

## INVESTIGATIONS BY THE DIRECTOR.

It was decided during the year that Dr. Miller, Director of Research, should personally investigate matters concerning the work in North America, Europe, and South America. Details in connection with his tour, which was commenced in March, 1930, have been finalized.

## SCOPE OF RESEARCHES.

The researches during the year have been confined to the control of blackberry, ragwort, gorse, and piripiri.

*Blackberry.*

In connection with blackberry, *Coraebus rubi* has been concentrated upon. During the year four consignments of infested rose stocks have been received from the south of France. Emergences from the 1928 consignments were secured in January. A difficulty in connection with the mating of the beetles was encountered and overcome without loss of time. The 1929 consignments were held in cool storage for varying periods, and the first three planted out in the glasshouse; the fourth consignment, which was retained under low-temperature conditions for the longest period, was planted in an outdoor insectary. Beetle emergences from all consignments were secured, and the most striking result was obtained from the fourth consignment, emergences being secured under conditions closely approximating to those obtaining in the open. It has been ascertained that, by use of the glasshouse, emergences can be secured during the winter months, and that, as the continued subjection to low-temperature conditions does not appear to affect adversely the insect, emergences can be secured under practically natural conditions during the summer. At first some oviposition was secured upon rose-plants and the eggs transferred to blackberry. This method, however, was abandoned, and successful oviposition directly upon blackberry-plants in the glasshouse was secured.

*Ragwort.*

Work in connection with the control of this weed has been confined to *Tyria jacobaeae*, and highly encouraging results have been obtained. The insect was found to have over-wintered quite successfully in all the parts of the Dominion to which it was sent last year. Field surveys carried out during the spring in the North Island showed that abundant larvæ were present and the insect firmly established. Consignments of pupæ were secured from Farnham Royal during the year, and to these were added those obtained in Nelson. Emergences from these pupæ have not been quite as large as was expected, owing to high degree of parasitism occurring in the English material. This year 200,000 specimens have been distributed in the ragwort-infested areas of Taranaki, Waikato, Rotorua, King-country, Westland, Otago, and Southland, so that during the year supplies have been distributed to all provinces of the Dominion in which ragwort-infested areas occur.

*Gorse.*

One of the major difficulties encountered last year was the sterility of *Apion ulicis*. This problem was intensively investigated this year, and a new type of cage evolved. This cage, which allows of abundant light being obtained without any detrimental rise in temperature, has proved completely successful, and two generations of New-Zealand-bred weevils have already been secured.

During the year seven consignments of *Apion* were obtained from England, and the work of securing suitable quantities of locally-bred insects for the necessary tests prior to liberation is being concentrated upon.

*Piripiri.*

The necessary financial arrangements were made to enable Brother Claude Joseph to complete his studies upon *Antholcus varinervis*. This worker has made a detailed investigation into the biology of this insect, and the result of his work has been forwarded to New Zealand. A consignment of this insect, which will be shipped in what has been determined as the most suitable stage of its development, is arriving early next year.

## PHORMIUM RESEARCH.

Advisory Committee: Mr. A. Seifert (Chairman), Mr. H. A. Seifert, Mr. B. B. Wood, Mr. E. E. Frost, Professor G. S. Peren, Mr. A. H. Cockayne, Mr. H. Vickerman, Dr. J. S. Maclaurin, Professor T. H. Easterfield.

During the year investigations were concentrated upon phormium-breeding and cultural work, with which was associated research into yellow-leaf disease. No further chemical investigations affecting fibre-treatment have been undertaken, but the Committee has secured the part-time services of the late Dominion Analyst, Dr. J. S. Maclaurin, who will test out a number of bleaching and softening processes now under consideration. The Committee has also during the year inspected a number of methods designed to facilitate and improve fibre-processing, the reinstatement of the flax bonus giving rise to increased activity in this direction. Active inquiries have been continued abroad into phormium-fibre utilization, in the endeavour to widen the market for the New Zealand output by ascertaining new uses for this material.

The funds for this research are derived from levies imposed on fibre exported, such amounts as are received from this source being subsidized £1 for £1 by the Department. Almost the whole of the funds in this year have been devoted to the flax-cultural work done at Massey Agricultural College.