

selective breeding have been evidenced through the records of animals tested for many years. The CDA 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. Extensive studies on the causes and control of diseases and parasites of livestock, fur bearing animals and wildlife are carried on with the result that epidemic outbreaks rarely occur and when they do are quickly suppressed. Live animals and meats must attain the high standards required in the export trade.

A matter of constant concern is the protection of crops from diseases and pests. Chemicals have proved to be potent weapons but there is also a continuing search for other control methods. Many weeds can be eradicated by proper tillage and cropping methods and a few have been controlled by insects that feed on them exclusively and destroy them. Fungus diseases may be checked by developing resistant varieties of crops. In biological control, parasites or predators are produced and released to prey on certain insects and eliminate them. Sterilization of male insects by radiation or chemical means is another method used to reduce insects of various kinds.

An area of special interest is that of farm mechanization in which there has been tremendous development in the past 60 years. The Research Branch is expanding its studies in this field at the Engineering Research Service in Ottawa and in the Maritime Provinces, and universities are being encouraged to study the subject more intensively.

Soil surveys are conducted in all provinces in co-operation with provincial departments of agriculture and the universities. Soils are examined and classified as to their chemical and physical characteristics and potential productivity. The resulting information is of inestimable value in setting up land uses under the ARDA program administered by the Department of Forestry and Rural Development (see pp. 470-471). Soil fertility is under study at many experimental farms and at research stations and is undertaken in close co-operation with the universities. Agrometeorology, a relatively new science, is opening new opportunities to growers to make the best use of the heat, light and moisture available in each farm area.

Although most agricultural research is carried out by the CDA, important programs are also undertaken by the provincial governments and agricultural colleges. Close liaison exists between these different agencies to avoid duplication and to ensure that the services offered by the Federal Government through provincial extension officers are of the kind needed by farmers. Federal research establishments across the country are represented on provincial committees concerned with field crop varieties, fertilizer practices, soil fertility, spray programs, field crop and animal management, and horticulture. Such collaboration ensures that new practices discovered by research are brought quickly to the attention of extension groups to recommend for local use.

The Grain Research Laboratory.—This 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.

Health of Animals Branch.—This Branch administers the Animal Contagious Diseases Act, the Meat Inspection Act and the Humane Slaughter of Food Animals Act, and operates laboratories for the study of animal diseases. Contagious diseases of animals are controlled through preventive measures of inspection and quarantine of imported livestock and restricted commodities such as meat, farm products and other possible sources of infection; through conducting disease eradication programs, notably of bovine tuberculosis, brucellosis and Johne's disease; through the control and eradication of serious