

NEW AND LITTLE-KNOWN SPECIES OF PHYTCORIS
FROM THE EASTERN UNITED STATES.
(HETEROPTERA—MIRIDÆ.)¹

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The present paper presents partial results of studies made in the genus *Phytocoris* in an effort to clear up the confusion surrounding the species in the *eximius* group. That there has been confusion need scarcely merit remark; still it might be added that the writer has before him no less than fourteen species, all of which have in previous years been determined by the best Hemiptera workers as *Phytocoris eximius*. Here is a group of species, all of which wear the same confusing cloak of dark and obscure colors, so similar in general appearance that several species can not be distinguished with certainty except by reference to the genital characters. If we are to separate the species consistently then we must get down to genital characters.

As a matter of fact after a little practice, any student can determine species more quickly by reference to the male claspers than by any descriptive process, and far more accurately. Ordinary word descriptions are useless in the *eximius* group and genitalia alone remain the sole guide for accurate determinations. The writer could only desire as other students, that all the species of *Phytocoris* were distinct and that simple tables could be devised to separate the species on other than genital structures but such does not seem feasible among the species of the *eximius* group. Perhaps after we have worked out the species by genitalia and come to know them by long series, certain superficial characters may be seized upon for distinguishing many of the species. In describing some of the new forms the descriptions are short, for the writer can point out only a few comparative color characteristics in addition to the genital structures, wherein the species may be said to differ from *eximius*; mere repetition of words would lead only to confusion.

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A few of the species differ only very slightly in the genital claspers, and just enough to cause one to wonder if there could be such variation of size and structure within a species. In order to get additional evidence on this point the writer has made a careful study of the ædeagus and its chitinous parts and was rewarded by finding some very definite and interesting structures, characters which correlate perfectly with the small differences found in the claspers. In the genus *Phytocoris* the tip of the penis, or perhaps better called the median lobe of the ædeagus, contains a chitinous process, representing the terminal chitinous sclerite of that organ. After a careful comparison with the work of Sharp and Muir² on the structure of the ædeagus in Coleoptera, the writer feels sure that this terminal chitinous process can be homologized with that structure which they have designated as the *flagellum*, an armature of the internal sac of the median lobe. The species most closely related to *eximius* have a flagellum bearing strong chitinous teeth, which in various modifications give distinct specific characters, while in the species examined which have an irrorate or conspurcate membrane and are related to *inops* and *fumatus*, the *flagellum* is devoid of teeth yet has a distinctive shape in each species. The writer has examined from four to six males in most of the species and in no instance has found any variation in the structures that would lead to confusion between the most closely related species.

Specimens to be used for this purpose may be placed in a moist chamber and when sufficiently relaxed the genital segment may easily be removed by using two needles sharpened like chisels. The structures may then be picked out in a watch glass containing 30 per cent. alcohol, later to be mounted on a triangle placed on the pin beneath the insect. If we are to understand the variations or differences which we see in closely related forms we cannot afford to neglect a consideration of the structure of the ædeagus when working out the species. Once the species are worked out on this basis, no doubt superficial characters will be discovered which may be used for ordinary determination of the species.

² Trans. Ent. Soc. London, 1912, pp. 477-642.

Phytocoris eximius Reuter. Caps. Am. Bor., p. 67, 1876. (1)

♂. Length 5.7 mm., width 2 mm. *Head*: width .94 mm., vertex .35 mm.; yellowish, frequently tinged with reddish; geminate mark at base of tylus and apical half excluding a pale spot on each side opposite tips of loræ, upper margin of loræ, jugæ, bucculæ, and a ray passing lower margin of eye, reddish brown to fuscous or black; front clothed with long pale hairs. *Rostrum* (length 2.4 mm.) attaining basal margin of genital segment, yellowish, blackish toward the apex. *Antennæ*: I, length 1.28 mm., yellowish, irregularly mottled with fuscous, bearing five or six long pale setæ; II, 2.77 mm., fuscous, pale at base for a space of .17 mm., the infuscation distinctly paler on the middle third and becoming darker toward each end; III, 1.6 mm., dark fuscous, pale at base for space of .14 mm. and again very narrowly at apex; IV, 1.25 mm., blackish. *Pronotum*: length .91 mm., width at base 1.6 mm., anterior angles .57 mm., collar .64 mm.; side margins very slightly sulcate, gently rounded; disk moderately arched, an even contour maintained behind calli and at side margins, basal angles gently rounded; calli oval, slightly separated, delimited behind by an impressed margin, pale with one or two fuscous marks on the outer half; disk testaceous to fuscous, central area frequently grayish green, paler anteriorly, narrow basal margin pale, sub-basal margin with six blackish points that frequently join; disk distinctly hairy, longest at the anterior angles, hairs taking the color of the surface where they arise; collar pale, marked with reddish each side of the median line, bearing several prominent pale hairs; sides blackish, lower margin and a mark across the base of the coxal cleft, pale. *Scutellum* testaceous, a pair of diverging black vittæ just before the apex, becoming paler toward the median line; mesoscutum moderately exposed, sloping abruptly downward at the lateral angles; heavily clothed with a mixture of pale and yellowish pubescence. *Sternum* blackish, a pale ray on each side in line with the lower side margin of the pronotum; pleura fuscous, narrow margin of sclerites, basalar piece and orifice, pale. *Hemelytra*: clothed with prominent yellowish pubescence intermixed with groups of white deciduous tomentum, having black hairs arising from the dark markings; greenish gray to fuscous, corium with base, middle, a triangular spot just before the cuneus, several spots on the embolium, paler and more or less translucent; tip of embolium, an oblique or nearly triangular patch lying just inside of the cubitus at apex of corium, bordering the claval suture except on basal one third, fuscous to black; clavus more or less fuscous either side

of the claval vein and bordering the claval suture. *Cuneus* grayish translucent, the apex, a small point along the inner margin and a second near the basal angle, black; the paler part usually showing some brownish or reddish coloration. *Membrane* fuscous, a large pale area just beyond the smaller areole and the tip of the cuneus, divided by a small fuscous spot which touches the margin; central area more or less invaded by paler, brachium distinctly pale at apex of areoles. *Legs*: coxæ and bases of femora pale; front and intermediate femora with a series of irregular reddish brown to fuscous spots; posterior femora blackish, forming the background for many large and small irrorations, the pale patches most numerous and broadly joined on the inner side, an irregular pale annulation a short space before the apex with a second nearer the middle but interrupted on the outside. Tibiæ annulated with fuscous and pale; the front pair banded with fuscous at apex, narrowly at the knee and twice between these points; intermediate pair with the apical band becoming pale, the whole apical half being more pale than fuscous; posterior pair infuscated, irregularly spotted with pale, broadly pale on the basal one third, delimited by blackish on the inner side at base and by a distinct annulation at the middle; spines pale to brownish; tarsi fuscous, arolia erect and diverging at the apices. *Venter*: clothed with prominent yellowish hairs, infuscated, yellowish on the ventral side except the genital segment which is narrowly pale along the median line and frequently at the sides near the base of the claspers. Genital claspers and flagellum distinctive of the species (pl. 1, fig. 1).

♀. Length 5.7 mm., width 2.05 mm. Very similar to the male in coloration; imperfect or poorly colored specimens can never with certainty be distinguished from the females of closely related species.

Plesiotype: ♂ July 15, Springfield, Missouri (H. H. Knight); author's collection. Specimens examined: 2 ♂, 1 ♀ July 15, Springfield, Mo. (H. H. Knight). 1 ♂, 1 ♀ July, Rabun Co., Ga. (Wm. T. Davis). ♂ July 1, Bluemont, ♂ Sept. 27, Glencarlyn, Va. (W. L. McAtee). ♀ June 25, Fairfax Co., Va. (Wm. T. Davis). 8 ♂, 2 ♀ July, Black Mts. N. C. (Beutenmüller.) ♂ June 30, Plummer's Is., Md. (O. Heidemann). ♀ Aug. 22, Sandy Hook, N. J. (Wm. T. Davis). 5 ♂, 15 ♀ July 29, 1 ♂, 5 ♀ July 30, 4 ♂, 5 ♀ July 31, 4 ♂, 6 ♀ Aug. 1, 1 ♂ Aug. 14, 2 ♀ Aug. 17, Batavia; 1 ♂, 1 ♀ July 23, Ithaca; 4 ♂, 1 ♀ July 26, McLean; 1 ♂ Aug. 9, Portage, New York (H. H. Knight). 1 ♂ July 26, 1 ♀ Aug. 28, Yaphank, N. Y.; 1 ♂ Aug. 9, Smithtown, L. Is., N. Y. (Wm. T. Davis). ♂ Aug 21, Wyandanch,

L. Is., N. Y. (Chris. E. Olsen). 2 ♀ Aug. 12-14, Portland, Conn. (B. H. Walden). 1 ♀ Aug. 5, East River, Conn. (C. R. Ely). 1 ♂ July, Woods Hole; 1 ♂ Aug. 8, Chester; 1 ♂ Aug. 9, Riverside; 1 ♂ Aug. 15, Sunderland; 1 ♂ Aug. 19, Swampscott; 1 ♀ Sept. 27, Northampton, Mass. (H. M. Parshley). 1 ♀ Sept. 12, Casco Bay, Me. (G. P. Engelhardt). 5 ♂, 7 ♀ Aug. 6-8, Parry Sound, Can. (H. S. Parish).

This species is found on a number of plants in various situations, and is largely if not wholly predaceous as are a number of closely related species in this group.

The writer's determination of the species is based on a comparison of male claspers with a specimen which Reuter determined as *eximius* in 1909 by comparison with the type in the Stockholm Museum. This specimen was returned to the late Mr. O. Heidemann at the U. S. National Museum and was used by him as a basis for determinations of *eximius*. The redescription that Reuter gives for *eximius* in 1909³ is evidently drawn from other specimens, doubtless retained by him, and apparently refers to a different species, a form with irrorate membrane.

From the standpoint of wide distribution and determinations by Reuter and Heidemann, the species here described and figured is more likely to prove identical with *eximius* when comparison with the type is made, than any other species of the several recorded as *eximius* from the eastern United States. It is entirely possible that the type *eximius* may prove to be a species distinct from any occurring east of the Mississippi river, thus no final disposal of the species may be had until some competent systematist examines carefully and records the genital claspers of the type, which fortunately is a male.

***Phytocoris brevifurcatus* new species. (2)**

♂. Length 5.8 mm., width 2.14 mm. Very similar to *eximius* but without the heavy oblique fuscous mark at apex of corium; second antennal segment darker fuscous on the middle third; head and pronotum distinctly grayish green on the paler parts; posterior femora with smaller irrorations, not distinctly banded with pale; genital claspers and ædeagus distinctive of the species (pl. 1, fig. 2).

Holotype: ♂ Aug. 6, Batavia, N. Y. (H. H. Knight); author's

³ "Bemerkungen über Nearktische Capsiden," etc., Acta. Soc. Sci. Fennicæ, xxxvi, No. 2, p. 23, 1909.

collection. *Allotype*: Aug. 24, Batavia, N. Y. (H. H. Knight). *Paratypes*: ♂ July 31, 3 ♂ Aug. 2, ♂ Aug. 4, ♂ Aug. 29, ♀ Aug. 30, Batavia, N. Y. (H. H. Knight). Specimens were taken on the bark of trees in shaded situations.

***Phytocoris neglectus* new species.** (3)

♂. Length 6.2 mm., width 2.2 mm. Resembles *eximius*, but the second antennal segment is uniformly blackish except for the whitish annulation at the base; corium and clavus frequently more broadly blackish; apical band on the middle tibiae white; infuscation at middle of membrane tending to separate into small specks; genital claspers and aedeagus distinctive of the species (Pl. 1, Fig. 3).

Holotype: ♂ June 25, Batavia, New York (H. H. Knight); author's collection. *Allotype*: same data as type. *Paratypes*: ♀ June 18, ♀ June 25, 2 ♀ July 1, ♂ ♀ July 5, ♂ July 6, ♀ July 11, ♂ July 14, ♂ July 15, ♀ July 22, ♀ Aug. 5, ♂ Aug. 25, ♀ Aug. 29, ♂ ♀ Aug. 30, 2 ♂ Sept. 7, ♂ Sept. 13, Batavia; 2 ♂ Sept. 14, Wyoming, N. Y. (H. H. Knight). 3 ♀ July 4, Four Mile, N. Y. (H. H. Knight). ♂ Aug. 3, White Plains, N. Y. (J. R. de la Torre-Bueno). ♂ Sept. 20, Amagansett, L. Is., N. Y. (Wm. T. Davis). 2 ♂ July 30, Pigeon Cove; 3 ♂ July 15–Aug. 6, Woods Holl, Mass. (Chris. E. Olsen). ♂ ♀ Sept. 16–17, ♂ Sept. 30, Forest Hills; ♂ July 13, Swampscott, ♂ Aug. 31, Beach Bluff, ♂, 3 ♀ Sept. 5, Saugus, ♂, 2 ♀ Sept. 15, Blue Hills, ♀ Oct. 3, Squantum, ♂ Oct. 13, Boston, ♂ Oct. 21, Hyde Park, Mass. (H. M. Parshley). ♂ July 26, N. E. Harbor, Me. (C. W. Johnson). ♂ Sept. 2, New Buffalo, Berrien Co., Mich. (R. F. Hussey). ♂ June 29, Twin Lake, Martin Co., Minn. (H. H. Knight).

Apparently there are two generations of this species in one season. The writer took specimens most frequently on the bark of apple trees where both nymphs and adults fed on Psocids. The species was also found on the bark of other trees and is probably predaceous on most soft bodied insects living in such situations.

Phytocoris onustus Van Duzee. Proc. Calif. Acad. Sci., ser. 4, ix, p. 344, 1920.

Figure of genital claspers and flagellum (pl. 1, fig. 9).

Plesiotype: ♂ July 31, Batavia, New York (H. H. Knight);

author's collection. Specimens examined: ♀ July 7, ♀ July 11, 2 ♀ July 29, 3 ♀ July 30, 5 ♀ July 31, Batavia; ♂ Aug. 9, Portage; 3 ♂, 3 ♀ Four Mile; ♂ July 26, Ithaca, New York (H. H. Knight). ♀ July 15-Aug. 6, Woods Hole, Mass. (Chris. E. Olsen). ♀ Aug. 8, Mt. Toby, Sunderland, Mass. (H. M. Parshley). ♂ July 24, Glen House, N. H.; ♂ July 22, Machias, Me. (C. W. Johnson). ♀ Aug. 22, Mt. Katahdin, Me., alt., 650 ft. (C. P. Alexander) 2 ♂, ♀ June, Clayton, Ga., alt. 2000-3700 ft. (Wm. T. Davis).

The writer took this species most frequently on the bark of hickory trees in shaded humid surroundings. The color of the insect matches the bark so closely that it is difficult to see when crouching in crevices on the bole of the tree.

Phytocoris spicatus new species. (10)

♂. Length 6 mm., width 2 mm. Slightly larger than *eximius* and more broadly black; second antennal segment uniformly black except for the white annulation at base; front largely black, transverse striæ evident; hind femora as in *eximius* only darker, one distinct pale annulation just before the apex; flagellum and right genital clasper distinctive of the species (pl 1, fig. 10).

♀. Length 6.8 mm., width 2.2 mm.; very similar to the male only slightly larger.

Holotype: ♂ July 14, Batavia, New York (H. H. Knight); author's collection. *Allotype*: Aug. 1, Batavia, New York (H. H. Knight). *Paratypes*: ♂ July 19, Machias, Me. (C. W. Johnson). ♂ July 15, Lunenburg, Mass. (H. W. Allen).

This species comes nearest to *cortitectus* but is readily distinguished by the sharp basal spike on the right clasper and the darker coloration; also approaches *onustus* but is smaller and more blackish.

Phytocoris cortitectus new species. (11)

♂. Length 6 mm., width 2 mm. Very similar to *eximius*; pale parts of the hemelytra more translucent, infuscations paler; front of head transversely striate with fuscous each side of the median line; second antennal segment more uniformly fuscous, but with a pale reflection apparent throughout the infuscation; genital claspers and ædeagus distinctive of the species (Pl. 1, Fig. 11).

♀. Very similar to the male but slightly more robust.

Holotype: ♂ July 31, Batavia, New York (H. H. Knight); author's collection. *Allotype*: taken with the type. *Paratypes*: 2 ♂ July 29, 2 ♀ July 30, 2 ♂, ♀ July 31, Batavia, N. Y. (H. H. Knight). ♂ July 24, Glen House, N. H. (C. W. Johnson).

The writer took specimens only on the trunks of elm trees (*Ulmus*) where the species is admirably concealed as it crouches in crevices of the bark.

Phytocoris lacunosus new species. (4)

♂. Length 6.7 mm., width 2.2 mm. Very similar to *cortictectus* only larger; nearly the size of *onustus* but more slender and paler in color; corium with a longitudinal pale area which extends onto the base of the cuneus without interruption at the cubitus; flagellum and right genital clasper distinctive of the species (Pl. I, Fig. 4).

Very similar to the male only slightly more robust.

Holotype: ♂ July 27, McLean, New York (H. H. Knight); author's collection. *Allotype*: taken with the type. *Paratypes*: ♂, 2 ♀ topotypic.

All the specimens were taken on the bark of *Carpinus caroliniana* found growing at the margin of Round Bog near McLean, N. Y.

Phytocoris salicis new species. (13)

♂. Length 6 mm., width 2.1 mm. Very similar to *eximius* but distinctly brownish above; fuscous coloration of the hemelytra interspersed with brownish maculations; second antennal segment more distinctly pale fuscous, becoming dark only at apex and next to the pale basal annulation; membrane paler on the central area and with a median pale ray extending to apex; genital claspers and flagellum distinctive of the species (Pl. I, Fig. 13).

♀. Very similar to the male in size and coloration.

Holotype: ♂ July 31, Batavia, New York (H. H. Knight); author's collection. *Allotype*: taken with type. *Paratypes*: 2 ♂, 1 ♀ July 13, 2 ♂, 3 ♀ July 25, 1 ♂, 5 ♀ July 29, 1 ♂, 3 ♀ July 30, 1 ♂ July 31, 2 ♀ Aug. 1, 2 ♂, 1 ♀ Aug. 2, ♂, 3 ♀ Aug. 6, 5 ♂, 5 ♀ Aug. 10, 2 ♀ Aug. 17, ♂ Aug. 20, Batavia; ♀ Aug. 2, Honeoye Falls; 2 ♂ July 24, 2 ♂ July 26, Ithaca; ♂, 2 ♀ July 27, McLean, New York (H. H. Knight). ♂ July, Orient, L. Is., N. Y. (Wm. T. Davis). ♀ July 22, Ridgewood, N. J. (M. D. Leonard). 3 ♀

July 29, Pigeon Cove; ♀ Aug. 3, Oak Bluff; 3 ♂, 2 ♀ July 15-Aug. 6, Woods Hole, Mass. (Chris. E. Olsen). ♂ July 4, Brookline; ♂♀ July 8, Mt. Toby, Sunderland; ♂ July 22, Lunenburg; ♂ Aug. 11, Beach Bluff, Mass. (H. M. Parshley). ♂ July 3, ♀ July 15, Bradford, Ct. (H. W. Winkley). ♀ July 3, Hanover, N. H.; ♀ July 26, Machias, Me. (C. W. Johnson). 4 ♂, 1 ♀ June 20-July 4, Berrien Co., Mich. (R. F. Hussey). ♂, 2 ♀ June 29, Twin Lakes, Martin Co., Minn. (H. H. Knight). ♂ July 2, Mille Lacs Co., Minn. (V. R. Haber). 1 ♂, 2 ♀ Aug. 8, Parry Sound, Can. (H. S. Parish).

The writer took this species only on willow, chiefly *Salix nigra* where the species appears to be predaceous on soft-bodied insects living on the willow.

Phytocoris buenoi new species. (14)

♂. Length 5.8 mm., width 2 mm. Resembles *eximius* but the colors of the dorsum are more contrasty; front and middle femora dark fuscous brown, closely and irregularly maculated with pale; black patch bordering the brachium strongly contrasted with the pale spot which joins the base of cuneus, pale part of cuneus tinged with roseous; central area of membrane distinctly pale; male claspers and flagellum distinctive of the species (pl. 1, fig. 14).

♀. Very similar to the male in size and coloration.

Holotype: ♂ July 3, White Plains, New York (J. R. de la Torre-Bueno); author's collection. *Allotype*: taken with the type; collection of Mr. Torre-Bueno. *Paratypes*: 2 ♀ topotypic. ♂ June 27, New Haven, Conn. (W. E. Britton). ♀ July 15-Aug. 6, Woods Hole, Mass. (Chris. E. Olsen). ♂ July 24, Marblehead, Mass. (H. M. Parshley).

Adults and nymphs were taken on Norway Spruce (*Picea excelsa*) by Mr. Torre-Bueno, in honor of whom the species is named.

Phytocoris erectus Van Duzee. (5) Proc. Calif. Acad. Sci., ser. 4, ix, p. 345, 1920.

Plesiotype: ♂ Aug. 24, Batavia, N. Y. (H. H. Knight); author's collection. Figure of genital claspers and flagellum (pl. 1, fig. 5). Specimens examined: ♂ Aug. 13, Cattaraugus Co., N. Y., alt. 2,300 ft. (H. H. Knight). ♂ July 15, ♂ Aug. 10, ♂ Sept. 16,

Cranberry Lake, N. Y. (C. J. Drake). 2 ♂ July 18, Springfield, Mo.; 2 ♂, 1 ♀ June 12, LeRoy, Ala. (H. H. Knight). ♂ July 28, Plymouth, ♂ Aug. 8, Chester, ♂ Sept. 25, Brookline, Mass.; ♀ Sept. 28, Crawford's, N. H. (H. M. Parshley). ♂♀ Aug. 14, Ft. Kent; ♂ Aug. 1, Penobscot Co., Me. (C. W. Johnson). ♂ July 26, Cogebeic Co., Mich. (T. H. Hubbell). ♂ Aug. 28, Bald Eagle Lake, St. Louis Co., Minn. (H. H. Knight).

Phytocoris penipectus new species. (12)

♂. Length 5.1 mm., width 1.9 mm. Very similar to *eximius*; second antennal segment uniformly infuscated except the pale annulus at base; apical half of corium and bordering the claval vein, distinctly olive green; flagellum and genital claspers distinctive of the species (pl. 1, fig. 12).

♀. Length 5.5 mm., width 2 mm. Very similar to the male in coloration, but slightly more robust.

Holotype: ♂ Sept., East River, Connecticut (C. R. Ely); author's collection. *Allotype*: topotypic. ♀ Sept., New Canaan, Ct. (W. E. Britton). ♀ Amherst, Mass.

Phytocoris pectinatus new species. (18)

♂. Length 4.8 mm., width 1.77 mm. Very similar to *eximius*, colored more as *penipectus* but more strongly invaded with green on the corium, clavus, and scutellum; second antennal segment black except at base; genital claspers and flagellum distinctive of the species (pl. 1, fig. 18).

Holotype: ♂ May 9, Gainesville, Florida (C. J. Drake); author's collection. *Paratype*: ♂ Sept. 25, Silver Springs, Fla. (G. P. Engelhardt); this specimen has lost most of the green color and is probably from a second generation.

Phytocoris obtectus new species. (21)

♂. Length 5.5 mm., width 1.85 mm. Very similar to *eximius* but slightly smaller and more slender; hemelytra more uniformly grayish translucent, not distinctly marked with fuscous at apex of corium; front transversely striate with fuscous; scutellum grayish brown and irrorated with paler; genital claspers and flagellum distinctive of the species (pl. 1, fig. 21).

♀. Very similar to the male in size and coloration.

Holotype: ♂ June 27, Honeoye Falls, New York (H. H. Knight); author's collection. *Allotype*: same data as type. *Paratype*: ♀ topotypic.

Phytocoris mundus Reuter. *Bemerk. Neark. Caps.*, p. 18, 1909.

Figure of male genital claspers and flagellum (pl. 1, fig. 22).

Plesiotype: ♂ June 29, Dyke, Va. (Wm. T. Davis); compared with type; author's collection.

Phytocoris fulvus new species. (23)

♂. Length 6 mm., width 2 mm. Similar to *mundus* but is larger, more elongate and paler in color; pale yellowish, darkened with fulvous on the exterior half of clavus and inner half of corium; antennal segments III and IV blackish, apex of II infuscated; apical half of femora perceptibly darkened through which small pale irrorations are visible; membrane pale, uniformly tinged with fumate, the veins fulvous; genital claspers and flagellum distinctive of the species (pl. 1, fig. 23).

♀. Very similar to the male in size and coloration.

Holotype: ♂ July 26, Ithaca, New York (H. H. Knight); author's collection. *Allotype*: topotypic. *Paratypes*: 4 ♂, 9 ♀ taken with the types. ♀ July 31, Peak's Island, Me. (G. A. Moore). 4 ♂, 1 ♀ Aug. 8, Cranberry Lake; ♀ Aug. 7, Wana-ken-a, N. Y. (C. J. Drake).

The type specimens and nymphs were taken on white pine (*Pinus strobus*).

Phytocoris pinicola new species. (7)

♂. Length 5.2 mm., width 1.8 mm. In coloration most suggestive of *conspersipes* but genital structures show it more closely related to *mundus*; more slender than *conspersipes*, spots on femora and tibia less distinct, orange yellow; genital claspers and flagellum distinctive of the species (pl. 1, fig. 17).

♀. Similar in coloration to the male, but shorter and more robust.

Holotype: ♂ July 14, Batavia, New York (H. H. Knight); author's collection. *Allotype*: topotypic. *Paratypes*: 1 ♂, 5 ♀ topotypic.

Taken on *Pinus silvestris* near Batavia, N. Y. This species may prove to be an importation but the writer was unable to locate it in the literature.

Phytocoris conspersipes Reuter. *Bemerk. Neark. Caps.*, p. 22, 1909. (19)

Figure of male genital claspers and flagellum (pl. 1, fig. 19).

Plesiotype: ♂ June 29, Corner Conduit and Potomac Roads, Md. (W. L. McAtee), taken on *Pinus virginiana*; compared with type; author's collection.

Phytocoris conspersipes diversus new sub-species. (20)

♂. Length 5 mm., width 1.7 mm. Structurally, nearly identical with *conspersipes* but is more slender; general aspect more nearly that of *fulvus*, the fulvous coloration more distinct on the inner apical half of the corium and on cuneus; head, pronotum, and ventral parts greenish, pronotum basally, sides of tylus, upper margins of jugæ and loræ, base of head, indistinct transverse striæ on front, sternum and sides of venter, tinged with reddish brown; femora except basally and tibiæ, fusco-brownish, irrorate with pale, spots much enlarged on upper side of posterior femora. *Head*: width .97 mm., vertex .37 mm. *Antennæ*: I, length .71 mm., greenish, darkened with fusco-brownish, irrorate with paler on inner side, beset with 9 or 10 dark bristles; II, 2.05 mm., infuscated, paler on basal half; III, 1.05 mm., blackish; IV, .85 mm., blackish. Length of segment II slightly greater than twice the width of head; in *conspersipes* the length of segment II is slightly less than twice the width of head. Genital claspers and flagellum nearly identical with those of *conspersipes* (pl. 1, fig. 20); such would seem to indicate a subspecific relationship.

♀. Very similar to the male in size and coloration.

Holotype: ♂ Sept. 1, Madison Barracks, New York (H. H. Knight); author's collection. *Allotype*: taken with the type. *Paratypes*: 3 ♂, 8 ♀ topotypic; 5 ♂ July 26, ♀ Sept. 12, Ithaca, N. Y.; 1 ♂, 4 ♀ Aug. 22, Whiteface Mt., New York (H. H. Knight); all taken on *Pinus strobus*. ♂ Sept. 16, Liberty, Me. (Cushman). ♂, Franconia, N. H. (Mrs. A. T. Slosson). ♀ Aug. 1, "Hatch Exper. Station," Mass.

Phytocoris quercicola new species. (24)

♂. Length 4.7 mm., width 1.7 mm. Suggestive of *puella* but the heavy infuscation on pronotum and legs distinguish this form at once. *Head*: width .91 mm., vertex .3 mm., basal half of loræ, spot each side of tylus, transversely across the front and four marks on vertex, red, front with prominent pale hairs; rostrum (length 2.2 mm.) attaining base of genital segment, pale, infuscated at apex. *Antennæ*: I, length .97 mm., pale, three irregular marks on upper side and broadly banded at apex with fusco-brownish or reddish, beset with 6

to 8 prominent pale spines: II, 2.25 mm., pale brownish, pale annulus at base, next to this and again at apex darker fuscous; III, 1.25 mm., fusco-brownish, annulated with paler at base, middle and narrowly at apex; IV, 1.04 mm., fuscous. *Pronotum*: nearly as in *eximius*, longest hairs situated anteriorly and on collar; outer half of calli and extending broadly to the rear, narrowing and curving inward to form submarginal line on middle two fourths, interrupted at median line, fusco-brownish to dark fuscous; submarginal line frequently forming two blackish points each side of the median line, narrow basal margin pale; scutellum pale, median line frequently reddish, each side of this an indistinct vitta composed of small brownish dots. *Hemelytra*: pale, more or less translucent, an irregular patch at middle of clavus and a larger one just opposite on the corium, fusco-brownish, the dark color broken by small irregular pale maculae; frequently the apex of corium with a second smaller dark patch and a series of fusco-brownish spots bordering the claval suture; embolium and cuneus flecked with coagulate spots of reddish. Membrane pale, infuscation composed of fine irregular spots, forming a large spot on apex, a smaller one at each side joining margin, the central area and within the cells more sparsely speckled with irregular flecks of fuscous; brachium pale, cubitus infuscated. *Legs*: front and middle tibiae pale, triannulate with fuscous, femora and hind tibiae marked nearly as in *eximius*, infuscation frequently becoming reddish brown. *Venter*: pale, side flecked with reddish, basal half of genital segment fuscous except along median line; flagellum and genital claspers distinctive of the species (Pl. I, Fig. 24).

♀. Very similar to the male in size and coloration.

Holotype: ♂ Aug. 12, Batavia, New York (H. H. Knight); author's collection. *Allotype*: same data as type. *Paratypes*: 41 ♂♀ taken with the types; 1 ♂ Aug. 1, 3 ♂ Aug. 10, 1 ♂, 1 ♀ Aug. 11, 5 ♀ Aug. 15, Batavia, N. Y. (H. H. Knight). ♀ Aug. 27, Beach Bluff, Mass. (H. M. Parshley). ♂ Aug. 12, Odenton, Md.; ♂ Sept. 27, Glencarlyn, Va. (W. L. McAtee); other specimens from the same localities in Mr. McAtee's collection.

The writer took this species only on bur oak (*Quercus macrocarpa*) to which tree it appears to be restricted in its breeding habits.

Phytocoris conspurcatus new species.

♂. Length 5.9 mm., width 2.1 mm. Resembling *eximius* in form of pronotum and general coloration only usually

darker; readily distinguished by the dark conspurcate membrane, antennal segments II and III banded at the middle with pale; dorsum thickly clothed with black deciduous scale-like hairs intermixed with small patches of white tomentum. *Head*: width 1.06 mm., vertex .34 mm., infuscated similarly to *eximius*; rostrum (length 2.6 mm.) attaining the base of the genital segment. *Antennæ*: I, length 1.2 mm., black, irregularly irrorate with white, beset with from 14 to 16 pale setæ; II, 2.5 mm., black, annulated at base with pale, a second band beginning at middle and covering a space of .3 mm. on base of apical half; III, 1.48 mm., pale at base and again at middle; IV, 1.11 mm., black. *Pronotum*: length 1.54 mm., width at base 1.7 mm.; form and coloration very similar to *eximius*, but differs by the presence of black scale-like hairs; scutellum thickly covered with white tomentum. *Hemelytra*: more uniformly darkened than in *eximius*, a pale triangular spot at tip of corium bordering the cuneus; thickly clothed with black scale-like hairs intermixed with small patches of white tomentum. Membrane thickly conspurcate with dark fuscous, brachium pale at apex of larger areole, conspurcate spots more sparsely placed near apex of the cells. *Legs*: marked very similar to *eximius*, pale band near apex of hind femora more or less interrupted on the under side. *Venter*: dark fuscous to blackish, more or less pale on under side at base; genital claspers and the long tubercle above base of the left clasper, distinctive of the species (pl. 1, fig. 16).

♀. Very similar to the male in size and coloration.

Holotype: ♂ Aug. 17, Batavia, New York (H. H. Knight); author's collection. *Allotype*: same data as the type. *Paratypes*: 4 ♀ topotypic. 3 ♂ July 30, ♀ Aug. 3, ♂ Aug. 12, ♂ Aug. 18, Batavia, N. Y.; ♀ Sept. 8, Ithaca, N. Y. (H. H. Knight). ♂ June 20, Washington, D. C. (O. Heidemann). ♀ Aug. 21, L. Is., N. Y. (Chris. E. Olsen). ♀ Aug. 3, Wallingford, Ct. (D. J. Caffery). ♀ Sept. 12, Hartford, Ct. (W. E. Britton). ♂ Aug. 9, Boston; ♂ Aug. 24, Beach Bluff, Mass. (H. M. Parshley). ♂ July 25, Mercer Co., Ohio; ♂ July 19, Ann Arbor, Mich. (R. F. Hussey). ♀ Aug. 13, St. Anthony Park, Minn. (H. H. Knight). 1 ♂, 1 ♀ Aug. 6, 2 ♂ July 11, Trenton, Ontario, Can. (Evans). ♀ July 4, White Plains, N. Y. (Torre-Bueno).

This is a predaceous, bark-inhabiting species which the writer took on the boles of Linden (*Tilia*), Pear (*Pyrus*), and Maple (*Acer*).

8

Phytocoris fumatus Reuter. *Bemerk. Neark. Caps.*, p. 25, 1909.

Figure of male claspers and flagellum (pl. 1, fig. 8).

Plesiotype: ♂ June 26, Deep Pond, Wading River, L. Is., New York (Wm. T. Davis); compared with type; author's collection.

The writer has studied the types of *fumatus* and *subnitidulus* that were returned by Reuter to the U. S. National Museum and is unable to see more than a shade of color difference between them. It is possible that the other type specimen of *subnitidulus* which Reuter retained, may represent something different from *fumatus*, but on the other hand, a study of the original description does not reveal any differences greater than may be found in the sexes of the latter species.

Phytocoris corticevivens new species. 6

♂. Length 6.6 mm., width 2.3 mm. Very similar to *fumatus*, differs in having the lower half of head black except for a small pale spot at base of loræ; femora black, narrowly pale at base, a few small pale freckles near apices, the hind pair with a distinct white oblique band just before the apex, broader and more distinct at the front and under side; genital claspers, flagellum, and tubercle above base of each clasper, distinctive of the species (pl. 1, fig. 6).

♀. Very similar to the male but slightly more robust, frequently lighter colored.

Holotype: ♂ July 11, Batavia, New York (H. H. Knight); author's collection. *Allotype*: taken with the type. *Paratypes*: ♂ June 8, ♂ June 25, ♂ July 13, ♀ July 14, Batavia; ♂ June 21, Portage, N. Y. (H. H. Knight). ♂ July 7, Waterville, N. Y. (I. M. Hawley). ♀ July 11, Staten Island, N. Y.; ♀ June 30, White Plains, N. Y. (Torre-Bueno). ♀ July 3, Palisades, N. J. (Wm. T. Davis). ♂ July 2, Great Falls, Md. (O. Heidemann). ♂ June 20, New Haven, Ct. (A. B. Chaplain). ♀ July 4, Lyme, Ct. (H. B. Kirk). ♀ July, Orono, Me. ♂ June 2, Ramsey Co., Minn.; ♂♀ "Minn.". ♂ July 1, Kingsmere, P. Q., Can. (R. N. Crystal). ♂ Henningford, P. Q.; ♀ July 3, Covey Hill, P. Q. (C. E. Petch).

The writer took this species only on the bark of maple trees (*Acer saccharum*) where the nymphs and adults are well concealed as they crouch in crevices of the bark awaiting their prey.

Phytocoris tuberculatus new species. 7

♂. Length 6.5 mm., width 2.1 mm. Very similar to *fumatus*, especially in the white coloration on lower half of head; first antennal segment (length 1.42 mm.), equal to the distance from base of pronotum to a line drawn through the middle of eyes, and in this respect is identical with *fumatus*; distinguished by having all the femora black, posterior pair with an oblique pale band near apex and adjacent to this a few small pale freckles as in *corticevirens*. Genital claspers, flagellum, a long tubercle above base of left clasper and a shorter one above the right clasper, distinctive of the species (pl. 1, fig. 7).

♀. Very similar to the male but slightly more robust, frequently lighter colored.

Holotype: ♂ July 5, Four Mile, New York (H. H. Knight); author's collection. *Allotype*: June 4, Black Mts., N. C. (Beutenmuller); Cornell University collection. *Paratypes*: ♂ July 5, Four Mile, N. Y. (H. H. Knight). ♂ June, Pine Island, N. Y. (Wm. T. Davis). ♀ July 19, Ann Arbor, Mich., at light (R. F. Hussey).

The writer would have been inclined to identify this species as *subnitidulus* but for the fact that the type specimen in the U. S. National Museum is certainly identical with the type of *fumatus* and in the original description no mention is made of the distinct pale band near the distal end of the posterior femora.

Phytocoris sulcatus new species. 15

♂. Length 6 mm., width 1.8 mm. Very similar in form to *fumatus* but smaller; pronotum more distinctly sulcate at sides and immediately behind the calli; pale annulations more distinct at base and middle of segment II; dorsum distinctly paler, exterior half of clavus and inner apical angles of corium blackish; femora broadly pale at base, irrorate with large pale spots on the apical half. Genital claspers, flagellum, a large thick tubercle above the base of the left clasper, distinctive of the species (pl. 1, fig. 15).

♀. Very similar to the male in coloration, more robust, the sides of the hemelytra distinctly rounded.

Holotype: ♂ Aug. 10, Batavia, New York (H. H. Knight); author's collection. *Allotype*: Aug. 1, Batavia, N. Y. (H. H. Knight). *Paratypes*: ♀ Aug. 1, ♀ Aug. 3, ♀ Aug. 5, Batavia; ♂ July 21, Ithaca (at light); 2 ♀ Sept. 1, Madison Barracks,

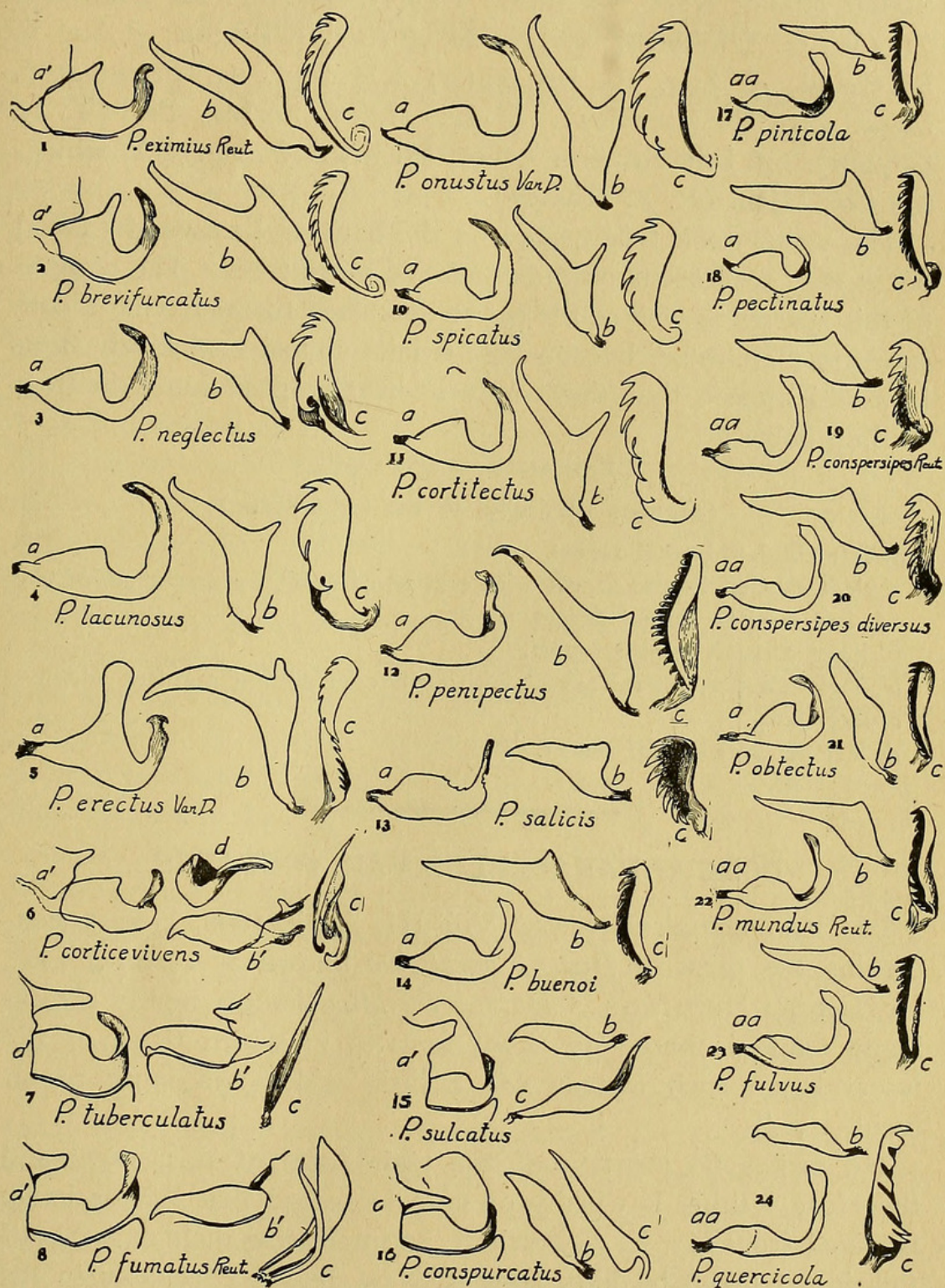


PLATE I.

♂ Genitalia of the species of *Phytocoris*.

N. Y. (H. H. Knight). ♂ July 22, 2 ♀ July 25, ♂ July 29, Staten Island, N. Y. (Wm. T. Davis). ♀ Aug. 22, Branford, Ct. (W. H. Winkley). ♂ July 20, ♂ Aug. 1, Boston; ♂ Aug. 6, Riverside; ♂ Aug. 10, Brookline; 2 ♀ Sept. 24, Farmington, Mass. (H. M. Parshley). ♀ July 12, Columbia, Pa. (T. L. Guyton). ♂ July 20, Ann Arbor, Mich.; 2 ♂ Aug. 3, Washington Co., Mich. (R. F. Hussey).

The writer took this species on the bark of Basswood (*Tilia*) but it may well occur on the trunks of other trees. The nymphs of this species as well as the above described forms having a conspurcate membrane, live on tree trunks almost exclusively, thus it would appear that they must be wholly predaceous in their feeding habits.

EXPLANATION OF PLATE.

(Figures all drawn to the same scale.)

- a*, left clasper, lateral aspect.
- a'*, left clasper, lateral aspect with outline of genital segment added.
- aa*, left clasper, dorsal aspect.
- b*, right clasper, lateral aspect.
- b'*, right clasper, lateral aspect with outline of genital segment added.
- c*, flagellum.
- d*, left clasper, caudal aspect.

DORCUS PARALLELUS VAR. COSTATUS.

In "Entomological News," Vol. III, April, 1892, Page 5, concerning the form of *Dorcus parallelus* known as *costatus* Lec., Dr. George Horn says: "*Dorcus costatus* though merely a catalogue name is based on those females in which three of the intervals on each elytron are a little wider and more prominent. . . ."

He makes no mention of the male form of this insect and therefore I think it worthy of note to record that I have lately received from Mr. E. A. Bischoff, an interesting male example of this insect taken by him, labelled New Jersey (probably in the vicinity of Newark, but unfortunately without date of capture)—length of specimen 20 mm.

JOHN W. ANGELL.



Knight, Harry H. 1920. "New and little-known species of *Phyllocoris* from the eastern United States." *Bulletin of the Brooklyn Entomological Society* 15, 49–66.

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