

Calf-feeding.

Two experiments on calf-rearing were conducted during the year. A dozen calves were reared on each farm on whey and meat-meal and 10 gallons of whole milk, with excellent results, at a cost of about 14s. per calf. The calves at twelve weeks, when weaned, were over 220 lb. live weight, and were in perfect health. Using meat-meal with whey puts an entirely new value on whey, and the practice, if adopted, should make a very great difference to farmers in whey areas. The results were published in the *Canterbury Chamber of Commerce Agricultural Bulletin No. 10*.

SHEEP INVESTIGATION WORK.

(1) *Grazing Trials on Small Top-dressing Trial Plots*.—The plots were originally laid down to test the value of different manures for grassland top-dressing by means of hay weights. For three years now the plots have been grazed by sheep, and records kept of the number of days of grazing and the live-weight increases obtained from each type of manuring. The results so far obtained show that neither hay weights nor days of grazing are a true criterion of the effects of the manures on the pasture, and that a more elaborate scheme should be started to investigate this work further.

(2) *Experimental Grazing on Large Fields*.—The object of these experiments is to demonstrate the value of intensive rotational grazing, and to show how it can be carried out in practice on a larger scale. The method of carrying out the work is to sow part of the pasture for hay or ensilage during periods of flush growth when there is more grass than the sheep can keep grazed moderately bare. The results so far have been very encouraging, and show that by adopting this system it is possible to keep the stock-carrying capacity fairly constant throughout the year and to increase the stock carried by about 50 per cent.

(3) *Winter Feeding of Ewes*.—These experiments are designed to find out the costs of and the returns from various systems of winter feeding. The results so far indicate that the better a ewe is fed during the winter the heavier will be the clip of wool and the quicker the lambs will thrive in the summer.

(4) *Lamb Investigation*.—Last spring all the crossbred experimental lambs were weighed and number marked at birth, and then weighed at intervals during the season. The results show a correlation between the weight of a lamb at birth and the way it will thrive subsequently—i.e., the heavier a lamb is at birth, the sooner it will fatten. The experiments also show that the better the dam is fed in the winter the quicker the lamb will fatten; also, that the quicker-growing lambs have a better appearance when killed for freezing.

(5) *Wool Research*.—(a) Breeding experiment: A small breeding experiment is being carried out with stud Romney ewes to find out the relationship between birthcoat of the lamb and subsequent fleece of the grown sheep.

(b) Collection of fleeces: Last October and November ewe hogget fleeces from representative South Island Corriedale and Romney stud flocks were collected. These fleeces have been halved, and one half has been sent to Torridon, in Leeds, to be analysed and reported on; the other half has been returned here and has been reported on by local wool-buyers who buy for Bradford firms.

(6) *Iodine Feeding of Sheep*.—Since October 160 hoggets are being grazed on an iodine-deficient grazing-area, and of these eighty have been drenched weekly with iodine. They are weighed once per month. Approximately at monthly intervals four of each kind are killed and records kept of their rates of gain per cent. of carcass, size of thyroids, and, in conjunction with other Departments of the Department of Scientific and Industrial Research, thyroids and blood-samples have been collected and submitted for analysis. Results will be available at the end of the present year.

PASTURE INVESTIGATIONS.

Pasture-management investigations were commenced in the autumn of 1928 with the main object of demonstrating advantages of proper grassland-treatment and controlled grazing. The work is being carried out on two distinct types of farms.

In the one case the complete management is under the direction of the College. These farms, two in number—one light land, the other heavy land—were made available to demonstrate the application, on a farm scale, of the principles of controlled grazing and intensive farming, with the purpose of making satisfactory farms that required improvement. Work of this nature requires a period of years in order to get good pastures—the foundation of subsequent success. Visible improvement has already been made in both cases.

In the second case, co-operating farmers, twenty-one in number, are managing two or more pastures as desired by the College. The pastures are being rotationally grazed, harrowed, and top-dressed, and grazing records are kept which enable comparisons with other pastures. These records show that increases in the carrying-capacity vary from 25 to 150 per cent. where controlled grazing on top-dressed pastures is being practised.

Single-field comparative manurial trials with sulphate of ammonia, Nitrophoska, Leunaphos, have been carried out on these fields. Additional trials with nitrochalk and potash will be commenced this coming season in a similar manner. This work is unique in that the grazing-animal is being used to measure the production of grass for the first time with any attempt at precision. In the past, methods, hay-weights, &c., were unsatisfactory: the results of top-dressing measured thus and by the eye were misleading. Very definite indications, though as yet not conclusive, to the effect that these manures must play an important part in economical pasture-management in Canterbury, have been secured on good pasture on heavy and medium soils.