

*Pasture-management Trials.*—In general the results obtained in 1937–38 were confirmed during 1938–39. This work is to be repeated during 1939–40, but greatly extended, particularly in measuring as accurately as possible pasture-production and changes under different methods of management. This work is to be co-ordinated with dairy-cow-nutrition investigation. The most important findings from this work are (1) close and continuous grazing of a pasture in the winter and early spring gives increased clover-production in the late spring and early summer and consequently the greatest likelihood of feed-flavour and bloat; (2) alternate spelling and lenient grazing of a pasture during the winter and early spring as described in the *Journal of Agriculture* for May, 1938, gives increased grass-production in the spring and early summer and consequently the least likelihood of feed-flavour and bloat, and it also provides good grazing for early calving cows; (3) hay and silage crops should follow lenient winter grazing and not hard winter grazing (see *Journal of Agriculture*, December, 1938); and (4) alternate spelling and lenient grazing of some pastures during the winter and early spring, and the rationing-off of this saved grass to early calving cows, as well as minimizing some spring troubles and simplifying the production of milk and cream of good quality, is also a splendid means towards attaining high production per acre.

*Live-stock-feeding Experiments.*—The live-stock-feeding experiments at Ruakura were controlled by a Committee comprising members of Live-stock and Fields Divisions—viz., District Superintendent, Fields Superintendent, Farm-manager, Extension Officer in Pig Husbandry, Poultry Instructor, and Veterinarians and Fields Instructor, Hamilton, and Assistant Experimentalist, Ruakura. The animal-nutrition investigations at Ruakura have shown satisfactory progress over the past year, and with the better facilities now available the work will be greatly extended. A well-planned piggery has been erected, and cattle-yards are under construction.

*Cattle-feeding.*—The investigation into the production of chilled beef on fat-lamb farms has been enlarged, and thirty-nine steers are now on trial. Calving-dates have been varied and cows calved in January, when normally the greater number of fat lambs have been sold and surplus grass is present. Calves born in January and April have been run on the mother over the first winter, and the growth rates of steer calves from weaning onwards obtained by periodic weighing. The dry summer and autumn of 1938 retarded the progress of the groups, and the steers born in January, 1937, had to be carried through the second winter and have reached killing weights at about twenty-six months of age. It is hoped to show that, given a good season, steers run on the mother over the first winter can be fattened to chilled-beef weights by the following autumn. This will eliminate carrying the steers over the second winter, when provision of hay is necessary to hold the condition of the steers. Data on the chilled-beef carcasses is being obtained, and a series of measurements on the length and depth of side, eye of meat, &c., are taken. By this it is hoped to evolve a standard of measurements similar to that in use for judging the pig.

The investigation into the influence of nutrition on the fertility of bulls is in progress, and the animals have been on their respective rations for about twelve months. Periodic examinations of the semen from the bulls is being carried out, but the investigation has not been in progress sufficiently long for any differences to be noted, except that in general the group on a high-protein ration appear less thrifty than do the other groups.

*Pig-feeding.*—One of the main problems of New Zealand's pig industry is the production of bacon pigs which are not overfat, and the best methods of feeding to obtain such pigs is now one of the main lines of investigation at Ruakura.

The position with regard to New Zealand bacon on the British market is that if our market is to expand it will be for the first-grade pig only, and New Zealand bacon pigs definitely tend to be over-fat. The ultimate solution of the problem is, of course, the breeding of a leaner type of pig, but the immediate solution is by restricting the ration at some part of the fattening-period. The main points of the investigation are therefore what is the degree of restriction and at what weight should the restriction be imposed. Another important factor is the effect of a store period in the early stages of the pig's life. This factor is of considerable importance, since a large number of New Zealand bacon pigs are pigs born in the autumn, over-wintered in store condition, and fattened in the spring. Here the main points under investigation are the effect of the length of the store period and the rate of growth during that period.

The investigation was commenced in 1938, and had been extended this year by the imposition of new forms of restriction. The 1938 trials have been repeated, and confirmed the previous results. In general it appears that the longer the winter store period the more disposed is the pig to lay on excess fat when fattened. Further, the pig of 200 lb. at six months of age will be as long as one which is 200 lb. at ten months. The growth in length of the pig is most rapid in the young stages, and this was demonstrated by an investigation into the carcass yield of young pigs of 40 lb. to 70 lb. live-weight, when it was found that the pigs of 70 lb. had already attained 75 per cent. of the length they would have when they reached 200 lb.

The use of roots in the fattening ration of bacon pigs is a further line of investigation at Ruakura, and their use has been extended to autumn fattening. This is to give a solution to the position where a man has a line of unfinished baconers and his milk-supply is dwindling, the present practice being to send these pigs to the works in a half-finished condition or at undesirable weights. With a small area of roots the farmer can substitute his skim-milk with the roots, which are a cheaper feed-supply than purchased meals and does not necessitate the cash outlay of meals.

In all the pig-fattening trials samples of the back fat are obtained, and these are analysed for fat quality. This ensures that any methods of feeding which give good results in the reduction of excess fat are not at the expense of the quality of the carcass produced.

*Sow Nutrition:* This experiment was designed to examine the effect of nutrition on litter-production. Unfortunately, the spring farrowing of 1938 was upset by a number of sows aborting,