guilford, 13 July, 1920 (B. H. W.); Orange, 22 June, 1920 (P. Garman).

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

Apparently a color variety of *albatius* although the writer has taken this form only on butternut (*Juglans cinerea*).

Color pattern very similar to *albatius* but having the apical half of cuneus and median line of scutellum black.

Holotype: Male, 30 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. *Paratypes*: Males (3) and female, taken with types; male, 23 June, 1920, topotypic. CONNECTICUT—Female, 22 June, 1920, Orange (P. Garman). QUEBEC—Male, 10 July, 1920, Montreal (G. A. Moore).

***P. albatius** var. *similis* Knight, new variety.

Suggestive of *albatius* but distinguished by the black base of antennal segment ii, black juga and lora, two rows of spots on hind femora, and more prominent black spots on tibiae. This form may prove to be a good species but in the absence of more material and better characters, it seems best to place it as a variety of *albatius*.

Female: Length 3.5 mm., width 1.5 mm.; ovate, robust, white and marked with black. Head: Width .63 mm., vertex .33 mm.; yellowish white, tylus and extending upon median line of front,

juga, lora, and lower margin of genae, black. Rostrum, length 1.39 mm., nearly attaining hind margins of posterior coxae, yellowish, basal segment and apex blackish.

Antennae: Segment i, length .25 mm., black, slender apex pale; ii, .86 mm., pale yellowish, basal one-fourth black; iii, .64 mm., pale; iv, .39 mm., pale.

Pronotum: Length .61 mm., width at base 1.16 mm.; black, central area of disk, inner angles of calli, and just before calli, pale or whitish; clothed with rather prominent pale yellowish pubescence. Scutellum pale, median line rather broadly, and the mesoscutum, black.

Hemelytra: Embolar margin moderately arcuate; white, inner half of clavus, apical half of corium and invading embolium, black; cuneus pale translucent, apical half infuscated, corium bordering base of cuneus pale; clothed with rather prominent, pale to yellowish pubescence. Membrane pale, veins white, smaller areole and spot bordering base of cuneus clear; apical half with broad fuscous ray just beyond clear spot at tip of cuneus; larger areole dusky.

Legs: Pale yellowish; hind femora with two rows of prominent black spots, anterior pairs with three or four spots forming a line; tibiae with prominent black spots at base of spines. Venter black, basal half of segments 4-8, pale.

Mr. Hussey collected the type on *Alnus incana*.

Holotype: Female, 5 July, 1920, New Buffalo, Berrien County, Mich. (R. F. Hussey); author's collection. Paratype: CONNECTICUT—Female, 7 July, 1920, New Haven (B. H. Walden).

Plagiognathus rosicola Knight, new species.

Fulvo-testaceous, antennae, tylus, sternum, and prominent spots on femora, black; length of antennal segment ii exceeding width of pronotum at base; rostrum reaching to middle of venter.

Male: Length 4.3 mm., width 1.64 mm. Head: Width .75 mm., vertex .33 mm.; fulvo-testaceous, tylus black, lora blackish apically. Rostrum, length 2.12 mm., reaching to near middle of venter, becoming blackish on basal segment and apex.

Antennae: Segment i, length .31 mm., black, apex narrowly pale; ii, 1.42 mm., black, base and the apex very slenderly pale; iii, 1.0 mm., fuscous; iv, .44 mm., fuscous.

Pronotum: Length .66 mm., width at base 1.22 mm.; fulvo-testaceous, lower pleural margin slightly paler. Scutellum very slightly darker than pronotum; sternum piceous, episternum except for dark spot above, and pleura, pale to fulvo-testaceous; ostiolar peritreme pale yellowish.

Hemelytra: Embolar margin nearly straight, widest just before cuneus; fulvo-testaceous to fusco-brownish, clothed with yellowish or golden pubescence; cuneus slightly darker on its disk. Membrane rather uniformly fuscous, a pale spot bordering apex of cuneus; veins fulvo-testaceous.

Legs: Pale to yellowish and tinged with brown, coxae fusco-

brownish on basal half; femora with two rows of very prominent black spots on anterior face, posterior face also spotted but the hind pair with only three or four subapical spots, postero-ventral margin with a black line on apical one-third; tibiae with large and prominent black spots at bases of spines. Venter fulvo-testaceous, genital segment and other segments beneath, becoming dark brownish black; moderately shining, rather finely yellowish pubescent.

Female: Length 4.4 mm., width 1.7 mm.; more robust than the male but very similar in coloration.

Holotype: Male, 30 June, 1905, Plummer's Island, Md. (O. Heidemann); Cornell University Collection. Allotype: taken with type. Paratypes: ILLINOIS—Males (3), 14 June, 1911, Pinkstaff (C. A. Hart), collected "on roses." MARYLAND—Males (6) and females (2), taken with types. Male, 5 July, 1905, Great Falls (O. Heidemann), collected "on wild roses." MISSOURI—Male, 12 June, Kansas City (F. Rogers).

**P. fulvidus* Knight, new species.

Fulvo-testaceous, antennae, lower half of head, and under surface of body, black; antennal segment ii not equaling width of pronotum at base; rostrum scarcely attaining hind margins of posterior coxae.

Male: Length 3.9 mm., width 1.4 mm. Head: Width .66 mm., vertex .36 mm.; fulvo-testaceous, eyes and lower half of head black, lower margin of bucculae, brownish. Rostrum, length 1.5 mm., reaching to near hind margins of posterior coxae, yellowish, apex blackish.

Antennae: Segment i, length .25 mm., black, apex very slenderly pale; ii, 1 mm., black; iii, .64 mm., pale fuscous, black at base; iv, .39 mm., fuscous.

Pronotum: Length .67 mm., width at base 1.22 mm.; fulvo-testaceous, lower half of pleura and the xyphus black. Scutellum fulvo-testaceous. Sternum, pleura, and ostiolar peritreme, black but with a tinge of reddish.

Hemelytra: Embolar margins very slightly arcuate; fulvo-testaceous, disk of corium and apically on corium frequently darkened with fuscous; cuneus slightly paler than corium; clothed like the whole dorsum with moderately fine, golden pubescence. Membrane uniformly fuscous, a narrow pale spot bordering apex of cuneus; veins yellowish.

Legs: Yellowish to fulvo-testaceous, hind coxae darkened with fuscous on basal half; hind femora with two rows of fuscous spots on anterior face, the lower row sometimes nearly obsolete; knees black, spots at base of tibial spines rather small. Venter black, sometimes with a tinge of reddish.

Female: Length 3.5 mm., width 1.5 mm.; slightly more robust but very similar to the male in coloration.

Holotype: Male, 30 July, 1910, East River, Conn. (C. R. Ely); author's collection. Allotype: taken with type. Paratypes: CONNECTICUT—Male

and female, 24 July, 1910, Hamden (B. H. Walden). NEW JERSEY—Female, 19 July, 1908, Ramsey (Wm. T. Davis). NORTH CAROLINA—Female, 20 July, Tryon (W. F. Fiske), collected at light.

P. delicatus (Uhler).

Ent. Amer., iii, 34, 1887.

Length 3.3 mm., width 1.4 mm.; reddish yellow to brownish, antennal segment i except extreme tip, and a ring at base of segment ii, dark fuscous; front of head more or less dark each side of median line; hemelytra, sternum, and abdomen, shaded with fuscous, sometimes the basal margins of calli quite dark; scutellum yellowish, usually with basal angles dark and thus leaving median line pale; membrane lightly shaded with fuscous, an area near middle and spot each side adjacent to apex of cuneus, clear; legs pale yellowish to fulvous, two rows of spots on femora, tibial spines and spots at base, apices of tarsi and claws, black.

Occurs on honey locust (*Gleditsia triacanthos*).

New York.

Plagiognathus caryae Knight, new species.

Male: Length 3.9 mm., width 1.44 mm. Head: Width .72 mm., vertex .31 mm.; yellowish to fulvous, tylus and lower half of face blackish. Rostrum, length 1.28 mm., just attaining hind margins of middle coxae, yellowish, basal and apical segments becoming blackish.

Antennae: Segment i, length .23 mm., black, extreme apex pale; ii, 1.02 mm., yellowish, black annulus at base, the apex becoming dusky; iii, .61 mm., pale yellowish and becoming dusky; iv, .36 mm., like the preceding.

Pronotum: Length .61 mm., width at base 1.19 mm.; dark brownish black, central area of disk, and calli more or less, yellowish to fulvous. Scutellum yellowish to fulvous, median line rather broadly, and the mesoscutum, brownish black. Sternum and pleura blackish, ostiolar peritreme only slightly paler.

Hemelytra: Embolar margins nearly straight; brownish black, more or less broadly each side of claval vein, bordering radial vein from base to apex, basal margin and inner angle of cuneus, anal ridge, and usually basal half of embolium, yellowish translucent to fulvous; clothed with rather fine, pale golden pubescence. Membrane fuscous, sometimes slightly paler on middle, small spot adjacent to apex of cuneus clear, veins yellowish.

Legs: Pale yellowish and tinged with dusky; femora with two rows of black spots on anterior face, larger and darker on hind pair; tibial spines with black spots at base but becoming obsolete near apices. Venter black, very finely yellowish pubescent.

Female: Length 3.4 mm., width 1.53 mm.; more robust than the male, very similar in coloration but frequently the pronotum more broadly pale.

Holotype: Male, 22 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and

females (21), taken with the types on *Carya cordiformis*. NEW YORK—Female, 30 June, 1914, males and females (15), 18 June, 1915, Batavia; males and females (8), 23 June, 1920, Ithaca; male, 27 June, 1915, Portageville (H. H. Knight). MISSISSIPPI—Male, 4 May, males and females (12), 27 May, 1915, Agricultural College (C. C. Greer), collected on pecan (*Carya illinoensis*).

P. repletus Knight, new species.

Suggestive of *albatus* variety *vittiscutis* but having the rostrum distinctly shorter.

Female: Length 3.9 mm., width 1.4 mm. Head: Width .57 mm., vertex .36 mm.; black, somewhat paler on vertex, pale pubescent. Rostrum, length 1.35 mm., scarcely attaining hind margins of middle coxae, yellowish brown, basal segment and apex blackish.

Antennae: Segment i, length .27 mm., black, narrow apex yellowish; ii, 1.46 mm., slender, slightly thicker toward apex, yellowish, basal one-fourth blackish, finely pale pubescent; iii, .67 mm., yellowish, fuscous at base; iv, .37 mm., yellowish to dusky.

Pronotum: Length .60 mm., width at base 1.21 mm.; black, central area of disk, between calli and just before on anterior margin, pale yellowish; clothed only with simple slender, yellowish pubescent hairs. Scutellum yellowish, median line black, meso-scutum rather broadly exposed, blackish, yellowish pubescent. Sternum and pleura black, ostiolar peritreme blackish but with a yellow tinge.

Hemelytra: Embolar margin only very slightly arcuate; black, margins of clavus and corium bordering claval suture, basal one-third of corium, embolium, cuneus, anal ridge and extending along apex of corium to join cuneus, yellowish translucent; embolium somewhat dusky bordering black area of corium; moderately shining, yellowish pubescent. Membrane uniformly fuscous, a narrow clear spot bordering apex of cuneus, veins pale yellowish.

Legs: pale yellowish, hind coxae dark fuscous on basal half; hind femora becoming brownish on apical half except apex, two rows of black spots on anterior face, showing through the obscuration; anterior and middle femora showing only three or four fuscous points; tibiae yellowish, knees, spines and spots at base, black, tarsi fuscous. Venter black, or brownish black, yellowish pubescent.

Holotype: Female, 25 June, 1914, Batavia, N. Y. (H. H. Knight); author's collection.

***P. repletus var. apicatus** Knight, new variety.

Similar in structure to the typical *repletus* but differing in certain color aspects; cuneus black, pale only at base; black color of corium spread to include inner apical angles, also apical half of embolium darkened; antennae and legs not darker than in the typical species.

Holotype: Female, 16 July, 1916, Conesus Lake, N. Y. (H. H. Knight); author's collection. Paratype: Female, 7 July, 1920, New Haven, Conn. (B. H. Walden).

Plagiognathus cornicola Knight, new species.

General coloration fusco-brownish or ligneous, calli darker; antennal segment ii fusco-brownish, blackish at base.

Male: Length 3.4 mm., width 1.24 mm. Head: Width .69 mm., vertex .32 mm.; brownish, lower half of face, and sometimes the front, more or less blackish. Rostrum, length 1 mm., fusco-brownish.

Antennae: Segment i, length .19 mm., black, extreme tip pale; ii, .78 mm., fusco-brownish to fuscous, blackish at base; iii, .52 mm., fusco-brownish; iv, .33 mm., pale fuscous.

Pronotum: Length .55 mm., width at base 1.12 mm.; brownish to fusco-brownish, calli darker. Scutellum uniformly fusco-brownish. Sternum and pleura brownish to blackish; ostiolar peritreme pale brownish.

Hemelytra: Embolar margin very slightly arcuate; fusco-brownish or ligneous, somewhat translucent; cuneus evenly colored like the corium; clothed with very fine pale yellowish pubescence. Membrane fuscous, veins paler, a small clear spot bordering apex of cuneus.

Legs: Fusco-brownish to blackish, apices of femora pale; tibial spines with rather prominent black spots at base. Venter brownish black to black.

Female: Length 3 mm., width 1.33 mm.; slightly more robust than the male but very similar in coloration.

Holotype: Male, 4 July, 1914, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (32), taken with the types on *Cornus*. MASSACHUSETTS—Males and females (10), 13 July, from *Cornus amomum*, male and female, 14 July, 1921, Arnold Arboretum, Boston (Harold Morrison). NEW YORK—Female, 27 July, 1915, Batavia (H. H. Knight). VIRGINIA—Female, 27 June, 1915, Mount Vernon (W. L. McAtee), taken on *Cornus stricta*.

P. punctatipes Knight, new species.

Black, antennal segment ii pale but black at base; legs yellowish, hind femora with two rows of black spots on anterior face.

Male: Length 3.8 mm., width 1.7 mm. Head: Width .72 mm., vertex .37 mm.; black, vertex slightly pale. Rostrum, length 1.39 mm., reaching to middle of hind coxae; blackish, paler on middle segments.

Antennae: Segment i, length .25 mm., black; ii, .97 mm., pale to yellowish, blackish at base; iii, .66 mm., pale yellowish; iv, .39 mm., pale to dusky.

Pronotum: Length .67 mm., width at base 1.28 mm.; black, shining, slightly pale at lower pleural margin. Scutellum, sternum, and pleura, black; ostiolar peritreme blackish, pale indications around margins.

Hemelytra: Embolar margins very slightly arcuate; black, moderately shining, clothed with pale yellowish pubescence; cuneus uniformly black, scarcely translucent at base. Membrane uniformly fuscous, veins and margin bordering tip of cuneus slightly paler.

Legs: Pale yellowish to fulvous; coxae dull fuscous, paler at apices; hind femora with two rows of prominent black spots on anterior face; tibial spines with rather small black spots at base, becoming obsolete near apex. Venter black, moderately shining, very finely pale pubescent.

Female: Length 3.7 mm., width 1.7 mm.; slightly more robust than the male but very similar in coloration.

Holotype: Male, 23 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (16), taken with types; collected on flowers of an ornamental shrub. PENNSYLVANIA—Male, 7 June, 1919, North Bloomfield (T. L. Guyton).

**P. punctatipes* var. *dispar* Knight, new variety.

Smaller and more slender than *punctatipes*, very similar in coloration but with cuneus narrowly pale at base.

Male: Length 3.5 mm., width 1.28 mm. Head: Width .67 mm., vertex .31 mm.; black, vertex yellowish. Rostrum, length 1.24 mm., reaching to middle of hind coxae, yellow, basal segment and apex blackish.

Antennae: Segment i, length .22 mm., black, narrow apex pale; ii, .90 mm., yellow, narrowly blackish at base; iii, .58 mm.; iv, .36 mm.; last two segments yellowish.

Pronotum: Length .53 mm., width at base 1.06 mm.; black, moderately shining, yellowish pubescent. Scutellum, sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Black, base of cuneus yellowish translucent. Membrane pale fuscous, central area and a spot bordering apex of cuneus paler, veins yellowish to dusky.

Legs: Pale to yellow, hind coxae except apex, fuscous; hind femora with twelve fuscous spots forming two rows on anterior face, a group of five or six spots on posterior surface near apex; tibiae with very small fuscous spots at base of spines. Venter black, moderately shining, finely pale yellowish pubescent.

Female: Length 3.3 mm., width 1.39 mm.; slightly more robust than the male but very similar in coloration.

Holotype: Male, 14 July, 1916, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males (2) and females (6), taken with the types on hickory (*Carya*). CONNECTICUT—Male, 8 July, 1912, New Haven, collected at light. ILLINOIS—Male, 31 May, 1914, Dixon (C. A. Hart). MICHIGAN—Female, 3 July, 1920, Berrien County (R. F. Hussey). NEW YORK—Female, 24 June, female, 5 July, 1914, male, 24 June, 1915, males (2), 31 July, 1916, Batavia; males (2) and females (4), 16 July, 1916, Conesus Lake (H. H. Knight).

Plagiognathus davis Knight, new species.

Dorsum black, clothed with erect, rather sparsely set, yellowish pubescence.

Female: Length 3 mm., width 1.37 mm. Head: Width .66 mm., vertex .34 mm.; black, front strongly protruding before eyes, tylus prominent; clothed with prominent pale pubescence. Rostrum, length 1.49 mm., attaining hind margins of posterior coxae, yellowish, basal and apical segments blackish.

Antennae: Segment i, length .23 mm., yellowish, basal half and a spot with two bristles on dorsal surface of apical half, blackish; ii, .73 mm., yellowish, black on basal one-fifth, slightly thicker toward apex but not attaining thickness of segment i, clothed with prominent pale pubescence; iii, .41 mm., yellowish, dusky at base; iv, .38 mm., yellowish to dusky.

Pronotum: Length .57 mm., width at base 1.14 mm.; calli apparent by the sulcate margins, anterior margin of pronotal disk distinctly convex before calli; uniformly brownish black. Scutellum brownish black, distinctly sulcate and rugulose on middle; mesoscutum rather broadly exposed, clothed with a few prominent yellowish pubescent hairs, similar to those on scutellum. Sternum, pleura, and ostiolar peritreme, brownish black.

Hemelytra: Embolar margin only very slightly arcuate; uniformly dark brownish black, moderately shining, clothed with rather sparsely set, strongly erect, yellowish to dusky pubescent hairs. Membrane uniformly fusco-brownish, veins and narrow margin bordering apex of cuneus, paler; not extending beyond apex of abdomen.

Legs: Pale to yellowish, bases of coxae becoming fuscous; femora dusky pubescent, hind pair with a single subapical fuscous spot on lower margin of anterior aspect; anterior femora with a dusky line on dorsal margin before apex, also a slight indication on lower margin; tibial spines with small fuscous spot at base of each; tarsi yellowish, apical segment fuscous. Venter dark brownish black, clothed with yellowish pubescence.

Named in honor of the collector, Mr. Wm. T. Davis, who has discovered many new and interesting insects in the general vicinity of Staten Island and Long Island, N. Y.

Holotype: Female, 20 June, 1912, Pine Island, N. Y. (Wm. T. Davis); author's collection.

***P. laricicola** Knight, new species.

Black, legs fuscous but with small black spots showing through the obscuration; clothed with yellowish and dusky pubescence.

Male: Length 3.9 mm., width 1.39 mm. Head: Width .66 mm., vertex .33 mm.; black, vertex yellowish. Rostrum, length 1.28 mm., fuscous to black.

Antennae: Segment i, length .27 mm.; ii, 1.03 mm.; iii, .66 mm.; iv, .36 mm.; black, the last two segments more nearly fuscous.

Pronotum: Length .55 mm., width at base 1.11 mm.; black, scarcely shining. Scutellum black. Sternum, pleura, and ostiolar peritreme, dull black.

Hemelytra: Embolar margins very slightly arcuate; fuscous black, base of cuneus scarcely paler than corium; yellowish pubescent, hairs dusky on cuneus and to some extent on embolium. Membrane uniformly fuscous, veins pale, spot bordering apex of cuneus clear.

Legs: Dark fuscous, apices of femora slightly yellowish; small opaque black spots visible on anterior and posterior faces of femora; tibiae fuscous but black spots at bases of spines showing through the infuscation. Venter black, covered with an opaque bloom.

Female: Length 3.6 mm., width 1.55 mm.; more ovate and robust than the male but very similar in coloration.

Food plant: *Larix laricina*.

Holotype: Male, 27 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as type. Paratypes: Males and females (64), taken with the types on *Larix laricina*. CONNECTICUT—Male, 7 July, 1920, New Haven (B. H. Walden). MAINE—Female, 12 July, Princeton (C. W. Johnson). Male, 5 July, 1911, Orono. MINNESOTA—Males and females (36), 12 Aug., 1922, Beaver Dam, Cook County (H. H. Knight). NEW YORK—Males and females (18), 26 July, 1916, Ithaca (H. H. Knight). ALBERTA—Males (2) and females (3), 4 Aug., 1921, Nordegg (J. McDunnough).

P. repetitus Knight, new species.

Smaller than *laricicola* but the dorsal aspect very similar; legs yellowish, femora with small, rather inconspicuous fuscous dots arranged in series on anterior face.

Male: Length 3 mm., width 1.24 mm. Head: Width .64 mm., vertex .33 mm.; black, shining, vertex scarcely paler. Rostrum, length .55 mm., yellowish, basal and apical segments blackish.

Antennae: Segment i, length .22 mm., black; ii, .75 mm., black; iii, .55 mm., fuscous; iv, .39 mm., pale fuscous.

Pronotum: Length .53 mm., width at base .97 mm.; black. Scutellum, sternum, pleura, and ostiolar peritreme black, moderately shining.

Hemelytra: Embolar margin only very slightly arcuate; black, moderately shining, clothed with fine yellowish pubescence; cuneus uniformly colored like the corium, not at all paler at fracture. Membrane and veins uniformly pale fuscous, scarcely paler bordering tip of cuneus.

Legs: Yellowish, coxae fuscous on basal half; femora spotted with fuscous, arranged in one or two rows on anterior face; tibiae with rather prominent black spots at bases of spines. Venter black, shining, minutely yellowish pubescent.

Female: Length 2.9 mm., width 1.16 mm.; very similar to the male in form and coloration.

Holotype: Male, 22 Aug., 1916, Whiteface Mountain, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males (3) and females (4), taken with types. MASSACHUSETTS—Female, 5 July, 1914, Beach Bluff (H. M. Parshley). Female, 28 July, 1916, Pigeon Cove (C. E. Olsen). NEW JERSEY—Male, 15 June, 1908, Lakehurst (Wm. T. Davis). NEW YORK—Male, 22 July, 1920, Conifer (H. Osborn). Female, 12 Aug., 1920, Wanakena (C. J. Drake). NOVA SCOTIA—Male, 17, July, Truro (W. H. Brittain).

Plagiognathus suffuscipennis Knight, new species.

Color aspect suggestive of *Plesiodema pinetellum* (Zetterstedt) but tibiae with black spots at base of spines; antennal segment i and base of ii, black.

Male: Length 3.4 mm., width 1.3 mm. Head: Width .68 mm., vertex .36 mm.; black, moderately shining, scarcely paler on vertex. Rostrum, length 1.2 mm., reaching upon hind coxae, yellowish, base and apex becoming blackish.

Antennae: Segment i, length .23 mm., black, slenderly pale at apex; ii, .81 mm., yellowish tinged with fuscous, blackish at base, cylindrical, not equal to thickness of segment i; iii, .54 mm., yellowish; iv, .36 mm., yellowish.

Pronotum: Length .45 mm., width at base .98 mm.; dark brownish black; pubescence yellowish to dusky. Scutellum black, yellowish pubescent, minutely transversely rugulose; mesoscutum moderately exposed, black. Sternum, pleura, and ostiolar peritreme black.

Hemelytra: Embolar margins distinctly arcuate; uniformly brownish translucent, yellowish pubescent, slightly shining. Membrane uniformly pale fuscous, margins appearing slightly darker, veins yellowish brown.

Legs: Yellowish testaceous; coxae fuscous except apices; femora with two series of fuscous spots on anterior face, a group of six or eight spots on apical half of posterior face; tibiae yellowish, spot on knee, spines and small spot at base of each, blackish. Venter black, moderately shining, clothed with very fine pale yellowish pubescence.

Female: Length 3.2 mm., width 1.37 mm.; very similar to the male in coloration but in form more robust.

Food plant: *Picea mariana*.

Holotype: Male, 11 July, 1914, Rochester Junction, N. Y. (M. D. Leonard); author's collection. Allotype: same data as the type. Paratypes: Female, 11 July, female, 18 July, 1914, topotypic (M. D. Leonard), collected on spruce (*Picea*). MAINE—Male, 26 July, 1920, Peaks Island (G. A. Moore). MINNESOTA—Males and females (32), 12 Aug., 1922, Beaver Dam, Cook County (H. H. Knight), on *Picea mariana*.

Microphylellus Reuter.

Key to Species.

1. Hemelytra uniformly blackish 2
- Hemelytra more or less pale; embolium, cuneus, and basal half of

Pronotum: Length .43 mm., width at base .88 mm.; black, moderately shining; a slight impression bordering front margin of calli; pale yellowish pubescent. Scutellum black; mesoscutum black, rather broadly exposed. Sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Black, slightly translucent, very similar to *modestus*. Membrane and veins uniformly pale fuscous, slightly paler bordering apex of cuneus.

Legs: Yellow, coxae black; femora with two rows of pale fuscous spots, dusky pubescent; apical tarsal segment fuscous. Venter black, scarcely shining, dusky pubescent.

Holotype: Female, 26 July, 1917, Truro, Nova Scotia (W. H. Brittain); author's collection.

***Microphylellus tsugae* Knight, new species.**

Smaller than *modestus* but very similar in coloration; antennal segment i blackish; legs uniformly yellowish, black spots wanting.

Male: Length 2.8 mm., width 1.11 mm. Head: Width .56 mm., vertex .31 mm.; black, yellowish pubescent. Rostrum, length .86 mm., attaining hind margins of middle coxae, yellowish, darker at base and apex.

Antennae: Segment i, length .17 mm., fuscous black; ii, .66 mm., yellowish, sometimes fuscous at base; iii, .39 mm., pale; iv, .28 mm., dusky.

Pronotum: Length .39 mm., width at base .88 mm.; black, pale yellowish pubescent, moderately shining. Scutellum, sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Embolar margins scarcely arcuate; ligneous black, slightly translucent, moderately clothed with pale yellowish pubescence. Membrane uniformly fuscous, scarcely paler bordering apex of cuneus, veins slightly paler at apex of smaller areole.

Legs: Uniformly pale fuscous, bases of coxae and tips of tarsi darkened with fuscous. Venter uniformly fusco-blackish moderately shining.

Female: Length 2.7 mm., width 1.05 mm.; very similar to the male in form and coloration.

Food plant: Hemlock (*Tsuga canadensis*).

Holotype: Male, 3 July, 1920, McLean Bogs, Tompkins County, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (48), taken with types on *Tsuga canadensis*. Female, 7 July, 1920, Ithaca, N. Y. (H. H. Knight).

***M. maculipennis* Knight, new species.**

Similar in size to *modestus* but distinguished by pale markings on dorsum.

Male: Length 3.4 mm., width 1.3 mm. Head: Width .69 mm., vertex .33 mm.; blackish, vertex pale. Rostrum, length 1.16 mm., attaining hind margins of middle coxae, yellowish, dark at base and apex.

Antennae: Segment i, length .30 mm., yellow, fuscous at base; ii, .86 mm., yellow, fuscous at base and dusky on apex; iii, .47 mm., yellowish and tinged with dusky; iv, .33 mm., pale fuscous.

Pronotum: Length .55 mm., width at base 1.11 mm.; blackish, moderately shining; central area of disk and the basal angles pale to yellowish; clothed with fine yellowish pubescence. Scutellum pale yellowish, median line rather broadly, and the mesoscutum, black. Sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Embolar margins slightly arcuate; blackish, embolium, cuneus, and basal half of corium, pale to yellow, sometimes distinctly reddish; clothed with fine yellow pubescence, longest on base of clavus. Membrane fuscous, paler bordering apex of cuneus, veins pale only at apex of areoles.

Legs: pale to yellowish, basal half of hind coxae and tips of tarsi fuscous. Venter blackish, moderately shining.

Female: Length 3.4 mm., width 1.39 mm.; slightly more robust than the male but very similar in coloration.

Food plant: *Quercus alba*.

Holotype: Male, 11 June, 1919, University Farm, St. Paul, Minn. (H. H. Knight); Minn. Univ. Coll. Allotype: taken with the type. Paratypes: Males and females (12), taken with the types on *Quercus alba*. Males and females (8), 10 June, 1920, type locality (H. H. Knight). NEW YORK—Male, 25 June, 1915, Batavia; females (2), 23 June, 1916, Conesus Lake (H. H. Knight).

***M. maculipennis* var. *fuscicornis* Knight, new variety.**

Similar to the typical *maculipennis* but distinguished by the black antennal segments, segment i narrowly yellowish at apex.

Holotype: Male, 29 June, 1905, Monmouth, Maine (C. W. Johnson); author's collection.

***M. nigricornis* Knight, new species.**

Black, strongly shining, minutely pubescent; antennae yellow, segment ii and base of i, black; legs pale.

Male: Length 4 mm., width 1.44 mm. Head: width .66 mm., vertex .33 mm.; black, vertex slightly pale. Rostrum, length 1.22 mm., yellowish, basal segment and apex blackish.

Antennae: Segment i, length .25 mm., yellowish, black at base; ii, .94 mm., deep black, narrowly pale at base; iii, .69 mm., pale yellow; iv, .36 mm., pale yellowish.

Pronotum: Length .61 mm., width at base 1.11 mm.; black, minutely pale or dusky pubescent. Scutellum, sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Embolar margins nearly straight; uniformly black, strongly shining; dusky or black pubescent. Membrane and veins uniformly fuscous, not or scarcely paler bordering tip of cuneus.

Legs: Pale to yellowish; bases of coxae and tips of tarsi black-

ish, knees slightly dusky. Venter black, strongly shining, yellowish and black pubescent.

Female: Length 3.8 mm., width 1.3 mm.; very similar to the male.

Food plant: *Aster macrophyllus*.

Holotype: Male, 7 July, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (26), taken with the types on *Aster macrophyllus*. NEW YORK—Males (2), 20 June, 1915, Batavia; males (2), 5 July, 1915, Four Mile (H. H. Knight). Female, 5 Aug., 1920, Cranberry Lake (C. J. Drake). ONTARIO—Male, 27 July, 1915, Parry Sound (H. S. Parish).

Microphylellus elongatus Knight, new species.

About the size and form of *nigricornis* but with antennae yellow except base of segment i, larger and more elongate than *modestus*; antennal segment ii equal to width of pronotum at base.

Male: Length 4 mm., width 1.44 mm. Head: Width .68 mm., vertex .33 mm.; black, slightly paler at base of vertex. Rostrum, length 1.47 mm., yellowish, basal segment and apex blackish, reaching to middle of hind coxae.

Antennae: Segment i, length .28 mm., yellowish, fuscous at base; ii, 1.19 mm., yellow, sometimes slightly dusky at base; iii, .77 mm., yellowish; iv, .33 mm., yellowish.

Pronotum: Length .62 mm., width at base 1.16 mm.; black, pale to dusky pubescent. Scutellum, sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Embolar margins nearly straight; black, strongly shining; pale to dusky pubescent. Membrane nearly as in *nigricornis*.

Legs: Pale to yellow; bases of hind and middle coxae, and tips of tarsi, blackish; hind femora with a row of fuscous spots on anterior face near dorsal margin. Venter black, shining.

Female: Length 3.8 mm., width 1.4 mm.; very similar to the male.

Occurs on *Acer saccharum*.

Holotype: Male, 25 June, 1915, Batavia, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Female, taken with types. Male and female, 1 July, 1915, type locality (H. H. Knight).

**M. longirostris* Knight, new species.

Very similar to *elongatus* but with rostrum distinctly longer, extending beyond hind coxae to near middle of venter.

Male: Length 3.8 mm., width 1.25 mm. Head: width .61 mm., vertex .32 mm.; black, slightly paler on vertex and bordering eyes. Rostrum, length 1.66 mm., reaching to middle of venter, yellowish, apex and basal segment except apically, blackish.

Antennae: Segment i, length .28 mm., fuscous at base; ii, 1.22 mm., yellow; iii, .86 mm., yellowish to dusky; iv, .44 mm., dusky.

Pronotum: Length .64 mm., width at base 1.11 mm.; black,

strongly shining, dusky pubescent. Scutellum, sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Embolar margins nearly straight; uniformly black, strongly shining; clothed with minute, dusky to black pubescence, longer and more prominent on cuneus and embolium. Membrane and veins uniformly fuscous, scarcely paler bordering apex of cuneus.

Legs: Pale to yellowish; base of hind coxae and apices of tarsi, fuscous; devoid of black spots. Venter black, strongly shining, clothed with yellowish and dusky pubescence.

Female: Length 3.9 mm., width 1.34 mm.; very similar to the male in form and coloration.

Food plant: Hazelnut (*Corylus americana*).

Holotype: Male, 2 July, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males (2) and female, taken with types on hazelnut (*Corylus americana*). CONNECTICUT—Male, 7 July, 1920, New Haven (B. H. Walden). MASSACHUSETTS—Female, 11 July, 1907, Woburn. MINNESOTA—Females (4) 6 July, 1919, Anoka County; females (3), 20 July, 1920, Gray Cloud Island (H. H. Knight). Female, 11 July, 1920, Becker County; male, 10 July, 1920, Morrison County (A. A. Nichol). Males (4) females (6), 22 June, 1922, Kings Bluff, Winona County (H. H. Knight). NEW YORK—Female, 24 July, 1915, White Plains (J. R. Torre-Bueno).

Rhinocapsus Uhler.

Key to Species.

1. Antennal segment ii uniformly dark reddish or black 2
Antennal segment ii black apically, pale to reddish on basal one-third to one-half **vanduzeei**
2. Antennal segment ii in length, not or scarcely equal to width of pronotum at base; larger, length 4.3-4.6 mm. **rubricans**
Antennal segment ii in length distinctly greater than width of pronotum at base; smaller, length 3.4 mm. **miniatus** n. sp.

R. vanduzeei Uhler.

Trans. Md. Acad. Sci., i, 82, 1890.

Length 3.4 mm., width 1.4 mm.; fuscous to black; pronotum, vertex and bordering eyes, antennal segment i and basal half of ii, reddish orange; apical half of antennal segment ii black, somewhat incrassated; legs pale yellowish, femora with two rows of black dots on anterior face.

Food plant: Wild red raspberry (*Rubus idaeus*).

Brookfield, 27 July, 1910 (E. L. D.); New Haven, 4 July, 1921 (B. H. W.).

R. rubricans (Provancher).

Pet. Faune Ent. Can., iii, 154, 1887.

Length 4.2 mm., width 1.7 mm.; differs from *vanduzeei* by being slightly larger and more reddish, antennal segment ii entirely black and more distinctly incrassated.

MAINE—Male, 1 Aug., 1910, Penobscot County (Cushman). North Carolina, Canada.

R. miniatus Knight, new species.

Smaller than *rubricans* and more uniformly red; length of antennal segment ii distinctly greater than width of pronotum at base.

Male: Length 3.4 mm., width 1.36 mm. Head: Width .67 mm., vertex .31 mm.; red, becoming dark fuscous on tylus. Rostrum, length 1.28 mm., attaining middle of hind coxae, fusco-brownish.

Antennae: Segment i, length .25 mm., fusco-reddish; ii, 1.16 mm., uniformly dark fusco-reddish; iii, .72 mm., pale reddish to dusky; iv, .36 mm., dusky.

Pronotum: Length .50 mm., width at base 1.0 mm.; bright cinnabar red, shining. Scutellum scarcely darker than pronotal disk; sternum, pleura, and ostiolar peritreme, bright red.

Hemelytra: Embolar margin nearly straight; uniformly colored dragon's blood red; clothed with fine dusky pubescence. Membrane and veins uniformly pale fuscous, scarcely paler bordering apex of cuneus.

Legs: Reddish, tibiae pale to dusky and tinged with reddish, tips of tarsi darker. Venter rather uniformly fusco-reddish, shining, finely pale pubescent.

Holotype: Male, 28 June, 1908, Lakehurst, N. J. (Wm. T. Davis); author's collection.

Microsynamma Fieber.

M. bohemanni (Fallen).

Phytocoris bohemanni Fallen, Hemip. Suec., 106, 1829.

Saunders, Het. Brit. Isds., 319, 321, pl. 30, fig. 5, 1892.

Length 3.7 mm., width 1.5 mm.; pale, hemelytra, scutellum, pronotum, and femora, with fuscous shadings, a touch of reddish on pronotum and head; antennae except apex of segment i, vertex, tylus, head beneath, sides of thorax, and abdomen, black; finely pale yellowish pubescent.

Occurs on *Salix*.

New Jersey, New York. VERMONT—8 July, 1908, Norwich (C. W. Johnson).

Criocoris Fieber.

C. saliens (Reuter).

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 88, 1876.

Male: Length 2.7 mm., width 1.4 mm.; black, shining, clothed with white scale-like pubescence and intermixed with more erect pubescent hairs; antennal segments i and ii strongly incrassate, thickness of segment ii half as great as width of vertex.

Female: Length 3 mm., width 1.4 mm.; black, pubescence similar to that of male; antennae yellowish brown, segment i and

base of ii black, segment ii slender, scarcely more than half as thick as segment i.

New Jersey, New York.

Atractotomus Fieber.

A. magnicornis (Fallen).

Capsus magnicornis Fallen, Mon. Cim. Suec., 99, 1807.

Reuter, Hem. Gymn. Eur., i, 100, pl. vi, fig. 2, 1878.

Black, hemelytra tinged with fusco-reddish; clothed above with golden yellow, scale-like pubescence, more silvery on pleura, and intermixed with erect dusky pubescent hairs; length of antennal segment ii distinctly greater than width of head.

Female: Length 3.1 mm., width 1.44 mm. Head: Width .75 mm., vertex .35 mm. Rostrum, length 1.28 mm., attaining hind margins of posterior coxae. Antennae: Segment i, length .19 mm.; ii, .89 mm., thickness .12 mm., fusiform, black; iii, .50 mm., slender, pale; iv, .39 mm., pale to dusky. Pronotum: Length .54 mm., width at base 1.08 mm.

Hemelytra: Embolar margins moderately arcuate; fusco-blackish, very slightly tinged with reddish, slightly translucent. Membrane pale fuscous, scarcely paler bordering apex of cuneus, veins pale to yellowish. Legs: Fusco-brownish, tibiae dark fusco-brownish but with darker spots at base of spines.

Collected on *Pinus sylvestris* at Ithaca, N. Y.; specimens compared with European examples of *magnicornis* Fallen and found identical.

A. magnicornis var. *buanoi* Knight new variety.

Very similar to *magnicornis* but smaller and more ovate; length of antennal segment ii just equal to width of head.

Female: Length 2.5 mm., width 1.28 mm. Head: Width .72 mm., vertex .33 mm. Rostrum, length 1.16 mm., extending slightly beyond hind coxae.

Antennae: Segment i, length .18 mm.; ii, .72 mm., thickness .11 mm., fusiform, dark reddish brown to black; iii, .44 mm., pale to dusky; iv, .36 mm., pale to dusky.

Pronotum: Length .44 mm., width at base .97 mm.; thickly clothed with recumbent, yellowish sericeous pubescence, and intermixed with more erect dusky pubescent hairs; sericeous pubescence paler on pleura.

Hemelytra: Embolar margins slightly arcuate; fusco-blackish, not tinged with reddish as in *magnicornis*; pubescence a continuation of that on pronotum. Membrane uniformly fuscous, scarcely paler bordering cuneus, veins slightly testaceous.

Legs: Blackish, tibiae slightly paler, more dusky testaceous but with dark spots at base of spines. Venter uniformly blackish, dusky pubescent, sides with some pale sericeous, closely appressed pubescence.

Collected on hemlock and spruce by Mr. Bueno, for whom the species is named.

Holotype. Female, 29 June, 1919, White Plains, N. Y. (J. R. Torre-Bueno); author's collection. Paratypes: Females (2), taken with type.

Reuteroscopus Kirkaldy.

R. ornatus (Reuter).

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 90, 1876.

Length 3.4 mm., width 1.3 mm.; yellowish green, the pronotum with darker green; scutellum, clavus, membrane, and a bar across apex of corium, fuscous, the dark color forming a well-marked Greek cross.

Food plant: Ragweed (*Ambrosia*).

New Haven, 26 June, 1912, 28 Aug., 1910 (B. H. W.).

R. sulphureus (Reuter).

Ofv. Finska Vet.-Soc. Forh., xlix, No. 5, 23, 1907.

Psallus sulphureus Van Duzee, Cat. Hemip., p. 407, 1917.

Length 3.3 mm., width 1.18 mm.; yellow, sometimes with a greenish tinge; inner apical angles of corium, tip of clavus, anal area of membrane, and spot on inner angle of cuneus, fuscous; clothed with yellowish to fuscous pubescent hairs, base of each hair with a small fuscous spot, also sparsely set with small tufts of silvery scale-like hairs, arranged in series on median line and outer margins of head and pronotal disk, and present to some extent on clavus and corium; membrane conspurcate on a clear background, the fuscous color forming a short transverse bar touching margin just beyond tip of cuneus, clear each side of this but a second and larger fuscous area just before apex; femora thickly speckled with small pale fuscous spots.

The writer collected this species on ragweed (*Ambrosia*).

MISSOURI—15, July, 1915, Springfield; 22 July, 1915, Hollister. MASSACHUSETTS—Male, 22 Aug., 1912, Edgartown (C. W. Johnson).

Psallus Fieber.

Key to Species.

- | | |
|--|-----------------------------------|
| 1. Femora pale, or pale with black spots but without black line on dorsal margin | 2 |
| Femora blackish, or pale to yellowish and with spots but always having a dark line present on dorsal margin | 3 |
| 2. Femora pale, tinged with red and spotted with black; dorsum chiefly red, head, pronotal disk, and scutellum, flecked with fuscous; cuneus red, narrowly pale at base; length 3.6 mm. | |
| (p. 468) <i>alnicola</i> | |
| Femora uniformly pale or yellowish; dorsum uniformly black; length 3.5 mm. | (p. 467) <i>strobicola</i> n. sp. |
| 3. Antennal segment ii not equal to three-fourths the width of pronotum at base | 6 |
| Antennal segment ii in length, equal to more than three-fourths the width of pronotum at base | 4 |

4. Scutellum black; cuneus always with blackish, frequently pale at base but pale areas of legs and hemelytra never tinged with fulvous 5
 Scutellum more or less pale on lateral margins, rarely entirely black; if scutellum black then cuneus pale or dusky only at apex; cuneus pale, sometimes slightly infuscated at apex but pale areas yellowish and tinged with fulvous (p. 466) *alnicenatus* n. sp.
5. Rostrum attaining hind margins of posterior coxae; hemelytra uniformly black; femora black; apices pale; length 3.6 mm. (p. 464) *morrisoni* n. sp.
 Rostrum scarcely surpassing hind margins of middle coxae; base of cuneus and usually tip of embolium and spot on base of corium, pale; length 4-4.6 mm. (p. 465) *parshleyi* n. sp.
 (a) Femora pale, dark line forming on dorsal margin, anterior face with black spots and at times becoming dusky; tip of embolium and spot on base of corium, pale
 variety *parshleyi* typical
 (b) Femora black, apices pale; corium uniformly brownish black
 variety *fuscatus* n. var.
6. Antennal segment ii in length distinctly greater than width of head 7
 Antennal segment ii in length, just equal (female) to width of head, or (male) very slightly greater; femora fusco-brownish to black, front and middle femora more yellowish, a black spot on dorsal margin at apex, and with a second slightly larger subapical spot bearing two prominent bristles (p. 468) *waldeni* n. sp.
7. Antennae black, or at least segment i black 8
 Antennae pale, pubescence dusky; legs black, apices of femora and the tibiae pale, spines with small fuscous spots at base
 (p. 469) *piceicola* n. sp.
8. Legs testaceous to brownish; femora sometimes nearly black but never paler at apices, always tinged with brownish and reddish, hind pair strongly incrassate; coxae and tibiae testaceous to brownish, more or less tinged with reddish (463) *anchorifer*
 Legs chiefly black; femora more slender, black, apices of front and middle pairs pale; coxae deep black; tibiae pale to testaceous, black spots at base of spines (p. 464) *drakei* n. sp.

P. anchorifer (Fieber).

Reuter, Hem. Gymn. Eur., i, 104, pl. 7, fig. 7, 1878.

Brownish black to black, moderately shining; thickly clothed with yellowish to golden, closely appressed, sericeous pubescence, and intermixed with more erect blackish pubescent hairs; legs testaceous to brownish, femora frequently brownish black but uniformly colored and never paler at apices; tibiae testaceous to brownish, scarcely darker at base of spines.

Male: Length 4.2 mm., width 1.5 mm. Head: Width .84 mm., vertex .44 mm. Antennae: Segment ii, length 1.05 mm., black, sometimes brownish apically, slender, scarcely thicker apically. Pronotum: Length .81 mm., width at base 1.38 mm.

Female: Length 3.8 mm., width 1.7 mm. Head: Width .84 mm., vertex .44 mm. Antennae: Segment ii, length 1 mm., black, yellowish on apical half, slender, slightly thicker apically but scarcely attaining thickness of segment i. Pronotum: Length .77 mm., width at base 1.4 mm. Hemelytra becoming brownish or testaceous, frequently the cuneus distinctly reddish.

Recorded on *Alnus* in Europe; Mr. Bueno collected specimens on apple at White Plains, N. Y.

New Haven, 25 June, 1911 (J. K. Lewis).

Psallus drakei Knight, new species.

Black, strongly shining; clothed with closely appressed, sericeous, deciduous silvery pubescence, and intermixed with more erect blackish pubescent hairs.

Male: Length 4.4 mm., width 1.7 mm. Head: Width .86 mm., vertex .39 mm.; black, shining, clothed with sericeous silvery pubescence. Rostrum, length 1.33 mm., extending to near hind margins of posterior coxae, black.

Antennae: Segment i, length .25 mm., black; ii, 1.02 mm., black, equaling thickness of segment i but more slender near base; iii, .58 mm., black; iv, .41 mm., blackish.

Pronotum: Length .72 mm., width at base 1.5 mm.; black, strongly shining, pleura as well as disk clothed with deciduous, silvery sericeous pubescence. Scutellum, sternum, pleura, and ostiolar peritreme, deep black.

Hemelytra: Embolar margins very slightly arcuate; uniformly black, shining; pubescence similar to that of pronotum. Membrane and veins uniformly fuscous, a small clear spot bordering apex of cuneus.

Legs: Black, middle and anterior femora pale at apex; tibiae pale, knees and apices fuscous, black spines with dark spot at base of each; apical tarsal segment fuscous. Venter black, strongly shining, silvery deciduous pubescence present on sides.

Female: Length 4 mm., width 1.89 mm.; very similar to male but embolar margins more arcuate. Pronotum: Length .77 mm., width at base 1.52 mm. Antennae: Segment ii, length 1.05 mm., black, brownish at middle.

Named in honor of the collector, Dr. C. J. Drake, to whom the author is indebted for many valuable specimens.

Holotype: Male, 6 July, 1917, Cranberry Lake, N. Y. (C. J. Drake); author's collection. Allotype: taken with the type. Paratypes: Males (2), 2 July, type locality. ALBERTA—Male, 31 July, 1921, Nordegg (J. McDunnough).

P. morrisoni Knight, new species.

Black, elongate, suggestive of a *Plagiognathus* but distinguished by closely appressed, scale-like silvery pubescence; antennal segment ii of male distinctly longer than width of pronotum at base.

Male: Length 3.6 mm., width 1.25 mm. Head: Width .69 mm., vertex .33 mm., black, scarcely paler on vertex. Rostrum, length 1.38 mm., attaining hind margins of posterior coxae, black, segment iii and apex of ii yellowish.

Antennae: Segment i, length .28 mm., black; ii, 1.03 mm., black, brownish on middle or slightly beyond, slender, not attaining thickness of segment i; iii, .77 mm., testaceous to dusky; iv, .49 mm., pale fuscous.

Pronotum: Length .55 mm., width at base 1.03 mm.; black, pleura and disk clothed with closely appressed, scale-like silvery pubescence. Scutellum, sternum, pleura, and ostiolar peritreme, black.

Hemelytra: Embolar margins nearly straight; uniformly black, or ligneous black, slightly translucent; pubescence similar to that of pronotum and scutellum but rather finer. Membrane uniformly fuscous, veins and bordering apex of cuneus slightly paler.

Legs: Black, tips of femora slenderly pale; tibiae pale, knees and spots at base of spines blackish. Venter black, shining, scale-like silvery pubescence extending along sides.

Female: Length 3.2 mm., width 1.2 mm.; more ovate than the male but very similar in coloration. Antennae: Segment ii, length .94 mm., testaceous, black on basal one-fourth. Pronotum: Length .49 mm., width at base 1.01 mm.

Named in honor of the collector, Mr. Harold Morrison.

Holotype: Male, 27 July, 1921, Arnold Arboretum, Boston, Mass. (Harold Morrison); U. S. N. M. collection. Allotype: taken with type. Paratypes: Males and females (19), collected with types by sweeping *Myrica* spp. MASSACHUSETTS—Males (2), 21 Oct., 1915, Hyde Park (H. M. Parshley), on *Solidago*.

P. parshleyi Knight, new species.

Color aspect suggestive of *Plagiognathus fraternus* Uhler, but distinguished by the sericeous, semiscale-like pubescence on pleura and dorsum.

Male: Length 4.5 mm., width 1.7 mm. Head: Width .80 mm., vertex .34 mm.; black, vertex somewhat yellowish; pale pubescent, hairs on front slightly thickened. Rostrum, length 1.43 mm., scarcely surpassing hind margins of middle coxae, blackish, somewhat brownish on middle.

Antennae: Segment i, length .32 mm., black; ii, 1.26 mm., slightly thicker toward apex but not attaining thickness of segment i, black, pale pubescent; iii, .88 mm., fuscous; iv, .48 mm., fuscous.

Pronotum: Length .66 mm., width at base 1.37 mm.; black, moderately shining, clothed chiefly with pale, closely appressed, semiscale-like pubescence. Scutellum black, transversely rugulose, clothed with pale semiscale-like pubescence. Sternum, pleura, and ostiolar peritreme, black, pleura bearing pale semiscale-like pubescence.

Hemelytra: Elongate, embolar margins very slightly arcuate; pale yellowish pubescent, and intermixed with closely appressed, semiscale-like hairs on corium and clavus; black, basal half of cuneus, tip of embolium, and a small translucent spot near base of corium, pale. Membrane uniformly fuscous, a pale spot bordering apex of cuneus, veins dusky but slightly paler at apex of cells.

Legs: Pale yellowish, coxae fuscous at base; femora with dark

line forming above and below on apical half, anterior face with two rows of black spots, largest spots in subdorsal line, posterior face with three or four spots on apical half; tibiae yellowish, knees, spines and large spot at base of each, black; tarsi fuscous, more brownish on middle segment. Venter black, shining, pale pubescent.

Female: Length 4 mm., width 1.66 mm.; more robust than the male but very similar in coloration.

Named in honor of Dr. H. M. Parshley, who has contributed much to the knowledge of New England Heteroptera.

Holotype: Male, 23 July, 1917, Beach Bluff, Mass. (H. M. Parshley); author's collection. *Allotype*: taken with the type; collection of H. M. Parshley. *Paratypes*: MASSACHUSETTS—Males (4) and females (5), taken with types on small birch bushes, probably *Betula pumila*. MINNESOTA—Male and female, 4 July, female, 9 July, 1921, University Farm, St. Paul, collected at light; male and female, 12 July, 1919, males (5) and females (6), 2 Aug., 1920, Hennepin County (H. H. Knight), collected on *Betula pumila glandulifera*. NEW YORK—Female, 11 July, 1920, Cold Spring Harbor, Long Island (H. M. Parshley). Male, 4-7 July, 1915, Bayshore (C. E. Olsen).

P. parshleyi var. *fuscatus* Knight, new variety.

Structurally not differing appreciably from the typical *parshleyi*; corium uniformly fusco-blackish; femora black, only the apices pale; antennal segment ii becoming yellowish or brownish at just slightly beyond middle, while in the typical *parshleyi* segment ii becomes brownish just before middle.

Holotype: Male, 20 Aug., 1920, Beaver Bay, Minn. (H. H. Knight); Minn. Univ. collection. *Allotype*: same data as the type. *Paratypes*: Male, taken with types. Male, 18 Aug., 1920, Carlton County, Minn. (H. H. Knight).

Psallus alnicenatus Knight, new species.

Distinguished by the somewhat flattened, pale sericeous, almost scale-like hairs on pronotum, but more prominent on pleura.

Male: Length 4.5 mm., width 1.44 mm. Head: Width .72 mm., vertex .32 mm.; blackish, vertex yellowish brown. Rostrum, length 1.41 mm., attaining hind margins of intermediate coxae, yellowish brown, basal and apical segments blackish.

Antennae: Segment i, length .30 mm., black, slender apex pale; ii, 1.16 mm., black, narrow tip pale, sometimes the middle one-third or more, yellowish brown; iii, .83 mm., fuscous or pale fuscous; iv, .45 mm., pale fuscous.

Pronotum: Length .66 mm., width at base 1.22 mm.; blackish, basal half or less, yellowish brown to pale fuscous; clothed with pale yellowish pubescence, the propleura and disk anteriorly bearing somewhat flattened, pale sericeous, almost scale-like hairs. Scutellum and mesoscutum yellowish brown, the median line broadly blackish; sternum, pleura, and ostiolar peritreme, black, in pale specimens becoming slightly yellowish.

Hemelytra: Embolar margins nearly straight; pale yellowish

brown to dusky, semitranslucent, clavus and apical half of corium becoming infuscated, usually paler bordering radial vein, cuneus dark brownish to fuscous at apex; clothed with pale yellowish pubescence. Membrane infuscated, slightly paler on middle, veins pale yellowish, a clear spot bordering apex of cuneus.

Legs: Pale to yellowish, hind coxae fuscous at base; femora with two rows of black spots on anterior face, a black line forming along dorsal margin, hind femora with a ventral line on apical half; knees, tibial spines and spot at base of each, black, apical tarsal segment blackish. Venter black, moderately shining, finely pale yellowish pubescent.

Female: Length 3.7 mm., width 1.44 mm.; shorter and more robust than the male; frequently more broadly pale, cuneus uniformly yellowish translucent, sides of venter broadly pale; antennal segment ii yellowish brown on apical half but fuscous before apex.

Food plant: *Alnus incana* and probably other species of alder.

Holotype: Male, 3 July, 1920, McLean Bogs, Tompkins County, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (78), taken with the types on *Alnus incana*. MASSACHUSETTS—Female, 8 Aug., 1912, Chester (C. W. Johnson). MINNESOTA—Males (3), females (3), 30 June, 1922, Kings Bluff, Winona County (H. H. Knight). NEW YORK—Males and females (26), 26 July, 1916, McLean; males and females (24), 8 July, 1920, Ithaca (H. H. Knight). Male, 26 July, 1917, Cranberry Lake (C. J. Drake). NOVA SCOTIA—Male, 4 Aug., 1917, Truro (W. H. Brittain).

P. strobicola Knight, new species.

Fuscous black; antennae, and legs except coxae, yellow; clothed with closely appressed, sericeous silvery pubescence.

Male: Length 3.5 mm., width 1.33 mm. Head: Width .72 mm., vertex .33 mm. (measured across posterior corners of eyes); black, eyes reddish brown. Rostrum, length 1.25 mm., attaining hind margins of posterior coxae, yellow, basal segment blackish.

Antennae: Yellow; segment i, length .17 mm.; ii, .97 mm.; iii, .62 mm.; iv, .39 mm., slightly dusky.

Pronotum: Length .53 mm., width at base 1.08 mm.

Hemelytra: Embolar margins very slightly arcuate; uniformly fuscous black; clothed with closely appressed, sericeous silvery pubescence, and intermixed with more erect dark pubescence similar to that of pronotum and scutellum. Membrane and veins uniformly fuscous, not perceptibly paler bordering cuneus.

Legs: Yellow, coxae blackish except at apex; tibial spines black but without dark spots at base.

Female: Length 3.1 mm., width 1.36 mm.; more robust than the male but otherwise very similar.

Breeds on *Pinus strobus*.

Holotype: Male, 29 June, 1920, Ithaca, N. Y. (H. H. Knight); author's collection. Allotype: same data as the type. Paratypes: Males and females (24), taken with the types on *Pinus strobus*. NEW YORK—Males and females (4), 8 July, females (2), 13 July, 1920, female, 26 July, 1916,

Ithaca; male, 21 June, 1914, Portageville; male and females (2), 11 July, 1920, Taghanic (H. H. Knight). Males and females (6), 8 July, 1919, male and female, 24 July, 1920, Cranberry Lake (C. J. Drake). QUEBEC—Males (2), 1 July, 1920, St. Hilarie (G. A. Moore).

P. alnicola Douglas and Scott.

Psallus alni Douglas and Scott, Brit. Hemiptera, 414, 1865.

Length 3.6 mm., width 1.4 mm.; carmine red, head, pronotal disk, and scutellum, flecked with fuscous; cuneus bright red, narrowly pale at base; membrane fuscous, slightly paler across middle; antennae yellowish, segment ii darker at apex; clothed with yellowish, sericeous pubescence and intermixed with more erect dusky pubescent hairs; legs yellowish but sometimes tinged with reddish, femora dotted with prominent blackish spots, tibial spines with black spots at base; sternum and base of genital segment fuscous.

Breeds on *Alnus rugosa* in cool humid surroundings.

Minnesota, New York. NEW HAMPSHIRE—Female, 24 Sept., 1907, Mt. Washington, alt. 2,500 ft. (O. Bryant).

**Psallus waldeni* Knight, new species.

Female: Length 2.5 mm., width 1.08 mm. Head: Width .66 mm., vertex .38 mm.; black, slightly paler on vertex. Rostrum, length 1.08 mm., yellowish, blackish only on apical segment, reaching upon hind coxae.

Antennae: Segment i, length .17 mm.; ii, .66 mm., slender, slightly thicker apically but not attaining thickness of segment i, very finely pale pubescent; iii, .43 mm.; iv, .28 mm.; black, last two segments pale fuscous.

Pronotum: Length .40 mm., width at base .9 mm., width anterior angles .57 mm.; fuscous black, scarcely shining; clothed with fine erect pubescent hairs and intermixed with closely appressed pale sericeous pubescence, propleura bearing only simple pubescent hairs. Scutellum black, mesoscutum moderately exposed, a pale spot at each side; sternum and propleura blackish, basalar plate yellowish.

Hemelytra: Embolar margins slightly arcuate; fusco-blackish, cuneus uniformly colored like the corium; pubescence similar to that on pronotal disk. Membrane uniformly pale fuscous, veins and narrowly bordering apex of cuneus, paler.

Legs: Yellowish to fusco-brownish, hind femora darker; femora with black spot on dorsal margin at apex, and with a second slightly larger subapical spot bearing two prominent bristles, front and middle pairs exhibiting a row of fuscous spots on lower margin of anterior face; tibiae pale, bearing two rows of very prominent black spines, length of spines nearly equal to twice thickness of segment, a large black spot at base of each spine, spots becoming obsolete on apical half of anterior pairs; tarsi fuscous. Venter black, pale pubescent.

Holotype: Female, 30 May, 1911, New Haven, Conn. (B. H. Walden); author's collection. Paratype: Female, taken with type.

P. piceicola Knight, new species.

Brownish black, hemelytra more brownish, antennae and base of cuneus pale.

Male: Length 3 mm., width 1.08 mm. Head: Width .60 mm., vertex at basal margin .34 mm., narrowest point on front .27 mm.; strongly inclined vertically, somewhat compressed; brownish black, pale yellowish pubescent. Rostrum, length 1.18 mm., extending behind posterior coxae, blackish, slightly paler on middle.

Antennae: Segment i, length .20 mm., thickness .057 mm., pale; ii, .66 mm., equal to thickness of segment i, slightly more slender at base, pale with a tinge of dusky, clothed with prominent pale to dusky pubescence; iii, .37 mm., dusky; iv, .34 mm., dusky.

Pronotum: Length .44 mm., width at base .91 mm.; dark brownish black, slightly shining, finely and closely yellowish pubescent, scale-like sericeous pubescence more evident on hemelytra. Scutellum and mesoscutum brownish black, yellowish pubescent. Sternum and pleura brownish black, the latter clothed with somewhat flattened, sericeous pale pubescence; ostiolar peritreme fuscous, anterior lobe bordering ostiole, pale.

Hemelytra: Embolar margins only very slightly arcuate; dark fusco-brownish to blackish, base of cuneus pale translucent, apex of embolium frequently pale; clothed with golden to dusky pubescence and intermixed with more closely appressed, silvery tomentose pubescence. Membrane pale fuscous, paler on middle and bordering apex of cuneus, veins somewhat pale or tinged with reddish.

Legs: Dark brownish black, apices of femora and the tibiae, pale; tibial spines brownish to blackish, a fuscous spot at base of each, both spots and spines paler apically; tarsi pale to dusky, fuscous at apex. Venter brownish black with a tinge of reddish, somewhat shining, finely pale yellowish pubescent.

Female: Length 2.86 mm., width 1.28 mm.; more robust than the male but very similar in coloration, hemelytra usually more brownish. Antennae: Segment i, length .22 mm., thickness .058 mm.; ii, .60 mm., nearly attaining the thickness of segment i but slightly more slender on basal half, clothed with prominent dusky pubescence; iii, .47 mm., slender; iv, .31 mm.; uniformly pale but with a dusky tinge, dusky pubescent.

Breeds on spruce (*Picea*).

Holotype: Male, 3 July, 1919, White Plains, N. Y. (J. R. T. Bueno); author's collection. Allotype: Female, 11 July, 1922, University Farm, St. Paul, Minn. (H. H. Knight). Paratypes. MINNESOTA—Males and females (38), taken with the allotype on spruce (H. H. Knight). Females (7), 27 Aug., 1920, Vermillion Lake, Minn. (H. H. Knight). Males and females (12), 12 Aug., 1922, Beaver Dam, Cook County (H. H. Knight). NEW YORK—Female, 29 June, females (2), 3 July, 1919, males (2), 5 July, 1920, White Plains (J. R. T. Bueno). Females (3), 28 July, 1920, Cold Spring Harbor, Long Island (H. M. Parshley), collected on spruce (*Picea*).

Lepidopsallus new genus.

Form short ovate, body clothed with closely appressed scale-like pubescence, and interspersed with more erect simple pubescent hairs; head broad, antennal segment ii, in length, not equal to width of head; tibiae strongly spinose; claws and pseudarolia as shown in figure 49: 3. Genotype: (*Sthenarus*) *rubidus* Uhler.

Differs from the genotype, *Europiella stigmosa* (Uhler), chiefly by shape of head, shortness of antennal segment ii, in type of pubescence, and in general by the more ovate and robust form.

Key to Species.

1. Rostrum extending beyond posterior coxae 2
Rostrum not extending beyond posterior coxae 3
2. Antennal segments i and ii pale yellowish; sides of venter without scale-like pubescence *claricornis* n. sp.
Antennal segment i black, base of segment ii dusky; sides of venter and pleura bearing scale-like pubescence *rostratus* n. sp.
3. Antennal segment ii scarcely longer than length of pronotum 4
Antennal segment ii, in length, equal to length of pronotum plus the dorsal width of an eye; small, length 2.7 mm. *olseni* n. sp.
4. Combined length of antennal segments iii and iv greater than length of segment ii; antennal segment ii thickened in both sexes, cylindrical and equal to thickness of segment i; black, length 2.6 mm. *minusculus* n. sp.
Combined length of antennal segments iii and iv less than or scarcely equal to length of segment ii; antennal segment ii more slender in female, distinctly thinner on basal half and not equal to thickness of segment i; color black with reddish, embolium and cuneus strongly reddish *rubidus*
(a) Color uniformly black, antennal segment ii always black; scale-like pubescence silvery white variety *atricolor* n. var.

L. rostratus Knight, new species.

Piceous black; antennal segment ii yellowish, dusky at base; rostrum extending to base of ovipositor.

Female: Length 2.8 mm., width 1.31 mm. Head: Width .74 mm., vertex .34 mm.; front and vertex more nearly flat and tylus more produced than in *claricornis*; black pubescent and intermixed with pale silvery scale-like hairs. Rostrum, length 1.47 mm., extending posteriorly as far as base of ovipositor, piceous.

Antennae: Segment i, length .17 mm., black; ii, .70 mm., slender, slightly thickened toward apex, yellowish, dusky at base; iii, .44 mm., pale fuscous; iv, .34 mm., fuscous.

Pronotum: Length .48 mm., width at base 1.06 mm.; rather thickly clothed with silvery, scale-like pubescence, and intermixed with black simple pubescence; propleura thickly covered with scale-like hairs. Scutellum with pubescence and coloration similar to disk of pronotum. Sternum, pleura, and ostiolar peritreme, uniformly black; episterna and pleura bearing scale-like hairs.

Hemelytra: Embolar margins moderately arcuate; uniformly piceous black; clothed with closely appressed, silvery scale-like

pubescence, and intermixed with more erect black pubescent hairs. Membrane and veins uniformly fumate, scarcely paler bordering apex of cuneus.

Legs: Black, tibiae and tarsi pale yellowish, basal half of hind tibiae becoming blackish, spines black but without spots at base, tips of tarsi fuscous. Venter black, brownish pubescent, sides bearing silvery scale-like pubescence.

Holotype: Female, 18 Aug., 1920, Elkhorn Creek, Carlton County, Minn. (H. H. Knight); Minn. Univ. collection.

L. claricornis Knight, new species.

Brownish black, antennae and tibiae pale; rostrum extending to middle of venter.

Female: Length 3.1 mm., width 1.47 mm. Head: Width .80 mm., vertex .36 mm.; yellowish pubescent. Rostrum, length 1.56 mm., reaching upon base of ovipositor, brownish black like the head.

Antennae: Segment i, length .19 mm., pale yellowish; ii, .77 mm., slightly thickened from base toward apex, uniformly yellowish, dusky pubescent; segments iii and iv missing.

Pronotum: Length .54 mm., width at base 1.23 mm.; brownish pubescent and intermixed on disk with closely appressed pale scale-like pubescence, propleura bearing simple pubescent hairs without any indication of scale-like pubescence. Scutellum uniformly brownish black like the pronotum, bearing scale-like pubescence intermixed with simple pubescent hairs. Sternum, pleura, and ostiolar peritreme, uniformly dark brownish, pleura bearing fine brownish pubescence only.

Hemelytra: Embolar margins slightly arcuate; uniformly brownish black, brownish pubescent and intermixed with closely appressed, pale scale-like hairs. Membrane uniformly pale brownish, scarcely paler bordering apex of cuneus, veins brownish.

Legs: Brownish black, tips of coxae and femora slightly paler; tibiae pale yellowish, spines black but without dark spot at base of each; tarsi pale, apices fuscous. Venter dark brownish, pubescence brownish.

Holotype: Female, 29 May, Lakehurst, N. J. (Wm. T. Davis); author's collection.

L. rubidus (Uhler).

Uhler, Hemiptera Colo., 41, 1895.

Male: Length 3.2 mm., width 1.5 mm.; blackish, hemelytra reddish brown with fuscous, embolium and cuneus strongly reddish; membrane uniformly fuscous; clothed with pale yellowish, closely appressed, scale-like pubescence and intermixed with more erect dusky, simple pubescent hairs; femora fusco-brownish, tinged with reddish; tibiae brownish to reddish, beset with prominent black spines. Antennae fuscous to ferruginous; segment i, length .16 mm.; ii, .64 mm., in length not equal to width of head

(width .81 mm.), equal in thickness to segment i but more slender on basal one-fourth, usually paler on apical half; iii, .36 mm.; iv, .31 mm. Pronotum: Length .62 mm., width at base 2.38 mm.

Female: Length 3.5 mm., width 1.53 mm.; width of head .86 mm., vertex .41 mm.; antennal segment ii, length .61 mm., more slender than in the male, gradually tapering thicker toward apex but scarcely attaining thickness of segment i.

Breeds on *Salix*.

New York.

L. rubidus var. *atricolor* Knight, new variety.

Structurally not differing appreciably from *rubidus* but uniformly black in color; tibiae somewhat reddish or testaceous apically; antennal segment ii always black; scale-like pubescence silvery white.

Holotype: Male, 10 Aug., 1916, Batavia, N. Y. (H. H. Knight); author's collection. Paratypes: Males and females (4), taken with the type. MINNESOTA—Males and females (24), 12 July, 1919, Hennepin County (H. H. Knight). NEW YORK—Male, 7 Aug., 1917, Wanakena (C. J. Drake). VERMONT—Male, 15 June, 1908, Brattleboro (C. W. Johnson).

Lepidopsallus minusculus Knight, new species.

Ovate, robust; black, moderately shining, clothed with silvery white, closely appressed, scale-like pubescence and intermixed with more erect yellowish to dusky pubescence.

Male: Length 2.4 mm., width 1.28 mm. Head: width .68 mm., vertex .34 mm. Rostrum, length 1.03 mm., attaining hind margins of posterior coxae.

Antennae: Segment ii, length .60 mm., cylindrical, equal in thickness to segment i; iii, .36 mm., pale fuscous; iv, .23 mm., pale fuscous.

Pronotum: Length .51 mm., width at base 1 mm. Pleura black, beset with conspicuous silvery white scales; ostiolar peritreme black, with two or three scales on dorsal lobe.

Hemelytra: Embolar margins strongly arcuate; scale-like pubescence rather closely but irregularly placed, each scale truncate at apex and quite as distinct as are the scales of certain Lepidoptera. Membrane and veins uniformly fuscous, scarcely paler bordering apex of cuneus.

Legs: Black, tarsi fuscous; tibial spines large, length of some equal to more than twice thickness of tibia. Venter black, also clothed with silvery scales.

Female: Length 2.6 mm., width 1.48 mm.; slightly larger and more robust than the male. Head: Width .71 mm., vertex .38 mm.

Antennae: Segment ii, length .60 mm., cylindrical, equal in thickness to segment i; iii, .36 mm., pale fuscous; iv, .23 mm., pale fuscous.

Holotype: Male, 10 July, 1915, White Plains, N. Y. (J. R. T. Bueno); author's collection. Allotype: taken with the type. Paratypes: Male and female, taken with the types on apple.

L. olseni Knight, new species.

Slightly larger than *minusculus*, very similar in color but in form more flattened above; distinguished by the long and slender antennal segment ii which is equal to length of pronotum plus dorsal width of an eye.

Female: Length 2.7 mm., width 1.28 mm. Head: Width .76 mm., vertex .34 mm. Rostrum (imbedded in glue).

Antennae: Segment i, length .17 mm.; ii, .68 mm., slender, gradually thickened from base toward apex but not attaining thickness of segment i; iii, .34 mm.; iv, missing.

Pronotum: Length .43 mm., width at base 1.01 mm.; clothed with silvery scale-like pubescence and intermixed with more erect, simple pubescent hairs.

Hemelytra: Embolar margins moderately arcuate; silvery scales not so distinctly truncate at apex as in *minusculus*. Membrane pale fuscous, veins fuscous to reddish brown.

Legs: Black, tibiae more reddish black. Venter sparsely beset with silvery scales and interspersed with more erect simple pubescence.

Named in honor of the collector, Mr. Chris E. Olsen.

Holotype: Female, 28 July, 1916, Pigeon Cove, Mass. (C. E. Olsen); author's collection.

Tribe **ONCOTYLINI**.*Key to Genera.*

1. *Pseudarolia* connate with claw for their full length; claws broadly curved 2
Pseudarolia attached only at basal angles and extending free and parallel with them, usually to the tips; claws short and strongly incurved (p. 474) *Macrotylus*
2. *Pseudarolia* extending beyond tips of claws (fig. 49: 13); rostrum not extending beyond hind coxae (p. 474) *Lopus*
Pseudarolia not attaining apex of claw, extreme tips sharply incurved; rostrum extending to middle of venter (p. 473) *Megalocoleus*

Megalocoleus Reuter.**M. molliculus** (Fallen).

Phytocoris molliculus Fallen, Hemip. Suec., 82, 1829.

Macrocoleus molliculus Reuter, Hem. Gymn. Eur., ii, 226, 1879.

Male: Length 5.4 mm., width 1.89 mm.; pale greenish white to yellowish, disk of corium sometimes slightly darkened with fuscous; membrane pale to fumate, smaller areole and a spot near tip of cuneus darker; dorsum clothed with prominent, more or less erect, pale yellowish to dusky pubescence; rostrum attaining middle of venter, blackish at apex.

Female: Length 4.5 mm., width 1.91 mm.; more robust than the male but very similar in coloration.

Occurs on *Tanacetum* and *Achillea* in Europe.

Beach Bluff, Mass.

Lopus Hahn.

L. decolor (Fallen).

Capsus decolor Fallen, Monog. Cim. Suec., 102, 1807.

Onychumenus decolor Saunders, Het. Brit. Islds., 297, pl. 27, fig. 10, 1892.

Length, male, 4.8 mm., width 1.6 mm.; female, length 4 mm., width 1.4 mm.; pale with dusky brown, antennae darker brown; tarsi and claws black.

Breeds on sedges; found in numbers and was observed to oviposit in the stem of *Juncus dudleyi* at McLean, New York.

Colebrook, 21 July, 1905 (H. L. V.); Cornwall, 18 July, 1921 (B. H. W.); Litchfield, 22 July, 1920 (P. G.); New Haven, 11 July, 1904 (P. L. B.), 11 July, 1920, 20 July, 1904 (B. H. W.); Salem, 11 July (H. W. Foote); West Thompson, 12 Aug., 1905 (H. L. V.).

Macrotylus Fieber.

***M. amoenus** Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 75, 1909.

Length 2.2 mm., width .8 mm.; yellowish green, the hemelytra darker green; antennal segments i and ii black, apices white; tibiae black, femora with a black bar on the dorsal margin; cuneus with two yellow spots separated with black; membrane fuscous, with a clear spot on each side near the margin.

Guilford, 13 July, 1920 (P. G.); Westville, 4 July, 1904 (W. E. B.), type locality.

M. sexguttatus (Provancher).

Pet. Faune Ent. Can., iii, 150, 1887.

Length 3 mm., width 1.1 mm.; black; apex of antennal segment ii pale; head greenish; base and apex of cuneus clear; membrane with a large clear spot on each side near the apex.

Found breeding on *Aster undulatus* at Batavia, New York.

New Haven, 16 June, 1920 (B. H. W.).

Tribe Hallodapini.

Key to Genera.

1. Pseudarolia connate with claws (fig. 49: 15, 16) 2
 Pseudarolia attached at base of claws, free apically but extending
 practically parallel with claw (fig. 49: 17); females usually
 wingless (p. 475) **Coquillettia**
2. Antennal segment ii nearly linear, slightly thickened apically but
 not exceeding twice thickness of basal half; females brachyp-
 terous (p. 475) **Orectoderus**
 Antennal segment ii distinctly clavate, thickness on apical half
 exceeding twice that of basal half; females macropterous
 (p. 476) **Teleorhinus**

Coquillettia Uhler.**C. mimetica Osborn.**

Proc. Iowa Acad. Sci., v, 236, 1898.

Male: Length 6.4 mm., width 1.77 mm.; ferrugino-testaceous, abdomen, tarsi, and antennal segment ii, becoming fuscous; basal half of corium transparent, apical part bright ferrugino-testaceous but slenderly margined with fuscous; basal one-third of cuneus white, slightly translucent, membrane and apical two-thirds of cuneus blackish.

Female: Length 5.5 mm., wingless; ant-like in form, head wider than pronotum; abdomen with first two segments constricted to form a pedicel, the remaining segments forming a globose, polished, minutely and sparsely haired body with conspicuous pleural fold; color brown, antennal segments iii, iv, and apex of ii, tarsi and apices of tibiae, fuscous to blackish; globose portion of abdomen and dorsum of second segment, dark chestnut or piceous.

Occurs on elevated grassy ridges (Osborn).

Iowa, North Carolina.

Orectoderus Uhler.**O. obliquus Uhler.**

Bull. U. S. Geol. Geog. Surv., i, 319, 1876.

Male: Length 7.7 mm., width 1.8 mm.; shining black, basal half of cuneus, base of corium and extending to near middle of hemelytra, pale or translucent; legs reddish to piceous.

Female: Length 5.8 mm., brachypterous; ant-like in form, head broader than pronotum; hemelytra greatly reduced, extending to base of abdomen, there turning upward, the tips tapering to a point and vertical; two basal segments of abdomen constricted into a pedicel, the remaining segments forming a globose portion, the pleural fold prominent from base to eighth segment inclusive; color piceous to black, antennae brownish to fuscous, segment iv and tips of ii and iii, blackish.

Granby, 21 May, 1920 (M. P. Z.).

O. obliquus var. ferrugineus Knight, new variety.

Female: Similar in structure to the typical female of *obliquus* but differs in color aspect; ferrugino-testaceous, apex of antennal segment ii piceous, globose portion of abdomen black.

Mr. Olsen took these specimens in company with a reddish colored ant (*Camponotus castaneus*) which this form resembles very closely.

Holotype: Female, 4-7 July, Bayshore, Long Island, N. Y. (Chris E. Olsen); author's collection. Paratypes: Females (2), taken with the types.

Teleorhinus Uhler.

T. tephrosicola Knight, new species.

Male: Length 7.3 mm., width 2.2 mm.; differs from *cyaneus* Uhler in that the combined length of antennal segments iii and iv is greater than the length of segment ii; clavate portion of segment ii only twice as thick as segment i, while in *cyaneus* the apical half of segment ii is three times the thickness of segment i.

Antennae: Segment i, length .36 mm., black; ii, 2.05 mm., apical two-fifths clavate, .17 mm. thick, yellowish, the clavate portion black; iii, 1.39 mm., slender, fuscous, slightly paler at base; iv, .97 mm., fuscous.

Black, shining, minutely pubescent, very similar to *cyaneus* but differs in form of anterior angles of pronotum; legs pale reddish yellow, coxae whitish but blackish at base; rostrum brownish but darker at base and apex.

Female: Length 7.6 mm., width 2.5 mm.; not differing materially in form or color from the male.

Holotype: Male, 11 July, 1916, Yaphank, Long Island, N. Y. (Wm. T. Davis); author's collection. Allotype: taken with the type. Paratype: Female, 17 June, 1906, Lakehurst, N. J. (Wm. T. Davis). Mr. Davis took the type specimens on flowers of *Tephrosia* sp.

Subfamily DICYPHINAE.

Key to Genera.

1. Pseudarolia prominent (fig. 49: 18-20) 2
Pseudarolia absent (fig. 49: 21); hemelytra hyaline, glassy, ovate, with a sharply defined inverted Y-shaped red or fuscous mark (p. 478) *Hyaliodes*
2. Calli distinctly impressed at basal margin, and thus the pronotal disk rather distinctly transversely sulcate (p. 476) *Dicyphus*
Calli not or scarcely impressed at basal margin, pronotal disk not transversely sulcate 3
3. Eyes small, head elongated behind eyes for a space equal to lateral width of an eye (p. 478) *Macrolophus*
Eyes large, head space behind eyes not equal to half the lateral width of an eye [*Cyrtopeltis*]

Dicyphus Uhler.*Key to Species.*

1. Ostiolar peritreme strongly protruding, ostiole large and clearly exposed 2
Ostiolar peritreme scarcely raised from the pleural wall, ostiole inconspicuous or quite concealed; head and pronotum black, collar and ray between calli pale, hemelytra chiefly pale *agilis*
2. Eyes removed from pronotal collar for a space equal to dorsal width of an eye; hemelytra conspicuously colored with red *famelicus*
Eyes removed from pronotal collar for a space equal to less than dorsal width of an eye; hemelytra darkened with fuscous, rarely tinged with reddish *discrepans* n. sp.

D. agilis (Uhler).

Bull. U. S. Geol. Geog. Surv., iii, 425, 1877.

Male: Length 3.4 mm., width .9 mm.; female, length 4.5 mm., width 1.1 mm.; pale yellowish, head, thorax, and segment ii of antennae, chiefly black; hemelytra pale, lightly marked with fuscous, sometimes tinged with red.

Food plant: *Rubus odoratus*, and possibly others.

Colebrook, 21 July, 1905 (H. L. V.); Guilford, July (B. H. W.); Hamden, 25 June, 1911 (B. H. W.); New Haven, 15 June, 1904 (W. E. B.), 1 June, 1911 (B. H. W.); Poquonock, 27 June, 1905 (H. L. V.).

D. famelicus (Uhler).

Proc. Boston Soc. Nat. Hist., xix, 413, 1878.

Length 4.8 mm., width 1.2 mm.; pale yellowish, head and thorax dull reddish; hemelytra and scutellum with dull reddish markings; membrane infuscated, brachium reddish near cuneus.

Food plant: *Rubus odoratus*.

Massachusetts, New York, New Hampshire, Vermont.

D. discrepans Knight, new species.

Male: Length 8.3 mm., width .94 mm. Head: Width .55 mm., vertex .22 mm., length .49 mm., from hind margin of eye to collar .11 mm.; black, shining, pale on vertex, darkened along median line. Rostrum, length 1.53 mm., attaining posterior margins of hind coxae, pale, darkened at extreme tip.

Antennae: Segment i, length .36 mm., pale, darkened at base and apex; ii, .97 mm., apical one-third black, pale at middle and infuscated at base; iii, .77 mm., dark fuscous, pale at base; iv, missing.

Pronotum: Length along median line .44 mm., to line drawn between basal angles .55 mm., width at base .77 mm., collar .38 mm.; calli confluent, transverse, convex, a transverse impression just behind which continues over the sides of disk; basal margin of disk strongly sulcate, exposing mesonotum broadly, basal angles rounded, lateral margins sulcate, coxal cleft visible from above, collar flat, separated from calli by a transverse impression which connects at each side with coxal cleft; pale, pleura blackish. Scutellum triangular, infuscated along median line, pale at each side; mesonotum broadly exposed, pale to reddish, a rounded fuscous spot at middle which continues under pronotum, also a smaller one at basal angles. Sternum black, shining, pleura pale to brownish; ostiolar peritreme strongly convex, alutaceous, pale, a horn-shaped reddish opaque tract curving dorsad from the large and conspicuous ostiole.

Hemelytra: Width .94 mm., pale translucent, disk of clavus and corium lightly infuscated, a dark spot at apex of embolium, apex of cuneus black. Membrane pale, lightly infumed at middle of apical half, veins infuscated.

Legs: uniformly pale yellowish, clothed with fine, short black hairs. Venter black, shining, genital segment yellowish.

Female: Length 4 mm., width 1.05 mm.; very similar to the male in form and coloration.

Some of the Minnesota specimens have the membrane shortened to little longer than the cuneus.

This form differs from the description of *vestitus* Uhler in having antennal segment ii pale, and black only at apex and base, in the paler scutellum with only median line dark, and if the original description is correct, in the much longer antennal segment ii which in *discrepans* greatly exceeds length of pronotum.

Food plant: *Aster* sp.

Minnesota, New Hampshire, New York.

Holotype: Male, 7 July, 1917, Cranberry Lake, N. Y. (C. J. Drake); author's collection. Allotype: same data as the type. Paratypes: Females (2), topotypic. Males (2) and females (6), 30 Aug., 1919 Kawishiwi River, St. Louis County, Minn. (H. H. Knight).

Macrolophus Fieber.

M. separatus (Uhler).

Proc. Zool. Soc. London, for 1894, 194.

Length 4.5 mm., width 1.1 mm.; greenish yellow; hemelytra pale, with numerous black dots, one at base of each black hair; spot near apex of embolium, tip of cuneus, antennal segment i and apex of ii, black; membrane pale fuscous, a large pale spot near apex of cuneus.

Branford, 21 July, 1920 (B. H. W.); East River, 30 July, 1910 (C. R. E.).

Hyaliodes Reuter.

H. vitripennis (Say).

Compl. Writ., i, 345, 1859.

Length 4.8 mm., width 1.7 mm.; hemelytra hyaline, glassy, with black or red bordering the scutellum, inner edge of clavus and corium, and across apex of corium to lateral margin, also dark on membrane, veins, and tip of cuneus; pronotum and antennae variously marked with red and black.

Occurs on several plants, frequent on *Vitis*; predaceous on plant lice.

Branford, 26 July, 1904 (W. E. B.); Mount Carmel (Hamden), 24 July, 1904 (W. E. B.); New Canaan, 14 Sept., 1905 (W. E. B.); New Haven, 7 July, 1905 (B. H. W.).

Subfamily BRYOCORINAE.

Key to Genera.

1. Pronotum without a distinct collar; pronotum posteriorly gibbous, often strongly so; pronotum coarsely punctured 2

- Pronotum with a distinct collar; pronotum not gibbous posteriorly; sparsely punctured; antennal segment i shorter than the interocular space **Monalocoris**
2. Pronotum posteriorly strongly gibbous, a longitudinal impression at least in the middle; embolium broadly expanded and flat, not thickened **Pycnoderes**
- Pronotum posteriorly moderately gibbous, without longitudinal impressions; embolium narrow, thickened, rope-like **Sixeonotus**

Monalocoris Dahlbom.

M. filicis Linnaeus.

Cimex filicis Linnaeus, Syst. Nat., Edn. 10, i, 443, 1758.
Saunders, Het. Brit. Islds., 130, 1892.

Length 2.5 mm., width 1.4 mm.; short oval, convex; brown to dark brown, shining, pronotum finely punctured; legs and antennae pale yellowish brown.

Occurs on shield fern (*Aspidium spinulosum*).

Huntington, 9 July, 1920 (P. G.); Lyme, 20 Aug., 1910 (B. H. W); Putnam, 12 July, 1905 (H. L. V.).

Pycnoderes Guérin.

P. dilatatus Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 3, 1909.

Length 4 mm., width 1.7 mm.; black, two spots on embolium, cuneus, membrane, legs excepting apical half of posterior femora, and antennae, white or pale yellowish; posterior area of pronotal disk strongly gibbous, having three longitudinal impressions, coarsely punctured.

New Jersey.

Sixeonotus Reuter.

S. insignis Reuter.

Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 78, 1876.

Length 3 mm., width 1.7 mm.; black; legs and antennae yellowish white; apical half of the membrane pale.

Occurs on skunk cabbage (*Symplocarpus*).

Colebrook, 27 July, 1905 (H. L. V.).

S. tenebrosus Distant.

Biol. Centr. Amer., Het., i, 441, 1893.

Length 2.7 mm., width 1.5 mm.; black; only the coxae, trochanters, and tarsi yellowish white; apex of the membrane pale.

Maryland.

Subfamily CYLAPINAE.

Key to Tribes.

1. Antennae exceedingly long, much longer than the body, segment i thickened, the remaining segments thread-like; pronotum laterally not margined, or rarely obsoletely margined; calli short, scarcely attaining the middle of the disk **Cylapini**

Antennae not longer than the body, segment iii not equaling ii in length; pronotum with the sides wholly or at least posteriorly margined; calli large and convex, at least attaining the middle of the diskFulvini

Tribe CYLAPINI.

Cylapus Say.

C. tenuicornis Say.

Compl. Writ., i, 347.

Length 5.5-6 mm., width 2.2 mm.; brownish gray and marked with white, distinguished by the long slender antennae and prominent protuberant eyes.

A very active species, usually found on dead and fungus covered tree trunks.

Portland, 10 Aug., 1919 (B. H. W.).

Tribe FULVINI.

Fulvius Stål.

F. brunneus (Provancher).

Nat. Can., iv, 104, 1872.

Length 3.4 mm., width 1.1 mm.; brown, marked with yellowish and white; antennal segment ii pale yellowish, femora brown like the pronotum, basal half of cuneus white, apex of scutellum and an area on hemelytra, pale.

New Haven, 28 Aug., 1910 (B. H. W.).

F. imbecilus (Say).

Compl. Writ., i, 345, 1859.

Length 4 mm., width 1.2 mm.; very similar to *brunneus* but larger; antennal segment ii brown with the apical one-third white, femora yellowish brown, scutellum dark brown.

New Jersey.

Subfamily CLIVINEMINAE.

Largidea Van Duzee.

L. davisii Knight.

Ent. News, xxviii, 7, 1917.

Length 6 mm., width 2.3 mm.; fuscous Indian red, shading to black on the head, calli, sternum, and parts of the abdomen; length of antennal segment ii only slightly greater than width of head across eyes, incrassate in the female and thick linear in the male; first tarsal segment expanded and flat on ventral surface; pronotum coarsely and hemelytra obsoletely punctured; calli outlined by an impressed, smooth line which runs forward and down on the side to coxal cleft.

Occurs on *Pinus*.

Promised Land, Long Island, N. Y. Male, 10 Aug., 1899, Hyannis Port, Mass. (J. L. Zabriskie).

Subfamily DERAEOCORINAE.

Key to Genera.

1. Antennae linear, very long and of nearly equal thickness throughout; vertex transversely striate and longitudinally sulcate; segment ii of hind tarsi much shorter than i or iii; usually large elongate species (p. 481) *Eustictus*
 Antennae not so long or linear, segment ii slender at base and slightly enlarged toward apex; vertex usually polished; segment ii of hind tarsi equally long as i or iii, or nearly so 2
2. Head strongly produced and nearly horizontal, facial angle acute, tylus projecting beyond apex of first antennal segment; dorsum thickly covered with stiff erect pubescence; embolar margin thin and broadly expanded, sides nearly parallel
 (p. 484) *Eurychiloptera*
 Head less produced, scarcely surpassing middle of first antennal segment, facial angle either a right angle or only slightly less; dorsum either pubescent or practically glabrous; embolium not as the above (p. 484) *Deraeocoris*

Eustictus Reuter.

Key to Species.

1. Hind tibiae with long pilose hairs on basal half, distinctly longer than true spines 2
 Hind tibiae with minute pubescence only, pubescent hairs not attaining length of true spines 3
2. Pronotal disk uniformly brownish black; legs chiefly reddish, tibiae not distinctly banded with paler; length 8-11 mm. *grossus*
 Pronotal disk blackish but paler near basal margin; legs pale testaceous and marked with black, tibiae distinctly marked with four alternating pale and fuscous bands *venatorius*
3. Pronotal disk with median portion black, lateral margins broadly pale except for dark punctures; male, width of vertex equal to little more than thickness of antennal segment i; length, male, 6.9 mm., female, 7.4 mm. *salicicola* n. sp.
 Pronotal disk chiefly brownish black, not paler on lateral margins; male, width of vertex equal to twice thickness of antennal segment i; length, male, 5.5-6 mm., female, 7 mm. *necopinus* n. sp.
 - (a) Pronotal disk blackish but with paler maculae; female antennal segment i, in length, equal to twice the width of vertex variety *necopinus* typical
 - (b) Pronotal disk uniformly brownish black; female antennal segment i, in length, not equal to twice the width of vertex variety *discretus* n. var.

E. necopinus Knight, new species.

Male: Length 5.6 mm.; allied to *venatorius* but smaller, width of vertex equal to twice thickness of antennal segment i, pronotum not distinctly paler on basal half, pubescent hairs on hind tibiae not attaining length of true spines.

Head: Width .98 mm., vertex .28 mm.; eyes less prominent than in either *venatorius* or *catulus*, scarcely raised above level of vertex; height of eye .61 mm.

Antennae: Segment i, length .75 mm., greatest thickness .069 mm., pale and marked with black; ii, 2.16 mm., brownish black, clothed with fine short pubescence; iii, 1.11 mm., black, paler on apical one-third; iv, .88 mm., black.

Pronotum: Brownish black, disk with a few small paler spots, slender margins and collar pale, coxal margin also pale. Scutellum black, spot at basal angles and vitta on apex pale.

Hemelytra: Width 2.08 mm.; pale translucent, irregularly marked with dark fuscous; cuneus clear, apical half and inner basal angle blackish; membrane pale, veins and invading membrane each side, brownish to fuscous.

Legs: Brownish black, femora paler basally, mottled apically; tibiae with four pale marks but not forming complete bands.

Venter: Reddish brown to blackish, paler beneath and spotted with reddish; genital claspers distinctive.

Female: Length 7 mm., width 2.6 mm.; larger than the male but very similar in coloration. Head: Width 1.09 mm., vertex .43 mm. Antennae: Segment i, length .86 mm.; ii, 2.57 mm.; iii, 1.24 mm.; iv, 1 mm.

Holotype: Male, 4 July, 1919, White Plains, N. Y. (J. R. T. Bueno); author's collection. Allotype: Female, 8 Aug., 1918, Ontario, Can. (H. S. Parish). Paratype: Male, taken with type.

Mr. Bueno collected the type on Aspen.

**E. necopinus* var. *discretus* Knight, new variety.

Female: Length 7 mm., width 2.44 mm.; pronotal disk uniformly brownish black, without paler maculae. Head: Width 1.05 mm., vertex .50 mm. Antennae: Segment i, length .94 mm., brownish black, paler maculae not distinct; ii, 2.72 mm., brownish black, spots not apparent, clothed with short pale or dusky pubescence; iii, 1.22 mm., brownish black, paler apically; iv, 1.05 mm., dark brownish black.

Holotype: Female, 26 July, 1910, Wallingford, Conn. (D. J. Caffrey).

Very likely this form may prove to be a distinct species.

Eustictus salicicola Knight, new species.

Male: Length 6.9 mm.; related to *venatorius* but differs in the antennae, tibial pubescence, and in color pattern of the dorsum.

Head: Width 1.19 mm., vertex .08 mm., height of eye .77 mm.; eyes prominent, projecting above vertex and below gula.

Antennae: Segment i, length .81 mm., pale and marked with black; ii, 2.31 mm., dark fuscous, paler on basal one-sixth but dark spots are visible, extreme apex paler; rather densely covered with fine short pale pubescence, a few hairs slightly longer but in length not exceeding thickness of segment; iii, 1.05 mm., blackish, paler apically; iv, .91 mm., blackish.

Pronotum: Median portion of disk black, lateral margins broadly pale except for dark punctures; propleura brownish black, lower margins pale. Scutellum black, basal angles paler;

minutely, sparsely pubescent. Sternum dark fuscous, paler on median line and at sides; ostiolar peritreme pale, invaded with fuscous above.

Hemelytra: Width 2.5 mm.; glabrous, pale translucent and marked with fuscous but without large spots on basal half as on *venatorius*; clavus black each side of commissure, slender dark marks bordering claval vein; corium with punctures, radius, and large spot on inner apical angle, dark fuscous to black; embolium scarcely darkened at apex, the extreme outer edge blackish. Cuneus pale translucent, inner apical margin blackish. Membrane pale, fumate within areoles, veins slightly darker, a fuscous mark bordering apical margin of larger areole; also a pale fuscous cloud on apical half each side beyond the areoles.

Legs: Pale and marked with blackish; femora with apical half marked and spotted with blackish, an irregular pale but spotted subapical annulus; tibiae with four paler bands but more or less interrupted with dark spots, pubescence short, not attaining length of true spines.

Venter: Pale greenish and maculated with reddish, ventral surface of genital segment blackish, an impressed dark spot beneath each spiracle; genital claspers distinctive of the species.

Female: Length 7.4 mm., width 2.77 mm.; very similar to male in coloration but differs in the pilose character of antennae. Head: Width 1.08 mm., vertex .39 mm., height of eye .69 mm., eyes less prominent than in male. Antennae: Segment i, length .91 mm., beset with several erect hairs, pale and irregularly spotted with black; ii, 2.5 mm., ground color pale but closely spotted and shaded with brownish black, extreme apex pale or reddish, beset with erect pale pilose hair, length of hairs exceeding twice thickness of segment; iii, .97 mm., blackish, paler apically, basal half beset with pilose hairs; iv, .83 mm., blackish.

The writer took all his specimens on willow (*Salix*) where both nymphs and adults were found on the bark of the trees, indicating that the species is predaceous.

Holotype: Male, 18 June, 1921, Phalen Park, Ramsey County, Minn. (H. H. Knight); Minn. Univ. collection. Allotype: 11 Aug., 1920, St. Anthony Park, Minn. (H. H. Knight). Paratypes: Males (3), taken with the holotype. MINNESOTA—Male, 20 June, 1921, New Ulm (H. H. Knight). MISSISSIPPI—Male, 21 Apr., 1915, Agricultural College (H. F. Wallace). SOUTH DAKOTA—Male, 30 June, 1921, Brookings (H. C. Severin).

E. venatorius Van Duzee.

Bull. Buff. Soc. Nat. Sci., x, 479, 1912.

Male: Length 7.4 mm., width 2.5 mm.; pale and mottled with fuscous and black; antennae irregularly annulated and mottled with black, more distinctly so than in *grossus*; dorsum rather sparsely beset with pale erect pilose hairs; hind tibiae with long pilose hairs on basal half, distinctly longer than true spines.

Female: Length 8.2 mm., width 2.8 mm.; more robust than the male but very similar in coloration.

Found on hickory by Van Duzee.

New York.

E. grossus Uhler.

Ent. Amer., iii, 70, 1887.

Male: Length 8 mm., width 2.6 mm.; brownish with fuscous, pronotum and scutellum nearly black; dorsum not mottled as in *venatorius*, cuneus usually reddish at base; femora reddish brown to blackish, never mottled; ventral parts sometimes reddish brown; dorsum and hind tibiae beset with long pilose hairs as in *venatorius*.

Female: Length 8.6-10 mm., width 2.9-3.5 mm.; very similar to the male but larger and more robust.

Massachusetts, New Jersey, New York.

Eurychiloptera Reuter.

E. luridula Reuter.

Acta Soc. Sci. Fenn., xxxvi, No. 2, 60, 1909.

Male: Length 4.5 mm., width 1.8 mm.; fuscous to black on a pale background; pronotum coarsely punctured; dorsum clothed with stiff erect pubescent hairs.

Female: Length 4.4 mm., width 1.03 mm.; more robust than the male but very similar in coloration.

Occurs on apple trees; evidently predaceous in habits.

New York.

Deraeocoris Kirschbaum.

Key to groups of Deraeocoris.

1. Claws deeply cleft near base (fig. 49: 29-30) 2
- Claws not cleft or with only a slight indication (fig. 49: 28) 7
2. Scutellum punctate 3
- Scutellum impunctate 5
3. Hind tibiae without distinct spines, clothed only with prominent black hairs .. (Exotic group containing genotype *olivaceus* Fabricius)
- Hind tibiae with a row of distinct spines on the anterior face 4
4. Pronotum distinctly margined; eyes with hind margins practically in line with base of head, nearly in contact with collar; segment i of antennae surpassing tip of tylus by less than half its length (p. 485) Group A (subgenus *Camptobrochis* Fieber)
- Pronotum immarginate; eyes sloping forward away from collar; segment i of antennae extending beyond tip of tylus by more than one-half its length (p. 496) Group E
5. Dorsum practically glabrous, at most only sparsely and finely pubescent (not rubbed specimens), rarely a few hairs at anterior angles of pronotum; hind tibiae with a row of spines or heavily chitinized hairs on the anterior face 6
- Dorsum heavily pubescent or hairy, at least with long hairs at anterior angles of pronotum; hind tibiae without distinct spines on the anterior face, usually rather closely set with prominent long hairs (p. 495) Group D (subgenus *Euarmosus*)

- 6. Form elongate, width not equal to one-half the length (p. 486) Group B
Form broad oval, strongly convex, width greater than or equal to
at least one-half the length of the insect (western species)
- 7. Scutellum punctate (western species)
Scutellum impunctate (p. 492) Group C

Key to Species of Group A.

- 1. Dorsum bright red, clavus, a pair of large spots on corium and on
pronotum black **histrio**
Dorsum not red and black as the above 2
- 2. Cuneus red or stained with reddish; membrane hyaline or with
only a fuscous spot at apex **poecilus**
Cuneus infuscated or with blackish; membrane having two small
fuscous points on apical half, or broadly marked with fuscous ... 3
- 3. Membrane nearly clear but having two small fuscous points, one at
each side on the apical half **nebulosus**
Membrane with the apical half heavily infuscated **nubilus**

D. (*Camptobrochis*) *nebulosus* Uhler.

Camptobrochis nebulosus Uhler, U. S. Geol. Surv. Terr., Mont. Prelim. Rept., 417, 1872.
18th Rept. State Ent. Minn., 91, 1921.

Length 3.5-3.9 mm., width 1.75-2 mm.; ovate, shining; olivaceo-testaceous and darkened with blackish, or fuscous to blackish and marked with pale; membrane clear, a pair of small fuscous points on the apical half, one each side of the middle.

Predaceous; occurs most frequently on *Quercus macrocarpa*, but also on other trees.

New Haven, 18 March, 6 Aug., 1911 (A. B. C.); South Meriden, 27 Feb. (H. L. J.); Westville, 2 Oct., 1905 (W. E. B.).

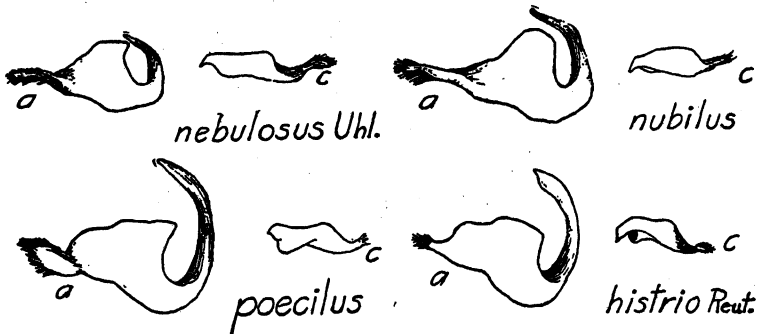


FIG. 50. Male genitalia of *Deraeocoris nebulosus*, *D. nubilus*, *D. poecilus* and *D. histrio*.—(a) left clasper, lateral aspect, (c) right clasper, lateral aspect, greatly enlarged. Drawing by Dr. H. H. Knight.

D. (*Camptobrochis*) *poecilus* McAtee.

Camptobrochis poecilus McAtee, Ent. News, xxx, 246, 1919.
18th Rept. State Ent. Minn., 96, 1921.

Length 4-5 mm., width 2-2.5 mm.; slightly larger than but structurally very close to *nebulosus*; olivaceo-testaceous to brownish and blackish, cuneus red, membrane clear, a rather distinct somewhat oval-shaped fuscous spot on the apex.

Predaceous; occurs most frequently on *Alnus rugosa*.

New Haven, 15 May (A. B. C.); Orange, 21 May (A. B. C.); Portland, 15 May (B. H. W.).

D. (Camptobrochis) histrio Reuter.

Callicapsus histrio Reuter. Ofv. Kongl. Sv. Vet.-Akad. Forh., xxxii, No. 9, 75, 1876.

18th Rept. State Ent. Minn., 100, 1921.

Length 4.5-5 mm., width 2-2.3 mm.; dorsum bright red, clavus, pair of large spots on corium and on pronotum black.

Frequents borders of ponds; probably predaceous.

Long Island, N. Y.

***D. (Camptobrochis) nubilus** Knight.

18th Rept. State Ent. Minn., 106, 1921.

Length 4.2-4.8 mm., width 2-2.3 mm.; male more elongate than female, apical half of membrane usually heavily infuscated; disk of pronotum fuscous to blackish behind the calli, the median line pale; femora biannulate with pale on the apical half.

Occurs on *Pinus strobus*; probably predaceous.

Portland, May (B. H. W.); Rainbow, 13 June (B. H. W.).

Key to Species of Group B.

- | | |
|---|------------------|
| 1. Tibiae banded with fuscous or pale | 2 |
| Tibiae uniformly pale or yellowish | 7 |
| 2. Membrane with a distinctly rounded fuscous spot on the apical half, frequently connected at base by a fuscous streak extending down from between the areoles, thus leaving a large pale spot each side of middle and bordering apex of cuneus | 3 |
| Membrane usually somewhat infuscated but not as described above | 4 |
| 3. Calli solid black, a broad piceous ray behind each, in pale specimens the calli may be somewhat brownish but in such case the median line and margins of the disk are distinctly pale, leaving a dark brown ray behind each callus; hemelytra with piceous on clavus and corium, embolium pale | <i>borealis</i> |
| Calli more or less invaded with brownish or pale, distinct rays not apparent behind calli; hemelytra and pronotum more uniformly colored, either fulvo-testaceous or dark brownish | <i>fasciolus</i> |
| 4. Rostrum extending slightly beyond the posterior margins of the hind coxae; membrane with the apical half scarcely infuscated, femora pale but with two distinct blackish bands near the apex, hind tibiae biannulate with fuscous on the basal half | <i>grandis</i> |
| Rostrum scarcely attaining the posterior margins of the hind coxae; membrane, femora, and hind tibiae not having the above combination of characters | 5 |
| 5. Femora uniformly dark on the apical half, likewise the basal part in darkest specimens; venter distinctly reddish, sometimes dark chestnut red, shining | <i>betulae</i> |
| Femora with the apical half distinctly banded or entirely pale | 6 |
| 6. Second antennal segment with prominent pale exerted hairs, in length equal to three times the thickness of the segment; pronotum | |

- tum with discoidal margins pale, calli and posteriorly on disk black, forming a ray behind each callus and thus leaving the median line pale *alnicola*
- Second antennal segment without prominent exerted hairs, or if present, not equal to more than twice the thickness of the segment; pronotal disk without distinct rays, sometimes black but the lateral margins not distinctly paler *aphidiphagus*
7. (1) Hind femora with two brown or fuscous bands near the apex; apical half of membrane with a distinctly rounded fuscous spot, usually connected at base by a fuscous streak which extends up between the large areoles 8
- Hind femora with but one fuscous band; apical half of membrane pale or clouded with fuscous but the fuscous area not forming a rounded spot on the apical half 9
8. Calli solid black, a broad piceous ray behind each, in pale specimens the calli may be somewhat brownish but in such case the median line and margins of disk are distinctly pale, leaving a dark brown ray behind each callus, hemelytra with piceous on clavus and corium, embolium pale *borealis*
- Calli more or less invaded with brownish or pale, distinct rays not apparent behind calli; hemelytra and pronotum more uniformly colored, fulvo-testaceous to dark brownish *fasciolus* var. *castus*
9. Dorsum uniformly brownish black; calli and scutellum blackish similar to the whole dorsum *davisi*
- Dorsum pale to testaceous and brownish, frequently becoming fuscous or blackish but always with some pale; calli margined with black or entirely black 10
10. Calli black only around the margin, dorsum rich brownish to fuscobrownish, shining *nitenatus*
- Calli entirely black, or if not, then the dorsum pallid testaceous and with three pustulate fuscous spots, one at apex, middle, and base of each hemelytron 11
11. Dorsum fuscous to blackish, usually with a pale median line running over the disk and scutellum, hemelytra darkened to such an extent that three pustulate fuscous spots are not apparent *quercicola*
- Dorsum pallid testaceous with three pustulate fuscous spots, one at base, middle, and apex of each hemelytron; calli usually black but in pale specimens only margined with black *quercicola* var. *pallens*

D. borealis Van Duzee.

Camptobrochys borealis Van Duzee, Proc. Cal. Acad. Sci., ser. 4, ix, 354, 1920.

18th Rept. State Ent. Minn., 120, 1921.

Length 6-7 mm., width 2.85-3 mm.; elongate, largely pale and marked with piceous; calli deep black, a broad piceous ray behind each, thus leaving the median line and margins of the disk pale or testaceous; embolium pale translucent, membrane with a distinctly rounded fuscous spot on the apical half, usually connected at base by a fuscous streak extending down from between the areoles.

North Branford, 5 July, 1921 (P. G.); South Meriden, 6 July (H. L. J.).

D. fasciolus Knight.

18th Rept. State Ent. Minn., 123, 1921.

Length 6.5 mm., width 2.8-3.1 mm.; usually slightly smaller than *borealis*, disk of pronotum more uniformly colored, calli more

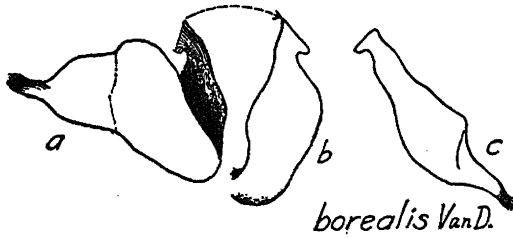


FIG. 51. *Deraeocoris borealis* Van Duzee,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

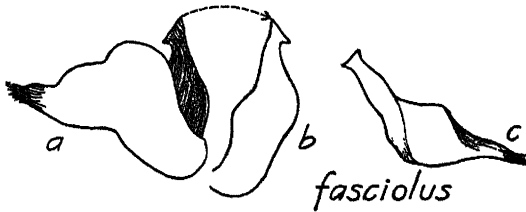


FIG. 52. *Deraeocoris fasciolus* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

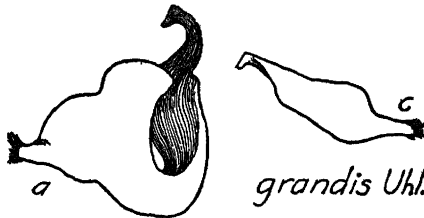


FIG. 53. *Deraeocoris grandis* Uhler,—male genital claspers, (a) left clasper, lateral aspect, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

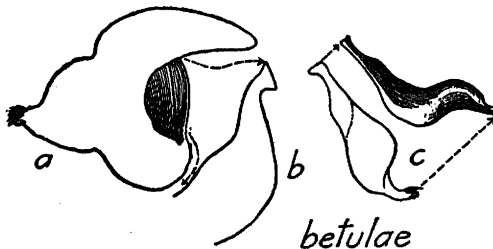


FIG. 54. *Deraeocoris betulae* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, dorsal and lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

or less invaded with brownish or pale and without distinct rays behind; left genital clasper very similar to that of *borealis* but the right clasper is distinctive (fig. 52).

Massachusetts, Maine, New York.

D. fasciolus var. castus Knight.

18th Rept. State Ent. Minn., 125, 1921.

Apparently only a color form of *fasciolus*; tibiae pale without annulations, dorsum fulvo-testaceous, calli usually lined with black but sometimes entirely brownish.

Occurs on beech (*Fagus grandiflora*); predaceous on *Phyllaphis fagi* Linnaeus.

Massachusetts, New York.

D. grandis (Uhler).

Camptobrochis grandis Uhler, Ent. Amer., ii, 230, 1887.

18th Rept. State Ent. Minn., 126, 1921.

Length 6.4-7 mm., width 2.9-3.1 mm.; distinguished by the long rostrum which reaches upon the second segment of the venter; dorsum rather uniformly dark brown, median line of pronotal disk rather broadly but only slightly paler than behind the calli; legs pale, apical half of hind femora and basal half of tibiae biannulate with blackish; membrane uniformly pale fumate on the apical half.

Occurs on hickory (*Carya* sp.).

Massachusetts, New York.

***D. betulae** Knight.

18th Rept. State Ent. Minn., 129, 1921.

Length 6.7-7 mm., width 3-3.2 mm.; brown to dark brown or blackish, venter dark reddish brown to chestnut red; femora uniformly blackish on the apical half, tibiae triannulate with blackish.

Occurs on birch (*Betula lutea*).

New Haven, 2 July (W. E. B.); South Meriden, 4 July (H. L. J.).

***D. alnicola** Knight.

18th Rept State Ent. Minn., 132, 1921.

Length 6.5 mm., width 2.7-2.9 mm.; general aspect very suggestive of *borealis* but distinguished by the genital claspers, prominent exserted hairs on antennae, and by paler infuscation of the membrane which does not form a distinctly rounded spot on the apical half (fig. 55).

Occurs on alders (*Alnus incana*).

New Haven, 20 June (B. H. W.), 2 July (W. E. B.); Stonington, 5 July, (I. W. D.); Wallingford, 19 June, 1912 (D. J. C.).

***D. aphidiphagus** Knight.

18th Rept. State Ent. Minn., 134, 1921.

Length 5.8-6.1 mm., width 2.9-6.1 mm.; fusco-grayish to blackish, the paler and translucent parts not stained with brownish, apical half of membrane infuscated, tibiae triannulate with



FIG. 55. *Deraeocoris alnicola* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

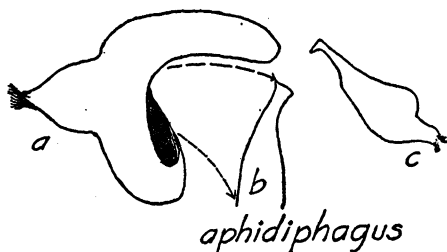


FIG. 56. *Deraeocoris aphidiphagus* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

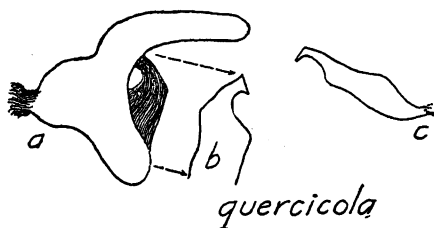


FIG. 57. *Deraeocoris quercicola* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

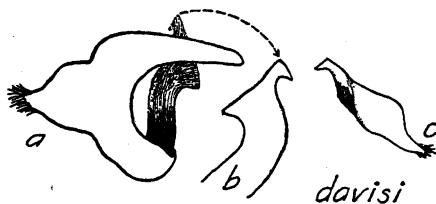


FIG. 58. *Deraeocoris davisi* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

blackish; left genital clasper with a long horn at the dorsal extremity, internal arm slender (fig. 56).

Predaceous on *Eriosoma americanum* Riley.

Wallingford, 13 June, 1911 (J. K. L.); Lyme, June (T. L. Guyton).

***D. quercicola** Knight.

18th Rept. State Ent. Minn., 138, 1921.

Length 5.5-5.8 mm., width 2.4-2.8 mm.; darker colored than *nitenatus*, fuscous to blackish, calli black, apical half of membrane fumate, rarely so pale as in *nitenatus*; left genital clasper with a long dorsal horn which is very distinctive when taken in consideration with the form of the internal arm (fig. 57).

Occurs on *Quercus alba*.

East River, June, 1910 (C. R. E.); New Haven, 8 July (W. E. B.), 7 July, 1920 (B. H. W.).

D. quercicola var. **pallens** Knight.

18th Rept. State Ent. Minn., 140, 1921.

In structure and size similar to *quercicola*; calli more or less pale, pronotal disk rather uniformly colored; scutellum pale, rarely with some blackish each side of median line; hemelytra pale to yellowish, corium with a spot at middle, small one at base, and irregularly at apex, blackish.

Occurs on *Quercus macrocarpa*.

New York.

D. davisi Knight.

18th Rept. State Ent. Minn., 140, 1921.

Length 5.3 mm., width 2.5 mm.; slightly smaller than *nitenatus*, uniformly brownish black; legs and antennae chiefly pale, hind femora with an incomplete dark annulus on apical half; membrane with apical half very faintly but uniformly stained with brownish, veins and areoles darkened with brownish; closely related to *quercicola* but the internal arm of left clasper more highly developed (fig. 58).

Staten Island, N. Y.

D. nitenatus Knight.

|| *Camptobrochis nitens* Reuter, Acta Soc. Sci. Fenn., xxxvi (2), 56, 1909.
18th Rept. State Ent. Minn., 141, 1921.

Length 5.7-6 mm., width 2-2.9 mm.; general aspect very similar to *quercicola* but more highly polished, calli black around the margins only; dorsum rich brownish to dark brownish and piceous, frequently brownish on scutellum but rarely blackish each side of median line; brachium and apices of areoles dark fuscous while the apical half of membrane is practically clear; male genital claspers distinctive of the species (fig. 59).

Predaceous on *Eriosoma lanigerum*.

New Haven, 3 Aug., 1920 (W. E. B.).

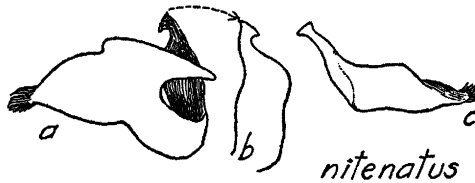


FIG. 59. *Deraeocoris nitenatus* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

Key to Species of Group C.

1. Dorsum heavily pubescent or hairy, at least with long hairs at anterior angles of the pronotum 5
Dorsum practically glabrous, at most only sparsely and finely pubescent (not rubbed specimens), rarely with a few hairs at anterior angles of pronotum 2
2. Form broad oval, strongly convex (width greater than or equal to at least one-half the length of the insect) (western species)
Form elongate (width not equal to one-half the length) 3
3. Antennae (female) with prominent exerted hairs on segment ii, in length equal to three times the thickness of segment at middle; male segment ii as thick at the middle as on the apical half, length of exerted hairs equal to one and one-half times the thickness of the segment *laricicola*
Antennae (female) with exerted hairs, in length scarcely equal to twice the thickness of the segment where they occur; male segment ii slender on the basal half, distinctly thicker on the apical half than at middle, or if not, then the length of exerted hairs not greater than the thickness of the segment 4
4. Calli margined or lined with black, rarely entirely black, ivory white just before and extending inward from the anterior angles in one or two curved lines upon disk of each callus; male segment ii of antennae nearly as thick at middle as on the apical half, length of exerted hairs scarcely as great as the thickness of the segment *pinicola*
Calli solid black; segment ii very similar in both sexes, slender on the basal half and gradually becoming thicker toward the apex. Exserted hairs about equal to thickness of the segment; scutellum uniformly brownish; hind tibiae broadly pale on apical half but without a pale indication below the knee *appalachianus*
5. (1) Legs uniformly dark sepia brown or blackish, hind tibiae frequently with a pale annulus on the apical half 6
Legs and general body coloration fusco-grayish to blackish; hind femora pale on the basal half, two or three linear series of dark spots visible, apical half dark fuscous to blackish but divided by a narrow pale annulation *kennicotti*
6. Pronotum, hemelytra and legs uniformly dark sepia brown or blackish, the semitranslucent areas stained with brownish; hind tibiae usually distinctly annulated with pale on the apical half .. *nigritulus*
Pronotum usually fusco-grayish or black; hemelytra fuscous to black, becoming paler in certain areas but not stained with brownish; legs brownish black, hind tibiae sometimes indistinctly annulated with paler on the apical half; front coxae, xyphus, lower margins of propleura, gula, and sides of tylus, pale *albigulus*

***D. pinicola** Knight.

18th Rept. State Ent. Minn., 162, 1921.

Length 5.7-6 mm., width 2.6-2.9 mm.; calli margined or lined with black, antero-lateral angles invaded with pale, median line of front and just before calli pale to ivory-white; general coloration pale to grayish and darkened with blackish, not at all tinged with brownish (fig. 60).

Occurs on *Pinus strobus*; predaceous on *Chermes pinicorticis* Fitch.

Hartford, July (M. P. Z.); Killingworth, 27 June, 1920 (W. E. B.); New Haven, 16 June (M. P. Z.), 11 July (W. E. B.).

D. laricicola Knight.

18th Rept. State Ent. Minn., 164, 1921.

Length 6-6.5 mm., width 2.7-2.8 mm.; very suggestive of *pinicola* but slightly larger and more elongate, differs in the prominent exserted hairs on antennae and in the structure of the genital claspers (fig. 61).

Occurs on larch (*Larix laricina*).

Massachusetts, New York.

D. kennicotti Knight.

18th Rept. State Ent. Minn., 166, 1921.

Length 5.7-6.8 mm., width 2.7-2.8 mm.; very much resembling and closely related to *laricicola* but having the dorsum distinctly hairy; structure of the male genital claspers very distinctive (fig. 62).

Maine.

D. nigrutilus Knight.

|| *Camptobrochis nigrita* Reuter, Acta Soc. Sci. Fenn., xxxvi, No. 2, 55, 1909.

18th Rept. State Ent. Minn., 170, 1921.

Length 5.9-6.4 mm., width 2.9-3.1 mm.; subovate, hemelytra only very slightly convex, dorsum distinctly hairy, legs thickly clothed with long erect hairs; dark sepia brown to blackish, the subtranslucent parts stained with brownish (fig. 63).

Occurs on *Pinus virginiana*.

Maryland.

D. albigulus Knight.

18th Rept. State Ent. Minn., 171, 1921.

Length 6.5-7.1 mm., width 2.9-3.1 mm.; closely related to *nigrutilus* but differs slightly in coloration and in structure of the male genital claspers; dark fuscous to black, basal half of hemelytra more or less pale between punctures, the paler areas not stained with brownish; front coxae, xyphus, lower margins of propleura, ostiolar area, gula, sides of tylus, juga, and arcuated streak just above on each side of front, pale (fig. 64).

Occurs on *Pinus sylvestris* and *P. resinosa*.

New York.

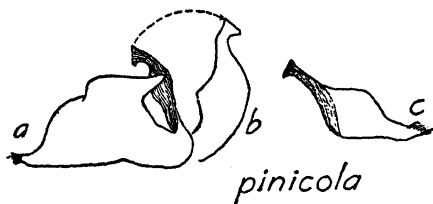


FIG. 60. *Deraeocoris pinicola* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

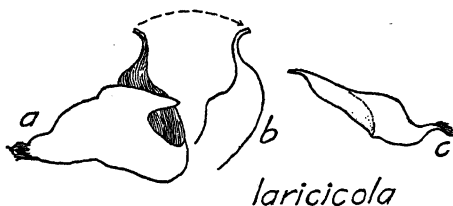


FIG. 61. *Deraeocoris laricicola* Knight,—male genital claspers, (a) left clasper, lateral aspect (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

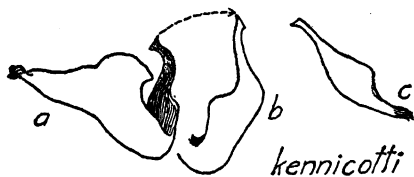


FIG. 62. *Deraeocoris kennicotti* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

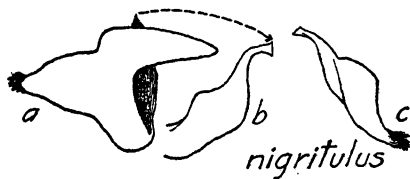


FIG. 63. *Deraeocoris nigrifulus* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

Key to Species and Varieties of Group D.

1. Scutellum pale or red 2
 Scutellum black, or only the median line pale apically 5
2. Lateral margins of pronotum black, or only narrowly pale at anterior angles 3
 Lateral margins of pronotum broadly pale or reddish 4
3. Front of head pale to reddish typical *sayi*
 Front of head distinctly blackish *sayi* var. *frontalis*
4. Embolium black like the corium *sayi* var. *marginatus*
 Embolium pale and the cuneus more or less translucent *sayi* var. *costalis*
5. Femora black, distinctly annulated with pale near apices *sayi* var. *unicolor*
 Femora distinctly pale on basal half, broadly annulated with black at middle of apical half *sayi* var. *femoralis*

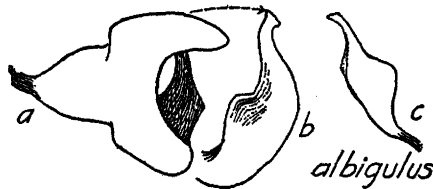


FIG. 64. *Deraeocoris albigulus* Knight,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

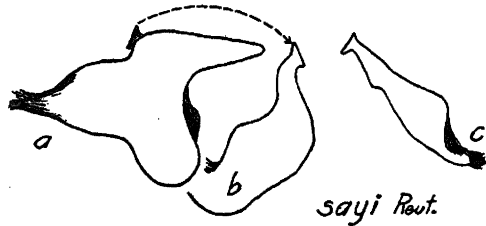


FIG. 65. *Deraeocoris sayi* Reuter,—male, genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.

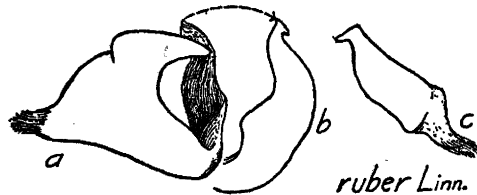


FIG. 66. *Deraeocoris ruber* Linnaeus,—male genital claspers, (a) left clasper, lateral aspect, (b) internal arm of left clasper, (c) right clasper, lateral aspect. Greatly enlarged. Drawing by Dr. H. H. Knight.