off, and found one bee on her back, doing its best to sting her, I used my finger and thumb on it, but the damage was done. She had been stung on one side, completely paralyzing that side, so she could only use three legs on the other side. I left her for three days; she was still in the same condition, so I at once pinched her, and concluded that I would experiment on the next one, if I should ever get the chance. The opportunity soon came. I found the same condition—one bee on her back trying to sting her, the other bees clustered over the two of them, I rubbed them off, the one little rascal, (evidently a young bee), was not satisfied, took after her again, and jumped on her back, determined to finish her, and the bees near by formed a ball just as quickly. This time I rubbed the bees off and pinched the mischievous one. The queen was unhurt and no more balling followed. I came to the conclusion that the bees that do the balling are friendly to her, but why they do not prevent that one rascal from killing her I cannot conceive.

The above might not be the true case in the balling of a queen at all times, but I am inclined to think it is. I would be pleased to hear from some bee-keepers through the Bee Journal, who have examined queen balling.

Burlington, July 17, 1911.

DEFOLIATION OF FORESTS BY THE SPRUCE BUDWORM.

Considerable uneasiness and even alarm has been felt by lumbermen and others interested in forest products, over the depredations in different parts of Canada, of the spruce budworm (Tortrix fumiferana). It was feared the spruce might sufier a fate similar to that of the tamarack which was killed by the larch sawfly about twenty-five years ago. As a result, however, of careful investigations begun by the Division of Entomology of the Dominion Department of Agriculture during 1909 and still in progress, the situation appears to be much more satisfactory and reassuring than was at first considered possible.

The destructive work of the budworm was first reported two years ago from Vancouver Island, where the Douglas fir was attacked; and from Quebec, where the spruce and the balsam suffered chiefly. In the case of Quebec, the pests were at first confined to the west-central portion of the Province, but during 1910 areas on the east of the St. Lawrence were also attacked. It was this latter circumstance that roused timber owners to a sense of the possible extent of the danger.

While in the caterpillar stage these insects destroy the buds of the spruce and balsam, especially at the tops of the trees. They also bite off the leaves, which together with the excrement of the caterpillars, cause the tops of the trees to assume a reddish brown appearance. When a large area is attacked it appears as if it had been swept by fire.

As such plagues of air insects can only be controled by natural means, the Dominion Entomologist visited a number of the infected districts for the purpose of discovering a natural remedy that would meet the situation. Various insect enemies or parasites were found, that prey upon the budworm, and these are being used to destroy the pest. As the percentage of important parasites, especially of the minute species which attack the eggs of the budworm, is unusually large, there is abundant reason for hoping for the extermination of the latter. Judging by previous experiences in studies of this nature, it is not improbable that the insect will be controlled by its natural parasites in the course of a year or two, that is, before it has inflicted any serious damage to the spruce and balsam by repeated defoliation.