

with the ocean and there would be no tides; so that the tides we measure at the present time are simply differential tides; differential tides of the water and of the earth. I may tell you that at the present moment we are having dug two vaults at the observatory for the installation of two new seismographs and instruments to aid in measuring the "give" of the earth by the attraction of the moon.

It remained for Professor Hecker, who has been engaged in measuring these tides of the earth, to discover a remarkable anomaly. The question arises, whether the earth is as squeezeable, if I may so term it, in one direction as another. Hecker found that the earth was evidently more elastic, more squeezeable, in the north and south direction than in the east and west direction. He submitted his theories and discoveries a few years ago to Professor Love, who threw out the suggestion that the apparent anomaly may be due to the effect of the oceanic tides. At the last meeting of the International Seismological Association, at Manchester, in 1911, this matter was brought up and it was then decided to make observations in several parts of the world with regard to these physical tides of the earth and the anomaly involved. The places selected are, one in the centre of South Africa, one in Siberia, one at Paris, and one in North America. For the last the above vaults are being built, and the Dominion Observatory will participate in this international investigation.

The effect of earthquakes is obvious to you all. If any of you made any enquiries regarding the recent earthquake here, you will find that the effects were different in different parts of the city. It all depends upon what the nature of the ground is, on which the houses stand. The disturbances of an earthquake depend primarily upon the acceleration or change of velocity. You can move an object a long way, even move a house without doing much damage, but when there is a rapid change of velocity, dire results may follow, although the actual motion itself is small. I recall one report of the recent earthquake given by a man, who said that it shook up his hens so much that they all immediately laid eggs and he had never had so many eggs on hand before. This was acceleration.

We had a disturbance in Canada some years ago, though the most famous one that we ever had was on Shrove Tuesday in 1663. Earthquakes in Eastern Canada are apt to take place along the St. Lawrence River, where our great geological fault in Canada is. Although we are not in a seismic region, yet should a severe earthquake take place, it will occur along the St. Lawrence and