

products we are willing to exchange for our own. With the exchange of products has come the exchange of pests which prey upon these products. Last century the Oyster-Shell Bark-Louse was introduced by settlers into New England, Australia and other countries, from Europe, so that it is now found all over the world. The San José Scale, whose original home is now supposed to be Japan, has, within recent years, spread from California over most of the United States, and portions of Canada. The Ostreaform or Curtis scale (*Aspidiotus Ostreaformis*), which is quite prevalent in Europe, has been found in many districts in Canada and the United States during the past year, and it gives evidence of being troublesome to the orchardist. It is fair to assume, then, that the presence of so many scale insects in our Province is due, in a large measure, to the importation of foreign and tropical plants and fruits, and not to the carelessness of entomologists who may wish to increase their collection of insects.

In the United States and Canada there are about 125 species of scale insects known, and of these nearly thirty have come to us from foreign countries. Prof. Cockerell, of New Mexico Ag. Exper. Station, who is well acquainted with the scales of Mexico and the West Indies, tells us that there are 130 additional species in the tropics, any one of which may find its way to the United States or Canada.

WHAT ARE SCALE INSECTS ?

Scale insects differ very much among themselves. Some, like the mealy-bugs, secrete a covering composed of a cottony material; some, like the lecaniums, secrete a waxy, hard, continuous layer, which forms a protection for the back; while others, like the San José and oyster-shell bark-louse, possess true scale-like coverings, composed partly of a waxy secretion and partly of moulted skins, beneath which the insect lives.

The San José scale produces living young, but most other scale insects lay eggs from which emerge six-legged larvæ, which are quite active for a short time, running about hither and thither in search of a suitable place to settle down and live by sucking the sap of the plant through their long slender thread-like mouth-parts. As the larva continues to grow it moults several times by casting off its old skin, and with each moult the female gradually loses its feelers, eyes, and legs, while wings are never developed. The male larva, after moulting twice or thrice transforms into an active two-winged insect with long feelers, strong legs, and large eyes, but without mouth-parts. The adult life of the male is short. As soon as the male has fertilized the females it dies, so that every larval scale insect is fatherless and posthumous. Scale insects are, then, insects which reveal their true insect structure in their young larval and adult male states. The female has apparently become degraded, and possesses little else than the powers of feeding and reproduction.