

In the field of geodetic surveys, the Department maintains and extends a network of horizontal and vertical control points across Canada. The Geodetic Survey is working on the extension of precise control in the north, and the greater density in the south. Its ultimate aim is to have horizontal and vertical control points no farther apart than 20 miles.

The Topographical Survey is pressing ahead with the topographical mapping of the country at the medium scale of 1:250,000 or about four miles to the inch, which it hopes to have completed in 1967. Nearly 700 of the 925 maps planned are available. It is also producing maps at larger scales, particularly of densely settled areas and for resource development.

The Department carries out legal surveys on Crown lands, such as the two northern territories, National Parks and Indian reserves, and produces the requisite plans. It is also responsible for the preparation of descriptions and diagrams of federal electoral districts, and co-operates with the provinces in the survey and demarcation of inter-provincial boundaries. The survey of the northern boundaries of British Columbia and the Prairie Provinces, for example, started in 1899 and was completed in 1963. The Department also contains the Canadian section of the International Boundary Commission; the Canadian Commissioner and his staff look after the maintenance of international boundary monuments and the boundary vista, and maintain a set of maps and survey records.

Another active field of mapping is the production of aeronautical charts, which are used by aircraft pilots, and show airports, airways and all the radio and other aids necessary for air navigation.

As a service to map-makers and others interested in that field, the Department maintains the National Air Photo Library, a collection of all air photographs taken by or for the Federal Government.

To carry out its hydrographic and oceanographic surveys, the Department has a fleet of ships and launches. Five vessels are based at the Bedford Institute of Oceanography at Dartmouth, N.S., and four at Victoria, B.C. Twelve more ships are planned to cope with the continuing increase in the already high demand for marine charts and information.

The Geological Survey each year places about 100 parties in the field, about half of whom are engaged in reconnaissance mapping. Geological surveys are carried out chiefly to provide an inventory of the potential mineral resources of Canada, to aid in the discovery of mineral deposits, and to help in other aspects of the national economy that are influenced by geological factors. Geologists have mapped about 70 p.c. of the country at scales no smaller than eight miles to the inch.

Both the Geological Survey and the Observatories Branch carry out geophysical surveys.* The geologists use geophysical methods, such as aeromagnetic, seismic and gravity measurements, as an aid in outlining geological features. The geophysicists of the Observatories Branch are concerned with fundamental features, independently of their immediate geological interest. They publish gravity maps at a scale of 1:500,000 and sets of charts of geomagnetism at 100 miles to the inch, and maintain a network of 19 permanent seismological observatories to produce earthquake-probability maps and other studies of the relationship between the structure of the earth and the propagation of seismic shock waves.

In the field of geographical mapping, the Department's geographers produce special maps showing land use; they survey land forms in the Arctic, where ice formation produces surface dislocations found in few other areas; and they also act as the executive arm of the Canadian Permanent Committee on Geographical Names.

* See also Chapter VIII, Sect. 4.