

Preliminary Report of the Earthquake of February 28, 1925
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THE data given in this preliminary report was gathered during a trip of investigation covering the north shore of the St. Lawrence between Quebec and Murray Bay, the south shore from Levis to Trois Pistoles, and the Lake St. John region as far east as Ha Ha Bay. The two chief objects were the listing of evidence indicating the epicentre, or origin, and an examination into the truth of the reports of damage sustained. The first object has been attained in a tentative way, the second fairly definitely for the area concerned.

Without going into details it may be said that at present it is thought that the epicentre is in the mountainous region near the eastern boundary of the Laurentides Park. However, that section of the country is practically inaccessible at this season, and data can be better gathered there later, if promised reports from lumbering companies, together with other information already accumulated or still to come should not serve to settle the question definitely.

The fact must be recognized that considerable serious damage was done at several points; on the other hand, many of the reports were exaggerated and some were pure inventions. The damage was not so much a function of the distance from the epicentre as of the nature of the ground and the character of the buildings. The major damages, described in more detail below, were at Quebec, Shawinigan Falls, Malbaie, St. Urbain, and the district near Riviere Ouelle. They were in no case widespread or general, and applied in most cases to massive stone structures, without steel reinforcement, such as churches. Minor damages, such as falling of chimneys and breaking of windows, were somewhat more common. As the character of the ground was more rocky or the distance from the epicentre was greater the minor damages were limited to those caused by falling pictures, statues, bottles, etc. When the damage was relatively serious the ground was found in every case to be sand or clay, usually on the side of a hill.

As in the case of all earthquakes of any considerable intensity, the main shock has been followed by a series of minor ones which are still felt at intervals. Earthquakes have occurred before in this region, the last severe one about half a century ago. Now that the accumulated stresses have, in all probability, been relieved, there is no occasion to anticipate further serious disturbances during the present generation. As an insurance for posterity however, it would be well to pay some attention to location and methods of construction of new buildings. Where these are massive, and of stone or concrete construction without reinforcement by steel girders, it is preferable to have the foundation on rock or other solid substratum. Wooden or steel reinforced buildings are safe.

The major damages noted are as follows: At Malbaie the Charlevoix Palais de Justice was severely shaken and the walls cracked. About two miles farther east an old manor house was badly damaged. Both these buildings are of massive stone construction and both stand on sand and on or near a slope. Other buildings in the same region much less solidly built but standing on rock, are not damaged. The church at St. Urbain is very old. It was so badly broken that it is now being torn down. It stood on sand but on a plain. The church at Riviere Ouelle is also wrecked. The stones in the adjoining graveyard are nearly all levelled. There are two old stonehouses within about a mile of this church which have been abandoned since the earthquake. The west wall of the C.N.R. station at Riviere Ouelle was wrecked. Some damage has been done to the walls of the stations, houses at St. Pacome, Ste. Anne de la Pocatiere, and St. Louis, but these might be listed as minor damages. At Quebec the grain elevator and Shed 29 at the harbour were badly damaged. As these structures are very heavy and were necessarily built on soft soil of considerable depth close to the river it is not to be wondered at that the ground settled slightly, that the concrete work was cracked, and the steel columns of the shed displaced. At the Palais station, Quebec, some slight damage was caused by the quake, the top rows of bricks in the layers of the north wall of the waiting-room being dislodged and some of the glass in the skylights broken. At Shawinigan Falls, St. Mark's Cathedral transept wall was broken, the solid brick wall falling to the south east. The walls of several houses on Hemlock St. were also broken. One fell completely and others partially. These houses are on a sandy soil and are built on the slope of a hill. Some damage was also reported at the Aluminum plant but there was not time to investigate this. 'No major damage was done in the Chicoutimi region.

If we class as minor damages such things as falling chimneys, broken panes of glass, the throwing down of bottles, packages, pictures, statues, etc., we find this sort of thing most common at Riviere Ouelle with close seconds at the adjoining parishes on the south shore down as far as Riviere du Loup, and at Baie St. Paul to beyond Tadoussac on the north shore. At Chicoutimi it was difficult to find anyone who had observed anything falling. Only a few cases were reported there and at Port Alfred.

The following reports were found to be untrue. The church at St. Hilarion did not fall nor was it damaged. The fires at St. Felician and Hoberville Stn (sic) were both burning before the earthquake. The \$10,000 fire reported to have occurred at St. Anne de la Pocatiere never happened at all. The reports of extensive damage at the church at Baie St. Paul are grossly exaggerated. There was no damage to the churches at Pointe au Pic or Malbaie although a statue in the churchyard at Pointe au Pic fell at the time of the quake. The reports that one death occurred at each of these points, Ste. Anne de la Parade (sic), Quebec, Chicoutimi, and Tadoussac were probably true, -but are no. indication of the intensity. Death in each case was reported due to shock. So far as call be learned not the slightest harm was done to any person physically by the quake other than in one case where a child was cut by a falling picture at Quebec. If any other casualties occurred they were not heard of during the trip. The report was that the river level fell on the St. Lawrence at the time of the earthquake is without foundation, the guage at Levis showing no permanent offset.

It may be remarked that information is still being accumulated from all over eastern Canada; and co-operation has been, arranged for from scientific institutions in the United States. This will take some considerable time to correlate. Seismograph records and reports from at least all Europe and America will have a bearing on the final deductions. It is proposed in due course to issue a. complete report as a Publication of the Dominion Observatory.

Respectfully submitted, ERNEST A. HODGSON. Seismologist.