

improvement must be through taking account of the depth of the origin—the 'focal depth'. The point within the earth from which the energy of an earthquake is liberated is called the 'focus'; the point vertically above the focus, on the surface, the 'epicentre'.

The records of seismographs within five hundred miles of an earthquake are used to determine the epicentre, focal depth, and focal time. These same stations, together with the others at distances up to the antipodes of an earthquake, are used to determine arrival times for making up the time-distance curves. The curves themselves are the point of departure for a study of the earth's crust and deep interior.

Seismological records for Canada previous to the beginning of the present century are mostly to be found in historical documents. Such are the only reports of a great earthquake which disturbed Eastern Canada from above Montreal to below Quebec during the first part of the year 1663. Other earthquakes in Eastern Canada, for which similar records alone are available, occurred in 1732, 1791, 1860, and 1870. In 1925 another earthquake took place in the same region. It was the subject of careful study by the Seismological Division of the Dominion Observatory and several reports were published. Another which occurred near Timiskaming, Que., on Nov. 1, 1935, was also carefully studied. It is known that the earthquakes of 1925 and 1935 were felt over wide areas. The former was reported from Duluth to Halifax and from the Arctic to the Carolinas. The latter was felt even farther west and as far south as Virginia. Many small earthquakes are experienced in Eastern Canada from time to time. Those previous to 1906 are listed from historical records. The subsequent ones have been recorded on seismographs. A network of stations in Canada and New England has been formed into an association for studying these shocks. It is known as the North Eastern Seismological Association or, briefly, NESA.

The only other regions of Canada where earthquakes are sometimes experienced are British Columbia and the Arctic. The earthquakes in the west have been mostly centred near the Queen Charlotte Islands and, within the brief span during which records are available, none has been severe. A severe earthquake occurred off Banks Island in the Arctic in 1920 and three of great intensity have since been centred in Baffin Bay. The first of these occurred on Nov. 20, 1933.

Previous to Dec. 1, 1936, two Government Departments carried on seismological investigations in Canada. Seismological stations were established at Toronto (1897), and at Victoria (1898), each under the auspices of the Meteorological Service. Stations at Ottawa (1905), Halifax (1915), Saskatoon (1915), Shawinigan Falls (1927), and Seven Falls (1927) were established by the Dominion Observatory. The stations at Halifax and at Saskatoon are maintained, respectively, with the co-operation of Dalhousie University and the University of Saskatchewan. The stations at Shawinigan Falls and at Seven Falls are maintained with the co-operation of the Shawinigan Water and Power Company. The Victoria station is now operated with the co-operation of the Dominion Astrophysical Observatory. A station designed for special research was opened in 1939 at Kirkland Lake, Ont., with the co-operation of Lake Shore Mines.