The two main divisions of the Department that carry on such work are the Science Service and the Experimental Farms Service. A somewhat detailed description of the work of the Science Service appeared in the Canada Year Book 1950, on pp. 406-409, and an outline of the organization and accomplishments of the Dominion Experimental Farms will be found at pp. 349-352 of the 1948-49 edition.

THE MAJOR SOIL ZONES AND REGIONS OF CANADA*

The nature and distribution of the different soils in Canada is governed by a number of major soil-forming factors, the most important of which are: climate, vegetation, soil parent materials, drainage and relief and the age of the soil. In many of the more intensely developed agricultural areas the natural characteristics of the soil have been modified to a greater or less extent by man. On the basis of general similarities between soils and on the basis of the general pattern that different kinds of soils form, a number of major soil zones and regions have been recognized in Canada. These major zones are outlined on the map facing p. 356.

One of the most important soil boundaries in Canada corresponds closely to the southern limits of the Precambrian Shield. The area to the north of this line covers approximately 50 p.c. of the land surface but the extent of land suitable for agriculture in this region is very limited. The Cordilleran region, in which agricultural development is confined mainly to the more fertile valleys and the smoother plateaux, covers approximately another 14 p.c. of Canada's land surface.

Most of the soils suitable for agriculture lie south of the Precambrian Shield and to the east of the Cordilleran Region. This area has been subdivided into a number of different soil zones and regions. The zones generally coincide closely with broad climatic and vegetative regions and hence the types of agriculture that can be practised and the kinds of crops that can be grown successfully are related to the major soil zones. Many of the soils within a zone have certain common characteristics typical of the particular zone. These "zonal" soils often form characteristic land patterns with other local soils which may differ considerably in some particular features.

In the area south of the Precambrian Shield there are three major soil zones in the region where grasses were the dominant natural vegetation. These three zones have been designated, after the prevailing colour of the surface soils, as: Brown, Dark Brown and Black Soil Zones. The forested region south of the Shield has been subdivided into six soil zones or areas which are: Degraded Black, Grey-Wooded, High Lime, Grey-Brown Podzolic, Grey-Brown Podzolic-Podzol Transition and Podzol Zones.

Brown Soil Zone.—This Zone occurs in the drier sections of the three Prairie Provinces which have a native vegetation of short grasses. It covers approximately 34,000,000 acres. The typical surface soil is brown in colour and is on the average thinner and lower in organic matter and nitrogen than any of the other prairie soils. The soils may vary in texture from sand to clay. A layer of lime accumulation is generally found at depths from 6 to 12 inches. Poorly drained depressions in this Zone are generally saline. Solonetzic soils (with heavy, compacted subsurface horizon or hard pan and with salty subsoils) are frequently found in this Zone.

The heavier soils in this Zone are generally used for wheat production, while much of the lighter land is devoted to cattle ranching. Irrigation is more effective than in any of the other soil zones in the grassland region.

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