

RESEARCH WORK AT CANTERBURY AGRICULTURAL COLLEGE, LINCOLN.

I. PLANT BREEDING.

(a) Cereals.

(1) *Wheat*.—This work has continued in co-operation with the Wheat Research Institute, and has given the following results :—

- (i) Tuscan has proved the best wheat on all light and medium soils.
- (ii) Hunters is best suited to all heavy land.
- (iii) Garnet is payable only when sown late on heavy soil, or as a spring wheat on light soil in a wet season.
- (iv) Yeoman has possibilities on the heavy dairy-land type of soils in Canterbury, while Garnet and Solid-straw Velvet show promise in Otago wheat areas.

A useful test, the Pelshenke test, has been utilized for demarcating Canadian types of wheats.

(2) *Oats*.—Variety trials have been conducted with some sixteen separate varieties of oats, and yields determined for future reference. Two crossbred oats developed at the College—Algerians × Dunns, and Algerians × Gartons are still under trial.

(b) Herbage Plants.

(1) *Cocksfoot*.—A variety of selection is still being continued in order to determine suitable strains of cocksfoot for New Zealand conditions, and one—Strain C 23—has been multiplied sufficient to establish in a 10-acre field, which will be used for the production of mother seed. This type has shown distinctly promising characteristics regarding growth character, feed-production, and permanency.

(2) *Red Clover*.—Selection of perennial types of red clover and hybrids from these selections are still being tested with a view to securing types of a desirable kind. The work shows distinct promise, but as yet has not reached a stage when any considerable amount of improved strain seed is available.

(3) *Rye-grass, &c.*—Strain-selection work is also proceeding with rye-grass, danthonia, and other pasture grasses.

II. SHEEP INVESTIGATIONS.

(1) *Winter and Spring Feeding of Sheep*.—Careful experimental work upon different systems of winter and early spring feeding of breeding-ewes has been continued, and have indicated that lambing percentages, average weight of wool per ewe, and weights of lambs and ewes are in large measure affected by defective winter feeding, when too much reliance is placed on grass, and too little use made of oat-sheaf chaff and meat-meal. This is well borne out in investigations which have indicated that ewes thin and poorly fed yield a gross profit of 7s. 6d. compared with one of 11s. 2d. from those that have been fed well consistently during the winter and spring months.

(2) *Relationship between Birth-weight and Daily Live-weight Increase*.—Investigations have shown, and have confirmed previous findings, that the rate of thrift of lambs was in proportion to their weight at birth, a fact which points to the importance of adequate winter feeding.

(3) *Feeding of Grain to Ewes and Lambs on Intensively Grazed Pasture*.—In order to test out the contention that under intensive grazing grass is too rich in protein to form a suitable diet for ewes and lambs, this system of feeding was tested out against another diet, which included an admixture of grain. The results indicated that, while the grain fed was of slight benefit to the ewes, it had no effect on the lambs.

III. BRAN FOR PIGS.

Experiments have been inaugurated to test out the value of bran as a supplementary feed for pigs.

IV. FEED VALUE OF SKIM-MILK.

On trials with calves it was ascertained that when veal sold at 2d. a pound skim-milk was capable of yielding a return of 0.45d. per gallon, ranging up to 1.8d. per gallon when veal reached a price of 5d. This gives a slightly higher return per gallon for skim-milk than when fed to pigs. With pigs the trial indicated that when pork was 4d. a pound skim-milk was worth 0.63d. per gallon, and 1.29d. per gallon with pork at 7d. a pound.

V. VETERINARY PROBLEMS.

Investigations of treatment for rickets in hoggets indicated that a dose of $\frac{1}{4}$ oz. per day of bone-flour was effective in curing lighter cases of rickets, but did not compare with a treatment involving a daily dosage of $\frac{1}{4}$ oz. of bone-flour, plus 2 drachms of Radiostoleum, a standardized concentrate of vitamins A and D. This latter treatment produced marked improvements in the straightening of bones, disappearance of stiffness and lameness, and increase in weight. The percentage gained on the initial weight with this treatment was 32.5, in comparison with one of 11.8 with bone-flour only, and with 5.2 with the control sheep. The sheep weights in this experiment throw interesting light on the extent to which growth can be retarded when sheep are on a diet containing an insufficient amount either of lime or phosphorus. Age for age, animals affected with rickets are at least 50 per cent. lighter than the average Canterbury hoggets.