

power of resistance to bacterial and fungus diseases and to insect enemies. The requirements of any rotation to be considered suitable should supply the crops needed in the proper proportions, and should be so constituted that a hoed crop should form part, so that weeds can be kept under control. It must yield a reasonable net profit, and must, under properly regulated treatment, maintain soil-fertility. With regard to the latter, Mr. Grisdale, the Director Dominion Experimental Farms, is very emphatic. He has no sympathy with farming conducted by means of constant applications of artificial fertilizers, so prominent a feature of farming methods in some districts in New Zealand. His aim is to build up soil-fertility in a natural way under the rotation system by means of growing and ploughing under some green crop. To this end, when grain is sown the land is also seeded down to legumes and timothy-grass, the quantity of seed varying slightly according to the length of the rotation—usually, however, 10 lb. red clover, 2 lb. alsike, 6 lb. lucerne, and 6 lb. timothy per acre. The following year two crops of clover hay are expected, and the next spring following the clover and grass sod is turned under for the succeeding crop, which is a hoed one, these latter forming a large proportion of every rotation. The rotations are generally of a five- or three-years duration.

Commercial fertilizers as a part substitute for barnyard manure: Experiments designed to supply information concerning the relative merits in regular farm rotation have been completed. The results show a distinct advantage in barnyard manure alone over commercial fertilizers alone for the soil on the farm, but point to the possibility of combining the two to good advantage when barnyard manure is scarce or high in price.

Division of Animal Husbandry.—The scope of work of this division includes directly the care, breeding, feeding, housing, and marketing of horses, cattle, sheep, and swine and their products on the Central Experimental Farm, together with the testing of methods in care and management and of all machinery pertaining thereto. In consultation with the branch farm superintendents, this division also assists largely in these various operations on all branch farms where live-stock are maintained, thus systematizing and consolidating all the live-stock experimental work on the Dominion experimental farms.

For the farm-work purebred and grade Clydesdale mares are kept. The pure breeding herds are Ayrshire, Canadian, Holstein, Guernsey, and Jersey. The sheep are Shropshires and Leicester. Three breeds of swine are kept—Yorkshire, Tamworth, and Berkshire.

Division of Chemistry.—Research work upon the solution of problems affecting Canadian agriculture claims first attention, but no less important is the educational and advisory work for the individual farmer.

Division of Horticulture.—The work of this division is subdivided under the heads of "pomology," "vegetable-gardening," "ornamental gardening," and "plant-breeding."

Division of Cereals.—The investigations carried on within this division are—Testing of varieties, importation of new sorts, selection, cross-breeding, and distribution.

In a series of test plots comparisons are made every year between the best varieties of grain which are commonly grown in Canada and such sorts as have been recently imported from other countries. The plots are usually one-sixtieth of an acre in extent, and are laid out in regular blocks with suitable spaces between. It is impossible to obtain, even under the most favourable conditions, perfectly trustworthy information in one season in regard to the relative merits of similar varieties, so that when making comparisons the average results of a series of years are always taken. With regard to new varieties, these are tested for at least five years unless they clearly show some serious defect, when they are at once discarded. At the time of my visit all the crops had been harvested.

Division of Botany.—The work includes two main groups—viz., plant pathology and economic botany. In addition the Dominion Botanist has charge of the Botanic Gardens and that part in the administration of the Destructive Insects and Pest Act dealing with diseases of plants due to fungi and bacteria.

Division of Entomology.—This division has the administration of the Destructive Insect and Pest Act—viz., the prevention of the introduction of insect pests into Canada, and the control or eradication of injurious insects already existing in the country.

Division of Forage Plants.—The work of this division is in general of an entirely scientific nature, the aim being to produce superior varieties and strains of forage crops, to ascertain the value of the different varieties of the different environments of Canadian soils and climate, and to investigate thoroughly the value of both native and foreign plants that are or may be used for fodder. As this division has only been in existence for a few years, no definite results of experiments will be available for two or three more years. The breeding-work demanding the greatest amount of attention up to the present is that with leguminous forage plants and grasses. In the breeding of leguminous forage plants such as lucerne and clovers the main object kept in view is breeding for increased hardiness and for increased yield and superior quality.

Division of Poultry.—The work undertaken is to investigate all poultry problems that are of interest to farmers and poultrymen. The experimental work includes breeding, incubation, brooding, rearing, feeding, housing, the production of flesh and eggs, diseases, &c., and to carry out this work turkeys, geese, ducks, guineas, and ordinary fowls are utilized.

Division of Tobacco.—The experimental work of this division is conducted at the Central Farm, Ottawa, and at the tobacco stations St. Jacques, l'Achigan, and Farnham in Quebec, and Harrow in Ontario. An extensive area was under this plant at the Central Farm at time of my visit.

Value and Purpose of Branch Farms and Stations.

Of the nineteen branch farms and stations, several have now been in existence for close on thirty years. Rapid settlement and development, especially in the western provinces of Canada,