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BULLETIN No. 88

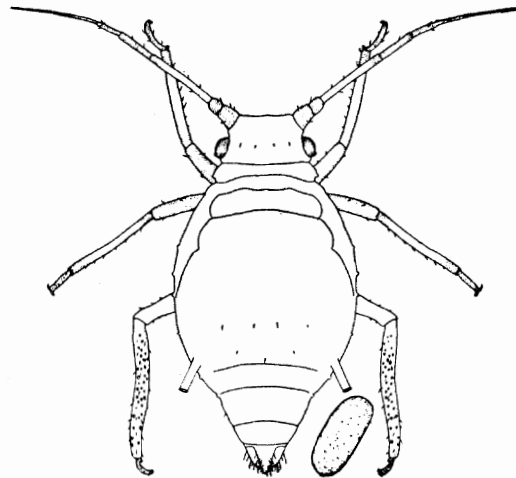
MARCH, 1910

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THE SOUTHERN PLUM APHIS

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ENTOMOLOGY



FEMALE APHIS AND EGG

STILLWATER, OKLAHOMA

A. & M. COLLEGE PRINTING DEPARTMENT

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**EXPERIMENT STATION, Stillwater, Oklahoma.**

## THE SOUTHERN PLUM APHIS (*Aphis setariae*, Thos.)

C. E. SANBORN

Every year, about the time that the plum trees of this State begin to foliate, they seem to become infested with a dark colored louse, which has white marked legs and antennae. This infestation generally increases in severity until the time that the young plums are about the size of a cherry. If meantime, the aphids have not been subjected by their natural enemies, or by artificial remedies, the plum crop is practically destroyed.

The presence of these lice is often first noticed on account of the unthrifty or "sorry" appearance of the tree. Its new growth is distorted, the leaves are more or less corrugated and crumpled together on the ventral or lower side. The terminal bud is stunted and its growth is sometimes abruptly terminated. Many of the blossoms are often killed, and in cases where the infestation is severe early in the season, no fruit is set, since the peduncles of the blossoms become colonized to such an extent that the food material in its passage to the young plum is all withdrawn by the sucking processes of the lice.

The almost sudden appearance of these innumerable "bugs" early in the spring gives rise to the question, from whence do these lice come and where do they go? In the answer to this question lies the entire seasonal history of this insect, which is as follows:

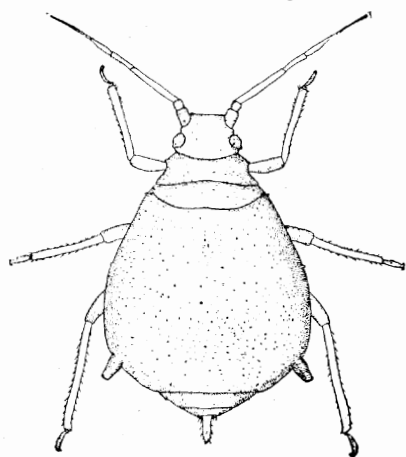


FIG. 1

The form which begins the colonization on the plum tree in the early spring is known as the "stem mother," and hatches from an egg which was placed there the previous fall. These forms being few in number are not often observed. They are, in general appearance, however, very much like the progeny which accrues from them except that they are more globular in shape, have shorter antennae and honey tubes, and never acquire wings. (See illustration of stem mother, Fig. 1.)

Many young are produced by a single stem mother, both directly and indirectly, in a comparatively short interim of time. For instance she can produce young at the rate of from two to five or six per day for a period of three or four weeks. These young attain their growth in a week or ten days; and also reproduce rapidly. When these colonies become conspicuously large they contain many winged forms which have developed in generations following the progeny of the stem mother. These forms (See Fig. 2) are dispersatory in nature

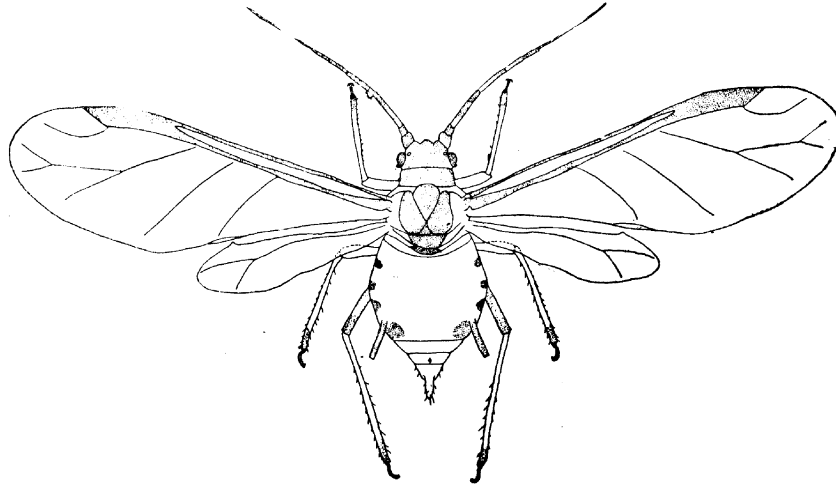


FIG. 2

and fly from the infested trees to other trees, there to found colonies which become nearly as serious as those established by the stem mothers. Such dispersion continues until the terminal branches have nearly attained their season's growth and the leaves have become toughened by age. The dispersion then becomes more pronounced than ever, but the insects leave the trees and begin to establish colonies on certain species of grasses. The time is in the early summer and consequently the beginning of their summer history.

Their presence mostly passes unnoticed during the summer season on account of the fact that the grasses colonized by them are exceedingly wide spread in distribution, and furthermore, are not yet considered to be of a very great economical importance. When noticed on these grasses (See food plants), they are often seen to be accompanied by such ants as the little yellow kind, known as *Solenopsis debilis*, or the little black ant, *Minomorium minutum*, or some of the larger black ants, such as the *Solenopsis geminata*. If they are not protected by some species of ant, one is liable to find small, six legged or footless white flocculent covered, or bare larvae, which are species of Coccinellids or Syrplus flies that prey on them. (See inimical insects.)

While colonizing the grasses throughout the summer season, (See wingless form, Fig. 3,) their bodies are brownish in color and the white markings on their legs and antennae are not as distinct as in colonies on the plum earlier in the season. The colonies are also much smaller and doubtless less prolific. As the fall of the year approaches, i. e. the last of October, there arises from these grass colonies a winged form known as a "migrant," (See Fig. 4), which locates on the plum tree, there to again found a new colony.

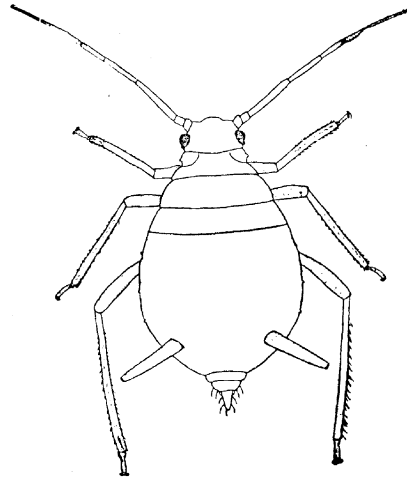


FIG. 3

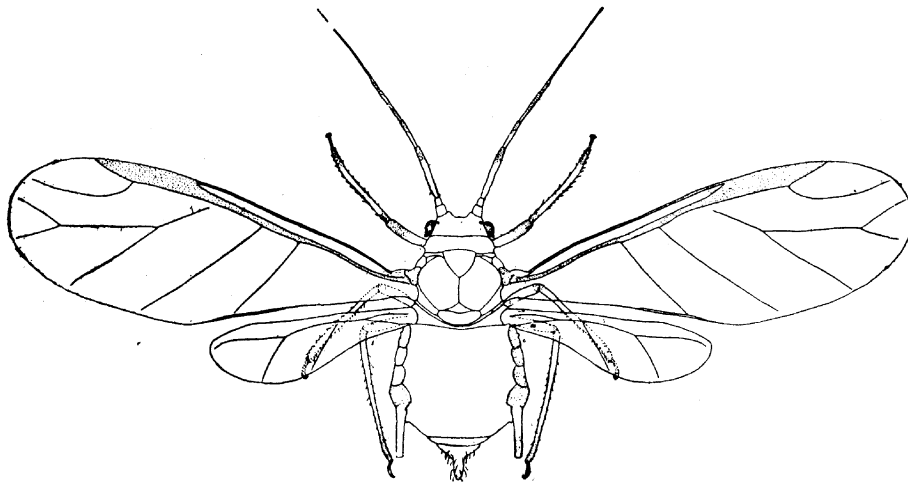


FIG. 4

The descendants of these migrants, however, differ greatly in function from their spring and summer predecessors, from the fact that they are sexual forms, and the females are oviparous instead of viviparous. From the appearance of the plum trees which have but few straggling tough leaves at this time, it seems that colonies could not be founded on them by the migrants, but contrary to this idea, the sexes obtain sufficient food material from either side of the leaves near the midvein or from the petiole for development. (See figures 5 and frontispiece, male, female, and egg.)

Soon after the sexes mature, copulation occurs and oviposition is begun. The females, for the latter purpose, disperse, seeking more or less protected places on the tree, such as the lateral and axillary side of the lateral buds. When the ovipositional period is finished, which

is generally about the middle of November, no live adults can be found. Their existence then lies entirely in the egg stage until March.

The egg, (See frontispiece), when first deposited is light amber colored, but soon turns to a dark glistening appearance. It is

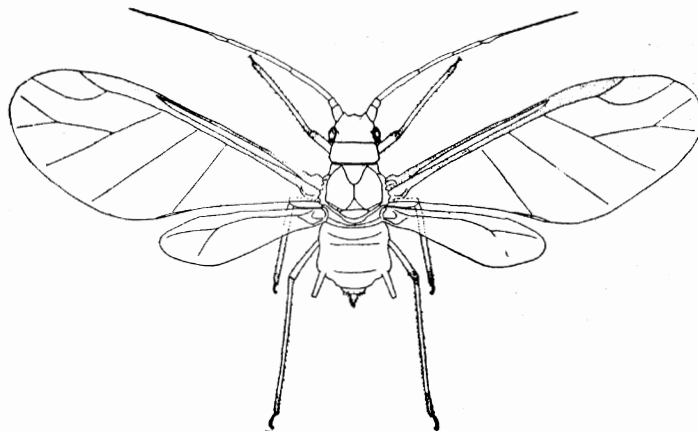


FIG. 5

roundish, oblong in shape, and about .24 x .49 m. m. in size. A stage is represented by it in this insect's life cycle which is the most **vulnerable** one in any period of its development.

The time of incubation begins in this latitude about the first or second week of March. The form which hatches from the egg is known as the "stem mother", which was mentioned in the beginning of this treatise as an answer to the question, "From whence do these lice come and where do they go"?

### FOOD PLANTS

The plants from which this insect obtains its food in Oklahoma, are as follows:

- Plum (*Prunus* species) all of our species.
- Canadian blue grass (*Poa compressa* L).
- Crab grass (*Panicum sanguinale* L).
- Goose grass (*Eluisine indica* (L) Gaertn).
- Red Top (*Tridens seslerioides* (Lichex.) Nash).
- Yellow fox tail (*Chaetochloa glanca* L. Scribu).
- Nimble Will (*Muhlenbergia screberi* Gmelin).
- grass (*Panicum polyanthes*, Schultes).

The grasses are the summer host plants and the plum trees are the fall, winter and spring host plants on which the louse may be found.

## INIMICAL INSECTS

There are several species of insects which prey upon the plum aphid, and in many instances the former become so numerous that they completely subject the latter, before it has done much damage. Of these insects, the lady bugs are the most conspicuous, but there are many others which are very beneficial. The list is as follows:

*Coccinella munda.*  
*Megilla maculata.*  
*Hippodamia convergens.*  
*Scymnus terminatus.*  
*Scymnus loewii.*  
*Exohomus constriatus.*  
*Ploribunda oculata.*  
*Hemerobius gossypii.*  
*Bacca clavata.*  
Spiders,—various species.  
Internal parasites.

## REMEDIAL MEASURES

In the application of sprays it is necessary to do a thorough and complete job. In order to do this, good spray pumps, provided with first class nozzles, such as "Mistry" or "Vermorel", are necessary. At any time after the eggs have been deposited in the fall, and before the buds begin to swell in the spring, the following spray should be used:

Lime.....	15 lbs.
Sulphur.....	15 lbs.
Water.....	50 gals.

Mix the sulphur with a small quantity of water to form a paste; place in an iron kettle or a similar vessel with enough water to form a thin solution; add the lime after slaking it, and boil the mixture for about forty-five minutes, or until it becomes dark amber in color; this diluted according to the formula, should be applied to the egg infested trees. It will not only destroy the eggs, but such other insects as bark lice or scales that may be present.

**Summer Sprays.**—I do not advise the emulsions which are generally used for controlling such insects as this one. The foliage of the plum tree is too tender to withstand the action of ordinary sprays of this kind, and it should be useless to state that no arsenical spray should be used, yet it is necessary, since many persons will make such applications unless informed that the bug would only be protected thereby, on account of its poisonous effect on the insect enemies, and non-poisonous effect on the bugs.

The following summer sprays may be used:

**Tobacco Sprays.**—Contact solutions, made from tobacco decoctions, are the best for summer applications. The following formulas are all good:

Tobacco stems or dust.....1 lb.  
Water.....4 gals.

Steep the tobacco in hot water for one hour, but do not boil the solution; apply while fresh.

Black leaf, one part to seventy-five parts water.

Black leaf is a tobacco product in the form of liquid, and makes a good spray for all insects similar to the **Plum Aphis**.

None of these summer sprays are as advisable as the winter application, since it answers as a stitch in time.