(1) Testing of varieties.—These are tested in plots located on uniform soil. They are put in early, commencing on well-drained land about April 20th. Different dates of seeding produce, in this climate, a marked effect on yield, consequently each group of plots is sown on the same day if possible. Observations are made regarding length and strength of straw, time of ripening etc., and after threshing, yield and quality of grain.

(2) Selection.—Among the first varieties operated upon in selection work were Red Fife wheat, Mensury barley and banner oats. From these, several good strains have been developed. The method is to retain the seed from the best groups of plants, and sow it in small plots the following year, keeping each selected strain separate. Comparisons are then made and the inferior strains discarded.

(3) Cross-breeding. — Where it is desirable to obtain varieties of grain which are radically different from those already on hand, cross-breeding is the method employed. At Ottawa several new wheats have been originated in this way, the most noteworthy being the Marquis, which comes from a cross between Hard Red Calcutta and Red Fife. This early ripening wheat has been a remarkable success, particularly in Saskatchewan. Cross-breeding is also being carried on with the following crops: oats, barley, peas, flax and beans.

Seed distribution.—A definite branch of the work is the propagation and distribution to farmers of new and improved cereal seed. This is a practice which is followed by the Ontario Agricultural College, and also the Ontario Experimental Union, and one which is proving a boon to many who are desirous of making a start with high-grade seed.

The Division of Chemistry

The work here covers a very wide field, for many are the problems of Agricultural Chemistry.

Laboratory work must accompany practical field results. Soils must be studied with regard to the effect of rotation of crops, of the growing of leguminous plants; a valuation must be put upon the various farm manures; the value of mucks, marsh and river muds, and the effect of lime must be determined.

Other investigations include the chemistry of (1) butter and cheese-making, and (2) the many insecticides and fungicides which are now in such general use. Cereal work has been largely the testing out of wheats and flours for their bread-making value. A considerable amount of testing of soil samples has been done, and their composition and suitability for agricultural purposes determined. Similarly, thousands of water samples have been examined.

Botanical Division

The work of the division of Botany falls under two heads; (1) advisory, (2) experimental. There are many problems in agriculture and fruit-growing which require careful investigation. This department concerns itself with such problems as weed control and plant disease study. For convenience, the division has been separated into two branches, dealing with (a) Economic Botany, (b) Plant Pathology or Plant Diseases. The former is subdivided into three phases—(1) correspondence concerning weed control and poisonous plants, (2) experimental work, (3) the maintenance of the herbarium collection of plants and seeds.

Plant Pathology comprises the following; (a) correspondence re control methods for use in the combatting of