

SOME NOTES ON SOME INSECT PESTS INFESTING TROPICAL PACIFIC INSULAR AND CONTINENTAL COUNTRIES

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Insect infestations anywhere in the world may be recognized by the trained or experienced entomologist as belonging to particular groups. He knows what and how to look for them although he may not know the exact species. Similar counterparts to those species in his homeland, however, may be expected. Leaf miner larvae, for example, feed between leaf surfaces in every land and may belong to groups commonly known as flies, moths or beetles more than to other groups.

In a trip stopping at various cities of southeastern Asia it was possible to get into rural areas in certain countries. It was seen that different species of plants and insects were found

in foreign lands, affected much by soil, climatic and other differences. Soils in Hawaii, for example, are volcanic in origin and may be, as the temperatures, more uniform. Plants and insects in most localities are adapted to the climatic and other factors, where they live in environments that are acceptable or favorable for growth and reproduction. This study trip was undertaken to provide more understanding of local plant pests.

In many Japanese gardens or properties scale insect infestations, with much accompanying sooty mold, were found. There was no evidence of control measures although plants were often stunted or dying from scale infestations.

Evidences of virus diseases of papaya were seen in Hawaii, Taiwan, Philippines and coastal areas of southeastern Asiatic countries. These evidences were much less prevalent than in southern Florida. No evidence of the papaya

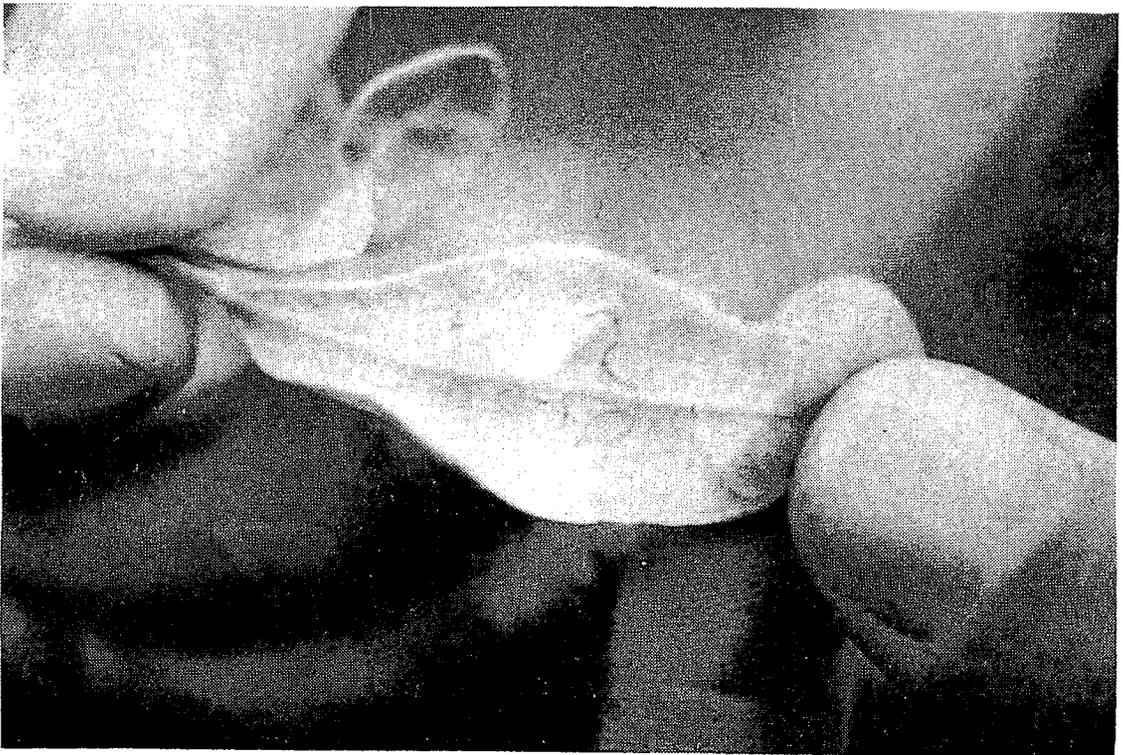


Figure 1.—Leaf miner in citrus leaf (Thailand)

fruit fly was seen although no attempt was made to make a survey for it. Only small dooryard plantings were seen and these are not as subject to severe infestations as large acreages. It is understood that only small areas are planted to papayas in Cuba, for example, owing to virus diseases. This is a control measure known as isolation that is often effective but has many factors affecting it.

Fruit flies, Mediterranean or other species, were observed in the backyard of a Honolulu home. They were flying in and about a mango tree with ripening fruit. Egg deposition was in progress. Since many fruit flies place eggs in early ripening stages of the fruit a removal of the peel eliminates the egg and very young larvae.

In Thailand and Ceylon citrus trees were heavily infested with one or more species of leaf

miner, probably the citrus leaf miner, *Phyllocnistis citrella* Stainton. Almost every leaf on some trees possessed a miner with its large area of dead or dying tissue (Fig. 1). Many individual twigs and branches and an occasional tree were dead, suggestive of having been killed by severe leaf miner infestations. This presented a very poor appearance to the grove condition. (Fig. 2). New or young leaves were infested soon after they appeared. I learned of no attempt to control the miner. This insect should be prevented from becoming established on the North American continent.

In Thailand a large planting of longan trees were devoted to selection of cultivars. Much progress was reported in which desirable characters were being developed. A pest of great severity, the fruit bat (flying mammal), was reported taking much fruit. These bats were reported to emerge from caves in the nearby hills and fly distances to obtain the fruit. Control efforts were in operation and consisted of fluorescent lights installed at heights above tree-top level in various parts of the planting, (Fig.



Figure 2.—Dead twigs and branches on citrus tree, apparently from severe leaf miner infestations (In Thailand)

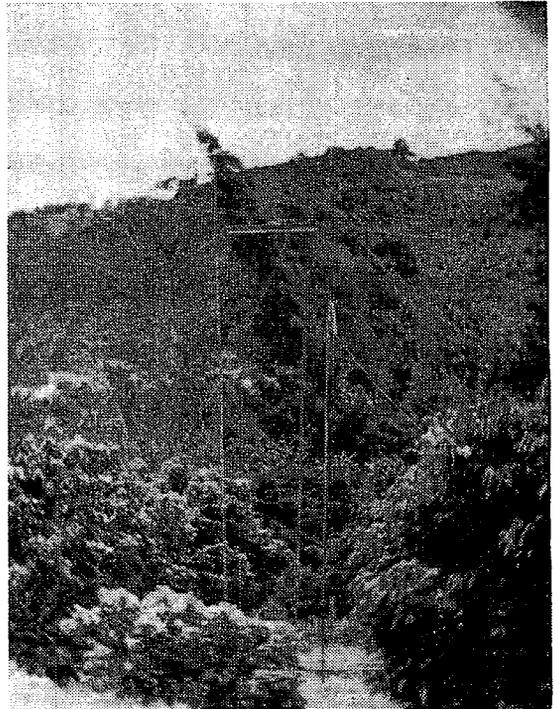


Figure 3.—Fluorescent lights installed to repel fruit bats (Thailand)

3). These lights repel the invaders so that at least partial control is obtained.

A fruit and seed boring weevil, possibly *Cryptorrhynchus gravis* Fabricius, was observed in Ceylon, (Fig. 4). This weevil is a serious pest in many mango producing countries. Larvae appear to burrow through the fruit to the seed until the pulp is decayed then it enters the seed endosperm to complete larval development and perhaps to pupate.

In a grove with sugar apple, *Annona squamosa* L., in Thailand the fruit was heavily infested with mealybugs, (Fig. 5). One individual mealybug, the largest one ever observed by the author, was seen. Very large ants were numerous on the trees, tending the mealybug infestations.

Colonies of the small eastern, or Indian honey bee, *Apis indica*, were observed in Ceylon. This species is smaller than the domestic or western honey bee of Europe, *A. mellifera* Linnaeus. It makes smaller cells and apparently smaller colonies than *A. mellifera*. Enemies of the species, a wax moth, apparently the *Galleria mellonella* (Linnaeus), and a very large hymenopteran,

perhaps an oriental hornet, were observed in or at the colonies. Strips of perforated zinc, whose perforations were apparently 163/1000 of an inch across, the same as is used in the United States for queen excluders, covered the entrance of colonies. These strips barred entrance to the large hornet but did not prevent them from awaiting at the entrance until a bee issued to the field. One such encounter was observed in which the large hornet caught and proceeded to tear the bee apart and consume it.

Some efforts are being expended in Thailand to get corn in production to the displacement, perhaps, of rice. Corn plants were infested with one or more species of budworms as they are locally.

Use of biological control, predators or parasites, has apparently been achieved in Hawaii more than in other areas of equal size. One explanation for this may lie in the efforts expended to introduce effective organisms. Another explanation may be that organisms introduced were given favorable media for growth and reproduction. Islands may be especially favored with acceptable or optimum conditions

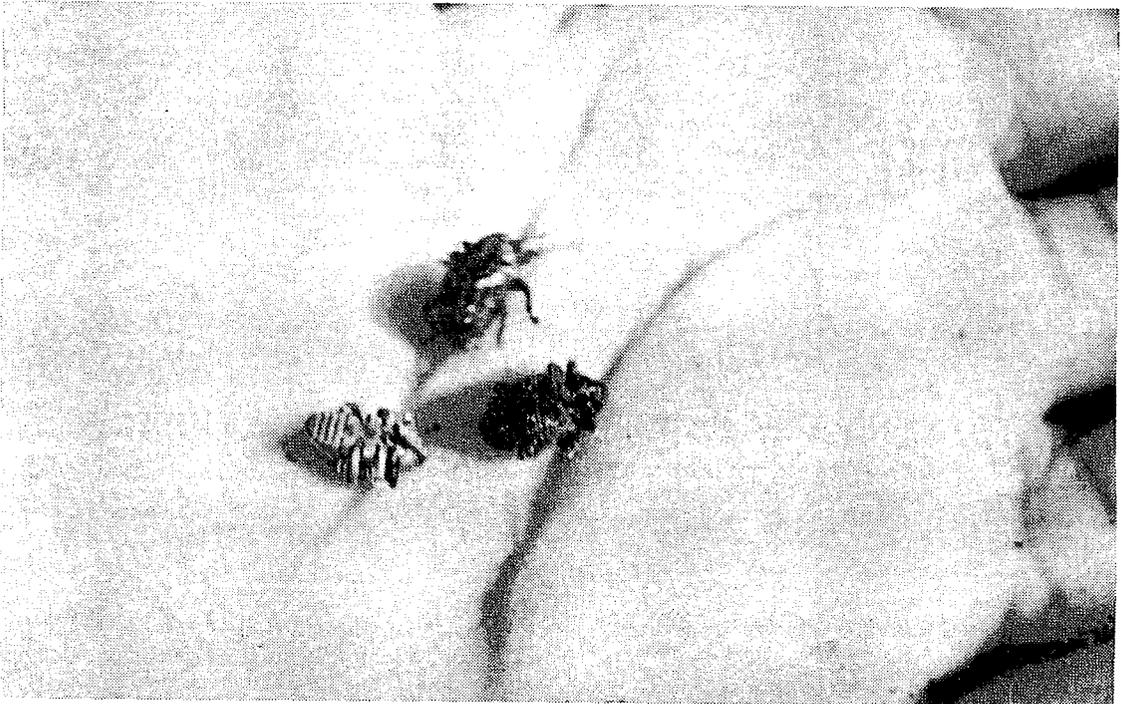


Figure 4.—A fruit and seed boring weevil taken from a mango seed (Ceylon).



Figure 5.—Sugar apple infested with a mealybug (Thailand).

for introduced predaceous or parasitic species from similar areas. Uniform or constant temperatures may be another explanation for favor-

able media in an islandic society, whereas on the wide land areas of continental expanses more variation occurs over day- and night-time hours.

STYLAR-END BREAKDOWN IN PERSIAN LIMES INFLUENCED BY TEMPERATURE AND BRUISING

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ABSTRACT

Significant amounts of stylar-end breakdown in Persian limes were induced by exposure to elevated temperatures such as 100° and 110° F. or by the intentional bruising of the fruit on the stylar end. The two treatments combined resulted in a cumulative effect with significantly

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