

industry is the exhaustive check made on biological and other products that are offered for sale for veterinary and agricultural use, to ascertain that the products will be effective for the purposes intended and that the disease or diseases which they are supposed to prevent or treat actually do occur in Canada.

The *Grain Research Laboratory* provides scientific services required in the administration of the Canada Grain Act. It carries out annual studies of the quality of the new crop cereals, maintains a continuous check of the quality of cereal grains as they move forward from the farm to marketing positions and plays a major role in testing (prior to licensing) the quality of plant breeders' varieties of various cereals. A comprehensive program of basic and applied research relating to the quality of Canadian cereal grains is an important task of the Laboratory.

**Improvement of Crops.**—Canada's main crop for generations has been wheat, of which 723,000,000 bu. were grown in 1963 and 600,000,000 bu. in 1964. The efficiency of high-quality wheat production in this country stems directly from the help the grain growers have received from research. Without the new varieties produced by plant breeding, it would be unprofitable to grow wheat on large areas of the wheat belt. Rust-resistant wheats prevented the loss of an estimated 250,000,000 bu. in 1962 alone and varieties resistant to sawfly have prevented substantial losses almost every year. Comparable improvements in oats and barley have enabled the farmer to continue to grow these valuable cereals despite the incidence of pests and diseases, drought and short growing seasons.

Because of the contribution of livestock returns to farm incomes in all provinces, it also became imperative to seek better grasses and legumes and to adapt them to the various regions of Canada that differ in climatic and soil conditions. Some success is being confirmed in many of the varieties advanced for this purpose but the impact of Climax timothy on forage crop production in the past decade deserves special mention. Developed by the CDA, Climax grows in all provinces and yields about 12 p.c. more forage than commercial timothy, long the chief grass of Eastern Canada. It is estimated that the increased tonnage and higher quality of Climax is worth about \$5,000,000 a year to Eastern Canada farmers.

Research in other crops, notably oil seed plants and potatoes, has resulted in new varieties with resistance to diseases, with improved quality and suitability for specific processing, and adapted to the different growing areas.

Investigation into the storage and processing of crops has been accelerated in recent years and has led to valuable innovations in the fruit and vegetable industries, and in the protection of stored grain. Technological improvements have been made in the harvesting and storage of tobacco; while the search for answers to perplexing problems, such as "weather fleck" and the use of chemicals for sucker control, continues to be pressed, tobacco growing has been introduced successfully into completely new areas of Eastern Canada in recent years. Some soybean varieties now widely grown have emerged from Canadian research. Wilt, rust pasmo disease, lodging and late maturity are some of the posers that have been mastered in flax. Plant breeders are helping to establish rape as a valuable oilseed crop and, on a smaller scale, safflower and sunflower crops for edible uses. More than 80 new varieties of crops have been developed and put into commercial production in the past five years.

In livestock, the main lines of progress are through genetics and nutrition and the main subjects are dairy and beef cattle, pigs, poultry and sheep. The advantages of selective breeding have been evidenced through the records of animals tested for many years. CDA itself developed a new breed of hog, the Lacombe, which is proving a worthy addition to the old-time breeds. Romnelet, a range-type sheep, was also an outcome of federal breeding programs. Crosses of several meat-type strains of chickens made at federal institutions have led to performance superior to that of pure strains.