

Lucerne.—The first pedigree strain raised from a combination of several plants of the *Marlborough* variety selected on the behaviour of their inbred progenies was multiplied last year for the first time, and the seed obtained distributed to several districts for field trials. Another seed crop has been harvested this year, and the produce will be used for the establishment of further increase blocks if the reports on the field trials are satisfactory.

Further breeding-work on the *Marlborough* type has been suspended in the meantime, but a project has been initiated with the object of developing a satisfactory pasture type from *Medicago glutinosa*.

Potatoes.—The certification of potatoes undertaken by the Fields Division, Department of Agriculture, ensures that the quality of the main commercial varieties, particularly as regards purity and freedom from virus diseases, is maintained. This Division, on the other hand, is concerned with the production of improved types by hybridization.

It has been fairly definitely established that certain "wild" potato species from South America are resistant either to late blight or to frost. Some of these "wild" types have been introduced through the Imperial Bureau of Plant Genetics, Cambridge, and have been used for crossing with our cultivated varieties. A number of promising hybrids have been obtained, but further back-crossing to commercial types is yet required to improve the quality.

Lupins.—The ordinary blue lupin, due to a relatively high alkaloid content, is rather bitter, and at certain stages is not relished by stock. By intensive selection methods, German and Russian workers were able to isolate a few seeds both of the blue and of the yellow species in which the alkaloid content was greatly reduced. From these have been propagated sweet blue and sweet yellow strains, and during recent years small supplies of both these types have been introduced and are being multiplied as rapidly as possible. From trials already conducted the claims in regard to their palatability have been substantiated, but it would seem that the yellow type is better suited to the warmer conditions of the North Island than to the South and that for southern conditions the sweet blue is likely to be preferred.

Linseed.—In view of the possibility of the re-establishment of linseed-oil production in New Zealand studies have been made of a large number of imported linseed varieties. Of these a type known as *Rio* has proved to be outstanding in regard to yield and to resistance to disease, and its oil-quality is satisfactory. An increase area of this variety was grown this year.

In addition, a trial to compare the relative seed-yields and oil-quality of several varieties of both linseed and linen flax was carried out.

Mangels, Carrots, Chicory, and Coriander.—During the past season small areas of mangels, carrots, chicory, and coriander were grown for seed.

Co-operation with other Institutes.—Grasslands Division: A section of the Grasslands Division has been established at the Agronomy Division and an officer stationed here to investigate the behaviour of pasture species and strains under Canterbury conditions. Stocks of herbage species reselected and raised by the Grasslands Division are also increased at Lincoln. The Grasslands Division reciprocates by carrying out certain trials for this Division at Palmerston North.

Plant Diseases Division: An officer of the Plant Diseases Division is stationed at Lincoln mainly for the purpose of investigating diseases of arable crops. The Agronomy Division receives considerable assistance and advice from this officer and from his Division in Auckland, particularly in connection with diseases of oats, peas, potatoes, brassicas, and linen flax.

Fields Division, Department of Agriculture: Close co-operation between the Fields Division and the Agronomy Division is maintained. The Agronomy Division is dependent on the Fields Division for carrying out field trials with new material, and the Fields Division receives from the Agronomy Division nucleus seed of several crops grown under certification.

Canterbury Agricultural College: The Canterbury Agricultural College has priority in obtaining supplies of pure-seed wheat raised by this Division and makes small areas available either for preliminary trials or as isolation blocks.

Wheat Research Institute: The programme of work in connection with wheat is discussed fully with officers of the Wheat Research Institute before being finalized.

Entomology Division: An area of pasture plots has been established to enable a study to be made on the habits of *Porina*.

Cawthron Institute: Cawthron Institute has co-operated with the Agronomy Division in conducting garden pea trials and in a seed-production undertaking.

BOTANY DIVISION, WELLINGTON.

Director: Dr. H. H. ALLAN.

Only the work of more immediate importance under present conditions is reviewed here.

SEAWEED UTILIZATION.

A bulletin, "The Economic Importance of Seaweeds," has been published, containing concise information concerning fertilizers, food, potash, and iodine sources, production of agar-agar and alginic acid, &c. The important New Zealand seaweeds are described and discussed, and an illustrated key given to the chief species of brown algae.

Macrocystis as a source of potash. Assistance was given in the survey of areas at Cape Campbell, Tory Channel, D'Urville and Stewart Islands. Approximate estimates of the available supplies have now been secured. Extended experiments on regrowth after cutting have been planned.

Carrageen.—Successful preliminary trials of certain species of *Gigartina* were made, resulting in further trials by a large brewery, with such success that arrangements were made for continued supplies.