Lotus Major.

One thousand six hundred lotus major single plants have established well. During the growing season notes have been taken on these plants, and a classification into different types is being worked out. There are wide strain differences occurring amongst the plants of the lines under study.

A supply of seed from a good commercial line has been obtained by planting out a small block of single plants and harvesting the seed produced. This seed will be useful for further trials and comparisons with other lines tested or built up by selection.

Seed-production Experiments.

In order to test the best time for closing up pedigree strains for seed-production purposes the Station white clover selection block was shut up at varying dates from 13th October to 22nd December. Shutting up towards the middle of December gave the best yield of seed, with much less bulk to handle compared with the earlier shut up lots.

Two blocks, each ⅛ acre, have been sown down with dual crop, the one being a selected rye-grass plus a selected white clover, and the other a selected rye-grass plus a selected Montgomery Red. It is hoped by using the larger blocks to control the bottom growth by sheep, to take a rye-grass crop the first year, and in subsequent years a dual crop. The problem is to combine a grass and a clover in the same field to enhance the value of the area for grazing during the period of the year when a seed crop is not being produced.

Field Trials and Field Demonstrations relative to Strain in Herbage Plants.

Three additional areas have been sown, and reports on all trials have been submitted regularly by the instructional staff of the Fields Division.

SUPPRESSION OF ANNUALS IN HAWKE'S BAY AND POVERTY BAY PASTURES.

These trials have now been finalized, but little really satisfactory evidence one way or another was secured. In a dry district like Hawke's Bay it would appear that manuring through stock is more effective than direct applications of artificial manures, particularly in small plots, the effect of the dressings on these being largely masked by the superimposed animal manures wherever stock concentration is sufficiently high to liquid-manure the entire area. Manuring whole paddocks in order to increase production is sound, and the reflex of the added stock carried is in a marked betterment of the sward as a result of the urine and droppings from stock.

REGRASSING SECONDARY-GROWTH COUNTRY.

No new work has been attempted, but the areas sown have been kept under observation.

ECOLOGICAL WORK.

Detailed botanical analytical work in connection with field trials at Marton and at the Research Station have been made from time to time.

GREEN-KEEPING RESEARCH.

This scheme of work, which is undertaken on behalf of the New Zealand Golf Association, and which is primarily an inquiry into the establishment and maintenance of greens, has progressed steadily during the year. Included in its aims and objects is a definite study of lawn grasses viewed specifically from the world trade requirements in lawn seeds. The first annual report has been prepared and presented to the Council.

ALTERNATE MOWING AND GRAZING TRIALS AT MARTON AND GORE.

The measurement of performance in strain is of paramount importance when it comes to impress overseas countries with exact yield data in regard to world strains. Also when it comes to pedigree plant production some measure or other than eye is essential to gauge the relative values of these compared with the best commercial strains available. Sowings of the major strains in rye-grass, white clover, red clover, and cocksfoot, including New Zealand and overseas strains, have been made at Marton and Gore. Yields are being kept, the plots being sown in twelve replicates and measured under the "Hudson" system of alternate mowing and grazing. Owing to the lack of finance, yield-data work on the Gore series has not yet commenced.

LAND REQUIREMENT AND GLASSHOUSE ACCOMMODATION.

The urgent land requirement of the Section has been met largely by a close collaboration with the mycological work on the original Station area. Land which it is desired to rest from plant disease investigational work is utilized for the grass and clover work. The need for glasshouses is urgent in order to commence building pedigree strains of rye-grass, white clover, red clover, Italian rye-grass, and cocksfoot. Means to control pollination in the early stages in the building-up of a pedigree strain is essential, and at Palmerston North the only practical means is within glasshouses.

FIELD EXPERIMENTS SECTION.

A. W. Hudson, Crop Experimentalist.

The total number of experiments in existence is 568, compared with 586 for the corresponding date in 1932. While the number of experiments with annual crops has been well maintained, there has been a slight reduction in the number of pasture top-dressing experiments.

A feature of the more recently inaugurated experiments has been the close collaboration with other specialist officers, and the carrying-out of co-operative trials on farms to form a connecting link between the research work at the Plant Research Station or the Wheat Research Institute and the extension work of the Fields Division. The active co-operation of the Director of the Fields Division and his staff, in spite of considerable demands on their services from other directions, has been the chief factor in enabling this policy to be pursued.

During the year fourteen reports on experiments, or reports containing reference to results from experiments, have been published in the *N.Z. Journal of Agriculture*.