

established in their locality. Consequently the demand for information is already large and increasing. To satisfy this demand so far as possible is the purpose of this bulletin. In preparing it the writer has not depended solely on his own investigations and the experience and observations of others in this Province, but has freely consulted the publications of various investigators elsewhere, who have made a careful study of the life history and control of the insect. The chief works thus consulted are the various publications of the Bureau of Entomology at Washington, D.C., and of the Experimental Stations of New York, Illinois, Ohio, New Jersey, Georgia and Tennessee.

BRIEF HISTORY.—The native home of the scale has been discovered by Dr. Marlatt to be in China. In 1873 it was first discovered in North America at San José in California. From here it was unwittingly shipped on nursery stock to nurseries in the Eastern States, and infested shipments from these in turn spread it widely. By 1894 it had become established in most of the Eastern States and in many of the Middle and Pacific ones as well. In 1897 it was found in Ontario, in Kent and Essex Counties, and also near St. Catharines and Niagara-on-the-Lake, but the large number of infested trees showed that it must have been introduced about 1893 or 1894, and so has been approximately twenty years in this Province. It was doubtless brought in on nursery stock. So far as I can discover, Ontario is the only Province in Canada where it has become established. It has twice been found in moderate numbers in British Columbia, but I am told by the Provincial Horticulturist and one of his assistants, and also by Mr. Treherne, the local Dominion Entomologist, that it has been exterminated, or at any rate has not been seen for several years. It has also been introduced into Nova Scotia, but infested trees have been destroyed, and there is good reason for believing that it has not obtained a foothold.

PRESENT DISTRIBUTION IN ONTARIO.

The map gives a fairly accurate outline of the districts where the scale is found. A good deal of time has been devoted to getting the data on which the map is based. Not only were all records of places from which the scale was sent in in the past considered, but the co-operation of the district representative in each county was gained. As these men know their respective counties well, and are greatly interested in all that in any way affects the farmers, their assistance was invaluable. In addition to this Mr. Jas. Neilson, a student of the Agricultural College, Guelph, devoted five months this summer under my direction to the sole task of determining the northern limits to which the scale had spread.

It will be seen that a line drawn from about Sarnia to Toronto marks the present northernmost limit of the scale. A study of the counties south of this line shows that Kent, Essex, Elgin, Welland and Lincoln are the worst infested counties. In Lambton the lower third has considerable scale, and there are a few isolated places farther north, as high or a little higher than Sarnia, where it is found. The southwest corner of Middlesex contains badly infested orchards, and there are also two or three affected orchards about five miles from London. In Oxford there was one badly infested orchard about four miles north-west of Woodstock. (The orchard has been sprayed this year and nearly all the scale destroyed). This seems to have been the only infested locality in this county. In Norfolk there are five localities where the scale has been found. In Brant there is an outbreak near St. George, but apparently only a very limited area is affected. In Haldimand there is considerable scale in the district along the lake, and though we have no reports of