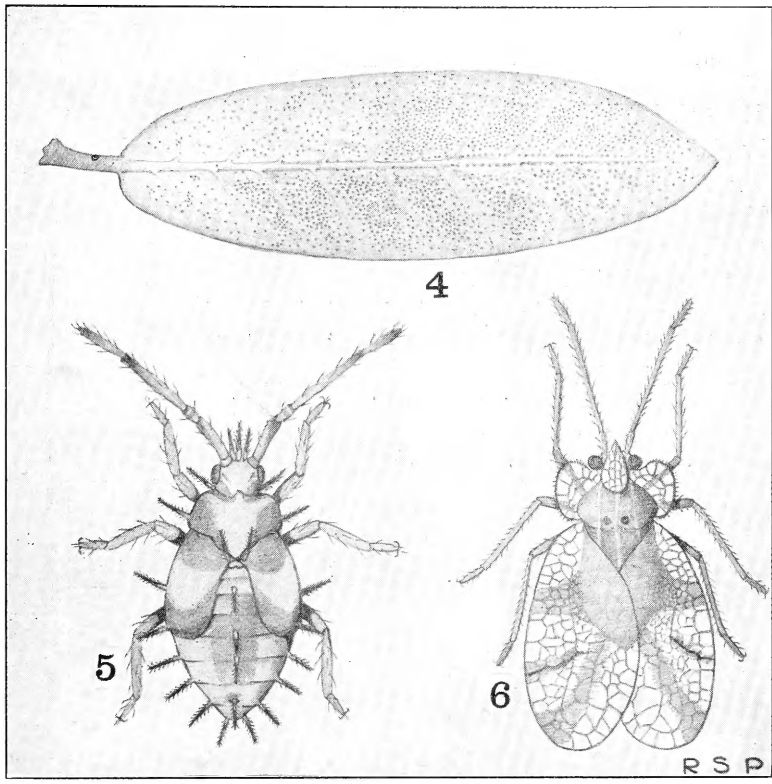




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NEW JERSEY
AGRICULTURAL EXPERIMENT STATIONS
CIRCULAR 100



INSECT ENEMIES OF GREENHOUSE AND
ORNAMENTAL PLANTS

NEW BRUNSWICK, N. J.



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NEW JERSEY
AGRICULTURAL EXPERIMENT STATIONS
CIRCULAR 100

Some New Insect Enemies of Greenhouse and
Ornamental Plants in New Jersey¹

With the exception of *Leptobyrsa rhododendri* Horv. and *Neoborus amoenus* Reut., all of the insects mentioned herein have only recently been found inhabiting New Jersey. The two exceptions have been known to exist in New Jersey for some time, but heretofore, very little has been published concerning their activities in this state.

The Ash Leaf Bug

Neoborus amoenus Reut.² (Fig. 1, 2, 3)

This species was described by Reuter³ in his paper "Bemerkungen über Nearctische Capsiden nebst Beschreibung neuer Arten", where it appears under the name *Tropidosteptes amoenus*, Reuter adopting the manuscript name of Professor Uhler.

In Van Duzee's⁴ check list of the "Hemiptera of America, North of Mexico", it appears as *Neoborus amoenus* Reut., with *saxeus* Uhl., as a name cited in error, and the following varieties, *palmeri* Reut., *plagiata* Reut., *signata* Reut., and *scutellaris* Reut. In the same list, its distribution is given as Canada, Eastern states to the Mississippi Valley and eastern Canada. In Smith's "Insects of New Jersey",⁵ it is recorded from New Brunswick on ash. It has however, a much wider distribution in New Jersey, having been found at Somerville, Milburn, South Orange, Kingston, Springfield, Irvington, Rutherford, Morris Plains, and Elizabeth, and is undoubtedly a well-distributed species.

¹Prepared January 1, 1918, by Harry B. Weiss. Contribution from Department of Entomology, Thomas J. Headlee, Ph. D. Entomologist. Published November 1, 1918.

²From Dickerson, E. L., and Weiss, H. B., 1916. The Ash Leaf Bug, *Neoborus amoenus* Reut. In Jour. N. Y. Ent. Soc., v. 24, No. 4, p. 302.

³Reuter, O. M. Bemerkungen über Nearctische Capsiden nebst Beschreibung neuer Arten, Acta Soc. Sci. Fennicæ, t. 36, no. 2, p. 48.

⁴Van Duzee, E. P., 1916. Hemiptera of America, North of Mexico. N. Y. Entomological Society, New York City.

⁵Smith, J. B., 1909. Insects of New Jersey. In Ann Rpt., N. J. State Mus., 1909, p. 164.

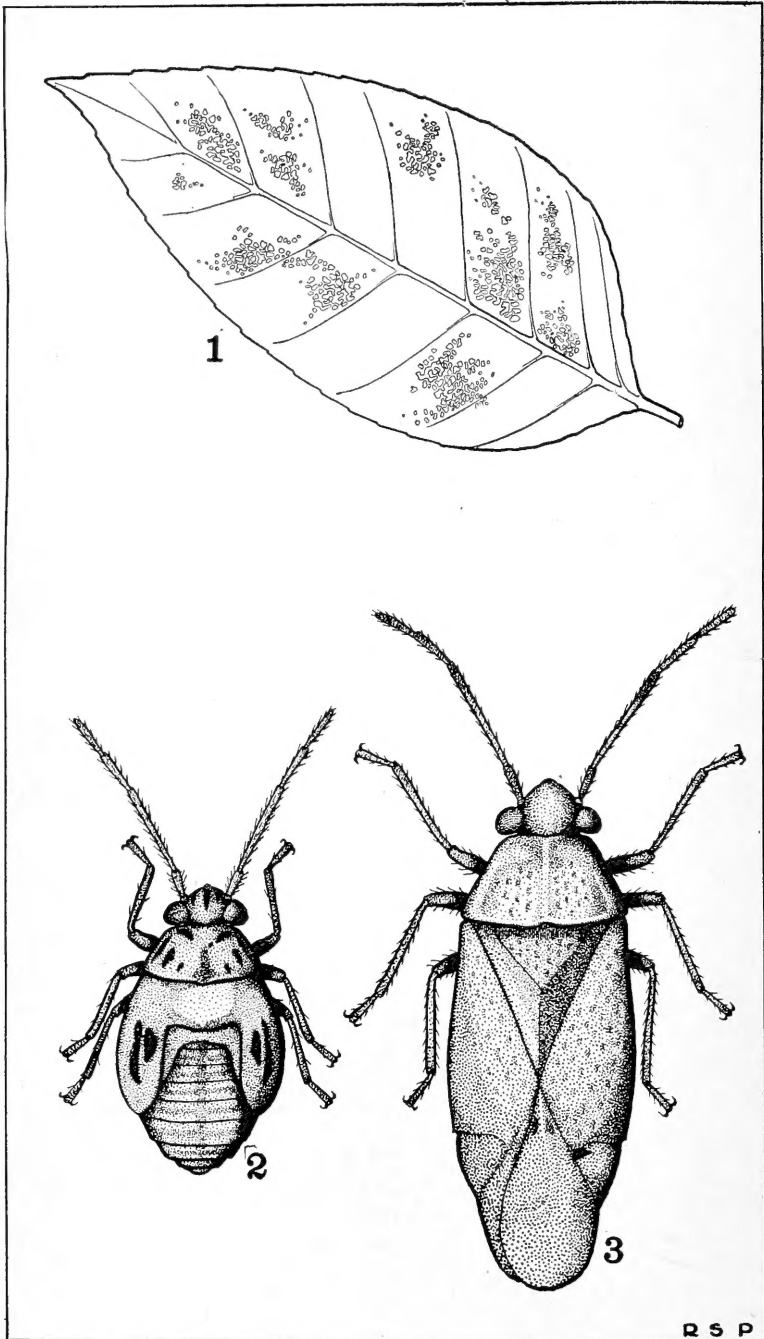


Fig. 1. Ash leaf showing injury by the ash leaf bug
Fig. 2. Last stage nymph of the ash leaf bug
Fig. 3. The ash leaf bug, *Neoborus amoenus* Reut

It has been found on the white ash (*Fraxinus americana*), the green ash (*F. lanceolata*), the red ash [*F. pennsylvanica (pubescens)*], and the English ash (*F. excelsior* Var. *pendula*).

When present in large numbers the foliage of ash trees is disfigured considerably by the adults and nymphs sucking out the plant juices, causing numerous white spots to appear on the upper leaf surfaces. The bugs feed singly on the under surface, and are quite active, moving as a rule quite rapidly when disturbed. In severe infestations the leaves become dry and somewhat curled. This is especially true of young tender leaves which have been additionally injured by egg deposition.

Eggs hatch in from ten days to two weeks and there are five nymphal stages, each requiring from four to eight days, the average length of time consumed from egg to adult being about five weeks. Adults are about 5mm. long and 2.5mm. wide and those of the first brood are usually plentiful about the middle of July at New Brunswick, those of the second brood appearing the latter part of August. In the more northern parts of New Jersey, they appear from one to two weeks later. On account of the somewhat extended oviposition period, it is quite possible to find later stage nymphs and adults present at the same time. In the latitude of New Brunswick, N. J., there are two generations, the first adults appearing about the latter part of May or the first of June.

The eggs, which are 0.4 mm. long and 0.14 mm. wide, translucent, flask-shaped, broad and rounded at the posterior ends, are deposited in the mid-ribs on the under-sides of young tender leaves. The whitish, circular rim of the egg cap projects out a slight distance but is effectively hidden by the pubescence on the mid-rib. Where many eggs are deposited in a leaf, a curling and distortion takes place. As far as is known, no attempts have been made in New Jersey to control this species by the application of insecticides.

The Rhododendron Lace Bug

Leptobyrssa rhododendri Horv.⁶ (Fig. 4, 5, 6)

This species was first described by Horvath as *Stephanitis rhododendri* in 1905⁷ and later by Heidemann⁸ as *Leptobyrssa explanata*, under which name it is usually considered by American collectors. It has a wide distribution in the East and occurs at a number of places throughout New Jersey. It is undoubtedly a native American species which has been introduced into Europe on rho-

⁶This account has been drawn from an unpublished paper by Dickerson, E. L., and from Crosby, C. R., and Hadley, C. H., 1915. The rhododendron lace bug (*Leptobyrssa Explanata*). In Jour. Econ. Ent., v. 8, p. 499.

⁷Horvath, G., 1905. Tingitidæ Novæet Minus Cognitæ e Regionæ Palearctica. In Ann. Mus. Hung., v. 3, p. 556.

⁸Heidemann, O., 1908. Two New Species of North American Tingitidæ. In Proc. Ent. Soc. Wash., 1, 10, p. 103-108.

dodendrons exported from America and is frequently noted in the egg stage on rhododendrons received into this country from Holland.

It occurs on mountain laurel (*Kalmia latifolia*), the rhododendron, (*Rhododendron maximum*) and many of its varieties. The nymphs and adults inhabit the under-sides of the leaves and by feeding cause a light, mottled spotting of the upper surfaces. In addition the under-sides of the leaves are disfigured with numerous, small, dark, varnish-like spots of excrement. The insect overwinters in the egg stage, the eggs being somewhat irregular, cylindrical

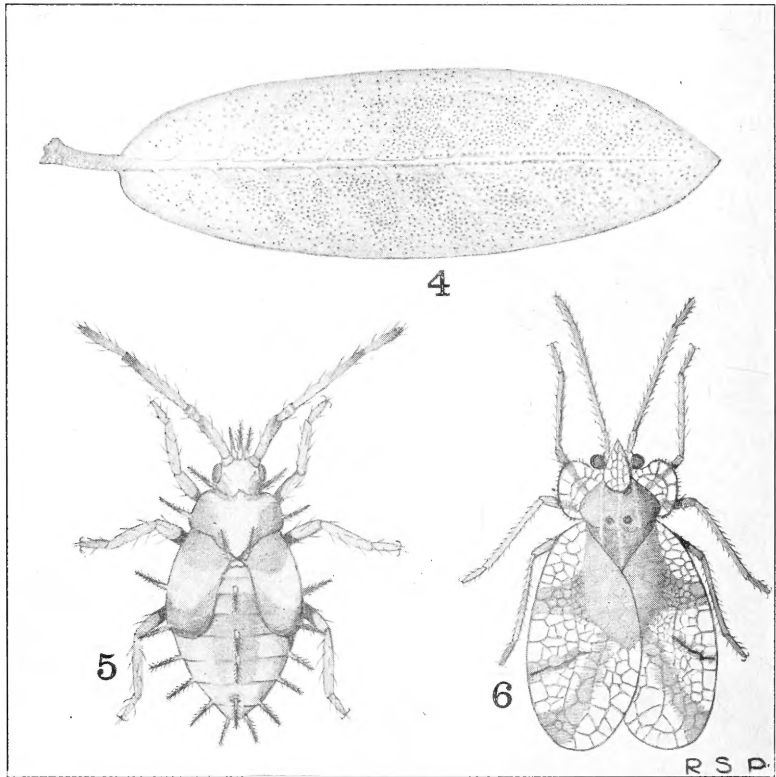


Fig. 4. Under surface of rhododendron leaf showing spotting due to the rhododendron lace bug

Fig. 5. Last stage nymph of rhododendron lace bug

Fig. 6. The rhododendron lace bug, *Leptobyrsa rhododendri* Horv. (Fig. 5 and 6, redrawn from Crosby & Hadley)

dricular and flask-shaped, oval in general outline with a rather broad neck-like elongation at the outer end turned to one side. They are about 0.4 mm. long, pale, yellowish white, and are inserted in the lower leaf surface, usually along the mid-rib, with the truncated end of the neck-like portion extending slightly above the leaf surface. This is capped with a varnish-like material which later hardens into a small scab-like object.

According to Mr. Dickerson, there are probably two broods in New Jersey. The eggs start to hatch early in May and the nymphs reach maturity early in June, and by the middle of that month or shortly after all of the insects of this brood have matured. After feeding and copulation, oviposition, occurs and may continue through June and part of July. From these eggs, a second brood of adults emerges in August and deposits the hibernating eggs.

There are four nymphal stages, and according to Crosby and Hadley, these require a combined minimum time of 25 days and

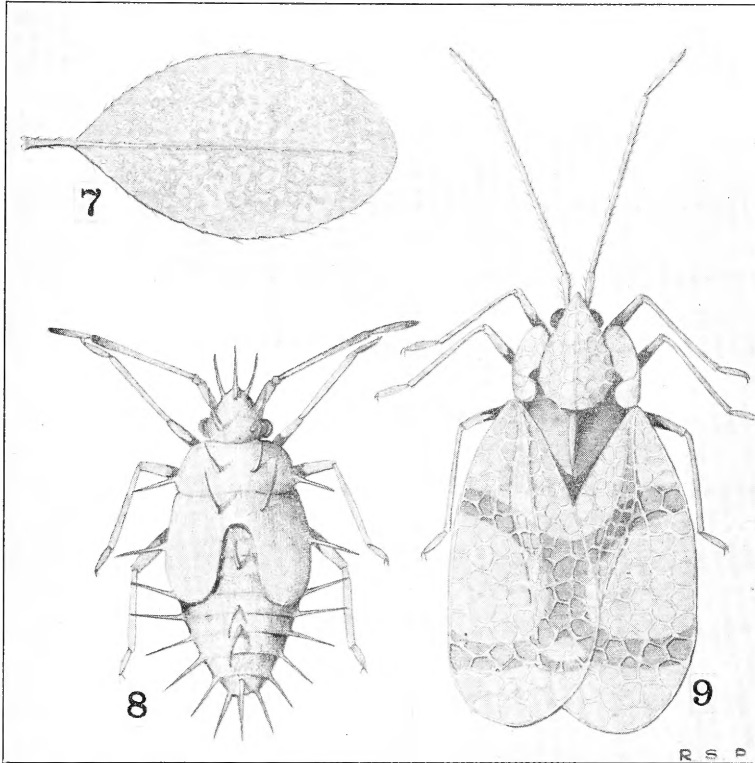


Fig. 7. Azalea leaf injured by the azalea lace bug
 Fig. 8. Last stage nymph of the azalea lace bug
 Fig. 9. The azalea lace bug, *Stephanitis pyrioides* Scott

an average of 30 to mature under insectary conditions. Mr. Dickerson states that in New Jersey development appears to be more rapid in some cases, especially on plants exposed to full sunlight, and mentions a total minimum nymphal period of 20 days for some individuals. During the first three nymphal stages, the insects appear to move around very little. These bugs may be controlled by applications of whale-oil soap at the rate of 6 or 7 pounds to 50 gallons of water, provided the spray is directed against the undersides of the leaves and applied as soon as the nymphs are noticed.

The Azalea Lace Bug

Stephanitis pyrioides Scott⁹ (Fig. 7, 8, 9)

This lace-bug has been present in New Jersey for the past several years, but only recently has it become seriously injurious. John Scott¹⁰ described it as *pyrioides* and Horvath in 1905¹¹ contributed to synonymy by renaming it *azaleæ*.

Van Duzee in his check list of the "Hemiptera of America, North of Mexico", lists it as *Stephanitis pyrioides* Scott. It has a wide distribution in New Jersey, having been found at Arlington, Rutherford, Far Hills, Riverton, Palmyra, Springfield, Nutley and New Brunswick. It was undoubtedly introduced into New Jersey in the egg stage on evergreen azaleas from Japan, as quite a few Japanese azaleas have been imported into New Jersey during the past few years.

Azalea indica and *Azalea amæna*, as well as numerous other varieties, have been found infested, the deciduous ones however not as much as the evergreen ones. The injury is caused by the nymphs and adults feeding on the under surfaces, abstracting the sap and causing a discoloration of the foliage on the upper surface. In severe infestations, the leaves become almost white, many of them drying completely and dropping. The under surfaces are also disfigured by the excrement of the bugs.

The winter is passed in the egg stage, each egg being 0.4 mm. long and 0.18 mm. wide, smooth, white and flask-shaped, with the neck bent to one side. They are deposited in the under surface of a leaf along the mid-rib and larger veins, being found as a rule in the younger leaves. Each egg is inserted in the tissue with the cap extending slightly above the leaf surface, each cap being visible as a whitish, oval or irregular, circular ring. Sometimes, but not always, the cap is covered with a brownish scab-like substance. From one to ninety eggs have been found in a single leaf. Hatching takes place about the latter part of May in central and southern New Jersey. There are 5 nymphal stages and the length of each varies from 3 to 6 days. In southern New Jersey there are 3 broods, the average length of each being about one month and the summer eggs requiring about two weeks for hatching.

On account of the extended oviposition period, it is possible to find all stages feeding together at the same time. Spraying with whale-oil soap at the rate of 5 or 6 pounds to 50 gallons of water

⁹Dickerson, E. L., and Weiss, H. B., 1917. The Azalea Lace Bug, *Stephanitis pyrioides* Scott. In Ent. News, v. 28, p. 101.

¹⁰Scott, John, 1874. On a Collection of *Hemiptera Heteroptera* from Japan, Descriptions of Various New Genera and Species. In Ann. Mag. Nat. Hist., ser. 4, v. 14, p. 440.

¹¹Horvath, G., 1905. Tingitidae novae vel minus cognitae e regione palae-arctica. Ann. Mus. Hung., v. 3, p. 568; also 1906 Ann. Mus. Hung., v. 4, p. 555.

will be found satisfactory, provided the spraying takes place shortly after the over-wintering eggs have hatched and is directed against the under-sides of the leaves.

The Boxwood Leaf Miner

Monarthropalus buxi Lab.¹² (Fig. 10 to 17)

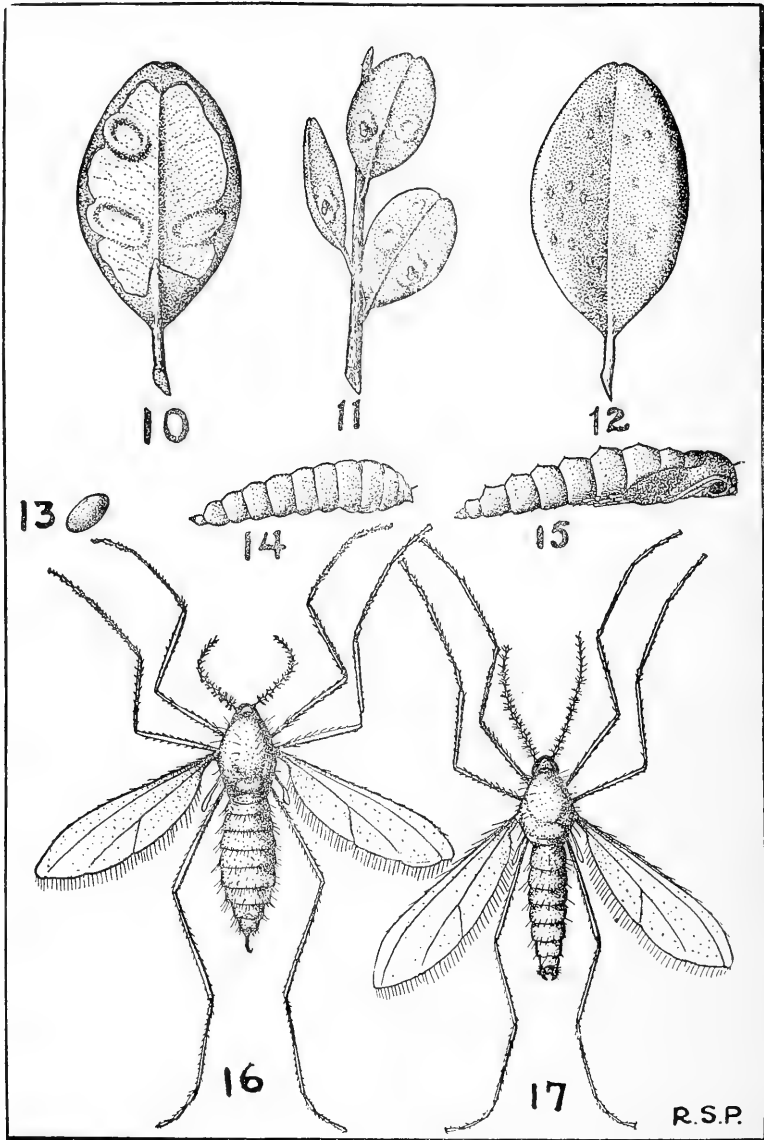
This insect, known as the European boxwood leaf miner, occurs on all varieties of boxwoods in nurseries and private estates in widely separated parts of New Jersey. It was evidently introduced from France or Holland within the past few years, especially from the latter country, as thousands of boxwoods are imported into New Jersey every year from Holland, while only a few come from France. It has, however, been noted by inspectors examining boxwoods from both of these countries.

The first sign of injury likely to be noticed by most persons is a small yellowish or light green spot on the upper leaf surface. Directly under this on the lower surface is quite a pronounced, irregular, oval blister, caused by the young maggot enlarging its mine. Later in the season, the injury is more pronounced and there will be a slight elevation of the upper surface, with a yellowish or brownish discoloration. In severe infestations, the entire leaf is taken up by irregular, oval swellings which are largest on the under surface. Badly infested plants during the spring present the superficial appearance of having been winter-killed, the discolored and disfigured leaves finally dropping off. Closer examination however, will reveal the larvæ or pupæ within their galls. Boxwoods have strictly an ornamental value and a plant having unsightly bare branches with new leaves developing at the tips is valueless for such a purpose. Specimen plants which have been trimmed for years in some particular shape are sometimes ruined by the insects infesting an entire side or top.

In New Jersey, the adult midges appear about the latter part of May and the eggs are then deposited in the young developing leaves. These eggs are tiny, oval and translucent, wide in the middle and tapering uniformly toward each rounded end, each being about 1/120 inch long and twice as long as broad. After hatching, which requires from 2 to 3 weeks, the yellowish white maggots mine the leaves all summer, making small oval pockets which sometimes run together on one side of a midrib, if many larvæ are present.

The winter is passed in these pockets, the larvæ transforming to light orange-colored pupæ in the spring. So as to facilitate the emergence of the adult, the pupa issues partly through the thin lower surface of the leaf. An infested leaf may contain as many as twelve and possibly more larvæ. The full-grown larva and pupa are about 1/8 inch in length and the adults are slender midges with

¹²From Weiss, H. B., 1916. *Monarthropalus buxi* in New Jersey. In Psyche, v. 23, p. 154-156.



- Fig. 10. Boxwood leaf with lower surface removed to show larval mines
 Fig. 11. Boxwood leaves showing galls made by larvae
 Fig. 12. Boxwood leaf showing distribution of eggs when many females are forced to oviposit in a few leaves
 Fig. 13. Egg of boxwood leaf miner
 Fig. 14. Larva of boxwood leaf miner
 Fig. 15. Pupa of boxwood leaf miner
 Fig. 16. Female midge, *Monarthropalpus buxi* Lab.
 Fig. 17. Male midge, *Monarthropalpus buxi* Lab.

hyaline wings, orange-colored bodies and remarkably long legs and antennae. Considering the damage which this pest is capable of doing and the lack of really efficient remedies, together with the fact that even partly injured boxwoods are no longer ornamental, it appears that the prompt destruction of infested plants before the

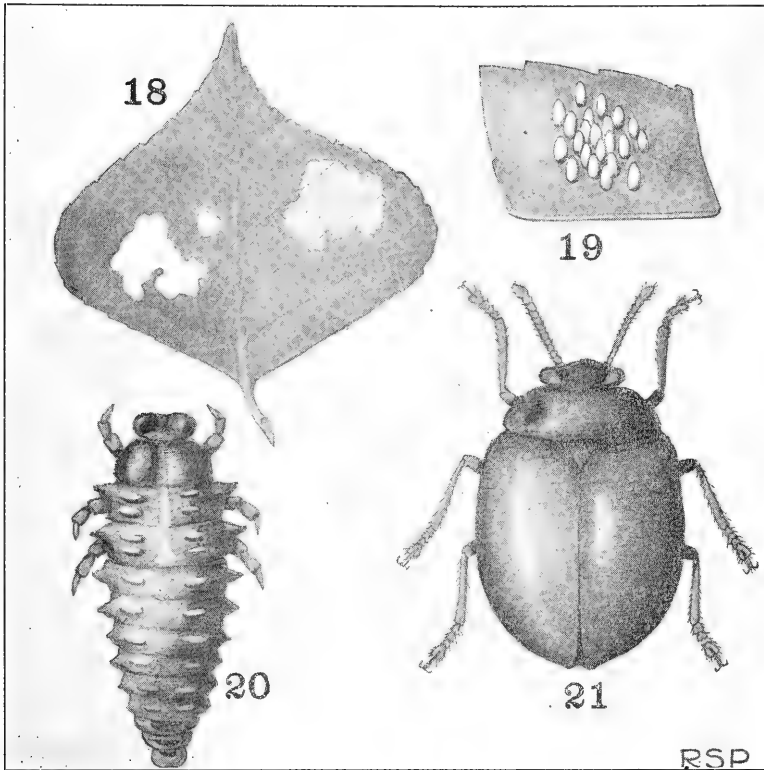


Fig. 18. Poplar leaf showing beetle and larval feeding
 Fig. 19. Egg mass
 Fig. 20. Full-grown larva
 Fig. 21. The imported poplar and willow beetle, *Plagiodera versicolora* Laich.

adults emerge in the spring is the best plan to pursue at present.

An Imported Willow Beetle

Plagiodera versicolora Laich. (Fig. 18, 19, 20, 21)

For the past several years this small, metallic blue Chrysomelid has been noted injuring poplars and willows at several localities in northern New Jersey and it is known to occur definitely at Irving-

¹³From Weiss, H. B., and Dickerson, E. L., 1917. *Plagiodera versicolora* Laich., an Imported Poplar and Willow Pest. *In* *Canad. Ent. v.* 49, p. 104.

ton, Clifton, Arlington, Elizabeth, Secaucus, Red Bank, and Paterson in New Jersey, as well as places on Staten Island. It is a European species and was described in 1781 by J. N. von Laichartig¹⁴ under the name *versicolora* which is an older name for the common European *Plagioderma armoricæ* of Fabricius. It is undoubtedly well established in New Jersey and has been for several years.

The foliage of poplars and willows is destroyed by both beetles and larvæ, the beetles eating the entire leaf tissue, and the larvæ the lower epidermis. The beetles hibernate during the winter under loose bark or in crevices in the bark, and appear in New Jersey in late April or early May. After feeding they begin oviposition, this operation continuing through the greater part of May. By early June, the adults of this brood had apparently disappeared and all eggs had hatched. The first adults developing from this brood of eggs were noted about June 10, and continued to appear until the early part of July. The first eggs were deposited by the second brood of beetles about July 1, and oviposition continued until the early part of August. The adults developing from this brood of eggs began to appear in the latter part of July and continued until late August, after which time, after feeding and copulating, they disappeared from the plants, having gone into hibernation. Thus there are two complete broods of the insects in addition to the hibernating beetles each season. There are five larval stages requiring from 3 to 6 days each and about a month's time is required for a complete cycle.

The lemon yellow eggs are laid in irregular masses of from 12 to 30, the average being about 19. Each egg is smooth, narrowly oval in outline, with broadly rounded extremities and measures 0.95 mm. long by 0.45 to 0.55 mm. broad, being inclined at an angle of 30 degrees. As a rule, only one mass occurs on the under-side of a leaf. The eggs hatch in from 3 to 5 days into brownish black larvæ which feed at first in colonies on the under surface. When full grown, at which time the larva is about 5 mm. long, it attaches itself usually to the under leaf surface by means of a sucker-like disc at the anal extremity and changes to the pupa, which rests with its posterior end within the cast skin of the larva. This stage lasts from 2 to 3 days. The pupa is yellowish-brown in color with dark spots and markings. The tubercles on the sides of the thorax and abdomen of the larva contain eversible hypodermal glands which are operated when the larva is irritated, giving off a characteristic odor. This species can undoubtedly be easily controlled by timely treatments of arsenate of lead applied to the under-sides of the leaves.

¹⁴Von Laichartig, J. N., 1781. Verzeichniss und Beschreibung der Zyroles Insecten. p.

A European Pine Saw-fly

Diprion simile Hartig¹⁵ (Fig. 22, 23, 24, 25)

This species which was first noted in the United States by Dr. W. E. Britton, has recently been found injuring pines in several nurseries in northern New Jersey. It is one of the most injurious

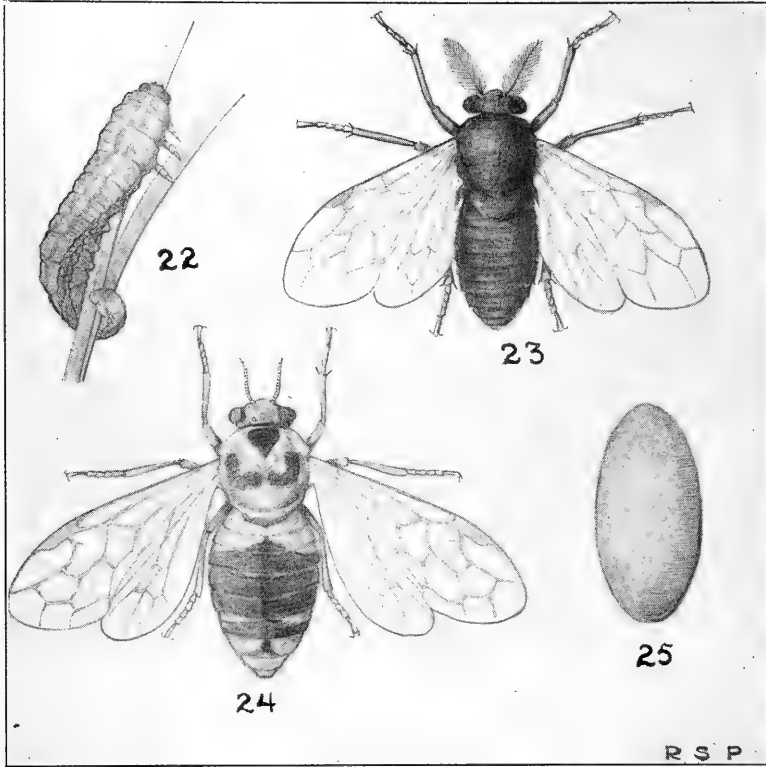


Fig. 22. Larva of the European saw-fly
 Fig. 23. Male saw-fly, *Diprion simile* Hartig
 Fig. 24. Female saw-fly, *Diprion simile* Hartig
 Fig. 25. Cocoon

Russia, France, Prussia, Sweden and England, and was evidently saw-flies in Europe, damaging the pine forests of Southwestern introduced into New Jersey on imported nursery stock.

¹⁵Britton, W. E., 1915. A Destructive Pine Saw-Fly Introduced from Europe. *In* Jour. Econ. Ent., v. 8, p. 379

The following brief descriptions have been taken from Dr. Britton's paper and will enable one to identify this species.

EGG. The eggs are laid end to end in slits made along one of the ridges at the edge of the needle. The eggs are pale blue in color, smooth and slightly shining. The sides are parallel with the ends rounded. Length, 1.25 mm. thickness, .33 mm. In the material examined the newly laid eggs were slightly separated in the slits. The

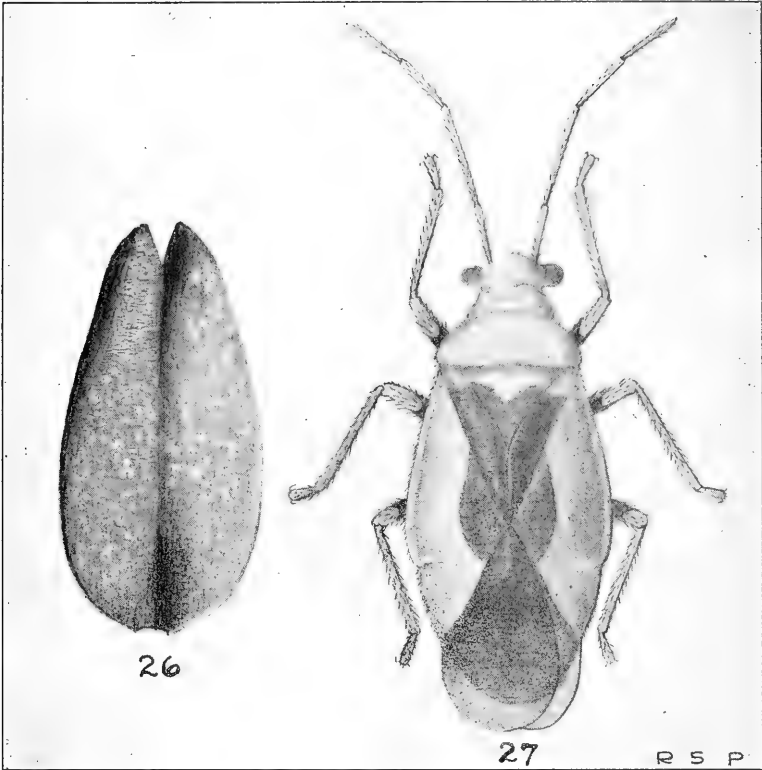


Fig. 26. Orchid leaf showing injury by orchid plant bug

Fig. 27. An orchid plant bug, *Tenthocoris bicolor* Scott.

eggs before hatching increase in size, becoming crowded in the slits so that the ends are flattened like peas in a pod.

LARVA. Length, 25 mm. (1 inch) to 28 mm. (1 $\frac{1}{8}$ inches). Thickness, 4 mm. ($\frac{5}{32}$ inch). Head black, body greenish yellow with a mid-dorsal double stripe of brown extending the entire length. On either side of the dorsal stripe is a yellow stripe broken with transverse markings of brown. The remainder of sides dark brown with many irregular yellow or whitish spots. Ventral surface pale yellow or white. Pro-legs yellow with a transverse black mark at base, true legs marked with black and yellow.

COCOON. 9 mm. long (about $\frac{3}{8}$ inch), thickness about 5 mm., oval in shape, tough leathery and fairly smooth. Color, sepia.

MALE. Wing-spread, 14 mm. ($\frac{9}{16}$ inch). Length, 7 mm. Large pectinate antennæ. Head and pronotum coarsely punctured. Head, antennæ and body, black. Cerci and tip of the last abdominal segment, orange. Legs yellow, with the trochanters and basal two-thirds of the femora, brownish black.

FEMALE. Wing-spread, 20 mm. (little over $\frac{3}{4}$ inch). Length, 8 mm. ($\frac{5}{16}$ inch). Robust, head and antennæ black. Thorax coarsely punctured, yellow with a large shield-shaped black spot on meso-thorax, extending from the anterior margin and covering about two-thirds of the space between the parapsidal grooves. On either side are a pair of L-shaped black marks which approach each other posteriorly. Posterior margin of the mesothorax, postscutellum and prosternum, black. Abdomen yellow with dorsal surface of 3rd, 4th, 5th, 6th, and the anterior portion of 7th segment, black. Legs yellow with the outer surface of hind femora, the apex of the middle and hind tarsi, dark.

In New Jersey, spraying with arsenate of lead has proven satisfactory; also, during the summer of 1916 the pupæ were heavily parasitized by *Monodontomerus dentipes* Boh.

An Orchid Plant Bug

Tenthecoris bicolor Scott¹⁶ (Fig. 26, 27)

This blue and red member of the family *Miridae* is occasionally met with in orchid houses and it is a common occurrence to find the leaves of *Cattleya* orchids imported from South America covered with irregular, white spots 1 to 2 mm. in diameter, due to the abstraction of chlorophyll by these bugs. The adult is an attractive bug 4 mm. long, having the head, pronotum and external edge of the upper wings of a pronounced brick red color and the thorax and the remainder of the upper wings a bright blue. The adults and nymphs live on the under-sides of the leaves, sucking the juices.

Cattleyas are especially subject to attack and *Lallias* and *Sophronitis* often show the characteristic spotting of the leaves.

Three Orchid Weevils

(Fig. 28 to 32)

The following notes relate to species which have been found associated with orchids growing in New Jersey greenhouses. Inasmuch as their life histories are imperfectly known, it is impossible to devote more than a few lines to each one.

¹⁶From Weiss, H. B., 1917. Some unusual orchid insects. *In* Ent. News, v. 28, p. 24.

Acythopeus (Baridius) orchivora, Blackb.

(Fig. 28, 29, 30)

It is not unusual to come across this representative of the family *Baridae*, and indications of its work in *Dendrobium* orchids growing in various greenhouses in northern New Jersey. It is a typical, little, dull black weevil about 3.5 mm. long, having the snout and legs thickened, the thorax wider than long and rounded on the sides to the hind margin. The elytrum is convex and broadly rounded to the apex. The head is finely punctured, the thoracic dorsum

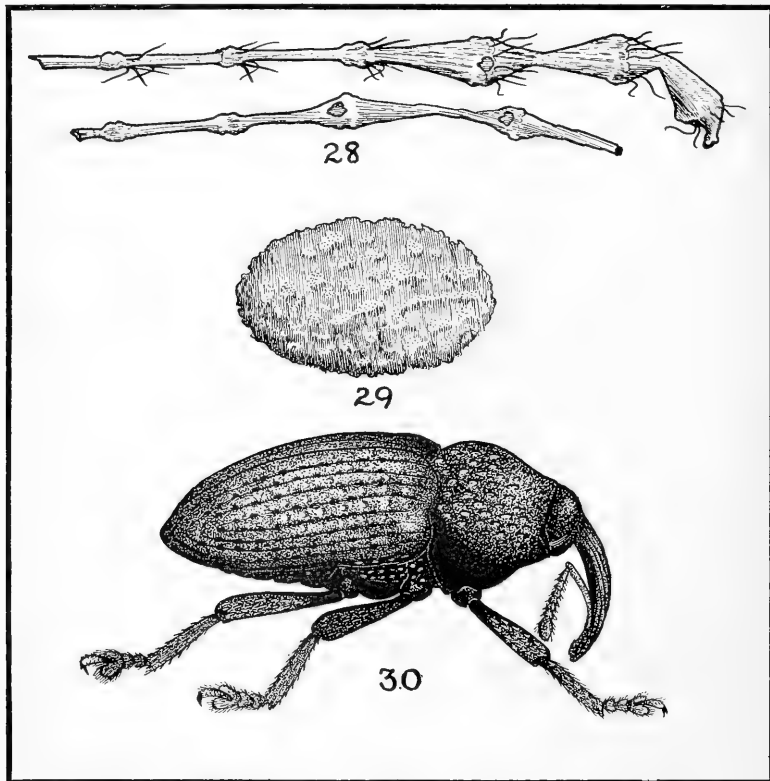


Fig. 28. Orchid pseudo-bulbs showing exit holes of weevils

Fig. 29. Pupal cell found in the large end of a pseudo-bulb

Fig. 30. The adult weevil, *Acythopeus orchivora* Blackb.

more coarsely pitted and the elytra marked with parallel punctured striae, the ventral surface and legs also being finely pitted. It was described by the Rev. T. Blackburn¹⁷ in 1900. Mr. Walter W. Froggatt¹⁸ gives a brief account of this species and figures an adult. He states that the insects were bred from the pseudo-bulbs or thickened leaf stalks of *Dendrobium canaliculatum* and gives the following description of the larva and pupa.

¹⁷Blackburn, T., 1900. Further notes on Australian Coleoptera with descriptions of new general and species. *In* Trans. Roy. Soc. So. Australia, v. 24, p. 35-68.

¹⁸Froggatt, Walter W. *In* Agr. Gaz. N. S. Wales, Misc. Bul. 751.

LARVA. Short, thickened, wrinkled and curled in burrow when at rest; head chestnut brown, lightest in center where it is bisected by two darker lines, arcuate on hind margin; jaws black, antennæ and palpi reddish brown.

PUPA. Pale yellow with black eyes; tip of snout and spines, on abdomen reddish brown, wing-pads dark colored at tips; dorsal surface of head smooth, bearing a few scattered hairs; thorax broad showing a depression on either side and a central suture; abdomen tapering to extremity, each segment furnished with a spine on either side with anal one bearing two and a number of spiny hairs on apex; surface shows several fine hairs upon head with two longer ones above eyes; snout and legs curled downward, wings folded down forming a pad on either side.

This insect was evidently introduced into New Jersey greenhouses in orchids imported from some tropical country of the Eastern hemisphere. During the middle of the day the beetles seem

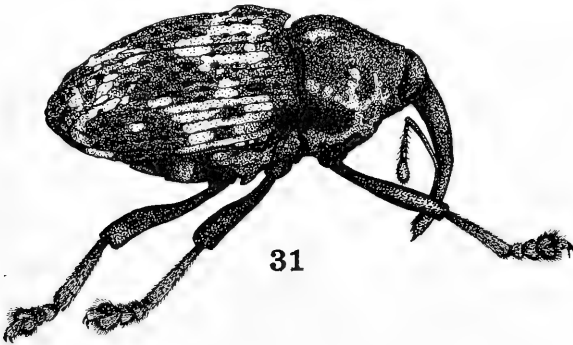


Fig. 31. *Cholus cattleyae* Champ.

to prefer to rest in the curled, basal portion of the leaf, where a considerable part of their feeding takes place. In New Jersey, *Dendrobium findlayanum* and *D. crystallinum* seem to be attacked more than other species.

Cholus Cattleyæ Champ. (Fig. 31)

This attractive species, which belongs to the *Curculionidae*, is about 11 mm. long, 5 mm. wide, black and characteristically marked with white, and has been found as a rule associated only with *Cattleya gigas*, but other species are sometimes injured. It feeds on the surface of the pseudo-bulb and punctures the leaves with large holes, the tissue surrounding these punctures finally turning black and becoming hard and dead. The larval and pupal

stages are passed within the pseudo-bulbs, as coleopterous larvae have been taken from these bulbs and they often contain large cavities and exit holes. Mr. Champion states that this species is allied to *C. forbesi* Pasc., from Ecuador, found among orchids and that two allied forms occur in Central America, these being *C. Nigro maculatus* and *C. nigronotatus*. *Cattleya gigas* comes from Colombia which is undoubtedly the home of this species.

Mr. G. C. Champion¹⁹ described this species from a New Jersey specimen as follows:

Oblong-rhomboidal, robust, black, opaque, the prothoracic tubercles and the rostrum somewhat shining; variegated with dense patches of rather large, imbricate, oval, white scales, which form an oval spot on the median basal lobe of the prothorax, a similar spot on the scutellum, a common elongate-subquadrate, post-scutellar patch (enclosing a square bare spot) and two laterally connected fasciæ on the elytra (one below the base, narrow, confluent with square basal patch, the other sub-apical, broad, interrupted, and extending obliquely forward to the shoulder), a transverse sinuate fascia on the front of the prosternum, and various spots along the sides of the meso and metasternum and abdomen, and an interrupted line down the middle of the latter; the tibiæ and tarsi thickly, and the bases of the intermediate and posterior femora sparsely, clothed with coarse yellowish hairs. Head rugosely punctuate; rostrum long, curved, moderately stout, widened at the tip, coarsely punctuate, the antennæ inserted at the middle. Prothorax transverse, convex rounded at the sides, compressed towards the apex, and rapidly narrowed anteriorly; studded with small, oblique, prominent, scattered tubercles. Elytra sub-triangular, at the base much wider than the prothorax; closely seriato-foveolate, the interstices narrow and unevenly raised, those surrounding the common sub-quadrate basal patch (which appears depressed) very prominent and transversely confluent. Anterior coxæ somewhat widely separated, legs long, stout, the femora sharply dentate towards the apex. Length (excl. rostr.) 11½, breadth 5½ mm.

Mr. H. S. Barber²⁰ describes what may be this species as *Chobus cattleyarum* from specimens taken in a greenhouse at Milwaukee, Wis.

Diorymellus levimargo Champ. (Fig. 32)

This little, black, shiny fellow, which is only 2 mm. long and 1 mm. wide and also a member of the *Barida*, is sometimes excessively abundant in orchid houses feeding on *Cattleyas* and *Dendrobiums*. *Cattleya mossii* and *C. speciosissima* have been the ones particularly subject to attack. In addition to feeding on the leaves, pseudo-bulbs and flower stalks, the orchid-growers credit this beetle with doing considerable damage to the flowers and unopened flower buds. Somewhat hard discolorations and spots, usually at the tips and edges of the petals and sepals, surround the feeding punctures. Such markings, of course, make the flowers unsalable or reduce their value. The beetles can be found, sometimes crawling slowly over

¹⁹Champion, G. C., 1916. On some Weevils Attacking Orchids. *In Ent. Mo. Magazine*, ser. 3, v. 2, p. 200.

²⁰Barber, H. S., 1916. A New Species of Weevil Injuring Orchids. *In Proc. Ent. Soc. Wash.*, v. 18, p. 177

the plants, but usually in the curled up, basal part of the leaf or in the sheath surrounding the flower stalk. Advantage is taken of this habit by the orchid-grower who sometimes sends a man daily through the house to hunt out and destroy them. Up to the present I have been unsuccessful in my search for larvæ and pupæ and know nothing concerning the early stages. Mr. G. C. Champion writes that the eight known species of *diorymellus* are all from Central America and that this new species is related to *D. octostriatus* and *D. 12-striatus*.

Mr. C. R. Crosby²¹ records *C. lævimargo* as feeding on orchid roots in a greenhouse at Ithaca, N. Y. This species was also described by Mr. Champion²², mostly from New Jersey specimens and his description is given herewith.

Rhomboidal, narrow, shining, black; glabrous above, the punctures of the under surface and legs each bearing a minute whitish scale.

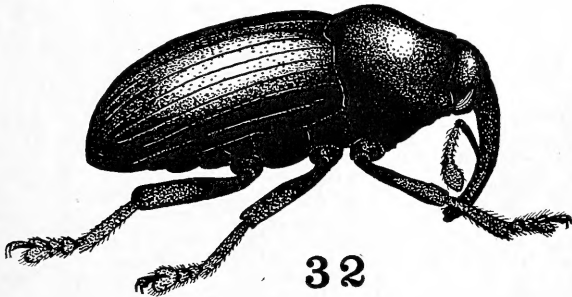


Fig. 32. *Diorymellus lævimargo* Champ.

Head finely punctate, transversely grooved between the eyes; rostrum moderately long, stout, arcuate, finely punctate, striate at the sides, smoother in the female. Prothorax, transverse, conical, constricted before the apex, sparsely, finely punctate, the punctures becoming coarser near the basal and apical margins. Elytra narrowed from a little below the base, the humeri not prominent; each with six sharply-cut, rather broad, deep, sparsely punctured striae on the disc, and another stria along the margin beneath, the interstices flat, each with an irregular row of excessively minute punctures. Beneath, coarsely, closely punctate; ventral segment broadly hollowed and smoother in the middle of the male. Prosternal sulcus deep v-shaped, strongly marked, not extending beyond the anterior coxæ widely separated. Femora feebly sulcate beneath. Length $17/8-2$, breadth, $1-11/10$ mm. (male and female).

²¹Crosby, C. R., 1916. *In Ent. Mo. Mag.* ser 3, v. 2, p. 202

²²Loc. cit. Footnote no. 19, p. 18.



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