Lupins.—The blue lupin is becoming increasingly important in Canterbury as a soil renovator. and, despite its obvious defects of low palatability owing to high alkaloid content, is used extensively for feeding. In Russia and Germany new strains of sweet lupins have been produced containing a very low alkaloid content. Only one variety has so far been introduced—namely, the Yellow Sweet Lupin, The yield of the yellow is not as great as that of the blue, but is characterized by a high degree of palatability, and this, in some other variety of sweet lupin, is likely to prove of great economic importance to New Zealand.

Root Crops.

Turnips and Swedes.—These crops are of outstanding importance in New Zealand farming, but are gradually becoming less popular owing to the serious losses occasioned by dry-rot and club-root. The work being undertaken is largely an effort to produce varieties less susceptible and at the same time maintain yield and quality. Some varieties are relatively resistant to club-root, and a recent introduction by this Division is a soft turnip, " Immuna," which has proved exceptional in this respect. Crosses have been effected between resistant and high-yielding non-resistant varieties, but progress is slow owing to many difficulties arising, such as those of overwintering roots and a satisfactory technique in the determination of resistance. Better facilities are, however, likely to be available in the near future, and greater progress may be possible.

Potatoes.—Attention is being devoted to the introduction of varieties from overseas, but past experience does not offer much prospect of improvement in this direction. The main objective is therefore an attempt at improvement by hybridization between standard varieties and material collected by various expeditions to the potato-growing regions of South America. These South American species are unimproved, and many are quite useless as food. Certain of them, however, possess such characteristics as frost-resistance, disease-resistance, and a wider range in other characteristics than is to be found in the commercial potato. Therefore by hybridization it should not be impossible in the course of time to introduce into the commercial potato important characteristics which previously were entirely non-existent. Several hundred crosses are at present under trial, but more effective work will be possible when glasshouse facilities become available.

Industrial Crops.

Linen Flax.—Investigations conducted over the past three years have proved that satisfactory crops of linen flax can be grown over a wide area of the South Island and that the fibre yield and fibre quality is satisfactory. Numerous trials have been conducted in co-operation with the Fields Division of the Department of Agriculture, and the produce retted and scutched by this Division. Samples have also been forwarded overseas, and reports thereon have been satisfactory.

Great Britain and Ireland require vast quantities of fibre for the spinning and weaving industry, and linen is essential for certain purposes associated with national defence. There has, however, arisen an acute shortage of raw material, and every endeavour is being made to stimulate production within the Empire. As a result of the acute position that has arisen and the favourable prospects of development, arrangements are now being made to establish linen-flax production on a commercial basis in New Zealand.

Linseed.—The possibility of re-establishment of this industry in New Zealand is receiving consideration, especially in view of the fact that if a linen industry is established there is likely to be a surplus of seed which can be used only for oil-extraction and feed purposes. A number of varieties have recently been introduced and are undergoing preliminary trial.

Vegetable Crops.

Investigations into vegetable crops was commenced this past season. These preliminary trials were designed to study varietal differences and to gain some idea as to the general standard of varietal purity and should lead to more specialized studies in the future.

Other Investigations.

A rotation trial laid down two years ago mainly to investigate the supposed impoverishment of the land by linseed is to be continued. So far there is no evidence that linseed is any more drastic in this respect than wheat.

Some investigations are being carried out on the effect of colchicine in the induction of polyploidy and hormones in the stimulation of root growth.

Periodic sowings are being made of wheat varieties to determine the latest date that they can be sown in the spring, and of all brassicas to determine the most favourable date for sowing for seed-production. In this connection vernalization of brassica-seeds has been undertaken in co-operation with the seed-testing station. The results obtained, although in certain cases positive, are not so far of economic significance.