

line, Massachusetts.* In 1881 and 1882 it came under the notice of Dr. Packard in the State of Maine; and in 1883 I observed it in vast numbers in the border townships of Bury and Lingwick in the Province of Quebec, and drew the attention of the Entomological Society of Ontario to the fact. Early in the summer of the following year I witnessed a flight of the perfect insects at Quebec, and gathered a number of the exhausted flies from the decks of the ferry-boats plying between Lévis and that city. In that same year the tamaracks around my residence were completely defoliated by the larvæ. It was impossible to approach the trees with comfort. The creatures were crawling everywhere around; and the sound produced by the droppings of their excrements upon the undergrowth was like an incessant pattering of rain-drops. By this time their ravages had been traced through the length of eastern Canada and into the maritime Provinces.

It was at first thought that the tamarack would survive the assaults of the *Nematus*—the more because a second growth of verdure appeared on the trees after the larvæ had left them. So eminent an observer as Dr. Packard was inclined to this opinion;† but Professor Riley seems to have had a clearer view of the consequences of the insect's attacks‡.

Many entomologists watched the *Nematus* through its metamorphoses hoping to discover parasitic foes of the insect. I have not learned that any were successful. The European parasites of the species (if such there were) did not appear; and our native Hymenoptera parasitica had not, it would seem, acquired a taste for the immigrant. Predacious insects, ants,§ and ground beetles,|| were found to prey upon it, but their attacks made but little impression upon the hordes of the invaders. This was owing probably to the fact that swamps, in which the tamarack abounds, are but ill suited for the abodes of ants and ground beetles.

The pest was clearly beyond human control. Ornamental trees around dwellings or in parks might, it was thought, be saved by "spraying," but beyond this nothing could be attempted.

The appearances, the life history, the operations of *Nematus Erichsonii* have all been minutely described; and allusions have often been made to the destruction wrought by the insect in Canada, but on this last point but little definite information has been given. With a view to arriving at something more precise in regard to it, I, a few weeks ago, made a visit to the townships in which I had first seen the insect, and in Bury I met by appointment the Rev. R. H. S. Fuller, rector of Bury, Mr. John B. Maddocks, superintendent of lumbermen, and Mr. Robert Clark, one of the leading farmers in that section. From conversations with these gentlemen, and from personal observation, I was able to gather the following particulars.

The tamarack swamps of the Township of Bury occupy about one-tenth of its surface, or 640 acres, and show on an average forty marketable trees to the acre. The largest of these trees are about 2 feet 6 inches in diameter at the butt—one was found having a diameter of 2 feet 9 inches. The usual size is 2 feet. This represents a growth of 200 years. Two hundred and twenty rings of annual growth was the actual record on the butt of one tree. Besides these marketable trees there are numerous others, in every stage of growth, which, under favourable circumstances, would, in successive years, have attained to marketable value. Of all these trees 98 per cent. are dead and the remainder dying.

Of the Township of Lingwick one-fifth, it is computed, is tamarack swamp. There is of such swamp one tract, lying partly in Lingwick and partly in Weedon, that is said to be five miles square. The destruction wrought in all this section is proportionate to that in Bury.

The tamarack as a shade tree is less valued than the pine, spruce, balsam and cedar, for the reason that its foliage is deciduous; but in the summer season when grown in the

*Dr. Lintner, 5th Report on the injurious and other insects of the State of New York, p. 22.

†18th Ann. Rep. Ent. Soc. of Ont. p. 32.

‡Ibid.

§18th Ann. Rep. Ent. Soc. of Ont. p. 32.

||Rep. of Proceedings of the Convention of fruit growers held at Ottawa, 1890, p. 69.