

sixty species of locusts and has obtained ecological notes and life-history data on the majority of these. *Diplotaxis tenebrosus* Fall was noted this spring injuring young apricot seedlings at Osoyoos.

This review has taken longer than I intended it should, and on reading it over it appears as though it were a diatribe on the features of professional entomologists and a history of the Branch development. I really do not intend that it should be such and must apologize if it appears so. I have not touched upon the very excellent systematic work that has been accomplished during the past few years by professional and private members of our Society, and the non-inclusion of these records in this paper is no reflection. I had intended only dealing with the economic history, and in order to do this effectively I must of necessity mention personal data. In closing, I merely wish to say that it is my hope that the same progress be shown in the next few years as I am sure you will all agree has been the history of the past few years.

A TALK ON INSECTS IMPORTED FROM THE ORIENT.

By W. H. LYNE, INSPECTOR OF IMPORTED FRUIT AND NURSERY STOCK.

It is not my intention to discuss the point as to whether or not the San Jose scale was first introduced to this continent on nursery stock imported from Japan. The fact that it was discovered on shrubbery imported from Japan to San Jose, Santa Clara County, Cal., and thus established its name, I have no wish to dispute.

What I do know is that on more than one occasion San Jose scale has been found on nursery stock imported from Japan to British Columbia, and that within the last month several apple, pear, and peach trees from Japan were condemned here in Vancouver owing to their being infested with that particular pest.

The San Jose scale (*Aspidiotus perniciosus*) is not the only scale-insect imported from Japan. We occasionally come in contact with other species, such as the cherry-scale (*Aspidiotus forbesi*, *A. nerii*, and *A. hederæ*), infesting ornamental trees and shrubs. There are often other subfamilies of Coccidæ, such as *Chionaspis*, *Mytilaspis*, *Diaspis*, and *Lecanium*, represented by several of their relative species.

On one occasion several egg-masses of the gipsy moth (*Porthetria dispar*) were found on the bark of *Arbor vitæ* trees.

Other interesting species of insects imported are the larvæ of several beetles, boring into the heart-wood or feeding on the roots of trees or plants. The giant borer, a species of the Prioninæ, has occasionally been found in roots or just above the crown of *Wistaria*, walnut, and other trees from Japan.

Probably the beetle attracting the most attention at the present time is the Japanese beetle, *Popillia japonica*, owing to its having become established in certain sections of the Eastern United States. It is supposed to have been imported in iris-roots from Japan. On a few occasions and very recently we have found several larvæ closely resem-

bling that of this particular beetle; some were taken from around the roots of **Thuja** and maple trees and others from the roots or iris-plants. They have been submitted to Ottawa for identification. Some have been identified as being closely allied to our native *Anomolas*, and others are in process of breeding to adults in order to determine their species. There have also been other insects of minor importance.

Insects infesting Stored Products.—Besides the insects that accompany nursery stock from Japan and a few other parts of the Orient, there are many species that infest the miscellaneous stored products imported to this country.

Some few years ago one might often notice along the wharves products such as rice, corn, beans, peanuts, etc., just landed from Japan, China, Malaya Straits, or Australia, simply smothered with insects.

It was a sickly sight sometimes to see a large consignment of rice with thousands of larvæ of the **Plodia interpunctella** moth crawling over the sacks or mats. A closer inspection of this writhing mass of larvæ might also disclose the presence of the Mediterranean flour-moth (**Ephestia kuehniella**) or the meal snout-moth (**Pyralis farinalis**). Then by way of a little seasoning might be added the rice-weevil (**Calandra oryzae**) and the flour-beetle (**Tribolium confusum**). Prowling among these like a tiger in search of his prey would perhaps be seen the cadelle (**Tenebriodes mauritanicus**), not very particular whether he dines on a good fat weevil or a grain of rice. There may still be other insects in this miscellaneous assembly. Sometimes we notice the frivolous little chalcid or other parasitic flies, and even the little flour-mites, **Tyroglyphus**. Consignments of the other products referred to, including wheat, are liable to be infested with any or all of the insects mentioned.

One other lepidopter not referred to is the Angoumois grain-moth, which on some occasions has accompanied maize from Australia and Manchuria, also peanuts from Japan.

On one occasion a large consignment of maize arrived from the Orient badly infested with weevil, **Calandra oryza** and **granaria**. The little pests were so anxious to see Vancouver they climbed over each other until they formed pyramids 6 inches high on top of the sacks. It was very amusing to hear the remarks passed by the longshoremen watching them.

Within twelve hours after the maize had been landed on the dock very few of the weevil were to be seen outside of the sacks. It is perhaps needless to add the whole of this particular shipment was fumigated shortly after with carbon bisulphide, which ended the career of these objectionable little immigrants.

Pea and Bean Weevil.—Other weevil of perhaps still more economic importance are those of the **Bruchus** family, commonly referred to as pea or bean weevil. It has been necessary to fumigate large quantities of peas and beans from the Orient infested with those particular insects, **Bruchus pisorum** and **obtectus**.

Nutmeg weevil.—Another species of the **Bruchus** family play sad havoc with nutmegs. Shipments have arrived at Vancouver simply riddled and pulverized, and the excavated nuts filled with castings of the insects are not very nice when ground and sold as powdered nutmeg. Such offal has been refused entry into the Province.

Sweet-potato Weevil.—Another so-called weevil, but more resembling an ant, is the sweet-potato weevil (**Cylas formicarius**). Both sweet potatoes and yams from the Orient have been condemned at Vancouver owing to being infested with this insect.

Potato-tuber Moth.—Shipments of the common Irish potato from Australia and New Zealand have been condemned for tuber-moth (**Phthorimæa operculella**).

The commercial world is just beginning to realize the tremendous waste resulting from the many insects that infest stored products, and fumigation and other methods of combating them are becoming very popular. Thousands of tons of the imported store products referred to have been fumigated at Vancouver during the last fifteen years.

MAN'S INFLUENCE ON THE NATIVE FLORA, WITH SPECIAL REFERENCE TO INSECT PESTS.

BY J. DAVIDSON, F.L.S., F.B.S.E.

For many years I have been observing man's influence in changing the local flora from the natural evergreen formation of cedar and Douglas fir to one in which deciduous trees predominate. My attention was first drawn to this about eight years ago during a botanical visit to the district between Crescent and White Rock. About that time an accidental fire had spread through a large area of evergreen forest on the bench land along the Coast where maples formed the fringe of the forest. The conifers and many of the maples succumbed to the effects, and the whole area was left a bleak waste of charred logs and burnt soil. The fire occurred when the fruits of the maples were reaching maturity, and though many trees were fatally injured at the crown of the root they were able to ripen and disperse their seeds. Being on the windward side, the seeds were freely distributed over the burnt area, and in the following season millions of maple seedlings gave promise of a change to a deciduous forest.

A similar change was found on logged-over land between Point Roberts and the Indian reserve, where maples, dogwood, and other deciduous trees form a large proportion of the second-growth forest. The change of soil by the additional humus formed by fallen leaves, and the fact that light reaches the forest floor in spring, favoured the increase of flowering plants formerly unable to exist in the darkness of the evergreen forest.

As is well known, there is a distinct relation between the flora and the fauna. Many of the new plants are food-plants of insects, which in turn provide part of the food of birds. Such areas naturally become breeding-