

THE DESTRUCTIVE GREEN-PEA LOUSE.

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Perhaps never in the history of economic entomology has an undescribed species of insect appeared so suddenly and over such a wide area, and in such destructive numbers, as the "destructive green-pea louse," the popular name I have given the insect herein described. It has occurred, during the past season, in Maryland, Delaware, Virginia, North Carolina, Pennsylvania, New Jersey, New York (Long Island), Connecticut, Vermont, Maine, Ohio, and Canada (Ottawa).

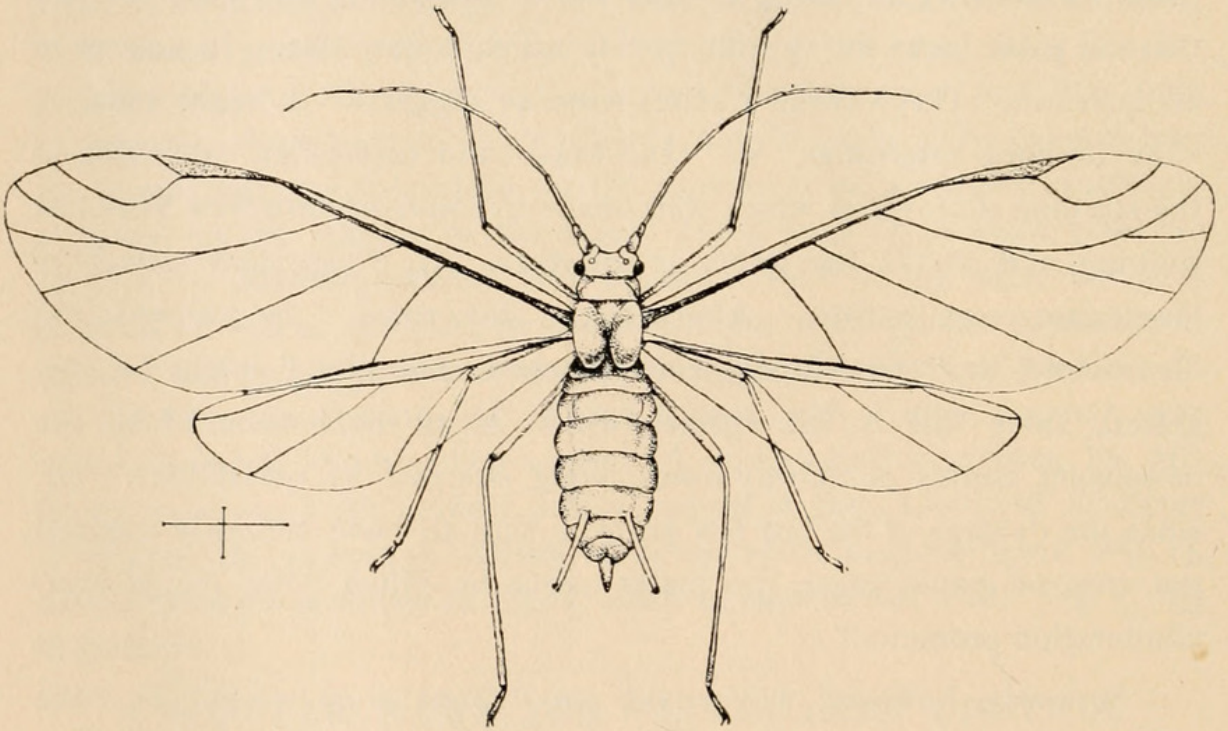


FIG. 4.—*Nectarophora destructor*, winged form. A typical representation. (Original.)

It belongs to the family Aphididæ, and the familiar and extensively-used genus *Siphonophora*. Unfortunately, however, Koch overlooked the fact that *Siphonophora*, as a generic term, was already appropriated for the Myriapoda before he made use of it in his Aphididæ; it is also used to denote an order of the oceanic Hydrozoa. In accordance with modern practice, therefore, it is fitting that we should drop the name *Siphonophora* and recognize some other. In his synopsis of the Aphididæ of Minnesota, O. W. Oestlund proposes the name *Nectarophora* to take the place of *Siphonophora*. I see no reason why it should not stand, and place the species described below under that generic name.

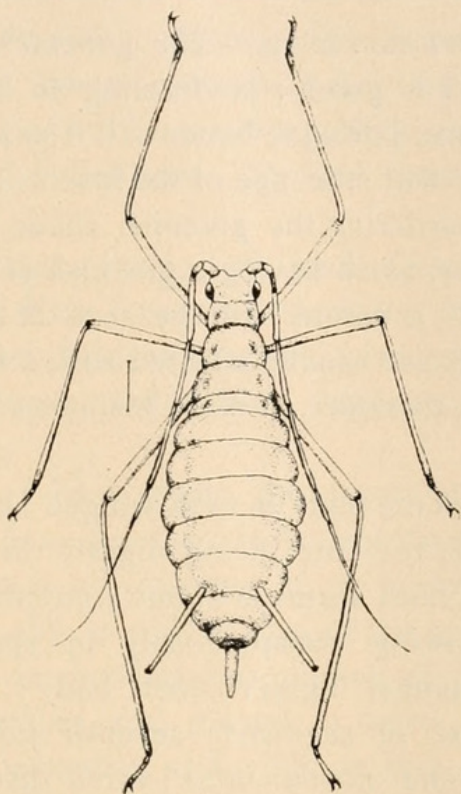


FIG. 5.—*Nectarophora destructor*, apterous form. (Original.)

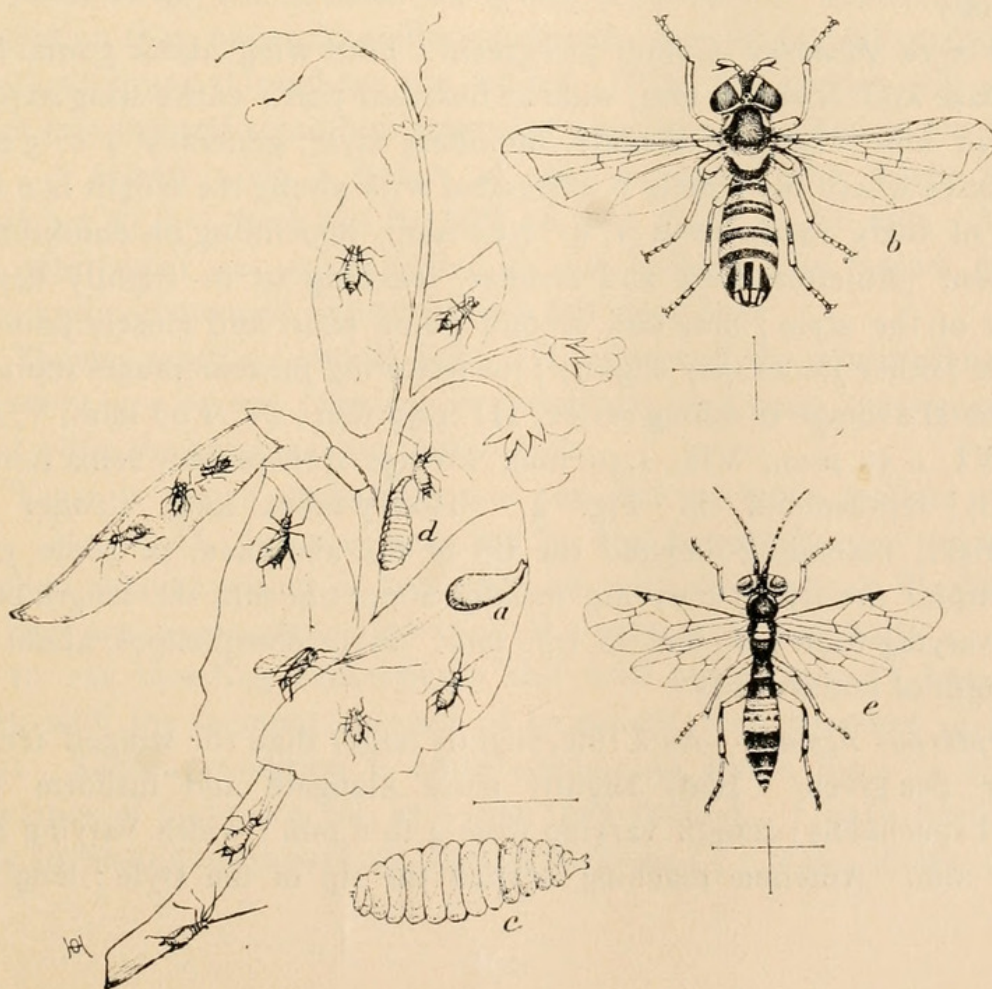


FIG. 6.—*Nectarophora destructor* and its principal enemy, *Allograpta obliqua*; *a*, pupa on leaf; *b*, adult; *c*, larva; *d*, larva feeding; *e*, *Bassus letorius* (female). Hair lines represent natural size. (Original)

Nectarophora destructor, n. sp.—The general colour of both winged and wingless individuals is green; conforming so closely to that of the pea plant itself, we might, perhaps, better call it pea-green. The colour, however, varies slightly with the age of the insects; the young when first born are lighter, still bordering the greenish shade of the adult; old or spent females are lighter, some having a greenish-yellow tinge. In many instances individuals in a colony will be seen of a yellowish or creamy tinge. Such individuals are usually affected with a fungous disease. The variation in colour may, therefore, in many instances be attributed to some abnormal condition.

The general form of the body in both winged and wingless specimens is elongate and fusiform, the latter being slightly the larger. The average length of the body in both forms is about 4.50 mm. Eyes are red and prominent; colour showing conspicuously in specimens mounted in Canada balsam. Antennæ lighter than body; tubercle prominent; joints darker than rest of segment; seventh joint quite filiform and fuscous. Legs long and conspicuous; tarsi, distal ends of tibia and femora fuscous. Honey-tubes fuscous at tips, otherwise concolorous with body.

Winged Female.—Colour pea-green. Fore wing about 5 mm. from tip to base and about 2 mm. wide at broadest part; entire wing expanse about 11 mm. Length of body, including style, generally 4 to 5 mm.; some cases where the female is distended with young the length is 6 mm. Width of body varies from 1 to 1.50 mm., depending on condition of specimen. Antennæ long and slender, reaching to or slightly beyond the tip of the style; first and second joints short and closely joined to tubercle; other joints vary slightly; the following measurements represent the general average of a long series: III. 1.50 mm., IV. 1.00 mm., V. 0.75 mm., VI. 0.50 mm., VII. 1.50 mm. Wings transparent, veins slender, typically represented in Fig. 4. Honey-tubes long, slender and cylindrical, extending beyond the tip of the abdomen, in some cases to the tip of the style; they are usually about one-fifth the length of the body, varying from 1.00 mm. to 1.50 mm. Style conspicuous, about half the length of honey-tubes.

Apterous Female.—As a rule, slightly larger than the winged female. Colour pea-green. Body slightly more elongate and fusiform than winged specimens; length varying from 4 to 6 mm.; width varying from 1 to 2 mm. Antennæ reaching beyond the tip of the style; length of

joints varying considerably. Honey-tubes same general shape as in winged specimen, but longer, extending beyond the tip of the style; length varying from 1.25 mm. to 2 mm. Style longer and more nearly conical than in winged individuals. Typical form of apterous female is shown in Fig. 5.

Described from many living and dead viviparous females of both forms from Maryland, New Jersey, Connecticut, Ohio, and Ottawa, Canada. Found on green field pea, sweet peas, and kept for a time on clover. Types in formalin and alcohol deposited in the U. S. National Museum.

General Notes.—I have given this insect much study during the past season, and still have a colony under observation (Jan. 29, 1900) in my laboratory. There is no cessation of the reproduction of young. As yet we have not been able to obtain eggs of the species, although several hundred mature apterous females were collected just before our coldest weather late in December and placed in tubes. We also made field observations late in December, and while we had no difficulty in finding the insects close to the ground on the under side of the leaves of volunteer peas, we are still in doubt as to how it passes the winter. I am of the opinion that, under favorable conditions, the female will continue to reproduce young throughout the winter. That the species will survive severe freezing and reproduce later was conclusively tested in our laboratory. A colony upon a bunch of peas in water were frozen late in December so that there was ice half an inch thick in the cup. A week later, when heat was again turned on the building, the insects became active and commenced reproduction a few days later.

Thomas reports a similar case. He observed the wheat-plant louse (*Nectarophora avenæ*) breeding in mid-winter, and took specimens from wheat while the snow was on the ground.

There is also a probability that the late apterous females deposit eggs. Mr. W. H. Ashmead tells me he has frequently seen the eggs of an allied species, which is abundant on tulip trees about Washington. The eggs are usually deposited about the base of the leaf buds.

In my breeding experiments and field observations, I have been struck with the seeming absence of hymenopterous parasites upon this insect. Such a condition is quite uncommon where there is such an abundance of plant lice, for, as a rule, they abound. I have bred but a single hymenopterous parasite, *Bassus lætorius* (♀), Fab., shown in Fig.

6 at *c*, and this is supposed to be parasitic upon the *Syrphus* larvæ. In Canada, Dr. James Fletcher informs me he has bred *Praon cerasaphis* and *Aphidius Fletcheri*, a new species recently described by Ashmead; while in Delaware, Professor E. Dwight Sanderson has bred another species of the genus *Aphidius*, namely, *A. Washingtonensis*, from the destructive green-pea louse.

In my field observations I have found the predaceous insects very important factors in the destruction of this plant louse. I have observed four groups of insects at work upon them: First, and most important, the *Syrphus* flies; second, lady beetles; third, lace-winged flies; and fourth, soldier beetles.

Of the *Syrphus* flies, we bred *Allograpta obliqua*, Say; *Syrphus Americanus*, Weid., and *Sphærophoria cylindrica*, Say. The first named was by far the most abundant and important species. On a farm where 600 acres were planted in peas, and where the plant louse totally destroyed 480 acres, the larvæ of *A. obliqua* so completely destroyed the plant lice by the second week in June that hardly a specimen could be found. In the language of the proprietor, who owns a large cannery, he says: "The last few days I packed, the separator sieved out about 25 bushels of green worms, which no doubt proves they destroyed the plant lice." These "green worms" were the larvæ of *A. obliqua*, illustrated in Fig. 6. The other two species were not so abundant.

Of the lady beetles the most important were *Coccinella 9-notata*, *Hippodamia convergens*, *Megilla maculata* and *Coccinella sanguinea*.

The larvæ of *Chrysopa oculata*, Say, were also abundant upon the infested vines. I observed the soldier beetle, *Podabrus rugulosus*, Lec., feeding voraciously upon the plant lice.

From what I have seen of the ravages produced by the destructive green-pea louse, and our inability to combat it on a large scale, I consider it one of the most important pests on the already long list of noxious insects. Whether it will appear again next year over the same general territory on the field pea remains to be seen; but I am of the opinion it will not be as destructive as the season just past. The superabundance of *Syrphus* flies and lady beetles over certain areas will certainly have a balancing effect in nature.

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