thirty miles in length can be set up with a minimum of difficulty. Among results to date are a determination of the thickness of the crust of twenty-five miles, with a less complex structure than had originally been supposed. Similar methods have been applied experimentally to problems of economic geology and plans are under way to investigate the subsurface structure of a portion of the Continental Shelf of Eastern Canada.

Geophysical Work of the Geological Survey

The Geophysics Division of the Geological Survey of Canada maintains a Canso aircraft for the purpose of flying an ASQ-3 magnetometer and AEP1903R Mark II scintillation counter. Regional surveys of approximately 40,000 line miles are flown each year. The magnetic data are compiled and published by the staff of the Geological Survey in the form of aeromagnetic maps. The radioactive data are being compiled and will be published in the form of maps on a scale of eight or sixteen miles to the inch. These gamma radiation maps will make it possible to compare the radioactivity of different rock types over broad areas and to compare the general background activity of different geological provinces.

The Geological Survey has started a program of interpreting the aeromagnetic data in relation to the geology on a regional basis. For the past two summers work has been carried on in the Eastern Townships of Quebec. One negative anomaly, the Yamaska, is being studied in detail in relation to the ratio of oxide minerals of iron and titanium, namely, hematite, ilmenite and magnetite. Remanent magnetism and magnetic susceptibility, chemical and petrographic investigations are being made.

Equipment for the study and investigation of physical properties of rocks is being constructed in the Geophysical Laboratories. It is planned to compare the magnetic susceptibility as measured by an astatic method with that as measured by the alternating current method. Also by magnitude and phase relationships in the alternating current method, the conductivity and dielectric constant of rock materials will be separated and analyzed over a range of frequencies. This will be a valuable aid in interpreting electromagnetic data for prospecting for massive sulphide conductors. Eventually physical rock properties will be published for typical rocks in areas that have been flown with the airborne magnetometer.

Geophysics at Canadian Universities

The teaching of geophysics in Canadian universities can be said to have started at McGill University, Montreal, Que., about 1926 when the late Professor A. S. Eve and Dr. D. A. Keys, now Vice-President of the National Research Council, were invited by the United States Bureau of Mines and by the Geological Survey of Canada to investigate geophysical methods of prospecting for minerals. They started to give courses which are still being conducted and wrote one of the standard textbooks on the subject, *Applied Geophysics* (now in its 4th edition). Their example was soon followed elsewhere in eastern Canada and courses in prospecting for minerals have been given for some years now at Laval University, Quebec, Que.; the University of Montreal, Montreal, Que.; Dalhousie University, Halifax, N.S.; and the University of New Brunswick, Fredericton, N.B. The maritime location of St. Francis Xavier (Antigonish, N.S.) and Dalhousie Universities has led to their co-operation with the Federal Government in oceanographic studies and the latter also maintains a government seismograph station for recording earthquakes.

Professor L. Gilchrist of the University of Toronto was early invited to join Professors Eve and Keys and, as a result, courses were started at Toronto from which more than one hundred and fifty men, twenty-five with Doctorate degrees, have graduated as specialists in geophysical prospecting—most of them within the past ten years. They are now taking part in the search by new methods for minerals and oil in Canada. A well equipped laboratory has also been established for measuring the age of ancient minerals and rocks by