

Genetic Investigations.

Detailed analyses of observations made on Romney stud flocks in the North Island are practically completed. While these clearly indicate the importance of non-genetic factors and the ineffectiveness of mass selection of parents in influencing the grade of certain economic characters, such as fleece weight and fleece character, of offspring, other characters such as count and type may be passed on relatively strongly to the next generation. For the former features the progeny test is essential as a basis for selection if rapid improvement above the level of the breed is to be achieved.

Effect of Mild Hairiness on Wool-manufacture.

Physical measurements have been completed on raw wool samples from the test lots in the manufacturing experiment being carried out in collaboration with the Wool Manufacturers' Research Association. No important differences in behaviour have been reported at the top stage, although samples of the two tops, like the raw material, show small but perceptible differences in handle and appearance.

SHEEP-DIPPING TRIALS.

During the past twelve months the work has been carried on under the ægis of Canterbury Agricultural College with financial assistance from the Department of Scientific and Industrial Research and the New Zealand Wool Council.

In September, 1941, it was considered that the work had progressed to such a stage that some of the information could usefully be published. Trials revealed that $\frac{1}{2}$ lb. of ground Derris of 5 per cent. rotenone content to each 100 gallons of water gave satisfactory control of ticks and lice in sheep, a result which persisted for a period of up to three months.

SUBTERRANEAN-CLOVER INVESTIGATIONS.

The third grazing season was completed on 30th March. In the spring the growth of the clover herbage was very good and one series of plots was closed for hay. The yield of hay was about $1\frac{1}{2}$ tons per acre and it is hoped to winter the stock with the aid of the hay produced on the area. This will be the first season that this has been possible.

The treatments concerned are :—

Treatment A : 1 cwt. of super one year, alternating with 5 cwt. lime the succeeding year, and so on.

Treatment B : 2 cwt. super annually (no lime).

Treatment C : 1 ton lime (initial) and 2 cwt. super annually.

Treatment D : 1 ton lime (initial) and 2 cwt. super plus $\frac{1}{2}$ cwt. potash annually.

The stock carried on each treatment during the three years is as follows :—

	First Year.	Second Year.	Third Year.
A ..	1.0 ewes per acre	1.3 ewes per acre	1.6 ewes per acre.
B ..	1.3 „	1.2 „	1.2 „
C ..	1.6 „	1.7 „	1.8 „
D ..	1.6 „	2.1 „	2.3 „

The normal carrying-capacity of this class of land under the old system of farming—*i.e.*, with temporary grass and cultivation for rape, green feed and turnips—was approximately 0.75 ewes per acre.

The results of the third grazing season confirm and supplement the indication from the previous seasons, and may be summarized as follow :—

- (1) Lime and super in combination gives best results :
- (2) The relatively light application of 1 cwt. of super one year alternating with 5 cwt. of lime next season and so on—*i.e.*, treatment A—is nearly as effective as the heavier and more costly treatment of 1 ton of lime (initial) and 2 cwt. of super annually—*i.e.*, treatment C :
- (3) One-half hundredweight of potash annually in addition to lime and super—*i.e.*, Treatment D—has given a marked increase in production :
- (4) There is evidence of a gradual accumulation of fertility of the soil under the fertilizer treatments as measured by the increase in numbers of stock carried :
- (5) Subterranean-clover pasture adequately top-dressed provides an alternative method of farming light plains land at a higher level of production than the older method of temporary pasture with cultivation for supplementary feeds with its high labour and cultivation costs.

ANIMAL PRODUCTION RESEARCH.

DR. C. P. McMEKAN.

Pigs.

(a) *Inbreeding Studies.*—This work has continued with the Cambridge White and the original population considerably increased ; the Tamworth strain is now well established and yielding promising results. The development of a “ new breed ” combining the red colour of the Tamworth with the body characteristics of the Large Whites is proceeding satisfactorily, and F3 inbred litters indicate that the red colour is recessive and accordingly capable of fixation in the cross.

(b) *Nutrition.*—Pigs have been fattened very successfully to the porker stage on a complete ration of Ceresan-treated barley without any harmful effects. This material is frequently available and represents a loss to farmers unless it can be fed to stock.

Sheep.

(a) *Growth Studies.*—Measurement data on over one thousand lamb, hogget, and ewe carcasses provide a basis for a survey of the carcass quality of Canterbury sheep and of the factors affecting it. Complete dissection data on all types are being accumulated to provide a foundation for future survey and experimental studies. An investigation of transit losses in fat lambs indicates that the time interval