

For a complete history of seismology in Canada, see pp. 7-9 of the 1943-44 edition of the Year Book.

There are at present, six permanent seismograph stations located in Canada. The control station is at the Dominion Observatory in Ottawa, Ont. There are stations operated by Dalhousie University at Halifax, N.S., by the University of Saskatchewan at Saskatoon, Sask., by the Dominion Astrophysical Observatory at Victoria, B.C., and by the Shawinigan Water and Power Company at Shawinigan Falls and Seven Falls, Que. All of these stations send their seismograms to Ottawa for study. From these records all the earthquakes recorded are listed and monthly bulletins are forwarded to most of the seismograph stations of the world. Those earthquakes which are called "local", that is they originate in this eastern part of North America, are reported to a central station at Boston, Mass., to be included in a special monthly bulletin. Any strong shock within Canadian borders is investigated and its place of origin is definitely located both by field study and by a mathematical solution from the seismograms available. In this regard, detailed studies have been made of the St. Lawrence earthquake of 1925, the Grand Banks earthquake of 1929, the Temiskaming earthquake of 1935, the Cornwall-Massena earthquake of 1944, and the British Columbia earthquake of 1946. In the case of the last two the mathematical solution of the epicentre from seismograms is now proceeding.

In order that the crustal structure of the Canadian Shield may be thoroughly studied a new program has been organized. From time to time, some of the mines at Kirkland Lake, Ont., suffer what is known as a rockburst. Some of these bursts have sufficient energy to record on seismographs up to 500 or 600 miles. These bursts, besides giving a record similar to that of an earthquake, have the feature that their exact location and depth are known. So that if seismograph stations are established, one at the mine to record the time of the burst, and several others along a line, a time-distance curve may be drawn up on which both time and distance are accurately known. From this curve and some mathematical calculation the depths of the various layers in the earth beneath the area studied are known. For this purpose a permanent seismograph station at Kirkland Lake has been established, and two other stations are operating on a semi-permanent basis between Ottawa and Kirkland Lake. This program promises to yield valuable scientific data for the future study of earthquakes in the area of the Canadian Shield and to give an accurate picture of the earth structure immediately beneath.

A modified form of seismograph is used for seismic prospecting. Dynamite is detonated in specially drilled holes and the resulting shock waves are recorded on seismographs at measured distances. A study made of the records obtained yields information which leads to the location of subsurface structures including those likely to contain oil or natural gas. Such work is being done more and more in the oil fields in southern Alberta and is responsible in some part for the recent discovery of new productive areas. The Dominion Observatory has had an observer attached to several of these surveys and at all times the seismologists endeavour to keep posted on the developments in this application of seismology.

The Seismological Service of Canada co-operates with seismograph stations from all parts of the world in supplying data and records for study of various earthquakes and, in return, co-operation is obtained from them in the obtaining of data for large Canadian earthquakes. The Bibliography of Seismology, a bi-annual publication of the Dominion Observatory listing all the articles on the subject for ready reference, is distributed to seismologists in every country.