

ENTOMOLOGY DIVISION.
(Director: Dr. D. MILLER.)

INTRODUCTION.

The Entomology Division has been established under the direction of Dr. D. Miller, of Cawthron Institute, Mr. J. Muggeridge being Associate Director and Government Entomologist. The Plant Diseases Division will have an Entomological Section to deal specially with therapeutant problems, in charge of Mr. W. Cottier. Co-operation has also been effected with Canterbury Agricultural College, Lincoln, where a section of the Division will function in charge of Mr. L. Morrison.

It is proposed to locate the headquarters of the Division at Cawthron Institute, Nelson, in order to facilitate full co-ordination with the Entomological Station of that Institute and to utilize the excellent facilities already provided there. One field station will be established at Canterbury Agricultural College, Lincoln, and the facilities and staff at present at Palmerston North will be transferred to Nelson during the winter months of 1937.

During the year reorganization has been proceeding on the above lines and the main investigations reported on are those undertaken at Palmerston North and Canterbury Agricultural College, Lincoln.

PALMERSTON NORTH.

(J. MUGGERIDGE, Associate Director.)

Entomological activities for the past year are conveniently referred to under the two headings—Routine and Research:—

Routine.—The routine work of this section occupies a considerable amount of time and consists in identifying insects for the general public and advising them on suitable methods of control. In addition, it provides an advisory and working service on entomological problems met with by the Department of Agriculture. Records of some of the more important insect pests are kept and new information in regard to them is published as occasion demands. During the past year the following insects hitherto unrecorded in New Zealand made their appearance:—

- (1) *Parlatoria pergandei*.—From plum at Tauranga.
- (2) *Eucalymnatus tessellatus*.—On Kentia palm imported to Napier from Australia. The identity of this insect has yet to be confirmed by the Imperial Institute of Entomology.
- (3) Black currant bud eelworm (*Aphelenchoides ribes*).—Hitherto this pest was recorded only from England. In New Zealand it has been discovered in material from the Wairarapa and Hawke's Bay, and from appearances must have been present in the Dominion for some years prior to its discovery. In the Wairarapa it is stated to be causing trouble, but, unfortunately, there is no known control for it. Inquiries are being made concerning the economic importance of this pest with a view to arranging investigations into control should they be warranted. An account of the eelworm is in the course of preparation for publication.
- (4) *Chortophila florilega*.—From onions near Christchurch. A detailed account of this pest is being prepared for publication.

Research.—The problems dealt with under this heading are as follows:—

- (1) Biological control work on Diamond-black Moth (*Plutella maculipennis*).
- (2) Biological control work on White Butterfly (*Pieris rapae*).
- (3) Use of oils against red mite.
- (4) Use of insecticides against white butterfly.
- (5) Control of mealy-bug on hot-house grapes.
- (6) Citrus insect pests.
- (7) Other investigations.

Biological Control of Diamond-back Moth: A special study of the diamond-back moth (*Plutella maculipennis*) problem was undertaken with the object of gaining a better control of this pest, if practicable, by the use of natural enemies. A detailed report which dealt with field surveys, anatomy of the larvæ, life-history studies, and natural enemies of the moth was presented in June, 1936. This investigation showed that the only known natural enemies in New Zealand were—(1) an undescribed species *Angitia*; (2) an undescribed species of *Diadromus*; (3) the fungus *Entomophthora sphaerosperma*; and (4) two Stryphid predators. Of the insect parasites none appears to be of any value in checking the pest, while the fungus, dependent as it is on climatic factors, is not prevalent normally at that period at which the most severe damage occurs in cruciferous crops.

The Imperial Institute of Entomology was requested to search for suitable parasites in England. Their investigations showed that the larval parasites (*Angitia cerophaga* and *A. fenestralis*) were important controlling factors which frequently parasitized between 70 per cent. and 80 per cent. of the moth in England, and consequently it was considered advisable to introduce them into New Zealand. A detailed report dealing with parasite importations has already been presented, but a brief outline of the work to date is as follows:—

The first three control shipments of *Angitia fenestralis* were received from the Farnham Laboratory during August, 1936. An attempt was made to breed from those parasites received alive, and mass breeding from the adults was begun on 12th September, 1936.

Owing to the fact that there is no hibernation period in the life cycle of the introduced parasites, and that the diamond-back moth is not present in the field in any great numbers in December, it was necessary to continue rearing the parasites in the laboratory until that time.