RESEARCH WORK AT AGRICULTURAL COLLEGES.

Grants were made by the Department during the year to Massey Agricultural College and to Canterbury Agricultural College for a number of projects, which are reported on below.

CANTERBURY AGRICULTURAL COLLEGE.

Subterranean Clover.

Subterranean clover is felt to be capable of playing an important part in increasing the carrying-capacity and fertility of much of the lighter lands of Canterbury, and at Ashley Dene 72 acres were set aside for a series of establishment trials and sheep-grazing experiments. Four fertilizer treatments, replicated, were arranged as follows:—

A. 1 cwt. super. alternating with 5 cwt. lime.
B. 2 cwt. super. annually.
C. 1 ton lime (initial) plus 2 cwt. super. annually.
D. 1 ton lime (initial) plus 2 cwt. super. plus 1 cwt. potash annually.

The various areas were grazed, a flock of 140 four-toothed Corriedale ewes being used in the trials.

Very unfavourable weather conditions prevailed during the whole of the establishment period in the previous year and again during the early autumn period of the present year, so that to date a really dense clover sward has not been developed.

The results of the grazing trials to date give information as summarized in the following table:—

Treatment.	Ewes, per Acre.	Stocking Ratio.	Actual Production Ration.
A	$1\frac{1}{2}$	100	100
B	2	133	123
C	$2\frac{1}{2}$	166	154
D	$2\frac{1}{2}$	166	154

It is seen that treatments C and D have to date given a 50-per-cent. increase in production over treatment A, which is considered the minimum fertilizer application which should be given to a stand of subterranean clover.

The trials to date have also indicated that no real advantage occurs in this light type of soil when dressings in excess of 5 cwt. per acre of lime are applied.

Sheep-dip Investigations.

L. Morrison.

Following the receipt of a grant from the Christchurch Gas Co., collaborative investigations were commenced with a view to ascertaining the possibility of manufacturing an efficacious dip comprised largely or entirely of locally produced materials. Trials of various dips and the purely entomological parts of the researches were carried out at the College. Preliminary work indicated the impossibility of carrying out tests adequately in portions of the fleece, and so a series of small paddocks to accommodate the various units of an experimental flock were constructed. These were infested with keds (*Melophagus ovinus*) and lice (*Bovicola ovis*) and have been treated in dips of various compositions. Interim results indicate that all of the preparations containing arsenites, phenols, and rotenone were effective against adult keds, but in order to be thoroughly effective the toxic influence should be protracted sufficiently long to deal also with the keds which emerge from the pupæ. Incomplete trials to date indicate that derris possesses value for giving this delayed action.

Stem Insects of Cereals.

L. Morrison.

Work has been continued on stem-weevil infestation of wheat, special attention being devoted to studies of the different degrees of resistance to attack of the various varieties commonly grown. Though results were not quite definite, there are indications that Hunters, Cross 7, and some of the newer varieties developed by the Wheat Research Institute possess a somewhat higher degree of resistance than other varieties. Investigations on the Hessian fly have now almost been completed.

Cocksfoot Midge.

Cocksfoot midge has been kept under general watch with a view to accumulating further particulars regarding its life-history under New Zealand conditions. It has been found that the insect is on the wing between the end of October and the end of March in Canterbury. It has not been possible to determine the economic importance of this insect, which appears to infest roadside cocksfoot to a much more serious extent than that growing in open fields. Information is being gathered relative to the actual seed loss caused by the depredations of the midge.