in the field. Further crosses with the stiff-straw Welsh variety S172 are in various stages of development under observation and selection. While Onward is a very important milling oat in New Zealand, it is segregating for type to an extent that prevents its certification. Selection within this variety to obtain uniformity is being undertaken.

Barley. The main project aims at the production of an improved variety suitable for direct heading. Kenia, Maja, and Culture 9 have been crossed with Spratt Archer and Golden Archer, and this material now in F4 will be grown next year for the first time to measure yield and quality. Research is an introduced variety that has assumed a dominant position in Canterbury during the past season, but it has the serious disadvantage of segregating into several maturity groups, which detracts from the malting quality of the grain. These maturity groups have now been separated, and the selection of one or more uniform lines of Research barley is well under way.

Ryecorn.—The N.I.A.B. winter ryecorn has proved at Lincoln and Gore to be superior to any other cereal green feed, and at least twice as productive as the commercial ryecorn usually grown in this country. Extreme variations in type within the variety offers scope for further selection being made during the vegetative period.

Peas.—From crosses between William Massey and Greatcrop an effort is being made to select an early variety with a yield heavier than that of William Massey. An attempt is also being made to improve the Onward variety by crossing it with Greenfeast, William Massey, and Greencrop. Efforts are being directed to the improvement of Partridge peas by selecting for smoothness, earliness, evenness, and wilt resistance from crosses between Partridge and the wilt-resistant variety, Marathon. Further improvement is being sought from crosses between Greenfeast and Blue Prussian in the production of a satisfactory boiling pea.

Lupins.—Two strains of the white-seeded, low-alkaloid variety, Weiko, homozygous for non-shattering, have now been obtained. In these selections there is no pre-harvest loss due to shattering, yet they offer no difficulty in threshing. Now available in sufficient quantity for field trial is a bitter pink-flowered strain which, when spring sown, exhibits marked superiority in rapidity of growth over the commonly grown bitter blue-flowered lupin. Crosses between this pink-flowered strain and the white-flowered sweet variety have been made in the hope of obtaining a sweet lupin of more rapid growth than any at present available.

Rape.—The club-root-resistant strain is proving extremely popular, particularly in Southland, where farmers who had previously given up growing this crop on account of club-root are now finding it possible to grow the new strain, and are obtaining high yields. Rape is extremely susceptible to aphid attack, and a more resistant plant is being sought in the hybrids between rape and aphis-resistant swede.

Kale.—The strains of chou moellier raised at this Division show up with advantage when compared with imported lines. A promising hybrid between giant chou moellier and thousand-headed kale has been increased for large-scale trials next year. Many other hybrid types are being grown, and chou moellier has been crossed not only with thousand-headed kale, but also with spring and winter cabbage and with kohlrabi. Some hybrids give heavy yields of leaf at seasons when the standard varieties have passed their peak. There appear to be great possibilities in the breeding of kales.

Swedes.—The variety Dryland, which was raised by the late Director of this Division, Mr. R. A. Calder, has been renamed Calder Swede, as the term Dryland proved far too restrictive. The variety has proved to be extremely hardy, resistant to aphis attack, and more resistant to mottled heart, dry rot, and club-root than any other variety. A large quantity of seed is now being distributed by the Department of Agriculture.