

POTATOES

An Empire collection of potato species from South America is at present being studied in detail at the Potato Research Station at Cambridge, and until tested material is available from this source no further breeding-work is being undertaken. Trials are still being carried out, however, with the most promising lines derived from crosses between commercial varieties and various South American species obtained some years ago from a Continental collection; a few of these are giving high yields of good-shaped tubers.

MANGELS, CARROTS, CHICORY, CORIANDER, AND BEANS

Small seed-increase areas of Yellow Globe mangel, of Holmes Improved carrots, of chicory, of coriander, and of three varieties of beans were grown for seed-production.

RYE-GRASS AND CLOVER

On behalf of the Grasslands Division, Palmerston North, 4 acres of short-rotation rye-grass, 2½ acres of Italian rye-grass, 2½ acres of perennial rye-grass, and 2 acres of broad red clover were grown for seed. For the coming season 5 acres of short-rotation rye-grass, 4 acres of Italian rye-grass, 2½ acres of perennial rye-grass, 1 acre of timothy, 1 acre of broad red clover, 1 acre of Montgomery red clover, and 1 acre of white clover have been sown down.

BOTANY DIVISION

Director: Dr. H. H. ALLAN

IDENTIFICATION AND ADVICE

Over one thousand six hundred specimens were reported on from the usual sources, schools accounting for 50 per cent. Special interest was shown in seaweeds, possible rubber plants, dye plants, and fibre plants. Several new records were made, and further information on distribution obtained. Advisory work covered a wide range of topics, mainly concerning plants of economic importance.

HERBARIUM

Over two thousand sheets were added to the general herbarium, including large collections of grasses and weeds. Mr. Geo. Simpson, Dunedin, contributed a very full set of *Carmichaelia* specimens and type specimens of recently-described species. Several important extensions of range were noted for indigenous species. To the cryptogamic section (seaweeds, lichens, liverworts, mosses) some three thousand sheets were added, making this a very strong reference collection. Mr. G. O. K. Sainsbury and Mrs. E. A. Hodgson very kindly made or checked identifications of mosses and liverworts. These collections will be of increasing use for work on grassland and forest ecology. The seed herbarium has been augmented by both local collections and overseas exchange. We have to thank the Director of the Auckland Museum for the loan of their seaweed herbarium, and the Director of the Dominion Museum for the loan of groups under study. Much critical work has been done on grasses, sedges, seaweeds, and alien weeds.

PLANT INTRODUCTION

Seed samples of strains of broomcorn, Russian dandelion, hemp, and roses (with high vitamin content) have been received from overseas. Edible shrubs and range grasses have been received from South Africa and the United States of America for trial in the tussock grassland experimental areas. Cuttings of athel tree (*Tamarix aphylla*) received from the manager of the Zinc Corporation mine at Broken Hill have been satisfactorily struck.

FIBRE PLANTS

(a) *Phormium*.—Routine work on the experimental area has been continued, but no trials are yet ready for sampling. A considerable quantity of nursery stock has been raised and further seed harvested, especially of the varieties 56 and 37. A programme of work on yellow-leaf disease has been planned jointly with the Plant Diseases Division and the Soil Survey Division, and the botanical experiments commenced. Multiplication of stocks of white-budded flax is proceeding.

(b) *Hemp*.—Last season's trials showed a production of stook-dried material of from 12,000 lb. to 13,000 lb. per acre. The yield was reduced by unevenness of the crop and severe weathering. Material for fibre trials had to be taken from the plants threshed for seed. The percentage of fibre from retted material was 17 (nearly 8 per cent. from green material). Fibre sent for appraisal was favourably commented on; fibre from material harvested at the normal period was weak and discoloured owing to mildew, but fibre from female plants used for seed-production was reported on as of similar quality to the best of that imported prior to the war. Small trials made in various localities were disappointing, largely owing to attack by birds. The present season's crop has been retted.

(c) *Cabbage-tree Leaf*.—Retted material was reported on as good for fibre-board manufacture. It was not found possible to arrange for a trial of stripped material. It was demonstrated that methods could readily be devised to propagate cuttings vegetatively and establish a stand.

(d) *Linen Flax*.—General botanical and anatomical work was intensified, an officer being stationed for a period at the Linen Flax Experimental Factory, Washdyke. A full series of sample sheaves from a number of crops has been sectioned for a thorough analysis of the value of anatomical evidence as regards importance of varieties, times of harvesting, soil conditions, and improvement of strains, and relation to field conditions generally.