

Garden Peas.—Seed stocks of garden-pea varieties become mixed and deteriorate very rapidly, and consequently require much attention and periodic renewal. This Division undertakes the raising of pure lines of the more important commercial varieties and makes them available to merchants. The following varieties were grown the past season: Greenfeast, Onward, Stratagem, William Massey, Little Marvel, and Harrison's Glory.

Breeding-work has been confined to testing the behaviour of several lines developed from a cross between Greenfeast and Greaterop. One of these, a high-yielding, green-seeded Greenfeast type, is particularly promising and is now to be multiplied for distribution.

Field Peas.—Blue peas are either packeted and sold for domestic use in the dried state or canned to provide a superior and more easily prepared article of food. It is estimated that in England over 140,000,000 cans are processed annually. Unfortunately, New-Zealand-grown peas are not very acceptable in Great Britain, due to their variable hardness and the toughness of their skins.

White peas are used almost entirely for the split-pea trade, but the yielding ability of the standard variety, White Ivory, is rather uncertain.

Some years ago breeding projects were initiated by this Division with the object of developing varieties of both the blue and the white types which might be more acceptable to the British trade or more suitable for New Zealand conditions. As a result several very promising lines have been raised and in the past season increase areas of the following ones were grown:—

Blue type, Line 5/7/1/6 (Harrisons Glory × Blue Prussian): Yields better than Blue Prussian, the standard blue pea, and peas are larger and greener.

White type, Line 3/42/3 (Greenfeast × Blue Prussian): Yields better than White Ivory and quality as good.

These are to be multiplied once more before being distributed.

The breeding-work has now been restricted to testing further selections of each type. 12/10, a cross between Victoria and Stratagem, and a white type seems to warrant particular attention on account of large seed-sized combined with a good yielding ability.

Linen Flax. For several years now this Division has conducted a considerable amount of preliminary investigational work in connection with methods of production of linen flax, a crop which has suddenly sprung into a position of prominence. Its product, linen fibre, is essential for certain war purposes, and in order to provide Great Britain with a proportion of her requirements an industry has been established in the South Island.

The investigations initiated by this Division are being maintained, and during the year trials were carried out to determine:

- (1) The optimum rate of seeding for fibre-production:
- (2) The best method of sowing—broadcasting, $3\frac{1}{2}$ in. drilling, 7 in. drilling, or 7 in cross-drilling.
- (3) The most satisfactory manurial treatment:
- (4) The relative merits of such varieties as Liral Crown, Liral Prince, Stormont Cirrus, Concurrent, and Giza Purple:
- (5) Processing requirements in connection with deseeding, retting, and scutching (for this purpose an experimental processing plant has been erected). The unit is used also for extracting the fibre from material harvested from experimental plots grown either by this Division or by the Fields Division, Department of Agriculture.

In the past year increase areas of Stormont Cirrus, Stormont Gossamer, Liral Prince, Blenda, and Hercules were grown, the last three being raised from hot-water-treated seed.

Rape. As Great Britain recently placed an embargo on the export of rape-seed, the commercial production of the Giant and Broad Leaf Essex types reselected by this Division and grown under certification by the Fields Division, Department of Agriculture, has now become an undertaking of added importance. The nucleus and mother seed of the varieties grown under certification is raised annually at this Division.

In addition, this year a small increase area was grown of a type which was received from the Plant Diseases Division and which has proved to be considerably resistant to club-root. The produce will be used for trial next season.

A new cross (Giant × Broad Leaf Essex) × Broad Leaf Essex, which is intermediate in behaviour between the two standard types, was distributed for trial in several districts.

Further work is being confined, in the meantime, to testing the behaviour of a cross between Giant rape and Chinese Cabbage, which shows promise of being a quick-maturing form.

Narrow-stem Kale.—Apart from the green- and purple-stemmed types there are no distinct varieties of narrow-stem kale available, but an attempt is being made to develop different strains which might be suited for different purposes. Two distinct green-stemmed types have been isolated and increase areas were grown for seed-production this past season. Field trials are also being carried out and it will depend on the reports from these as to whether or not the selections will be distributed.

In addition to strain selection, many crosses have been made in an endeavour to produce improved forms.

Turnips and Swedes.—Work on these crops has been concerned mainly with an attempt to raise disease-resistant types by hybridization. The effort has been handicapped, however, by the difficulty experienced at Lincoln in overwintering selected bulbs and is now being confined to testing out a few lines which were able to be maintained.