was done at a much lower cost. *Operation Keewatin* showed that 25 p.c. or approximately 14,000 sq. miles of the area mapped is favourable for prospecting, a high percentage when compared with some of the better known favourable areas in more southerly regions.

In *Operation Baker* in 1954 five geologists, using helicopters, mapped 67,000 sq. miles of territory in the central part of the District of Keewatin just north of the territory covered in *Operation Keewatin*. In 1955 the Survey carried out two similar projects, *Operation Franklin* in the Queen Elizabeth Islands, the largest operation of its kind ever attempted, and *Operation Thelon* in the District of Mackenzie in the Northwest Territories.

In *Operation Franklin* seven departmental geologists, four seasonal geologists and ten student assistants trained in geology mapped 100,000 sq. miles of land on the Queen Elizabeth Islands in the District of Franklin. The entire project was airborne, the two helicopters used for the geological mapping being among the largest in commercial operation. Working from its main base at Resolute Bay the party set up subsidiary bases east of Resolute Bay, moving northward and then westward as the sea ice broke up. It examined the main geological zones of the Islands, investigated local geology for possibilities of mineral occurrences particularly of oil and gas and made detailed studies at scores of points, some within 600 miles of the North Pole. The party found numerous coal seams and several extensive areas that could be explored for oil. In *Operation Thelon* five geologists mapped a 60,000 sq. mile area in the southeast part of the District of Mackenzie in the Northwest Territories and reports on the findings in both operations are being prepared. The Survey has thus gained in a few years a considerable knowledge of the prospects for minerals in areas totalling 184,000 sq. miles north of the 60th parallel of latitude and between Hudson Bay and Great Slave Lake in the Northwest Territories, and of 100,000 sq. miles of territory in the Arctic Islands.

The Geological Survey has also met with considerable success in using helicopters for reconnaissance mapping in the rugged mountain areas of British Columbia where ground methods are impracticable. It also used helicopters to map a timbered area of Cape Breton Island in Nova Scotia in 1954, affording operational experience in the use of these machines in such areas.

The Survey does a certain amount of airborne magnetometer work each year. In this work the aeroplane is equipped with instruments that record total magnetic force of the rocks over which the aircraft is flown, even if the rocks are buried beneath heavy overburden. Areas of high magnetic intensity or 'anomalies' may indicate the presence of mineral deposits. The Geological Survey publishes the information thus secured in the form of aeromagnetic maps and these have proved to be valuable guides in the search for mineral wealth. The iron ore deposits now being mined at Marmora in southeastern Ontario were brought to light as a result of such a survey. They were covered with 100 feet of limestone which had to be removed to permit mining.

Although the Geological Survey placed fewer parties in the field in 1955 the increased use of aircraft resulted in the coverage of an area greatly in excess of that of any previous year and almost completed the geological reconnaissance of the Canadian Shield south of latitude 66°

In its survey of the physical geography of northern regions the Geographical Branch makes extensive use of aerial photography to study, in the office, key areas so as to interpret the character of the terrain. This work, which is supplemented with ground studies to prove the correctness of the deductions, has proved particularly useful for selecting base and station locations in the construction of northern defence lines.