

## RECENT CANADIAN PUBLICATIONS.

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THE APPLE MAGGOT.—By L. Caesar, B.A., B.S.A., Provincial Entomologist, and W. A. Ross, B.S.A., Entomological Branch, Dominion Department of Agriculture. Bull. 271, Fruit Branch, Ont. Dept. of Agriculture. Pp. 1-32, with 17 figures in text.

The investigation upon which this excellent bulletin is based was commenced in 1911, when the apple maggot was abundant in many parts of Ontario, and has been continued during each succeeding year. It contains a detailed account of the life-history of this insect, with full data on its seasonal history, habits, distribution, influence of environmental factors and methods of control.

Although normally the life cycle is completed within a year, a certain number of pupæ remain in the soil during a second winter, the flies emerging the following summer. There is also in the warmer parts of Ontario a partial second brood in some seasons, though a very insignificant one. The time of emergence of the flies, which begins as a rule about the first week in July, and continues throughout most of August, is not influenced by the time of pupation, i. e., flies from pupæ from early varieties of apples do not appear to emerge any sooner than those from later varieties.

Natural control seems to depend mainly upon weather factors, parasites being apparently of very minor importance. Hardening of the soil surface, as a result of heavy rains followed by drought, may either prevent the flies from emerging or the larvæ from pupating beneath it, and large numbers may perish in these ways.

Much variation exists in the susceptibility of different varieties of apples and crabs to infestation.

The most effective control measures are found to consist in spraying with arsenicals, the mixture recommended being arsenate of lead paste,  $2\frac{1}{2}$  lbs. to 40 gallons of water, without any molasses or other sweetening. "The first application should be given as soon as the flies begin to emerge, so that they may be killed before they can lay eggs," the proper date of application in an average season varying according to the district, from June 25, in the warmest parts of the province, to July 7 in the more northerly localities. A second application should be made as soon as the first shows signs of disappearing, and a third may be necessary if heavy rains should wash off the second, and is recommended in all cases the first year after a bad infestation.

Good figures from original photographs are given to illustrate the different stages of the insect and its work on the apple.

REPORT OF THE PROVINCIAL MUSEUM OF NATURAL HISTORY FOR THE YEAR 1918, PROVINCE OF BRITISH COLUMBIA.—Victoria, 1919. Pp. T 1-16, with 2 plates. Entomology. By E. H. Blackmore.

Mr. Blackmore's article constitutes the greater part of the report (pp. 6-13), and consists chiefly of notes on the occurrence of uncommon insects taken in British Columbia during the season of 1918. These include 12 species, belonging to several orders, that were described as new during the year, and a