MINERAL-DEFICIENCY WORK

(*a*) *Serpentine-superphosphate Investigations.*—The same pots that were used last year for experiments with Sherry River soil were again given the same fertilizer treatments and sown to Western Wolths grass.

(*b*) *Plant-tissue Tests.*—As part of the fundamental work concerned with the evaluation of plant-tissue-test methods, petioles of single leaves from the same position on tomato plants of a similar appearance as possible grown on plots of a given fertilizer or soil-amendment treatment have been analysed. Very great variations in concentration of any particular constituent have been revealed. This work was done fairly late in the season and, although it confirms results obtained last season, requires to be extended to cover the earlier stages of growth of the plants.

The great variations found from plant to plant show that before these tissue-test methods can be used in fertilizer and nutritional studies a large amount of work must still be done to find out how many plants must be sampled on a given plot for inter-comparisons to be made of the effect of fertilizer and cultural treatments if reliable results are to be obtained.

(*c*) *Nutritional Deficiencies.*—In December, 1946, a chlorosis of the leaves of the tops and side shoots of indoor tomato plants on the unsterilized and formalin-treated plots developed to an appreciable degree. Steam-sterilized or chloropicrin-treated plots did not show this symptom. Painting the leaves with a solution of ferrous sulphate (0·25 per cent.) gave some improvement in colour, but no response was obtained from the use of a manganese sulphate solution at the same concentration.

A chlorosis of similar appearance developed in the same month on outdoor tomato plants on soil which had been treated in the early winter with sulphuric acid to lower the pH value. This chlorosis responded to iron treatment also, but the best results were obtained with a mixed iron, manganese, and zinc solution.

RESEARCH WORK AT AGRICULTURAL COLLEGES

Grants were made by the Department during the year to Canterbury and Massey Agricultural Colleges for a number of projects which are reported below.

CANTERBURY AGRICULTURAL COLLEGE

ANIMAL HUSBANDRY

Professor I. E. COOP

Pig-breeding.—The breeding programme of the Tamworth and Large White pigs has continued in the process of evolving a breed of pigs possessing the desirable qualities of each parent breed. Progeny testing of sires is being used in selecting the boars for breeding. Further Large White blood has been introduced from a line of proved carcass-quality pigs obtained from Ruakura.

Sheep-dipping Trials.—The new insecticides D.D.T. and Gammexane have been tested in their effect on keds and lice. The trials with D.D.T. have proved disappointing. The D.D.T. was used both as a solid dispersion and in suspension dissolved in benzine, and in both cases failed to control lice, and was not as good as derris or Gammexane in controlling keds. On the other hand, Gammexane proved to be very effective in the small-scale trials against both keds and lice. Here again it was used in both the fluid and powder forms, both being equally effective. It has also been tested on a larger scale, when a flock with a very heavy ked infestation was cleaned up in one dipping. The difficulty of obtaining lice-infested flocks has not yet permitted large-scale trials of Gammexane against lice.

Growth and Development of Corriedale Sheep.—The growth and development of Corriedale sheep raised at the Kirwee Experimental Farm on high and low levels of nutrition since birth are being studied. Their rates of growth are being followed and their development studied by killing and dissecting the carcasses of representative sheep at regular intervals.