

was found that significant quantities of seed had come into the country in gear and tents. Recommendations were made as to treatment. *Bromus rubens*, a Mediterranean grass naturalized in the United States, was found to be establishing on the camp site previously occupied by American servicemen at Paekakariki.

ALIEN FLORA

Work has proceeded with a view to a second edition of "The Naturalized Flora of New Zealand." Since it was published a number of new species have been found to be established and further details of distribution learned. Several genera have been subjected to critical revision. In conjunction with this work the publication of a manual on the control of the major weeds is projected.

MEDICINAL PLANTS

Work has been mainly confined to completing the sampling of the different species grown for analysis, and to maintaining supplies of seed of species likely to be called for.

RUSSIAN DANDELION

A full report was furnished during the year. It was considered unwise to advocate an attempt to establish kok-saghyz growing on a commercial basis till the findings from the small-scale experiments made by the Division could be tested on a large-scale field trial. Previous small field trials had not shown much promise. Our own trials indicate (1) that the soil must be deep, preferably with a water-table at a depth of about 6 ft.; (2) the climate should be relatively dry, with plenty of sunshine; (3) kok-saghyz should be preceded by a good weed-smothering crop; (4) on soils deficient in nitrogen either organic manure should be provided or a leguminous crop ploughed in well before the seed is sown. There is evidence that October is the best month in general for sowing, and that 14 in. drills at the rate of 2-2½ lb. of seed per acre are most suitable. The seed should not be placed more than ½ in. deep. Plots were sown last spring for observational and seed-supply purposes. These, up to date, are doing well.

TUSsock-GRASSLAND INVESTIGATIONS

In addition to the areas mentioned in the previous annual report, a further experimental area has been established at Lindis Pass. This is in "snow-grass" country and will provide a useful comparison with those in low tussock-grassland. The more detailed work on the Molesworth area has been continued, and a nursery area established at the homestead. Examination of the progress of sowings on all the areas will be made during the coming year and the information gained reported on.

EROSION CONTROL

An examination of the Mount Bruce area was made for the Wairarapa Catchment Board, and further field-work is in progress in the area controlled by the Board. At Mount Bruce it was found that the area was well protected vegetatively from erosion. Quadrat studies were made on the Wither Hills Conservation Area, and the marked plots will be examined periodically.

PEAT INVESTIGATIONS

A detailed study of a peat area near Wellington is in progress, accompanied by laboratory work. The "pollen analysis" technique has proved a very useful adjunct, and reference material has been built up comprising 2,264 slides. Some 80 peat samples are being examined as to pH, ash, and pollen stratigraphy. In addition, a study of vegetable remains and woods has been commenced. Preliminary work has been done on other peat areas with a view to ascertaining how far botanical studies can assist in the work on copper deficiency and peat reclamation and utilization in general.

ENTOMOLOGY DIVISION

Director: Dr. D. MILLER. Associate Director: Mr. J. MUGGERIDGE

MITE INVESTIGATION

This activity mainly centres around the mites infesting cheese, though some work has been done upon the control of mites attacking other products.

Cheese-mites.—The survey of cheese-factories has been extended to the early spring, when mite population, it was considered, should be at their minimum following winter and the annual cleaning of curing-rooms. The position, however, was the reverse, in that in all but one of the factories examined there was extreme mite infestation. This strengthens the former conclusion that the initial mite infestation of cheese occurs in the factory curing-rooms and that such infestations cannot be controlled until the practice of keeping second-grade and reject cheese in the curing-rooms has been discarded and a thorough regular cleaning of the curing-rooms resorted to.

A study of the cheese-mites reveals that two species are almost exclusively responsible for infestation in curing-rooms and that these species attack in a definite succession. A study of the physical ecology of these mites is being carried out, correlated with reactions to fumigants, a most important one of which is dichloroethyl ether.

COCKSFOOT STEM-BORER

The life-history studies on this insect have been completed. Experimental areas have been sampled to ascertain the correlation between infestation and seed yield. Different methods of management were studied with a view to controlling the borer; indications are that, of the methods tried, burning stubble in the spring has a most pronounced influence in reducing infestation. The rapidity with which the insect invades a cocksfoot crop from adjoining heavily infested areas is being studied.

GRASS-GRUB

A long-term research project into the grass-grub problem has been initiated. This involves a survey of the various grass-grub species and their range, the ecology of the destructive species having the possibilities of control by pasture management in view, and the utilization of natural controlling factors—disease, parasitic worms, and parasitic insects.