

## VAST SURVEY PROGRAMME

Come spring and "break-up time", Canadian Government geologists are heading back into the field to lay bare the geological secrets of thousands more square miles of Canada's 3.8 million square miles of territory.

The Department of Mines and Technical Surveys announces that this year 72 parties of the Geological Survey of Canada will fan out into each province and territory and penetrate into the Arctic Islands to within 600 miles of the North Pole.

Their assignments run the gamut of geological investigations from the reconnaissance mapping, by helicopter, of Canada's great northern regions to mapping the surficial geology of the Ottawa area to bring peace of mind to industry and residents alike contemplating construction in the Capital City area.

Survey geologists will work with the most modern of tools, the helicopter in the Upper Mackenzie River basin and in the hinterlands of New Quebec, and the airborne magnetometer in northern Manitoba. At the same time, they will continue to use the pack horse in the mountains and the canoe on northern streams.

Their methods will range from the time-worn study and sampling of outcrops in areas where outcrops occur to geochemical research and exploration in New Brunswick and Nova Scotia. Wherever they are and whatever their task, they will cope with the vagaries of the weather while trying to gather as much information as possible in an already too short field season.

### MAPPING BY HELICOPTER

The Survey's 1957 field programme features two large helicopter projects, Operation Mackenzie and Operation Fort George.

In Operation Mackenzie, nine officers of the Geological Survey and nine student assistants will use helicopters to help map 100,000 square miles of promising oil and gas territory in the Upper Mackenzie River basin in the Northwest Territories lying between latitudes 60 and 64 degrees and extending from longitude 126 degrees to the western edge of the Canadian Shield. The extensive search for new sources of oil and gas in Western Canada has spread into the Peace River area and into the Northwest Territories and industry is already actively exploring the territory to be covered by Operation Mackenzie. The region is known to be underlain by rocks similar to those in which producing wells have been found in Alberta and to the northwest at Norman Wells. A promising gas discovery was made in the area in 1955. The Geological Survey has done little work in the area since 1923.

In Operation Fort George, three Geological Survey officers and three geological assis-

tants will map by helicopter from 35,000 to 40,000 square miles of a 300-mile by 400-mile block of Quebec lying between latitudes 52 and 56 degrees and extending from the Hudson and James Bay coast inland to longitude 68 degrees. This is part of the largest unmapped area in the Canadian Shield. Interest in the area's mineral potential has increased greatly since the recent discovery of important nickel deposits 300 miles to the north. This is an opportune time for the Operation as the party will be able to make use of facilities made available by the construction of the Mid-Canada Line. The Operation is a two-year project and will be continued in 1958.

### AEROMAGNETIC SURVEYS

In northern Manitoba, a party will carry out the aeromagnetic mapping of another unmapped area in the Canadian Shield, a strip one degree wide lying along the Manitoba-Northwest Territories border. Similar work was done immediately to the south in 1956. The resulting aeromagnetic maps will serve as temporary substitutes for reconnaissance geological mapping and will facilitate future ground mapping in the area.

### OTHER SURVEYS

Of the many problems dumped into the lap of the Geological Survey of Canada each year for solution, those connected with surficial geology are becoming increasingly numerous. The rapid growth in Canada's population and the extensive construction under way throughout the country are underlining the vital need for information on sources of groundwater supplies and of construction materials, the outlining of new agricultural areas, and for data on the nature of the earth's surficial deposits in relation to engineering projects.

Ottawa has been earmarked for a surficial geology study. The continued high pace of construction activity in the Capital City area has given rise to hundreds of phone calls from industry and residents for information on foundation problems and available sources of ground water in relation to building in certain parts of the area. The value of surficial geology studies is emphasized by the decided settling of the National Museum building. If such information had been available at the time of its erection in 1912, this settling might have been avoided.

In Nova Scotia and New Brunswick, the Survey will carry out extensive geochemical surveys, analyzing stream and lake waters, soils, and the sediments laid down by streams as a means of locating and outlining areas likely to contain base-metal deposits.