periods for grass-production. As all these clones came from an old pasture on Canterbury wheat land, an attempt was made to describe the cocksfoot-seed from such land by classifying the clones that came from it by the system of Stapledon. The analysis shows—Dense pasture types, 34·3 per cent.; spready pasture types, 19·4 per cent.; cup types, 9·7 per cent.; tussock types, 32·9 per cent.; dense hay types, 3·4 per cent.; lax hay types, 0·3 per cent. The high proportion of dense pasture types in this random selection shows the good quality of the plains cocksfoots.

Besides observations in rows, the best clones have been planted in plots and kept close mowed, but their product at critical times of the year and their proportion of stem to leaf are the bases of comparison. The best strains were also planted out where they can be grazed by sheep, to watch their reaction there. Specimens of all the types are also in this grazing trial, and about one hundred other strains are under continuous grazing for observation.

The production of seed from the cocksfoots selected involves technical difficulties owing to cross-fertilization by wind. The necessity is that the offspring be reasonably like their parents, and that presupposes that the parent was relatively pure bred. To test the purity of the parent, and the truth of the offspring to type, elaborate experiments have been made. These are not suitable for general description, but they involve thousands of sowings and plantings, and cuttings and weighings. Correlations of 0·84 and 0·90 have been obtained between parents and offspring in respect of length and breadth of leaves, this showing, as far as it goes, that the material used and the method of seed-production adopted are likely to give improved strains of practical utility.

The best strain so far isolated (C 23) was planted out on an acre of land. This produced about 100 lb. of dressed seed, which is being sown under field conditions for seed-production on a commercial scale. Small plots sown with this seed give promise of reasonable increase over the best bought seed.

The cocksfoot-plots that were growing on light land in Nelson and Marlborough, Mid-Canterbury, South Canterbury, and Mid-Otago have been closely selected, and the best of each lot are now growing in competition on similar land a few miles from the college. A selection of cocksfoot for light shingle country should soon be available.

(2) *Rye-grass.*—Observations were continued on 300 clones of plants obtained from permanent pasture on Canterbury wheat land. The thirteen best were planted out in wheatfields for shelter fertilization, and a fair amount of seed was obtained from certain of the strains. The seed has been sown, and observations are now starting in the young plants, as it is only the plants produced from seed that are of commercial interest. The best pasture-plants were interpollinated by hand to find parents the most valuable offspring. The number of crossbred seed obtained varied very greatly. In the twenty-eight crosses made the percentage of seed set varied from 0 to 72 per cent.

Some rye-grass strains of great promise are growing in Marlborough and in Central Otago. This will be selected during the coming winter.

(3) *Red Clover.*—Of 160 original selections thirty have been preserved. These have been planted out anew together with 200 more from old Canterbury pastures, and sixty from Cornish marl. Differences of 100 per cent. in yield are not uncommon, even among these permanent types, and difference in proportion of leaf to stem, productivity at critical times of year, and rapidity of recovery after grazing are equally striking. Here, again, the production of seed reproducing the parental excellencies is necessary for commercial purposes, and this forms the basis of our present work.

Seed raised in various ways from the seven best plants has been sown and thousands of cuttings and weighings have been made throughout the year. In case 1 the two very best plants we enclosed in the same cage and crossed by washed bumble-bees. In case 2 the five next best were all included in one cage and interfertilized similarly: In case 3 the same five were grown in the open and seed collected from them. Twenty plants from each lot were cut and weighed for the following yields: Case 1, best pair crossed, 457 grains of leaf; case 2, next best five interpollinated, 282 grains of leaf; case 3, the same five open interpollinated, 214 grains of leaf.

This result offers considerable promise of greatly increased clover-yield. The plants weighed from the cross of the best pair are of a very good type, and some thousands of cuttings of them are now growing in the greenhouse for transplanting to the field for shelter interfertilization and the production of seed to be sown in a field.

Pig-feeding.

During the year ending March, 1930, the work of testing out meat-meals with different classes of feeds has been continued. The state of affairs has now arrived where most of the meat-meals on the market are of uniformly high quality, and if the ideal of an identical quality were possible a very forward step would be made. Meat-meals are valuable only for their protein content, and if one uniform quality were on the market the user of meat-meal would be benefited. Further work is being directed towards ascertaining the efficiency of "fat-free" meat-meal. Other aspects of pig-feeding that have been investigated during the year are—(1) The value of grazing for pigs; (2) the value of self-feeders as against hand feeders for pork-production; (3) methods of control of pleurisy; (4) costs of bacon as against pork-production; (5) investigation of relationship between eight-weeks weight and sixteen-weeks weight; (6) investigation of the composition of various (thirty-two) proprietary and other pig-meals. These subjects are fully reported on in the half-yearly reports for September, 1929, and March, 1930.

Export Carcasses.—In conjunction with the Meat Board and a Christchurch freezing company, all porkers reared have been exported and judged at Smithfield by the expert men whose services have been secured by the Meat Board. The history of every pig is known from birth to slaughter; each pig is tagged with a distinctive number, is judged before being sent away, and these judgments compared with those of Smithfield buyers. When sufficient of these tags come back it will be possible to define without further trial the type of carcass most suitable for the London Market.