

investigation of minor problems in the field as they are brought under our notice from time to time ; (3) attention to and care of departmental collection, and indexing and classification of certain classes of literature.

*Research.*—The amount of work necessary under this head is to all intents and purposes unlimited, but, necessarily, only problems of immediate or major importance received consideration. These are briefly outlined and dealt with under their respective headings :—

(1) Diamond-backed moth (*Plutella maculipennis*) : The larvæ of this moth are particularly destructive in the numerous cruciferous crops grown throughout the country. With a view to the biological control of this pest it was deemed essential to ascertain the different species of parasites and hyperparasites (if any) already here. This phase of the work is now well advanced, and specimens of the parasites obtained have already been forwarded to the Imperial Bureau of Entomology, London, for specific identification. The life-history of the above moth is also being studied.

(2) Biological control of the "Pear-midge" (*Perrisia pyri*) : The work under this head has consisted mainly in rearing to the adult stage midges and their parasites from material sent in from various orchardists.

(3) Virus diseases of potatoes : This apparently, though primarily a question for the Mycological Section, also involves entomology, inasmuch as insects are vectors in the dissemination of the disease. A survey of the potato-growing areas representative of the South Island was accordingly undertaken. Various species of insects infesting the potatoes were collected and are being classified, while preparations to ascertain what part these insects play in the transference of the disease are in train.

(4) Brief field survey in regard to the incidence of eel-worm as it affects the potato-grower, and experiments to determine broadly the types of soil most conducive or otherwise to the welfare of this pest has been undertaken, but much remains to be done.

(5) Survey to determine the food habits of the pukeko : Numerous pukeko-stomachs are sent in from time to time from variously selected localities. These stomachs are analysed and the food contents noted.

(6) Aphid control : Though admittedly a question of primary importance, comparatively little work has yet been done on it ; primarily, perhaps, because the subject is involved and difficult, and its successful undertaking is no light consideration. Parasites of this pest have been reared and identified, however, while some still remain for identification.

#### NOXIOUS-WEEDS-CONTROL RESEARCH.

Advisory Committee : Professor H. B. Kirk\* (Chairman), Mr. Q. Donald, Dr. F. W. Hilgendorf, Mr. A. H. Cockayne. Director of Research : Dr. David Miller.

The funds for this research are provided by annual grants of £2,000 received from the Empire Marketing Board. These are supplemented by a similar grant from the Department, while the Cawthron Trust Board makes available portion of its services to facilitate the investigations. £1,000 of the Empire Marketing Board's grant is being expended in Great Britain. This amount, previously apportioned between Dr. Imms, of Rothamsted, and Dr. Heslop Harrison, of Durham, for the collection and forwarding to the Dominion of suitable parasites, has during the year been allocated to the Empire Marketing Board's Entomological Station at Farnham Royal. On the 1st May, 1928, Dr. D. Miller took up his position as Director of Research in succession to Dr. R. J. Tillyard.

#### REPORT OF DIRECTOR ON PROGRESS OF RESEARCHES.

##### *Equipment.*

An automatic cool-store plant was erected in the general laboratory, and is utilized for keeping insects in a dormant state until required. Towards the close of the year a specially designed heated glasshouse was erected, in order that certain insects may be experimented with throughout the winter months.

##### *Blackberry.*

Two insects have been tested out in connection with blackberry—(a) *Coræbus rubi* ; (b) *Bembecia marginata*.

(a) *Coræbus rubi*.—A consignment of rose stocks infested with the larvæ of *Coræbus rubi* was received during April from the south of France. Periodically in May, July, and August this consignment was removed from cool storage and planted in the insectary in order to give the insects every chance of emerging in time for spring and summer work on the control of blackberry. Although the rose stocks sprouted after planting, no beetles had emerged by the end of December ; however, from an examination of some of the stocks, emergences are expected in January, 1929, when the researches on blackberry-control will commence.

(b) *Bembecia marginata*.—From the consignments sent from North America last year twelve moths were secured ; but the eggs laid by the females were found to be sterile. Owing to this difficulty and to the fact that *B. marginata* damages raspberries, it was deemed advisable to discontinue work with this insect and concentrate on *Coræbus rubi*.

##### *Ragwort.*

Three insects parasitical to ragwort have been tested :—

(a) *Tyria jacobaeae*.—Progress with this insect has been extremely satisfactory, and, before last winter, having reached a stage when the tests had shown the insect to be a safe one to liberate, a Government permit was secured.

Tests with this insect have proved successful, and, in consequence, about 500,000 specimens were liberated in ragwort-infested areas in the Bay of Plenty, King-country, Taranaki, Southland, and Nelson districts. This liberation was for the purpose of testing out the adaptability of the insect