oyster- shell bark-louse does, is safer than one that hibernates. What then gives the San Jose Scale its pre-eminence among its brethren as a plant destroyer?

First, it is the difference between addition and multiplication. A single brood of 600 is left far behind by a three or four-generation multiplication of even 50 or 60 In Ontario the over-wintered San Jose females begin bringing forth their young about the 20th of June. If by the 15th of July each of these over-wintered ones has produced 30 females, these are by the the latter part of August ready to produce say 50 each (the later mid-summer broods are said to number 200 to 300 females from each mother) giving a total of 1,500, and each of these 1,500 by the early part cf October is multiplying by 50, totalling for the single season, in Ontario, a progeny of 75,000 females from each individual female that survived the winter.

It is probable with us that there are three full generations in a year. The possible ratio of multiplication is probably nearer 100 than 50. (It is said to be between 200 and 300 in the latitude of Washington). A ratio of 100 for three generations would give a total of a million. On trees in certain conditions and of varieties that have resistant bark, probably only a small proportion effect a connection with the sap channels necessary for them to complete their life cycle. There is pretty good evidence that a susceptible young tree may be overrun and literally sucked to death in three years. On the other hand, the increase of the insect on trees of a susceptible kind has in some cases been very slow. Mr. Honner, Amherstburg, testified that on a young peach tree in his orchard the scale had been most certainly established three years and yet in that time it had spread over but a small part of the tree.

Secondly, the comparative activity of the larvae and their plumpness at birth enables them to scurry around a considerable distance and to subsist a relatively long time before they perish for lack of food.

Third, its lack of fastidiousness in the flavor of its nourishment. Trees, shrubs, herbs, foliage, fruit and roots are neither common nor unclean to it. Mr. John Gordon, of Guilds, whose story of his efforts to save his orchard from the officers of the law, was truly pathetic, has spent time and effort without stint in studying and experimenting upon the insects in his neighbors' orchards since his own was burned. He showed Mr. J. H. Smith, B.A., and me, examples of the settlement of the insect and the secretion of its scale on fruit of watermelon, root of carrot, fruit of squash, leaves of poison ivy, garden phlox, high brush cranberry, and hemerocallis. Besides some of the above he nad artificially inoculated mulberry, basswood, blue beech, red beech, ironwood and elm. We found on September fourth and fifth, breeding females on hemp, pitch forks, rhubarb, burdock, horse-radisb, erect door weed, oriental polygonum, hedge mustard, turtle head, nettle, touch-me-not, potato, white asb, willow, nine-bark, rose, elm, basswood, currant.

The almost continuous running of the larvae, owing to the fact that they are produced singly over a period of several days, offers the means of their distribution by nesting birds, strong winds, horses and workmen engaged in the orchard, and fruit harvesters.

The desirability, nay the necessity, of checking, eradicating or controlling an insect so fecund, so omnivorous and so destructive as the San Jose Scale is at once impressed by a knowledge of its habits and capabilities. The usual restriction of animal life to its peculiar faunal zone makes some biologists hope that in our latitude this insect, even if let alone, could not become so destructive as in the latitude of Maryland. The extreme severity of the winter of 1899 proves that prolonged zero temperature, while it may weaken and check it, will not eradicate it. Its allies on our fruit trees are usually held in check by parasitic insects. In the trip just referred to, Mr, J. H. Smith and I were shown two trees the worst infested I ever saw with *Chionaspis*. Here and there were groups of the spinulous sloughs of *Chilocorus*. The owner informed us that there had been a great many more of those, but he had brushed them cff and killed them. As frequently happens in insect fighting, he was spending his efforts in killing his allies. In one sample of Putam's scale that I found on hickory, nearly every shield was perforated and its contents devoured by some insect.

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