

The Spruce Budworm.

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In the annual report of the Division of Entomology of the Dominion Experimental Farms, covering the injurious insects of the year 1909, it is purposed to give a rather lengthy account of the injury done in Canada to spruce and balsam trees by the Spruce Bud-worm, *Tortrix fumiferana*, Clemens, during the past summer. As this report will not be published until the end of the present fiscal year, it has been thought advisable here to make a short statement of the work of this insect, dealing particularly with the ravages wrought in the Upper Gatineau country of the Province of Quebec.

In July last, the Deputy Minister of the Department of Agriculture was informed by the Hon. Senator Edwards that an insect of some kind was doing much damage to spruce and balsam trees in the above district, and as a consequence I was instructed to proceed at once to the infested locality to investigate the outbreak.

Early on the morning of July 29th, therefore, I left Maniwaki, Que., in company with Mr. M. Boyle of the W. C. Edwards Company, and drove to Baskatong about 40 miles due north. Around Baskatong the injury to spruce and balsam was very apparent, owing to the conspicuous reddening of the tops of the trees. Early the following morning we left Baskatong and spent the whole day examining trees at different points.

As soon as the first tree was cut down we saw at once that a lepidopterous insect had been at work. Thousands of the empty pupal cases of the moths were present on the trees, and these, with the partly eaten and discoloured dead foliage, together with the excrement from the caterpillars, gave the conspicuous reddish appearance to the tops of the trees.

The injury for this year, of course, had stopped before the time of our visit. The caterpillars had evidently become full-grown during the first and second week of July. Moths which had issued some days before the end of July were present in large numbers on the

trees, and from fairly good examples collected, I saw that the species was *Tortrix fumiferana*, Clemens, which is known popularly as the Spruce Bud-worm.

The caterpillars had fed chiefly at the tops of the trees, although some injury was done towards the ends of many of the lower branches. The foliage for about four or five feet from the tops of the infested trees was almost wholly destroyed, being either partly or completely eaten by the caterpillars. This, with the exposed pupal cases above referred to, gave the trees the conspicuous reddish appearance, and caused the rather widespread report among lumbermen that the trees were dying. In looking over a valley on the opposite hillside, the trees appeared as if fire had swept through the region. Other than loss of foliage and the consequent setback thus caused, the trees did not seem to be seriously injured. The tops were perfectly green under the bark.

The outbreak of the Spruce Bud-worm this year has been most remarkable and very widespread. Not only has this insect done much damage all through the Upper Gatineau country and other adjacent districts, where there are large tracts of spruce and balsam trees, but even in British Columbia reports have been received of much injury by the Tortrix. Dr. C. Gordon Hewitt, Dominion Entomologist, when in British Columbia in October last, saw the conspicuous work of the insect and received reports from local entomologists concerning its ravages.

The Spruce Bud-worm, when mature, is nearly an inch in length, tapering slightly from the middle to the end. In colour it is dark brown and bears conspicuous whitish-yellow piliferous tubercles, and along the sides of the body there is a yellowish stripe. The eggs of the insect are scale-like and are deposited in clusters overlapping each other. The partly-grown caterpillars pass the winter among the terminal shoots of the trees, completing their growth the following year.