

greatly aid prospecting for uranium. More sophisticated gamma ray spectrometers are now being developed to give quantitative field determinations of the uranium, thorium and potassium content of rocks.

The foregoing are only brief sketches of the subjects covered. Further condensed information is supplied by *Geology and Economic Minerals of Canada* (including Map 1045A) and *Prospecting in Canada*; the latter also contains chapters on the principles of geology and on minerals and rocks. *The Geological Map of Canada* (1045A, 50 cents) and *Canada, Principal Mining Area* (900A) are also recommended. Map 900A is revised annually; one copy is sent free to residents of Canada and additional copies are 25 cents each. These publications can be ordered from the Director, Geological Survey of Canada, Ottawa, together with lists of reports and maps of the Geological Survey of Canada on specific topics and areas, for each province. Other publications are available from provincial mines departments.

Section 3.—Federal Government Surveying and Mapping*

The needs for maps and surveys of Canada are met mainly by the Department of Energy, Mines and Resources. Although not all Branches of this Department make surveys and compile maps, many of them are involved in such work either wholly or partly. They compile topographical, geological and aeromagnetic maps, aeronautical and hydrographic charts, as well as specialized maps showing electoral district boundaries, land use and other features. In carrying out these tasks, the Department is guided partly by long-range plans based on general national needs and partly by requests from private enterprise and other government agencies. Some types of maps and surveys are also produced by provincial and private agencies and, to avoid duplication, the Department co-ordinates its work with these bodies. Other types—such as hydrographic and aeronautical charts—are produced exclusively by the Department.

The staff of the Department numbers about 4,000, of whom 1,000 are scientists and engineers and 1,300 are technicians. Each year, some 1,500 men are sent into the field to make surveys and to carry out research. Of the various Branches and Divisions, the following are particularly concerned with surveying and mapping: Surveys and Mapping Branch (geodetic and topographic surveys, electoral maps, aeronautical charts); Marine Sciences Branch (hydrographic charts of seacoasts and inland navigable waters); Geological Survey of Canada (geological features); Observatories Branch (geophysical maps); and Geographical Branch (land-use, land-form and other special maps).

Types of Surveys.—In the field of geodesy, the Geodetic Survey maintains and extends a network of horizontal and vertical control points across Canada. At present, most of the extension work is in the northern parts of the country, while in the south greater density and the closing of gaps are the main tasks. The ultimate aim is to have horizontal and vertical control points no farther apart than 20 miles. The Topographical Survey is proceeding with the establishment of control points at smaller intervals and the mapping of the country at the most popular scales—1:25,000, 1:50,000 and 1:250,000. Complete coverage of Canada at 1:250,000, or about four miles to the inch, is expected by 1967; of the 925 maps required for this purpose, more than 800 were completed by early 1966. Of particular interest in both geodetic and topographical surveying is the establishment of monumented control points in and around municipalities, a long-neglected and urgently needed task.

The Department also carries out legal or property surveys on Crown lands, such as the two northern Territories, the National Parks and Indian reserves; it participates in the

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