The seismographs employed have been improved greatly since the first world chain of stations was established in 1896 by John Milne under the auspices of the British Association for the Advancement of Science. The instruments now used in Canada are Milne-Shaw, Wood-Anderson, and Mainka horizontals; Wiechert, and Benioff verticals. It is planned to modify the Mainka and Wiechert instruments for photographic recording, and electro-magnetic damping; the others are already of that type.

Seismological instruments have been modified for recording the earth tremors sent out by explosives detonated for the purpose of studying the earth structure near the surface (to a depth of about two miles). A technique has been developed for making use of this equipment to trace sub-surface contours. Such information is useful in locating oil deposits and, to a lesser degree, fault zones in which minerals may be found. Some work of this nature has been done in Canada, but only by trained groups of operators hired from companies outside Canada. In some cases the Dominion Observatory has been represented by an observer attached to the group. The officers of that institution endeavour to keep themselves posted as to the developments in this important application of seismology but, as yet, no work of this kind has been developed in Canada.

The Seismological Service of Canada, as now organized, has its central station at Ottawa. The records are developed at the auxiliary stations and sent to Ottawa for reading and the publication of reports. Seismological research is carried on at the Dominion Observatory and international co-operation in seismological work is there arranged.

PART IV.—THE FLORA OF CANADA.*

NOTE.—Bibliographical references are indicated by arabic numerals and run consecutively throughout the article; corresponding notes are listed in the Bibliography at the end, pp. 56 to 59. Textual footnotes to individual pages are indicated by symbols.

The Dominion of Canada extends from Pelee island in lake Erie, a little south of latitude 42°, to the northern end of Ellesmere island in latitude 83°, that is, a distance in a north and south direction of about 2,800 miles. In an east and west direction, the distance from the Atlantic to the Pacific ocean is about 3,000 miles. In a country of such great extent there are naturally wide variations of climate such as the mild, equable, ocean climate of Vancouver island and the southwestern mainland, the warm, temperate climate of the lake Erie region, the dry, interior continental climate with wide extremes of heat and cold of the central prairie regions, and the rigours of the Arctic islands, to mention only a few outstanding variations. As might be expected, the range of flora in such a country is very wide and in the present age of specialized studies it would hardly be possible for one writer to do justice even to the highest group, namely, the seed-plants. If, in addition, cognizance is taken of the various groups of cryptogams—the mosses, fungi, etc.—it will be realized that all that can reasonably be attempted in an article such as this is a summary of some of the more important botanical features of different regions and an indication of what has been accomplished in regard to the study of the distribution in Canada of the various subdivisions of the plant kingdom. Any attempt to explain the origin of the various floral groups in Canada with reference to changes in geological time and to correlate their affinities with the plants of other countries (more particularly with those of the United States, Eastern Siberia, and Arctic Europe) would require specialized knowledge of each group and a much more intensive study of their local and general distribution than has hitherto been achieved.

* Prepared by John Adams, M.A. (Cantab.), Division of Botany, Experimental Farm, Ottawa.