

*Feed Flavour.*—Routine analyses of the material fed to the stock have been carried out. Attempts to obtain from plant material any substance which would produce flavour in cream in any way similar to the naturally occurring clover taint have failed.

*General.*—Plots have been laid down to provide material for the investigation of mechanical differences in strains of rye-grass and clover. Work on technique of analyses of these samples is in progress. Experiments in the rooting of cuttings with the use of root-forming hormones have been carried out, and more detailed investigations are in progress. Results to date indicate that the successful rooting of cuttings of many species cannot be satisfactorily obtained, irrespective of the time of the year and the condition of the wood. The best results may be expected under conditions such as experienced propagators expect to get best results without the use of hormones. Considerable time was taken up in the transfer of the laboratory to new premises and the fitting-up of new laboratories. The greater facilities are much appreciated.

#### (6) GREENKEEPING RESEARCH.

Very little investigational work was done during the year, although many requests were received for identification of weeds and grasses. The fourth annual report was issued during the year.

#### ENTOMOLOGY DIVISION.

(Director: D. MILLER.)

##### STAFF.

During August, 1937, the members of the staff formerly stationed at Palmerston North transferred to the Division's headquarters at the Cawthron Institute, Nelson. In September, Mr. L. J. Dumbleton, who had been employed as entomologist under the Fruit Research Scheme at the Cawthron Institute, was transferred to the staff of the Division. In regard to co-operation with Lincoln College, it was agreed that Mr. Morrison, part-time entomologist to that College, should act as a representative of the Division in Canterbury, and for this service provision is made in the Division budget for part of his salary and expenses.

Mr. Muggeridge, Associate Director, who sailed for London on 1st March, 1938, will give attention to the parasite complex of the diamond-back moth in England and Europe, as well as to other problems in which the Division is interested. He will also attend the International Congress of Entomology at Berlin. His contact with Farnham House Parasite Laboratory will be of great value in regard to the organization of the activities of that laboratory on behalf of the Division.

##### ACCOMMODATION.

During the year insectary accommodation for the increased activities has been provided and a heat-controlled glasshouse has also been added. In regard to laboratory and office accommodation, certain alterations in the existing buildings have been effected, while a new building has also been erected. For the cultivation of the many crops associated with the researches, field space has been provided by the Cawthron Institute in a section adjoining the entomological block. For the growing of crops under field conditions the trustees have also provided space on the Marsden Estate at Stoke.

##### RESEARCH ACTIVITIES.

*White Butterfly Position, 1937-38.*—Though the white butterfly must be looked upon as an insect of major importance, there is a widespread disposition to consider that the damage to crops is in direct proportion to the numbers of butterflies flying over them. The large size and conspicuous appearance of the butterfly results in estimates of the butterfly abundance being far too great. The white-butterfly damage is frequently confused with that caused by diamond-back moth. The indubitable butterfly damage, which is usually most pronounced round the margins of the crops, is not a fair indication of the actual damage over the whole of the crop. In addition, the part which rainfall and soil play in the production of good cruciferous crops is frequently disregarded and the whole blame for poor crops placed on the insect pests.

Notwithstanding this, the parasite control of white butterfly this season has undoubtedly not been satisfactory. The butterfly has been abundant in Hawke's Bay, Manawatu, and South Canterbury, and considerable damage has resulted to the crops in the first two districts at least. Field collections show that there is a very high rate of parasitism of pupæ in late summer from all these districts. The past season has been decidedly abnormal. From November onwards the mean monthly temperatures have been several degrees above normal, and this condition would have the effect of accelerating the development of the white butterfly to such an extent that the parasite was unable to overtake it until late in the season. It remains to be seen whether the parasite will give a satisfactory control in more normal seasons. At present we have no reliable information on the factors which favour the butterfly or militate against the success of the parasite, but a study of the problem is now being made.

In the early years of the distribution of the parasite *Pteromalus* (1932-33, 1933-34, 1934-35 seasons) large numbers of the parasites were liberated in the North Island, particularly in Hawke's Bay, but also in the Manawatu and in Wellington Province. In the following season (1935-36) large numbers were liberated in the Auckland Province and also in Marlborough, Canterbury, and Otago. In the past two