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EARTHQUAKES OF EASTERN CANADA AND ADJACENT AREAS 1534 - 1927

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Earthquakes of Eastern Canada and Adjacent Areas, 1534-1927

By W. E. T. Smith

ABSTRACT: This is the first in a series of papers intended to contain the entire earthquake history of Eastern Canada. Much of the seismic activity in this area has occurred along the St. Lawrence River valley close to the international boundary. Therefore, in this initial part of the study, the area considered embraces northeastern North America and its adjacent waters, east of longitude 85°W and bounded by the 40th and 60th parallels.

Two lists have been compiled, one of earthquakes in Eastern Canada and the other of those in northeastern United States. From 1534 to 1927 there were 338 shocks in Eastern Canada and 417 in northeastern United States. Intensities, on the Modified Mercalli Scale of 1931, have been assigned to all shocks. Each list is accompanied by a geographical index. A map shows the positions of all earthquakes by symbols proportional in size to their intensities.

After each entry in the text all sources of information, in which the earthquake was mentioned, are indicated by letters and numbers which can readily be identified in the References. Many entries are accompanied by quotations from contemporary accounts.

RÉSUMÉ: Voici la première d'une série d'études qui engloberont tous les tremblements de terre qui se sont produits dans le passé dans l'Est canadien. L'activité séismique dans cette région se limite surtout à la zone qui longe la vallée du Saint-Laurent, à proximité de la frontière internationale. En conséquence, dans cette première partie de l'étude, la région étudiée comprend le Nord-Est de l'Amérique du Nord et les eaux adjacentes, à l'est du 85e méridien ouest et à l'intérieur des limites constituées par les 40e et 60e parallèles.

On a dressé deux listes, l'une pour les tremblements de terre survenus dans l'Est canadien et l'autre pour les tremblements de terre survenus dans le Nord-Est des États-Unis. Entre 1534 et 1927, il y a eu 338 secousses dans l'Est canadien et 417 dans le Nord-Est des États-Unis. Les intensités de tous les séismes ont été indiquées suivant l'Échelle modifiée de Mercalli (1931). Chaque liste s'accompagne d'un index géographique. Une carte indique les positions de tous les tremblements de terre à l'aide de symboles dont les dimensions varient suivant l'intensité.

Toutes les sources de renseignements où il est fait mention de chacun des tremblements de terre se trouvent indiquées dans le texte à l'aide de lettres et de nombres qui peuvent être facilement identifiés parmi les Références. Plusieurs cas de tremblements de terre s'accompagnent de citations tirées de récits de l'époque.

INTRODUCTION

For over fifty years seismologists at the Dominion Observatory have been accumulating and indexing all available data on earthquakes in Canada. This work was begun by the late Dr. O. J. Klotz in 1905, when he organized the Division of Seismology, Terrestrial Magnetism and Gravity. In 1917 Dr. Klotz was made Director of the Observatory, and the seismicity study became the responsibility of Dr. E. A. Hodgson, who was subsequently made Chief of the re-organized Division of Seismology—a position which he held until his retirement in 1952. The work has since continued under the direction of the present Chief of the Division, Dr. J. H. Hodgson.

During his long association with the Division of seismology Dr. E. A. Hodgson collected information on earthquakes in all parts of Canada including some 380 which occurred in Eastern Canada and adjacent areas prior to 1928. He assembled these data in a chronological card index with references to literature in which the details could be found. Further, he obtained many of the articles either as reprints or typewritten copies and conserved them in the pamphlet files of the Division. Similar records were compiled in the United States by Rev. Francis A. Tondorf, S. J., of Georgetown University, Prof. J. B. Woodworth of Harvard University, Prof. Harry Fielding Reid of Johns Hopkins University, and Cdr. N. H. Heck of the United States Coast and Geodetic Survey, but with differing perspectives. Cooperation among these and other seismologists augmented all their lists. Although some publicity (*H9*)* was given to the existence of Dr. Hodgson's records the full account was never published. The requirements of those times were adequately met by a number of papers on particular aspects of the seismic hazard. Some of these (*H10*, *H11*) contain detailed information on all large earthquakes in the area.

More recently, a complete seismic history became desirable for such applications as the formulation of building codes, the design of large-scale water power developments and actuarial studies for insurance purposes. Seismic activity west of longitude 113°W has been discussed in a series of papers by W. G. Milne, (*M8*, *M9*, *M10*, *M11*, *M12*). A similar study of the area east of 85°W has been undertaken by the writer. Seismic events to the end of 1927 make up the two lists in this paper. Both lists are historical and practically devoid of instrumental data. That beginning on page 275, is the first of a series for Eastern Canada. It will be brought up to date by future lists based largely on seismograph records. The other, beginning on page 289, is for northeastern United States. Each list is accompanied by a geographical index in sections of one degree latitude by one degree longitude and a composite map is in a pocket at the back.

Of the original 380 earthquakes in Dr. E. A. Hodgson's card index, 292 have here been given serial numbers in the appropriate lists. Fifty, which were small aftershocks of the 1727 Newbury earthquake, have been omitted. The remaining 38 have been listed without assigned numbers as aftershocks of the 1925 St. Lawrence earthquake felt only near the source of the main shock. It was found, as anticipated by Dr. Hodgson (*H9*), that "Each entry leads to

* See References.

55559-9—2

the investigation of other possible sources which, in turn yield further details." In this way the total number of entries has increased from 292 to 755. It is now felt that little if anything remains to be found. Where these early accounts clearly indicated exaggeration, or confusion over natural phenomena, they have been edited in such manner as to avoid misleading the reader.

The succeeding sections have been written with two aims, first to include all information germane to the reading of the lists and second to answer the more common questions that have been asked during interviews with potential users. It is hoped that this approach will in some measure enhance the value of the data presented.

SCOPE AND SOURCES

The present paper deals with those parts of Canada, the United States and their adjacent waters lying between longitudes 50°W and 85°W and between latitudes 40°N and 60°N. This includes eastern Ontario, Quebec, the Maritime Provinces and Newfoundland in Canada, and the New England states, New York and portions of New Jersey, Pennsylvania, Michigan, and Ohio in the United States. The main reason for the international coverage is that the boundary lies so close to the St. Lawrence Valley—a region of seismic activity—that this area cannot be properly studied without some knowledge of the activity across the border. However there are other contributing circumstances. The early colonization of New England and its rapid development afforded a greater chance for the preservation of old records. More early scientific papers were published in this area and they frequently carried data from Canada as well as New England. Since much of this material is on file at the Dominion Observatory, and had to be reviewed in any case, it was felt that it should all be published, though in two separate chronological lists—one for Eastern Canada and the other for northeastern United States.

Every effort was put forth to make the Canadian list exhaustive. As a matter of course, the coverage of the New England states and to a lesser degree of northern New York became fairly complete. The remaining United States territory—in particular northern Ohio—has been somewhat neglected. The aim of complete Canadian coverage has led to the inclusion in the Canadian list of those United States shocks felt also in Canada. Beside each of these, the United States list number is added in parenthesis as a reference to more detail. It should be noted that Canadian shocks felt also in the United States have not been similarly treated. Instead, they are indicated by numbers in an appendix to the United States list.

The period covered extends from the earliest tradition of an earthquake in the area about 1534 to the end of 1927. The terminal date was so chosen because it was the last year prior to the regular operation of sensitive short-period seismographs in Canada. This paper is therefore based on the following types of source material:

1. Newspaper clippings in various scrap books.
2. Reports of officials of religious, civil or military organizations. The Jesuit *Relations* as translated by Thwaits is the earliest Canadian source.
3. Diaries, letters and papers of individuals.
4. Scientific papers—particularly those of Brigham, Dawson, Heck, Humphreys, Kain, Neumann, Laflamme, Lancaster, Mather et al., McLeod and Callendar, Odenbach, Reid, Rockwood, Tondorf and Woodworth—in the References.
5. Long-period seismographs capable of recording only the larger tremors. These are discussed in the next section.

Considerable care has been taken to see that the lists are thoroughly documented. All sources where a shock has been found may be determined from the References through letters and figures inserted alphabetically after each entry. All quotations are similarly acknowledged.

INSTRUMENTS

The earliest reference to the use of seismological instruments in Canada occurs in a paper by Dawson (*D4*), where he says, "Note: A slight shock of earthquake was felt at Hawkesbury on the Ottawa on the 3rd January (1871). Dr. Smallwood states that though not appreciable in Montreal, it was indicated by the seismometer." No further information about this instrument could be found. McLeod and Callendar (*M5*), of McGill University, where apparently unaware of Dr. Smallwood's "seismometer" for they reproduced a record of the March 23, 1897, earthquake made on a Ewing seismograph and stated, "This earthquake is the first of which a record was obtained in Canada." Their Ewing seismograph was started automatically by the force of a shock and only operated on occasion. *A Milne seismograph was installed at Toronto in September, 1897. This was the first seismograph to record continuously in Canada. It was replaced by a pair of Milne-Shaw instruments in May, 1923.

In January, 1906, a pair of Bosch photographic seismographs began operation in Ottawa. In March 1912 an 80 kgm. vertical Wiechert was added. In 1915 a Mainka bifilar horizontal seismograph was installed at Dalhousie University in Halifax. During the same year a "Deformation Instrument" with a free period of about 30 seconds was set up at Ottawa. The Ottawa instruments were further augmented by two Milne-Shaw seismographs in 1922. From April 1925 until June 9, 1927, a Milne-Shaw was operated at Ste-Anne-de-la-Pocatière, Que., near the source of the February 28, 1925, earthquake. Unless otherwise stated the instruments mentioned in this section continued to operate through 1927. None of these instruments were well adapted to the recording of local tremors. However in the few instances where instrumental data were available they have been reinterpreted using the seismic velocities determined by J. H. Hodgson (*H12*, *H13*). More sensitive short-period seismographs were operating regularly by the beginning of 1928.

DATES AND TIMES

The source material for this paper came from different areas, not all of which reckoned time by the same calendar. The two calendars† in use prior to September 14, 1752, (Gregorian) were the Julian and Gregorian. The earth does not make a complete passage around the sun (one year) in

* Dr. E. A. Hodgson (*H4*) is the authority for the remainder of this discussion.

† The Encyclopaedia Britannica is the authority for this discussion of the calendars.

an integral number of days. In attempting to compensate for this, the Julian calendar was only partially successful. By 1582 it had fallen ten days behind the seasons. In that year Pope Gregory XIII introduced the calendar which bears his name. The new calendar was accepted at once in France and brought to New France by the colonists. However, it was not adopted by the British until the Act of 1750 which became effective in 1752, and omitted the days September 3 to September 13 inclusive. At the same time the legal year was made to commence January 1 instead of March 25. From 1582 to 1700 the calendar difference was ten days. However 1700 was a leap year in the Julian calendar and a common year in the Gregorian, so the difference became eleven days from then until 1752 when the Julian calendar was abolished.

From the above discussion of calendar changes it is obvious that the great earthquake of January 26, 1662, as reported from New England, is the same as that of February 5, 1663, as reported from New France. Accordingly, in this work any two shocks which differed in date by the amount of the calendar correction were carefully examined for points of similarity such as hour of occurrence, etc., and the sources of the reports were considered. In practically all cases their identity was satisfactorily established. In some older lists the dates were corrected but the "corrections" were erroneously applied to reports from New France as well. In this catalogue all dates are Gregorian. It is felt that no duplication occurs as a result of confusion over the calendars.

The clock times used are also somewhat uncertain but this is less important. Except for a few instances of Daylight Saving time which were converted to Standard time, all times herein are those in general use when and where the earthquake occurred. In early reports they are local times. In the nineteenth century some may be Eastern Railway time. After 1884 all are believed to be Standard time for the particular location. A few of the more recent were converted to Standard from Universal time as used in seismic bulletins.

RELATIVE SIZES OF EARTHQUAKES

It is the current practise to signify the severity of an earthquake by the *Instrumental Magnitude Scale* of Gutenberg and Richter (*G4*, *R3*), or the *Modified Mercalli Intensity Scale of 1931*, as set up by Wood and Neumann (*W2*).

The magnitude scale is designed to rate an earthquake in terms of the total energy released. In general the magnitude is independent of the position at which the instrumental observations are made, although small corrections for local conditions may be necessary. It is ideally suited for rating earthquakes in sparsely populated districts or those of submarine origin. Except in a few cases, there are insufficient instrumental data to enable magnitudes to be found for the shocks listed here. Consequently they have been assigned intensities.

Earthquake intensities are defined in terms of perceptible effects. They will, therefore, vary with the observer's position. Unless otherwise specified, intensities given in this catalogue are the maxima and refer to the centres of the respective disturbances. In each entry the intensity is indicated by a roman numeral following the time of occurrence. Originally quite a number of these shocks were rated by Rockwood (*R4*), on a scale of I to VI corresponding to a series of descriptive terms such as strong, severe, etc. Many

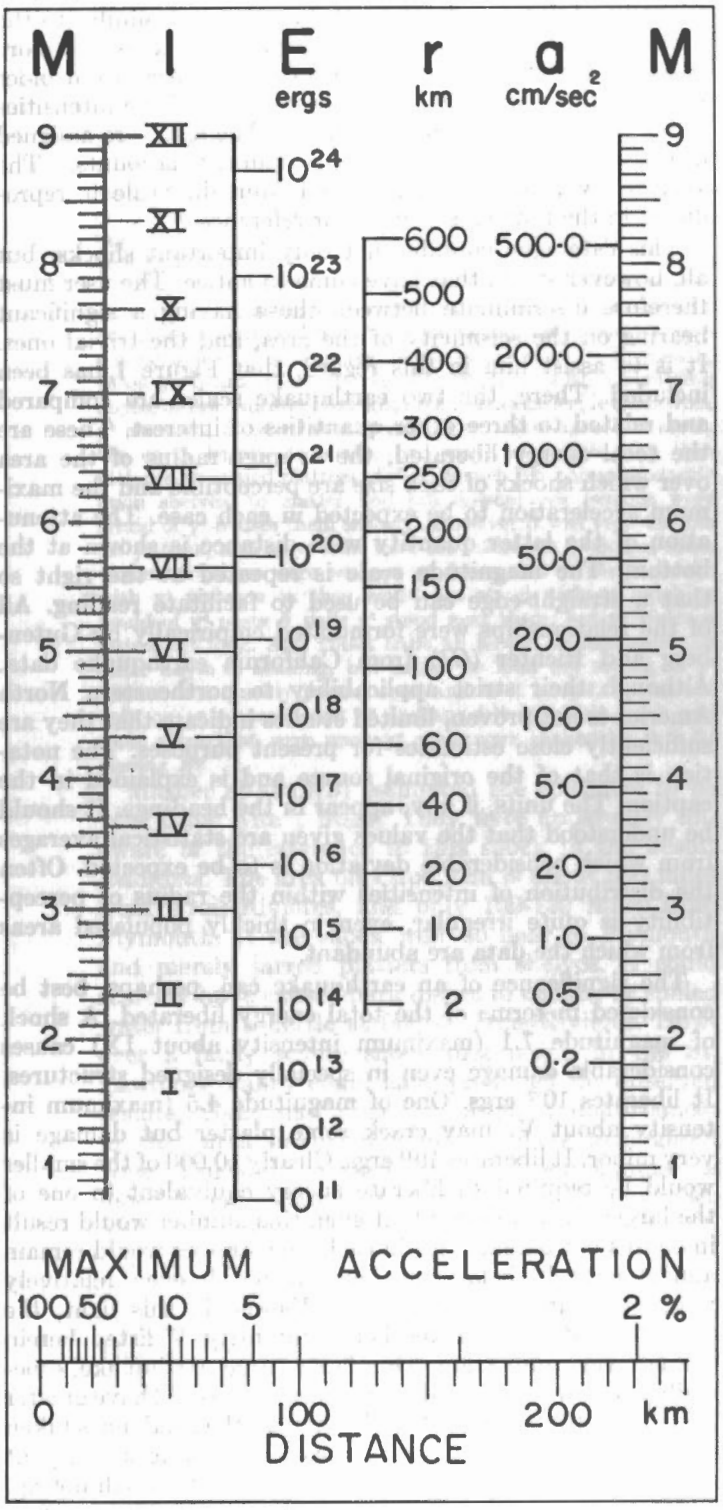

Figure 1. M is the magnitude on the Gutenberg and Richter scale; I is the maximum intensity on the modified Mercalli scale; E is the total energy; r is the radius of perceptibility, a is the maximum acceleration.

more were rated by Humphreys (*H15*), Mather (*M3*) and others, on the Rossi-Forel Scale of I to X. This scale is defined both by descriptive terms and by details of perceptibility and damage. In the latter respect it is similar to the Modified Mercalli Scale used at present. It is therefore possible, within limits, to transform intensities from older scales to the newer one. In this way many of the intensities in the present work were determined. The rest were assigned directly on the basis of contemporary accounts. The abridged version of the Modified Mercalli Scale is reproduced in the following section for reference.

This catalogue contains not only important shocks, but all, however small, that have come to notice. The user must therefore discriminate between those having a significant bearing on the seismicity of the area, and the trivial ones. It is to assist him in this regard, that Figure 1 has been included. There, the two earthquake scales are compared and related to three other quantities of interest. These are the total energy liberated, the average radius of the area over which shocks of each size are perceptible and the maximum acceleration to be expected in each case. The attenuation of the latter quantity with distance is shown at the bottom. The magnitude scale is repeated at the right so that a straight-edge can be used to facilitate reading. All of the relationships were formulated empirically by Gutenberg and Richter (*G4*) from California earthquake data. Although their strict applicability to northeastern North America is not proven, limited studies indicate that they are sufficiently close estimates for present purposes. The notation is that of the original source and is explained in the caption. The units, if any, appear in the headings. It should be understood that the values given are statistical averages from which considerable deviation is to be expected. Often the distribution of intensities within the radius of perceptibility is quite irregular, even in thickly populated areas from which the data are abundant.

The significance of an earthquake can, perhaps, best be considered in terms of the total energy liberated. A shock of magnitude 7.1 (maximum intensity about IX) causes considerable damage even in specially designed structures. It liberates 10^{22} ergs. One of magnitude 4.5 (maximum intensity about V) may crack some plaster but damage is very minor. It liberates 10^{18} ergs. Clearly 10,000 of the smaller would be required to liberate energy equivalent to one of the larger. It is unlikely that even this number would result in equivalent damage, for in each, the stresses would remain almost entirely below the level at which even relatively weak structures would fracture. Viewed in this light, the few hundred earthquakes below intensity V listed herein are not very important. One fairly large earthquake, especially in a new locality, added to these lists would have greater bearing on the seismicity study than all the small ones taken together. These are, however, proof of seismic activity at their respective locations, and in this sense are worth noting.

The size of each earthquake in these lists is related to the size of the symbol representing it on the map in the pocket, as shown by the diagram in the legend. There, it may be noted, both intensities and magnitudes are given. This is effected through the use of the equation: $M = 1 + 2I/3$ where M is the magnitude and I is the maximum intensity. It expresses the relationship between magnitude and intensity depicted in Figure 1.

MODIFIED MERCALLI INTENSITY SCALE OF 1931

(Abridged)

I. Not felt except by a very few under especially favorable circumstances.

II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.

III. Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.

IV. During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.

V. Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles and other tall objects sometimes noticed. Pendulum clocks may stop.

VI. Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.

VII. Everybody runs outdoors. Damage **negligible** in buildings of good design and construction; **slight** to moderate in well-built ordinary structures; **considerable** in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.

VIII. Damage **slight** in specially designed structures; **considerable** in ordinary substantial buildings with partial collapse; **great** in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.

IX. Damage **considerable** in specially designed structures; well designed frame structures thrown out of plumb; **great** in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.

X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations, ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.

XI. Few, if any (masonry), structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipe lines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.

XII. Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

LOCATIONS

The location of an earthquake is usually specified by the latitude and longitude of its epicentre—that point on the earth's surface directly above the source of the disturbance. Where possible, such coordinates are given in these lists. For the most part they define the central point of an area over which the shock is reported as felt. Some have been assigned by the writer, but most were first published by others. In either case, the tenths of degrees frequently cited, must not be construed as indicating their precision. Rather the following general ratings apply:

(a) denotes an accurate determination from abundant data;
(b) denotes a fairly reliable estimate based on considerable data; and
(c) denotes a less certain result sometimes based on scanty information.

All epicentres are class (c) unless otherwise designated in the text.

A map has been prepared on which classes (a) and (b) are plotted as filled circles and class (c) as open circles. Many of the smaller shocks were reported from one municipality only. In such cases map plots refer to the locations from which the reports came. Where several earthquakes have occurred at one spot, the largest is plotted and the number of shocks represented is given beside the symbol.

ACKNOWLEDGMENTS

Though it may be apparent from the preceding sections, the writer wishes to state explicitly that Dr. E. A. Hodgson's writings, both published and unpublished, have been extensively used as background material. Their influence is so strongly reflected in the present work, that despite the many citations, the writer's indebtedness to Dr. Hodgson remains inadequately acknowledged. Indeed the very title of this catalogue appears in bold-face type in one of his papers.

Grateful acknowledgment is made to Dr. J. H. Hodgson, Chief of the Division of Seismology, for directing and assisting in this study, and to Paul Boucher, librarian at the Dominion Observatory, for English translations of French language source materials. The figure and accompanying map were drawn by J. W. Geuer, who also gave valued advice on the method of depicting the earthquake data.

EARTHQUAKES OF EASTERN CANADA

1. 1534–35 IX–X. Near Les Eboulements, Que. *B5, H10, O1, L1, T1.1, T1.8.*

"A little above this place," (the village of Murray Bay now La Malbaie on the north shore of the St. Lawrence River) "is the village of Les Eboulements (The Landslides), which apparently received the name from one of the phenomena in the earthquake of 1663, noted by Jerome Lalemant (Vol. XLVIII, p. 49). Bouchette (Topog. Dict., art. Eboulements) cites local traditions of an earthquake occurring there between Jacques Cartier's two voyages (1534-35)." *T1.8.*

"1637—Father Quen, in his *Relation* informs us that 'the savages have preserved the tradition of a great earthquake which had happened in former times, but that they did not know either the time or the cause of the disturbance'. It is perhaps to this that the surveyor Bouchette alludes in his 'Topographical Dictionary' under the heading Eboulements, when he speaks of a local tradition on the subject of an earthquake which happened in this place between the two voyages of Jacques Cartier." *L1 quoting T1.1.*

2. 1638 June 11. 2:00—4:00 p.m. IX. 46°.5N, 72°.5W. Probably in the St. Lawrence Valley. Two shocks a half hour apart. Felt near Trois-Rivières, Que., and throughout New England.

"1638—The *Relation* of this year says: 'on St. Barnabas' Day (June 11), we had an earthquake in some places' " (near Trois-Rivières, Que.)" ' and it was so perceptible that the savages were greatly surprised to see their bark dishes collide with each other, and water spill out of their kettle. This drew from them a loud cry of astonishment'. The surprise of the savages leads one to believe that that generation had apparently not been witness to similar phenomena and that a good number of years had passed since the last shock....." *L1 quoting T1.2.*

"This year (1638) aboute ye 1. or 2. of June," (the former date being in agreement with contemporary accounts and being equivalent to June 11 by the Gregorian calendar) "was a great & fearful earthquake; it was in this place," (Plymouth, Mass.), "heard before it was felte. It came with a rumbling noyse, or low murmure like unto remoate thunder; it came from ye norward, & pased southward. As ye noyse aproched nerer, the earth begane to shake, and came at length with that violence as caused platters, dishes, & such like things as stoode upon shelves, to clatter and fall downe; yea persons were afraid of ye houses them selves.....However it was very terrible for ye time, and as ye men were set talking in ye house, some women & others were without ye doors, and ye earth shooke with ye violence as they could not stand without catching hould of ye posts & pails y^t stood next them; but ye violence lasted not long. And about halfe an hower, or less, came an other noyse & shaking, but nether so loud nor strong as ye former, but quickly passed over, and so it ceased. It was not only on ye seacoast, but ye Indeans felt it within land; and some ships that were upon ye coast were shaken by it." *B4 quoting B2.*

Mather et al (*M3*) estimated the epicentre to be "Off Cape Ann", Mass. They were apparently unaware of the reference to this shock in the Jesuit *Relations*. The area off Cape Ann is about 600 miles from Trois-Rivières, and only 100-150 miles from Plymouth. If the shock were so near to Plymouth and merely jarred platters from shelves, it could scarcely have caused bark dishes to collide, or spilled water from a kettle at far off Trois-Rivières. However a fairly severe shock originating in the St. Lawrence Valley could have produced the observed results. Some half dozen subsequent disturbances in that area have had similar effects throughout New England. Accordingly this earthquake is listed herein as having occurred in the St. Lawrence Valley. *A7, B2, B3, B4, B5, D2, H1, L1, M3, M7, O1, P1.1, T1.2.*

3. 1661 February 10. 7:00 (?) VII. 45°.5N, 73°.0W. Probably in the St. Lawrence watershed, south of Granby, Que. Felt at Montreal, Que. and also at Roxbury, Mass.

"The earthquake which occurred last winter at Montreal made the settlers tremble in advance, causing them to dread misfortunes which followed that baleful omen (inroads of the Iroquois). Vol. 46, page 203, Paul Le Jeune." *O1 quoting T1.3.*

The date was given by Odenback (*O1*) as 1660. It has been changed to 1661 because Laflamme (*L1*) quotes the same passage under the later date, and because this date agrees with that in Brigham's list (*B4*) when changed to the Gregorian calendar. *A7, A8, B4, B5, D2, L1, M3, O1, T1.3.*

4. 1663 February 5. 5:30 p.m. X. 47°.6N, 70°.1W. In the St. Lawrence River between the mouth of

Rivière La Malbaie* on the north and the mouth of Rivière Ouelle on the south. Felt over the entire eastern part of North America—750,000 square miles. Accompanied by vast landslides along the St. Maurice, Batiscan and St. Lawrence Rivers. Sulte (*S4*) has shown from contemporary accounts that one of these slides practically levelled a very great waterfall at Les Grès on the St. Maurice River. Other damage was confined to cracked chimneys and the like. No loss of life was reported.

"On the shores of Massachusette Bay houses were shaken so that pewter was jarred from the shelves and the tops of several stone chimneys were broken." *B4*.

The effects in New England were very similar to those of the earthquake of June 11, 1638. Records of the destruction in the St. Maurice Valley have been thought to indicate a much greater intensity for the 1663 shock. However Hodgson (*H8*) tentatively concluded that the seismic intensity "was not markedly greater" than that of some five other shocks occurring in the same region in more recent times. This is borne out by the similarity of their effects at points along the New England coast. He further suggested that the devastation in the St. Maurice valley "does not, in all probability, indicate a separate focus there, but was due to a landslide of major proportions." This opinion was based on a careful analysis of all available data and much first-hand study (*H6*) of new landslides in the marine clays of the same area. It is well established that great quantities of tree-covered earth moved from the shores into the rivers, especially near the suggested epicentre in the St. Lawrence and along the St. Maurice. The amount of rainfall during the season just prior to the earthquake would have great bearing on the question of whether these earth movements were likely to be landslides. Unfortunately no record of weather conditions could be found. The landslide explanation is accepted as final in this report because the great release of seismic energy necessary to explain the effects along river banks is incompatible with the minor damage sustained by buildings in the area. *A8, B3, B4, B5, D2, G1, H1, H8, H9, H10, H11, K1, L1, M3, M7, O1, P1.1, S4, T1.4, T2.*

5. 1663 FEBRUARY 5. 9:00 p.m. V. Aftershock of No. 4. *M3*.

6. 1663 FEBRUARY 6. 10:00 a.m. VI. Aftershock of No. 4. *B4*.

"The next day 'about three hours from the morning' (being about 10:00 a.m. on the sixth) 'there was a violent shock which lasted a long time; .... next night some counted thirty-two shocks; of which many were violent.'" *B4*.

7. 1663 FEBRUARY 7. 9:00 a.m. IV. Aftershock of No.4. *B4, B5,*

8. 1663 NOVEMBER 16. IV. Aftershock of No. 4. *B4, B5, D2*.

9. 1664 IV. St. Lawrence Valley. Probably aftershocks of No. *4.A8, B5, L1*.

"In a letter in the month of August 1664, the celebrated Mary of the Incarnation writes 'The earth has again trembled in some places, but likely these are the remnants of the large shocks of last year.'" *L1*.

10. 1665 FEBRUARY 24. VIII. 47°8N, 70°0W. Near La Malbaie, Que. Felt over northeastern North America. *B4, B5, D2, L1, M3, O1, T1.5*.

"On Saint Mathias's Day the shocks were so violent around Tadoussac and at La Malbaie, that the savages and one of our Fathers who was wintering in that neighbourhood with them, declare that they were not less severe than those that were felt here at Quebec in that famous earthquake which occurred in 1663." *T1.5*.

11. 1665 OCTOBER 15. 9:30 p.m. IV. St. Lawrence Valley. Caused slates on houses to crack at Quebec City, Que. *B4, B5, D2, L1, O1, T1.5*.

12. 1668 APRIL 13. 8:00 a.m. VI. 47°1N, 70°5W. In the St. Lawrence River near Isle-aux-Grues. Caused damage at Cape Tourmente, Que., and was felt at Quebec City, Que. *A8, B5, L1, O1, T1.6*.

"The earth trembled perceptibly about 8:00 o'clock in the morning for about the space of a 'miserere'." *T1.6*.

"Mary of the Incarnation in a letter of September 1, 1668, gives us more details. 'The earth' said she 'has trembled quite strongly in the month of April last, and this trembling lasted two miserere. It made debris towards Cape Tourmente, and was felt everywhere up to the Iroquois country. We felt it only once at Quebec but it has been more frequent further inland where we have not yet learned how much damage was caused'." *L1*.

13. 1672 FEBRUARY–MARCH. IV. Two shocks felt at Tadoussac, Que.

"In a letter on the missions of Tadoussac, dated June 2, 1672, Father Francis de Crépieul recounts that during the months of February and March 1672, quite moderate earthquakes were felt on two occasions—'continuation of that of 1662 (probably 1663) which have not yet ceased in these northern regions from time to time.'

From 1672 to 1732, a period of sixty years, the documents of this epoch which remain do not mention earthquakes. It is probable that some must have occurred; but they were not violent enough to attract the attention of the inhabitants." *L1*.

Evidently the shock listed below was overlooked. *A8, L1, O1*.

14. 1673 DECEMBER 8 (?) III. Felt at Tadoussac, Que. The Jesuit *Relation* which mentioned this shock concerned the Tadoussac Missions. The exact date is uncertain. *O1, T1.7*.

"About this time (Octaire of Immaculate Conception—December 8, 1673) there was a noticeable earthquake near us." *O1 quoting T1.7*.

15. 1732 SEPTEMBER 16. 11:00 a.m. IX. 45°5N, 73°6W. (b). At Montreal, Que., chimneys fell and walls were cracked. Three hundred houses were damaged. One girl was killed. *A7, A8, B3, B4, B5, D2, H1, H9, H10, H11, L1, M3, M7, W4.1*.

"The Mother Duplessis of St. Helen, Superior of the Hotel Dieu at Quebec, after speaking in a letter of October 20, 1732, of the fire at Montreal which had destroyed 185 dwellings adds: 'One month ago an earthquake caused unexpressible consternation. The first shock which lasted two or three minutes damaged 300 houses, many chimneys tumbled down; walls cracked; people were wounded and one girl was killed; showers of stones spread everywhere seemingly thrown by invisible hands; finally there was such universal fright that the

* The names "La Malbaie" and "Rivière La Malbaie" are those agreed upon by the Canadian Board on Geographical Names. Murray Bay is the name of a landing a few miles from La Malbaie. The terms "Murray Bay" and "Murray River" appear on many maps instead of "La Malbaie" and "Rivière La Malbaie" respectively. On some maps one English name and one French name are used.

houses were deserted, people slept in the gardens and beasts were shrieking thereby redoubling the fears of men .... Many have fled and have come to Quebec having a fear of being buried alive under the ruins of that poor city. What is worse, all is not yet finished. There are no days when it is not felt; some wells are extremely dry and roads appear plowed.' " *L1.*

16. 1744 MAY 27. IV. A considerable vibration felt at Quebec City, Que. *A8, B4, B5, D2.*

17. 1755 NOVEMBER 18. 4:12 a.m. IX. 41°.5N, 67°.0W.
(47) About 200 miles east of Cape Ann, Mass. Felt at Halifax, N.S. For details see No. 47 of the United States list. Plotted on the map as No. 47 in U.S.A. *A7, B3, B4, B5, D2, H1, H10, K1, P1.1, M3, W1.*

18. 1764 SEPTEMBER 30. "About noon." V. *K1.*

"In the *Halifax Gazette* (Nova Scotia), December 13, 1764, occurs the following news item: 'We hear from St. John's" (New Brunswick, then part of Nova Scotia) "in this province that on the 30th of September last about 12 o'clock noon that a very severe shock of an earthquake was felt there." *K1.*

19. 1777 APRIL 14. V. 53°.8N, 79°.0W. Near James Bay, Canada. This shock is mentioned in old records of the Hudson's Bay Company. *B5, H10.*

20. 1784 JANUARY 2. 5:00–6:00 a.m. IV. Felt at Quebec City, Que. No damage. *B5, H10, L1, M3.*

"From the *Quebec Gazette* of Thursday, January 8, 1784, 'Last Friday between five and six o'clock in the morning, there was felt here a noticeable earthquake shock which although not violent placed the majority of this city in consternation; happily the shock was not accompanied by any other alarming circumstance, and we hope that it has not caused any misfortune elsewhere.' " *L1.*

21. 1784 JANUARY 12. 3:30 a.m. IV. Felt at Quebec City, Que. No damage. *A8, B5, H10, L1.*

"The following week on January 15" (1784) "the same journal" (*Quebec Gazette*) "added 'Monday at 3:30 in the morning a second earthquake shock was felt here which according to general opinion was the equal in strength and duration of that mentioned in our last issue.' " *L1.*

22. 1791 DECEMBER 6. 8:00 p.m. VIII. 47°.4N, 70°.5W. (b). In the St. Lawrence River between Baie-St-Paul and the Île-aux-Coudres. Most of the damage occurred at Baie-St-Paul and on the island. A church was damaged at Les Eboulements. The shock was much less severe at La Malbaie. *A8, B4, B5, H9, H10, H11, L1, M7.*

"On December 29, 1791, the *Quebec Gazette* gave the following account by a 'reliable correspondent' at Baie-St-Paul:

'All the tremors have been felt west to east and have caused more damage in a strip approximately two leagues wide, the length of which is not known, including in their course the lower part of Baie-St-Paul the lower extremity of Île-aux-Coudres which was hit from north to south and the lower part of Les Eboulements.

During this time (December 6-19, 1791) twenty-one chimneys were knocked down or damaged. A stone house was almost completely demolished, others were cracked and many stoves and ovens were thrown down not counting the damage suffered by the church at Les Eboulements.

It is remarkable that on the first days the tremors took place regularly at the same hour, every morning and night and that since the sixth up to now (19) we have had four or five every day.' " *L1.*

23. 1809 JANUARY 21. V. 57°.0N, 62°.0W, Labrador. Felt generally along the cost. *G2.*

"On January 21, 1809, and for some days after, severe shocks of earthquakes were felt, and were said to have been general all down the coast. The extraordinarily rapid rise of the land amounting in some places to ten or fifteen feet within the memory of fishermen still going to Labrador would lead one to suppose that earthquakes were of common occurrence. No damage or noticeable disturbance has ever been recorded however!" *G2.*

24. 1816 SEPTEMBER 9. VII. Near Montreal, Que. Felt over northeastern North America. *B4, B5, D2, H10, M3.*

25. 1816 SEPTEMBER 16. VI. Near Montreal, Que. Felt over Eastern Canada. *B4, B5, D2, H10, M3.*

26. 1817 MAY 22. 3:00 p.m. VII. 46°.0N, 69°.0W. Central
(94) Maine. Felt all over New Brunswick as well. Plotted on the map as No. 94 in U.S.A. *K1, M3.*

27. 1818 OCTOBER 11. IV. 46°.9N, 71°.2W. North of Quebec City, Que. *B4, B5, D2.*

"October 11, 1818, strong shocks were felt along the base of the mountains to the north of Quebec. The windows and furniture of the houses were shaken." *B4.*

28. 1819 AUGUST 15. III. St-Andrews, Que. *B5, D2, L2.*

"August 15 at the village of St-Andrews (Lower Canada), a shock accompanied by a strong explosion." *L2.*

29. 1819 NOVEMBER 10. III. Montreal, Que. Slight shock felt only in the city. *B4, B5, D2.*

"At Montreal, slight. Followed by an awful storm with rain impregnated with matter like soot." *D2.*

30. 1821 FEBRUARY 20–28. III. Quebec City, Que. A slight shock was felt at Quebec City, but not in New England. *B4, B5, D2.*

31. 1824 JULY 9. V. 46°.5N, 66.5W. Province of New Brunswick, Canada. Severe shock felt all over the province. *B4, B5, D2. K1.*

32. 1831 MAY 7–8. "During the night". VII. 47°.3N, 70°.5W. In the St. Lawrence River above Île-aux-Coudres, Que. *A8, B5, H10, L1.*

"The *Canadian* gives us rather complete details on this earthquake. We will be satisfied with a resume.

The tremor was felt during the night of May seventh to eighth. It was very perceptible at Quebec, Ste-Foy, and St-Antoine-de-Tilly. At Beauport several chimneys were knocked down and walls were cracked ...

At La Malbaie one shock was very strongly felt followed by five more feeble ones in the course of an hour. The first shaking broke several walls. The shock was more strongly felt at Baie-St-Paul." *L1.*

33. 1831 JULY 14. VII. 47°.6N, 70°.1W. In the St. Lawrence River south of La Malbaie, Que. Walls and chimneys were thrown down at La Malbaie. *B4, B5, D2.*

34. 1832 IV. 45°.0N, 64°.0W. Nova Scotia. Slight. *B4, B5, D2.*

35. 1833 MARCH. IV. Felt at La Malbaie, Que. *B4, B5, D2.*

36. 1833 APRIL. IV. Felt at La Malbaie, Que. *B4, B5, D2.*

37. 1836 NOVEMBER 30. V. Labrador. Felt at Hopedale. *G2.*

38. 1840 SEPTEMBER 10. V. Hamilton, Ont. "A violent shock." *B4, B5, D2, H10.*

39. 1842 NOVEMBER 9. VI. 46.0N, 73.2W. St. Lawrence Valley. Felt at Montreal and Trois-Rivières. The waters of the St. Lawrence were violently agitated. *B4, B5, D2. H10.*

40. 1844 NOVEMBER. IV. Felt at Montreal, Que. *D2, H10, L2.*

41. 1847 JANUARY 1. IV. Felt at Yarmouth, N.S. *W4.4.*

42. 1847 JANUARY 8. 3:00 p.m. III. Felt near Grafton Harbour, Ont. A remarkable tide on Lake Ontario. *B4, B5, W4.4.*

43. 1847 JANUARY 14. III. 44°.2N, 78°.2W. Felt at Rice Lake, Ont. Accompanied by breaking of the ice. *B5, L2.*

44. 1847 NOVEMBER. III. Felt at Montreal, Que. *D2, H10.*

45. 1848 JANUARY 1. IV. 45°.0N, 63°.5W. Nova Scotia. Ice was broken on ponds and doors were opened. *B4, B5.*

46. 1848 FEBRUARY 1. III. 43°.5N, 65°.5W. Felt at Yarmouth and Shelburne, N.S. *B4, B5.*

47. 1848 MAY 23. III. Felt at Montreal, Que. *B4, B5.*

48. 1848 NOVEMBER 6. 5:15 a.m. II. 47°.6N, 69°.9W. A light shock felt at Grand Island, in the St. Lawrence River. *B4, B5.*

49. 1848 DECEMBER 11. 3:00 a.m. III. A tremor at Montreal, Que. *B4, B5.*

50. 1851 JANUARY 30. 5:00 p.m. III. Felt at St-Andrews, Que. A light shock. *B4, B5.*

51. 1852 FEBRUARY 11. 5:40 a.m. III. Felt at St-Martin, Que. (Île Jésus, nine miles west of Montreal). A light shock from the west-northwest. *B4, B5.*

52. 1852 AUGUST 2. 11:00 p.m. III. Felt at Bathurst, N.B. *B4, B5.*

53. 1853 MARCH 12. 2:00–3:00 a.m. VI. 43°.7N, 75°.5W.
(151) (b). Machinery thrown down at Lowville, N.Y. Felt also in Canada. Plotted on the map as No. 151 in U.S.A. *B4, B5, H1, M7, W4.4.*

54. 1853 MARCH 13. 5:00 a.m. V. 43°.1N, 79°.4W. Shock near St. Catharines, Ont. *B5, L2.*

"The same day at the same hour at Grimsby, Jordan, Thorold, Fells, Queenston, Fort Mississangua and in all Canada, four schocks." *L2.*

55. 1853 MAY 24. II. Felt at Ottawa, Ont. *B4, B5, W4.4.*

56. 1853 JUNE 3. III. Two or three shocks at Bridgetown, N.S. *B4, B5, W4.4.*

57. 1853 JULY. III. 47°.5N, 70°.0W. Slight shock felt in the province of Quebec. *A8, L1.*

58. 1854 DECEMBER 4. 10:00 p.m. III. Felt at Huntingdon, Que. *B4, B5.*

59. 1855 JANUARY 13. 5:40 a.m. III. Felt at St-Martin, Que. *B5, L2.*

60. 1855 FEBRUARY 4. VI. 44°.8N, 66°.2W. Bay of Fundy. Felt in New Brunswick and northeastern Maine. *B5, L2, M3.*

61. 1855 FEBRUARY 8. 6:30 a.m. VII. 46°.0N, 64°.5W. (b). Near Moncton, N.B. Felt in Montreal and from Prince Edward Island to Bangor, Me., over an area of 85,000 square miles. *B4, B5, D2, D4, H1, K1, L2, M3.*

"Speaking of this shock in *Acadian Geology*, pp. 39-40, Sir Wm. Dawson says: 'Its point of greatest intensity appears to have been at the bend of the Petitcodiac (Moncton). At this place there were several shocks, one of them sufficiently severe to damage a brick building.' " *K1.*

62. 1855 FEBRUARY 19. II. Felt at Montreal. *D4.*

63. 1855 JUNE. IV. 44°.7N, 65°.5W. Southeast of the Granville Mountains, N.S. The implication of the quotation below that an active volcano existed in Nova Scotia in 1855 is erroneous. *B5, L2.*

"Under the title 'Volcanic phenomenon in Nova Scotia' one reads in the *New York Tribune* on the 21st (of June): 'A correspondent of the *St. John News* says that the people of the vicinity of Digby, N.S. are greatly excited by terrestrial commotions which have taken place to the southeast of Granville Mountains. On the day of the earthquake which took place several months ageo, the mountain was strongly shaken and opened up and threw out much smoke for the rest of the day. All was calm until the new shock was felt about a fortnight ago; it formed a new chasm in the mountain and the shocks continue since; the mountain threw out smoke dust and stones. The phenomenon continues without anyone daring to approach it.' " *L2.*

64. 1856 JANUARY 1. III. Felt at Montreal, Que. *D4.*

65. 1856 MAY 1. 12:30 p.m. II. Felt at Ottawa, Ont. *B4, B5, D1, D2.*

66. 1856 DECEMBER 28. II. Felt at Ottawa, Ont. *B4, B5.*

67. 1857 OCTOBER 16. III. Felt at Montreal, Que. *D4.*

68. 1857 OCTOBER 23. 3:15 p.m. VI. 43°.2N, 78°.6W (b).
(180) Centred near Buffalo, N.Y., and felt to the Montreal region. See No. 180 of the New England list. Plotted as No. 180 in U.S.A. *B4, B5, H1, L2, W1.*

69. 1857 IV. Felt at Hebron, Labrador, Nfld. *G2.*

70. 1858 JANUARY 15. II. Felt at Montreal, Que. *D4.*

71. 1858 JANUARY 15. II. Felt at Niagara Falls, Ont. Slight. *D2.*

72. 1858 MAY 10. III. Felt at Richmond, Que. Felt also at Montreal. *B4, B5, D2, D4.*

73. 1858 MAY 17. 3:00 p.m. IV. 45°.5N, 72°.1W. Felt at Richmond, Compton and Sherbrooke, Que. Animals were much alarmed at Compton. *B4, B5.*

74. 1858 JUNE 27. II. Felt at Montreal, Que. *D4.*

75. 1858 SEPTEMBER 15? 4:30–5:00 p.m. III. Felt at Kamouraska, Que. *A8, L1.*

76. 1859 III. Felt at Metis, Que. *B4, B5, D2.*

77. 1860 OCTOBER 17. 6:15 a.m. VIII–IX. 47°.5N, 70°.1W (b). In the St. Lawrence River north of the mouth of Riviere Ouelle. Chimneys thrown down and walls damaged. The earthquake was felt from Hamilton, Ont., in the west, to New Brunswick in the east, and southward in the United States as far as Newark, N.J. over an area of 700,000 square miles. *A7, A8, B4, B5, D2, D4, H9, H10, H11, K1, L1, M3, M7.*

"The buildings situated on each side of our river (Rivière Ouelle) suffered in a general way. One chimney on the home of E. Chas. Tetu, two on the home of M. C. Casgrain, one on the home of M. Frenette, one on the home of Auguste Casgrain, one on the home of Madam Frs. Casgrain and on the homes of a dozen other persons were thrown down. The cross of our church and the weathervane surmounting it are now on the ground; the walls of our fine church are cracked. The shocks were frightening; the first, the most violent, began at 6:15 and lasted four minutes and forty seconds, very violent for ten seconds and gradually weakening; a weaker shock at 6:20 lasted three or four seconds, and the third began at 6:30 and lasted two or three seconds; but like the first it was a staccato jolting that made the furniture dance and unhooked pictures, clocks, etc." *D2 quoting from a Quebec newspaper.*

78. 1861 JULY 12. 9:00 p.m. VII. 45°.4N, 75°.4W (b). Felt at Montreal, Ottawa and Odgensburg, N.Y., but most violently at Ottawa where it overturned chimneys. *B4, B5, H1, M7.*

79. 1861 OCTOBER. 9:03 (?) V. 45°6N, 73°7W. A strong shock felt at Île Jésus, Que. *B4, L2.*

80. 1864 APRIL 20. 1:15 p.m. VI. 46°9N, 71°2W. North of Quebec City, Que. Felt from Father Point to Montreal. *A8, B4, D3, D4, H10, L1.*

"*The Mercury* (Quebec City) says:—'The earth trembled violently; every house was shaken as if an explosion of gas or gunpowder, or an eboulement of the rock had taken place—only no noise was heard. Some fancied that a heavy weight had fallen upon the floors above them, and, indeed, that was our own sensation. The walls of the house rocked; the windows rattled; and we rocked ourselves. To make sure that the power-press had not fallen to pieces, we examined the press-room, but found all right there. The inmates of the rooms above us, horror-stricken, came down stairs to enquire what the matter was; people from the street came tumbling in to ask us if we had felt any unusual sensation; the people over the way felt it; the cruet stands were overset, plates broken, and the whole dinner-table service at Russell's set in motion; ... *D3.*

81. 1864 APRIL 20. 11:00 p.m. III. Felt at Father Point, Que. *B4, B5.*

82. 1864 JULY 28. 7:00 p.m. V. 46°5N, 53°7W. Off the coast of Newfoundland. The shock caused a "tidal wave" at St. Shotts Harbour, Nfld. Reported in a letter from a resident of Newfoundland.

83. 1864 OCTOBER 21. 4:10 a.m. IV. Four distinct shocks were felt at Montreal, Que. *B4, B5.*

84. 1866 NOVEMBER 9. 11:10 a.m. IV. Felt by Father Taschereau in the Seminary at Quebec City, Que. *L1.*

85. (191) 1867 DECEMBER 18. 3:00 a.m. VII. 44°0N, 73°0W. In western Vermont. Felt in neighbouring states and in Canada. Plotted as No. 191 in U.S.A. *A5, B4, B5, H1, M3.*

" . . . felt at Montreal, Burlington and other places in Vermont, and over a distance of 400 miles to the west." *A5.*

86. 1869 APRIL 9. 8:00–9:00 a.m. III. Felt at Vienna, Ont. *B5, L2.*

87. 1869 OCTOBER 22. 6:00 a.m. VIII. 45°0N, 66°2W. In the Bay of Fundy off the coast of New Brunswick. Felt throughout the Maritime Provinces of Canada and in New England over a total area of 250,000 square miles. *A6, B4, B5, H1, K1, M3, M7.*

"At Fredericton and other places in New Brunswick, chimneys were thrown down and walls of houses cracked." *A6.*

88. 1869 DECEMBER. "Near the end." V. A violent shock at Baie-St-Paul, Que. *B5, L2.*

89. 1870 FEBRUARY 8. VI. 44°1N, 67°1W. In the Bay of Fundy. Felt in the Maritime Provinces of Canada and in Maine. *B5, L2, M3.*

90. 1870 MARCH 4. II. Felt at Montreal, Que. *D4.*

91. 1870 MARCH 17. 6:00–8:00 a.m. IV. 45°5N, 66°5W. Felt at St. John and Fredericton, N.B. *K1.*

"It was at this time that a landslide occurred at Sand Point, carrying the end of the point out into the deeper water of the harbour." *K1.*

92. 1870 OCTOBER 20. 11:30 a.m. IX. 47°4N, 70°5W. (b) Centred near Baie-St-Paul, Que., where the greatest damage occurred. Felt throughout eastern Canada and in the United States westward to Iowa and southward to Virginia, a total area of over 1,000,000 square miles. *A8, B4, B5, D4, H1, H9, H10, H11, K1, L1, M3, M7.*

"Quebec:— . . . Buildings shook and bells rang; several chimneys were knocked down in Desfosses Street, and two persons nearly killed." *D4 quoting a news account.*

"A hasty note to let you know the disasters that were suddenly caused, here and in the vicinity, by the strangest earthquake in the memory of man. Approximately half an hour before noon a thunderbolt—this is the only word I can use for what happened—an enormous detonation threw everyone in a state of shock and the earth started not to shake but to boil in a manner to cause dizziness not only to the people in houses but also to the ones in the open air. All the dwellings seemed to be on a volcano and the earth, forming fissures in five or six places, was throwing up columns of water to six, eight and perhaps fifteen feet in the air carrying with it a quantity of sand which spread on the ground. Almost every chimney was thrown down and I believe there were not more than six left in the whole village. Walls of houses were thrown down; here and there stoves, furniture and other objects were overturned carrying with them utensils, china, etc. ..... The church suffered very much; a part of the portico fell down and part of the ceiling and the remaining walls are so cracked that it is doubtful if they can be repaired . . . Some people arrived from various concessions so that we have reports from about twelve miles around and nowhere has a house remained intact. Everywhere the shock was as violent as here . . ." *D4 quoting from a letter by Father Plamondon of Baie-St-Paul.*

93. 1870 OCTOBER 26. IV. Aftershock of No. 92. *D4.*

94. 1870 DECEMBER 26. 1:30 p.m. IV. Rattled the houses in several places in Quebec City, Que. *L1.*

95. 1871 JANUARY 3. V. Felt at Hawkesbury, Ont., and though not appreciable at Montreal, it was recorded on Dr. Smallwood's seismometer. This is the earliest indication of instrumentally recorded earthquakes in Canada. *D4, D5, D6.*

96. 1871 JANUARY 9. V. 47°5N, 70°1W. A particularly strong shock felt at Kamouraska, Baie-St-Paul and Eboulements, Que. *A8, L1.*

97. 1871 FEBRUARY 16. IV. Felt at Île-aux-Coudres, Que. *L1.*

98. 1871 FEBRUARY 17. III. Felt at Île-aux-Coudres, Que. *L1.*

99. 1871 MAY 20. 2:00 a.m. IV. Felt at Quebec City, Que. *D5 D6, L1.*

100. 1871 MAY 20. 3:20 a.m. III. Aftershock of No. 99. *D6, L1.*

101. 1872 JANUARY 9. 7:54 p.m. VII. 47°5N, 70°5W. Felt along the St. Lawrence River to a distance of 200 miles northeast and 60 miles southwest from Quebec City. The disturbance cracked walls at Quebec City. Felt in the United States to the coast of Maine. *B5, H1, M7, R4.1.*

102. 1873 FEBRUARY 26. II. Felt at Beauport, Que., on the St. Lawrence River. *R4.4.*

103. 1873 MARCH 21. 11:30 p.m. III. Felt at Montreal, Que. *R4.4.*

104. (201) 1873 APRIL 25. 2:00–3:00 p.m. V. 44°8N, 74°2W. Several shocks were felt in northern New York, most heavily at Malone and along the St. Lawrence River. Plotted as No. 201 in U.S.A. *F1, R4.4.*

"At Cornwall Canada there were three shocks of considerable violence between two and three p.m." *R4.4.*

105. 1873 APRIL 30. "At night!" IV. Felt at Cornwall, Ont. *R4.4.*

106. 1873 APRIL 30. "At night." IV. Felt at Hamilton, Ont. *R4.4.*

107. 1873 JULY 6. 9:30 a.m. VI. 43°.0N, 79°.5W. About fifteen miles west of Welland, Ont. Felt in western New York state and adjacent portions of Pennsylvania and at St. Catharines, Hamilton and London, Ont., over an area of 30,000 square miles. *B5, H1, R4.5.*

108. 1873 JULY 8. a.m. II. Felt at Halifax, N.S. *R4.5.*

109. 1873 SEPTEMBER 30. 6:50 a.m. IV. 46°.5N, 76°.0W. In the Gatineau River Valley, Que.

"A severe shock lasting about forty seconds was felt at 6:50 a.m. at the Désert (River) on the Gatineau River in Canada. The same shock was felt at St-Hyacinthe and by a few persons in Montreal." *R4.5.*

It seems unlikely that this shock could have been felt at such widely separated places unless it were of greater intensity and had shaken many places between, including Ottawa. Accordingly a second shock near St-Hyacinthe the same morning is given below. *R4.5.*

110. 1873 SEPTEMBER 30. 6:50 a.m. IV. 45°.5N, 73°.2W. Felt at St-Hyacinthe and Montreal, Que. *R4.5.*

111. 1874 FEBRUARY 1. 2:30 and 3:00 p.m. III. 48°.6N, 68°.5W. Felt at Rimouski, Que., and at a few other points along the St. Lawrence River. *R4.5.*

112. 1874 MARCH 12. II. Slight shock felt at Yarmouth, N.S. *R4.6.*

113. 1874 JULY 31. 4:00 a.m. IV. Felt at Portneuf, Que., and described as being similar to a cannonade. *A8, L1.*

114. 1874 AUGUST 3. IV. More of the "subterranean" noises heard in the vicinity of Portneuf. This time eighty detonations were heard in two and a half to three hours. *A8, L1.*

115. 1875 APRIL 30. III. 45°.1N, 74°.5W. Felt in Dundee township, Huntingdon county, Que. *F1.*

116. 1877 MAY 2. 10:20 p.m. III. A shock "lasting eight or ten seconds" at Oshawa, Ont. *R4.8.*

117. 1877 JULY 17. 3:00 a.m. III. A sharp shock lasting about thirty seconds at Rivière-du-Loup, Que. *R4.8.*

118. (234) 1877 NOVEMBER 4. 1:56 a.m. VII. 44°.5N, 74°.0W. Northeastern New York state. Felt in New York state and throughout northwestern New England, covering more than 90,000 square miles. Plotted as No. 234 in U.S.A. *A8, B5, D5, D6, D7, F1, H1, L1, M3, R4.8.*

"At Montreal there was only one distinct shock, preceded by the usual rumbling noise and sufficiently severe to be distinctly felt, and to shake windows and other loose objects, causing them to vibrate for several seconds." *D5, D6.*

119. 1877 NOVEMBER 14. 9:40 a.m. III. Felt at Cornwall, Ont. *D5, D6, R4.8.*

120. 1877 DECEMBER 18. 1:00–2:00 a.m. III. Felt at Beachburg, Ont. *D6, R4.9.*

121. 1877 DECEMBER 18. 5:00–6:00 a.m. V. Felt at Beachburg, Ont. *D6, R4.9.*

"... between five and six o'clock ... being so severe as to shake houses and arouse the inmates from their slumbers." *D6.*

122. 1879 APRIL 7. 12:00 midnight. III. Felt at Baie-St-Paul, Que. *D7.*

123. 1879 JUNE 11. IV. 45°.6N, 73°.6W. Smart shock with a rumbling noise. Felt at Montreal and elsewhere in the province of Quebec. *D7, M7, R4.10.*

124. 1879 AUGUST 21. 3:00 a.m. IV. 43°.2N, 79°.2W. Near St. Catharines, Ont. Felt at various places within a radius of about twenty miles. *B5, D7, H1, R4.10.*

125. 1880 FEBRUARY 8. 8:00–9:00 p.m. II. A slight shock felt at Ottawa, Ont. *D7, R4.10.*

126. 1880 APRIL 3. 10:00 p.m. II. Felt at Ottawa ,Ont., and in neighboring portions of Quebec. *D7, R4.11.*

127. 1880 MAY 31. IV. 45°.2N, 75°.3W. Light shock felt along the lower Ottawa and St. Lawrence Rivers. *A8, L1.*

128. 1880 JULY 22. 2:00 a.m. III. Felt at Ottawa, Ont. *R4.11.*

129. 1880 SEPTEMBER 6. 12:30 a.m. IV. 45°.2N, 73°.8W. Felt at Montreal and Huntingdon, Que. *F1, R4.11.*

130. 1880 SEPTEMBER 6. 2:00 a.m. III. Felt at Cornwall, Ont. *R4.11.*

131. 1880 NOVEMBER 24. 11:45 p.m. III. "Smart shock" at Quebec City, Que. *D7.*

132. 1880 NOVEMBER 28. 8:30 a.m. IV. Sharp shock at Baie-St-Paul, Que. *A8, L1, R4.11.*

133. 1880 DECEMBER 30. III. Felt at Cap-des-Monts, now known as Pointe-des-Monts, Que. *D7.*

134. 1881 APRIL 7. 12:01 a.m. II. A shock at Baie-St-Paul, Que. *R4.12.*

135. 1881 MAY 31. 3:30 a.m. II. 47°.1N, 70°.4W. Felt at L'Islet, Que. *D7, R4.12.*

136. 1881 MAY 31. 4:30 a.m. II. Felt at La Malbaie Que. *D7.*

137. 1881 JUNE 19. a.m. II. A slight shock at Ottawa, Ont. *R4.12.*

138. 1881 OCTOBER 1. 1:40 a.m. IV. 47°.6N, 70°.2W. Felt at Kamouraska, La Malbaie, and Baie-St-Paul, Que. *R4.12.*

139. 1881 DECEMBER 4. 6:30 p.m. III. A slight shock at Huntingdon, Que. *R4.12.*

140. 1882 FEBRUARY 26. 6:25 p.m. II. Felt at La Malbaie, Que. *R4.13.*

141. 1882 AUGUST 1. 6:00 p.m. III. A light earthquake at Pointe-des-Monts, Que. *R4.13.*

142. 1882 AUGUST 15. 10:30 a.m. IV. A strong shock at Pointe-des-Monts, Que. *R4.13.*

143. 1882 SEPTEMBER 20. 12:00 noon. III. A light earthquake at Pointe-des-Monts, Que. *R4.13.*

144. 1882 OCTOBER 10. 6:00 a.m. II. Felt at Montreal, Que. *D7.*

145. 1882 NOVEMBER 27. 6:30 p.m. IV. A strong shock at Welland, Ont. *R4.13.*

146. 1882 DECEMBER 4. 6:30 p.m. II. Felt at Welland, Ont. *D7.*

147. 1882 DECEMBER 31. 9:56–10:05 p.m. VI. 45°.0N, 67°.0W. Off the coast of New Brunswick in Passamaquoddy Bay. Felt to Halifax, N.S., Fredericton, N.B., and Eastport, Me., over 80,000 square miles. *B5, D7, H1, K1, R4.13.*

"It was also felt at Sussex, (in addition to St. John), Fredericton, and very markedly at Rothesay." (all in N.B.). *K1.*

148. 1883 JANUARY 9. 3:00 a.m. II. Felt at Huntingdon, Que. *R4.14.*

149. 1883 MARCH 11. 10:57–11:07 a.m. III. Two distinct shocks felt at Waterloo, Que. This information is repeated exactly under the date 1885, both taken from the same source (*D7*). It is likely that both refer to the same shock and that some error has occurred. *D7.*

150. 1883 MARCH 12. IV. 45°1N, 74°5W. Felt in Dundee township, Huntingdon county, Que. *F1.*

151. 1883 MARCH 23. 9:25 a.m. II. Felt at Huntingdon, Que. *D7, R4.14.*

152. 1883 APRIL 1. 1:00 a.m. III. "Smart shock" at Hamilton, Ont. *D7, R4.14.*

153. 1883 OCTOBER 15. "At night" III. Felt at Pointe-des-Monts, Que. *D7, R4.14.*

154. 1883 NOVEMBER 5. "At night" III. Felt at Pointe-des-Monts, Que. *D7, R4.14.*

155. 1883 NOVEMBER 22. 11:00 a.m. III. Felt at Pointe-des-Monts, Que. *D7, R4.14.*

156. 1883 DECEMBER 22. 8:00 p.m. III. Felt at Pointe-des-Monts, Que. *R4.14.*

157. 1884 JANUARY 26. III. Three light shocks felt at Rothesay, N.B. *D7, K1, R4.15.*

158. 1884 FEBRUARY 16. 9:00 a.m. II. Felt at Pointe-des-Monts, Que. *D7, R4.15.*

159. 1884 MARCH 18. 1:30–1:45 p.m. V. 47°2N, 53°0W. Felt at St. John's and throughout the Avalon Peninsula in Newfoundland. *D7.*

160. (278) 1884 AUGUST 10. 2:07 p.m. VII. 40°6N, 74°0W. Strong shock in New England and the middle states, light in Canada. Extended over 70,000 square miles. Centred near New York City, N.Y. Plotted as No 278 in U.S.A. *A7, B5, D7, H1, M7, R4.15.*

161. (279) 1884 SEPTEMBER 19. 2:15 p.m. V. 40°7N, 84°1W. Centred near Lima, Ohio. Felt moderately in neighboring states and lightly in western Ontario. Plotted as No. 279 in U.S.A. *D7, H1, M7, R4.15.*

162. 1884 OCTOBER 24. 12:15 a.m. III. Felt at Huntingdon, Que. *R4.15.*

163. 1884 OCTOBER 24. 9:00 a.m. III. Felt at Huntingdon, Que. *D7.*

164. 1884 NOVEMBER 21. 6:30 p.m. Felt at Pointes-des-Monts, Que. A second shock felt during the night. *D7, R4.15.*

165. 1884 NOVEMBER 22. III. Near Gaspe, Que. *D7.*

166. 1885 FEBRUARY 3. 12:20 a.m. III. Felt at Huntingdon, Que. *D7, R4.16.*

167. 1885 FEBRUARY 25. 12:30 p.m. III. Felt at Huntingdon, Que. *D7, R4.16.*

168. 1885 MARCH 11. 10:57–11:07 a.m. III. Two distinct shocks felt at Waterloo, Que. This information is duplicated exactly under the date 1883. Both accounts are from the same source (*D7*). It is likely that both refer to the same shock and that some error has occurred in the year. *D7.*

169. 1885 MARCH 18. 7:45 p.m. II. Felt at Pointes-des-Monts, Que. *D7, R4.16.*

170. 1885 MARCH 23. 8:22 p.m. III. 45°1N, 74°2W. Felt at Huntingdon and various other places in Quebec. *D7, R4.16.*

171. 1885 APRIL 16. 9:00 a.m. III. 47°5N, 70°2W. Felt at St-Fidèle and La Malbaie, Que. *D7, R4.16.*

172. 1885 APRIL 26. 5:30 a.m. III. Felt at Pointe-des-Monts, Que. *D7.*

173. 1885 JUNE. 10:00 a.m. IV. 45°1N, 66°1W. Felt at Rothesay, Seal Cove and more severely at Southern Head, N.B. *K1.*

174. 1885 SEPTEMBER 4. 9:40 a.m. III. 44°3N, 77°9W. Felt at Campbellford, Hastings and Norwood, Ont. *R4.16.*

175. 1886 FEBRUARY 13. II. Felt at Port Hope, Ont. *D7.*

176. 1886 MARCH 21. 5:00 p.m. II. Felt at Pointe-des-Monts, Que. *D7.*

177. 1886 MAY 16. 10:25 a.m. II. Felt at Pointe-des-Monts, Que. *D7.*

178. 1886 MAY 18. 2:30 p.m. IV. Felt at Pointe-des-Monts, Que. *D7.*

179. 1886 AUGUST 12. "Early in the morning". IV. 46°0N, 74°0W. Felt at Ste-Marguerite, Ste-Adèle and St-Sauveur, Que. The shaking lasted about six minutes. *D7.*

180. 1886 AUGUST 19. 3:00 a.m. III. Felt at Cooksville, Ont., and along the banks of the Credit River. *D7.*

181. (293) 1886 AUGUST 31. 9:50 p.m. X. 32°9N, 80°0W. (b). Centred near Charleston, S.C., where it caused great damage. The epicentre is not plotted on the map as it lies outside the scope of this work. However, the shock has been included in both lists for it was felt all over eastern United States and at Toronto, London and St. Catharines, Ont. *D7, H1, M4, M7.*

182. 1886 SEPTEMBER 2. II. Felt at St. Catharines, Ont. *D7.*

183. 1886 OCTOBER 14. 10:30 p.m. III. Felt at Sydney, N.S. *D7.*

184. 1886 OCTOBER 27. II. Felt at Pointe-des-Monts, Que. *D7.*

185. 1887 JANUARY 7. 6:40 a.m. II. Felt at Pointe-des-Monts, Que. *D7.*

186. 1887 JANUARY 21. 2:47 p.m. II. Felt at Pointe-des-Monts, Que. *D7.*

187. 1887 FEBRUARY 15. 1:30 p.m. III. Felt at Ste-Anne-des-Monts, Que. *D7.*

188. 1887 FEBRUARY 16. 2:08 p.m. II. Felt at Pointe-des-Monts, Que. *D7.*

189. 1887 FEBRUARY 19. 11:45 p.m. IV. Felt at Parry Sound, Ont. *D7.*

190. 1887 FEBRUARY 22. 5:59 p.m. IV. Felt at Pointe-des-Monts. Que, *D7.*

191. 1887 MARCH 11. IV. Strong shock felt at Baie-St-Paul, Que. *A8, L1.*

192. 1887 MARCH 19. 10:50 p.m. II. Felt at Parry Sound, Ont. *D7.*

193. 1887 MAY 27. 1:15 a.m. V. Felt at Baie-St-Paul, Que. with a sound like thunder. *A8, L1.*

194. 1887 JUNE 30. 10:20 p.m. II. Felt at Pointe-des-Monts, Que. *D7*.

195. 1888 JANUARY 6. 2:30 p.m. II. Felt at Huntingdon, Que. *D7*.

196. 1888 JANUARY 11. 4:00 a.m. IV. Felt at Pembroke, Ont. *D7*.

197. 1888 FEBRUARY 5. "Early morning" II. Felt at Ottawa, Ont. *D7*.

198. 1888 MARCH 2. 4:30 p.m. III. Felt at Huntingdon, Que. *D7*.

199. 1888 APRIL 19. 12:30 a.m. IV. Felt at Baie-St-Paul, Que. *D7*.

200. 1888 APRIL 19. 12:40 a.m. III. Felt at Rivière-du-Loup, Que. *D7*.

201. 1888 JULY 1. 4:00 p.m. II. Felt at Montreal, Que. *D7*.

202. 1888 JULY 10. 11:00 p.m. III 44°.4N, 77°.0W. Felt at Belleville and Kingston, Ont. *D7*.

203. 1888 DECEMBER 7. 9:25 a.m. IV. 48°.5N, 68°.7W. Felt at Father Point, St-Flavie and Trois-Pistoles, Que. *D7*.

204. 1890 MAY 17. 8:30 p.m. III. Felt at Pointe-des-Monts, Que. *D7*.

205. 1890 SEPTEMBER 26. 3:03 a.m. III. A slight shock at Montreal, Que. *D7*.

206. 1890 OCTOBER 29. 5:30 p.m. III. 45°.6N, 75°.9W. Felt near Meach Lake, twelve miles from Hull, Que. *D7*.

207. 1892 JULY 26. 10:00 p.m. III. Felt at Rivière-du-Loup, Que. *D7*.

208. 1892 DECEMBER 26. III. 45°.1N, 74°.3W. Felt in Dundee township, Huntingdon county, Que. *F1*.

209. 1893 NOVEMBER 27. 11:50 a.m. VII. 45°.5N, 73°.3W. In the St. Lawrence Valley. Felt over Quebec, New England and New York State. *A8, D7, M3, M7, L1*.

"Strong at Montreal, china broken and one house collapsed." *A8*.

210. 1894 JANUARY 11. 4:07–4:30 a.m. IV. 49°.7N, 66°.8W. Felt at Pointe-des-Monts and Sept-Iles, Que. *D7*.

211. 1894 FEBRUARY 23. 11:00 p.m. II. Felt in the eastern part of Toronto, Ont. *D7*.

212. 1894 AUGUST 27. 12:44 a.m. III. Felt at Montreal, Que. *M6*.

213. 1894 NOVEMBER. 7:00 a.m. III. Felt at Ste-Anne-de-la-Pocatière, Que. *L1*.

214. 1894 APRIL 17. 11:15 a.m. IV. 45°.6N, 73°.3W. Felt at Montreal and St-Hyacinthe, Que. *M6*.

215 1895 DECEMBER 9. 12:25 a.m. III. Felt for eighteen seconds at Montreal, Que. *M6*.

216. (304) 1896 MARCH 22. 8:00 p.m. V. 45°.2N, 67°.2W. In southeastern Maine. Plotted as No. 304 in U.S.A. *B5, H1, K1, M3*.

"This shock was felt in Charlotte and York counties, New Brunswick and in Washington county, Maine. The area disturbed has a diameter of about 100 miles and lies adjacent to the shore of the Bay of Fundy and the Gulf of Maine." *K1*.

217. 1896 MAY 15. 11:00 p.m. IV. Felt at Fredericton, N.B. *K1*.

218. 1897 JANUARY 26. a.m. III. 44°.9N, 66°.9W. Felt at Campobello and Deer Islands, N.B. *K1*.

219. 1897 JANUARY 28. 9:00 p.m. IV. 44°.5N, 66°.8W. A sharp shock felt at Southern Head, Grand Manan Island, N.B. *K1*.

220. 1897 FEBRUARY 14. 9:00 p.m. III. 44°.7N, 66°.8W. Felt at Grand Manan Island, N.B. *K1*.

221. 1897 MARCH 7. IV. 43°.1N, 79°.2W. Felt at Thorold, St. Catharines and Niagara, Ont. *M6*.

222. 1897 MARCH 23. 6:07 p.m. VII. 45°.5N, 73°.6W. Near Montreal, Que.

"The disturbance covered an area measuring approximately 300 miles by 100 miles, having its major axis along the St. Lawrence Valley and the Island of Montreal at its centre . . .

The earthquake of March 23rd, is of interest locally, not only on account of its severity but also as it was the first of which a (seismograph) record was obtained in Canada . . .

In the earthquake of March 23rd the maximum extent of the movement of the ground is seen by the records to have been only about one-fortieth of an inch." *M6*.

From the above quotation it appears that McLeod and Callendar were not aware of Dr. Smallwood's seismometer which recorded a shock on January 3, 1871. *M6*.

223. 1897 MARCH 26. 12:04 a.m. IV. Aftershock of No. 222. Felt at Montreal and other points in eastern Quebec and Ontario. *M6*.

224. 1897 MARCH 27. 10:14 p.m. VII. Aftershock of No. 222. Centred on the Island of Montreal, Que. *M5*.

"The district principally affected was, however, the same as on March 23 and 26th, the centre of the disturbance being in each case the Island of Montreal. Reports of this shock were received from places covering a distance of approximately 350 miles along the St. Lawrence by a width of about 250 miles." *M5*.

225. (305) 1897 MAY 27. 10:13 p.m. VI. 44°.5N, 73°.5W. Near Lake Champlain. Felt over 150,000 square miles from Montreal to Burlington, Vermont. Plotted as No. 305 in U.S.A. *B5, H1, M3*.

226. 1897 OCTOBER 12. 10:35 p.m. III. 44°.7N, 66°.8W. Felt lightly at Grand Manan Island, N.B. *K1*.

227. 1898 JANUARY 7. 1:00–2:00 a.m. IV. 45°.1N, 74°.3W. Felt in Dundee township, Huntingdon county, Que. *F1*.

228. 1898 JANUARY 11. 2:00 a.m. IV. 44°.7N, 66°.8W. Felt at Grand Manan Island, N.B. *K1*.

229. 1898 NOVEMBER. 7:00 a.m. III. Felt at Ste-Anne-de-la-Pocatière, Que. *A8, L1*.

230. 1902 FEBRUARY 3. 7:00 a.m. II. Felt at Quebec City, Que. *A8, L1*.

231. (315) 1904 MARCH 21. 1:04 a.m. VII. 45°.0N, 67°.2W. Centred near Eastport, Me. Chimneys were overthrown at Eastport and at St. Stephen, N.B. Felt in New England and the Maritime Provinces over an area of 150,000 square miles. As the epicentre was practically on the Atlantic coast, and equal area under the sea was probably shaken. Plotted as No. 315. in U.S.A. *B5, H1, M3, R2, W3*.

232. 1906 NOVEMBER 17. 9:00 a.m. IV. Felt at Buckingham, Que., but not recorded at Ottawa. *K2*.

233. 1906 DECEMBER 21. III. 47°.7N, 70°.8W. Two light shocks lasting about five seconds were felt at Baie-St-Paul and throughout Charlevoix county, Que. *A8, L1*.

234. 1907 JANUARY 25. 1:00–5:00 a.m. IV. 44°1N, 79°1W. Several shocks felt at Goodwood, Ont. *S2*.

235. 1907 APRIL. II. Reported, by Father Tremblay, as felt at La Malbaie, Que. *L1*.

236. 1907 AUGUST 5. 7:43 a.m. IV. Felt at La Malbaie, Que. *A8*, *L1*.

237. 1907 NOVEMBER 14. 12:00–12:30 a.m. IV. Two shocks felt at Renfrew, Ont., but not recorded at Ottawa on the Bosch seismograph. *S2*.

238. 1908 MARCH 10. "Evening." IV. Several shocks were felt at Baie-St-Paul during March. The most distinct shock was on the evening of March 10. *A8*, *S2*.

239. 1908 MAY 13. 11:30–12:00 midnight. V. 44°0N, 65°8W. Felt in Digby, Annapolis and Shelburne counties, N.S., but most severely at Yarmouth. No damage was reported. *S2*.

240. 1908 JUNE 16. 3:41:52 p.m. V. 45°1N, 74°8W (b). Felt at Montreal, Que., Ottawa, Ont., and Ogdensburg, N.Y. The centre of the disturbance was near Cornwall, Ont. It was recorded on the Ottawa seismograph. The following week this shock was blamed for indirectly causing the collapse of the New York-to-Ottawa railway bridge near Cornwall. The theory was that the shock somehow started the washout which finally undermined one end of the bridge. However, no other damage was reported. *S2*, *S3*.

241. 1908 JULY 17. 2:10 a.m. IV. Felt at Arnprior, Ont. *S2*.

242. 1908 AUGUST 8. 7:00 a.m. VI. 46°3N, 67°6W. Centred near Hartland, N.B., where plaster fell from the ceiling of one building. Felt also at Fredericton, N.B., and probably in eastern Maine. *S2*.

243. 1909 JANUARY 31. 11:30–11:45 p.m. III. Two shocks felt at Montreal, Que. *S2*.

244. 1909 FEBRUARY 1. 3:20 a.m. IV. Rattling of glassware and crockery was distinctly heard at Montreal, Que. *S2*.

245. 1909 APRIL 14. "Last night." III. 45°4N, 66°4W. Houses were shaken at Westfield and Welsford about twenty miles from St. John, N.B. *S2*.

246. 1909 MAY 9. 9:20 p.m. IV. A sharp earthquake near Ste-Agathe, Que., rattled the cupboards and caused people to run out of their homes. *S2*.

247. 1909 JUNE 8. 3:25 a.m. IV. Two shocks, not ten minutes apart were felt at Ste-Agathe, Que. Little damage was done. *S2*.

248. 1909 DECEMBER 10. 1:24:10 a.m. IV. 45°4N, 75°6W. The shock was centered just east of Ottawa and felt throughout the city. At the Geological Survey on Sussex Street, a pan of sand and water had been left to settle resting on a light bench. In the morning the sand was furrowed in a manner which showed that the shock had passed from east to west. It was said to have broken twenty good sized bolts in the St. Patrick Street bridge. One man reported that he felt the shock lightly at Almonte, Ont. *S2*, *S3*.

"A local earthquake was recorded at the Dominion Observatory at 1:24:10 o'clock ... The disturbance lasted five seconds and the maximum amount of motion or oscillation of the earth particles was three-hundredths of an inch." *S2 quoting Dr. O. J. Klotz.*

249. 1909 DECEMBER 19 or 20. 3:00 p.m. VI. 46°5N, 60°5W. Felt throughout Cape Breton, N.S. News of the shocks was said to have been delayed by the breaking of cables. *B5*, *S1.2*, *S2*.

250. 1910 FEBRUARY. VI. 48°0N, 70°0W. In the St. Lawrence Valley. Felt in New England and Quebec. *M3*.

251. 1910 FEBRUARY 25. "Night." IV. 43°2N, 79°8W. Centred near Hamilton, Ont., and felt lightly at St. Catharines, Ont. *S2*.

252. 1910 OCTOBER 25. 4:30 a.m. V. 47°6N, 69°8W. Felt at St. Pascal and throughout Kamouraska county, Que. The shock continued for about thirty seconds but caused no serious damage. *S2*.

253. 1912 MARCH 27. 7:52 a.m. V. 43°2N, 79°7W. Felt most severely at Hamilton, Ont., where dishes were shaken from shelves. The shock was recorded for about thirty seconds on the seismograph at Toronto and also felt feebly by a few persons. *S2*.

254. 1912 OCTOBER 23. IV. 49°5N, 68°0W. Houses were badly shaken along the north shore of the St. Lawrence River between Rivière-Bersimis and Rivière-Pentecôte, Que. *R1.3*. *S2*,

255. (341) 1912 DECEMBER 11. 5:15 a.m. VI. 45°0N, 68°0W. Centred west of Eastport, Me., and felt from Augusta, Me., to Fredericton, N.B. Plotted as No. 341 in U.S.A. *B5*, *H1*, *R1.3*, *S2*, *W4.3*.

256. 1913 APRIL 28. 7:28:57 p.m. V. Instrumental magnitude 4.4. 44°52′N, 75°20′W (a). Near Iroquois, Ont. Recorded by seismographs at Ottawa and Harvard and studied in the field by Dr. O. J. KLOTZ. Felt at Montreal, Pembroke, Thousand Islands and throughout the northern portions of New York and Vermont. Parts of chimneys fell at Iroquois, Ont. *B5*, *H1*, *K2*, *K3*, *M3*, *S1.1*, *S2*, *S3*, *W4.5*.

257. 1913 JUNE 8. 1:30 a.m. IV. Felt most severely near Brownsburg, Que. *S2*.

258. (346) 1914 JANUARY 13. 3:00 a.m. V. 45°1N, 67°2W. Near Calais, Me., and St. Stephen, N.B. Plotted as No. 346 in U.S.A. *B5*, *H1*, *M3*, *R1.4*.

259. 1914 FEBRUARY 10. 1:31 p.m. VII. Instrumental magnitude 5.5. 44°59′N, 76°55′W (a). About 25 miles west of Lanark, Ont.

Dr. O. J. Klotz (*K4*), 1914, placed the epicentre at 46°15′N, 74°46′W. He used the distance from Ottawa and an azimuth computed from P–wave amplitudes as measured by a pair of horizontal seismographs. Hodgson (H12), 1953, has observed, at 120 km distance, that P–activity on the transverse component is about as large as that on the radial. It therefore seems that the azimuth of a shock at this distance cannot be reliably found by this simple method. In the present determination, data from Harvard station was combined with that from Ottawa to yield two possible positions of the epicentre and a single origin time. A distance obtained from a seismogram at Cornell (Ithaca, N.Y.) confirmed the more southerly location. This position is much closer to the centre of the disturbed area as shown on Dr. Klotz's map. From some of the reports, the epicentre might have been placed further south in New

York State. However the instrumental evidence is accepted.

North Bay and Toronto in Ontario, Philadelphia and New York City in the United States, and Quebec City and Chicoutimi in Quebec seem to have been near the limits of the zone in which the shock was felt. The region inside these limits was severely shaken. *B5, H1, K2, K4, M3, R1.4, S1.3, S2, S3, W4.4.*

260. 1914 FEBRUARY 14. 4:34 a.m. V. 46°4N, 73°6W (a). Centred north of Ste-Emélie, Que. The shock was felt in the Quebec and Saguenay areas. The epicentre was determined instrumentally. *M2, S2, S3, W4.4.*

261. 1914 APRIL 12. 3:20 p.m. IV. Felt at Godbout, Que. about 250 miles below Quebec City on the north shore of the St. Lawrence River. *S2.*

262. 1915 JULY 27. 11:00–12:00 noon. V. 44°0N, 65°0W. Centred near Sable River, N.S., where pictures on walls were disarranged. Felt from Mahone Bay to Shelburne, N.S. *S2.*

263. 1915 AUGUST 6. 4:35 p.m. III. Felt at Quebec City. *M2.*

264. 1916 FEBRUARY 29. 12:15 a.m. IV. 46°8N, 70°9W. Three sharp shocks felt at Quebec City and along the south shore of the St. Lawrence river below the city in the province of Quebec. *S2.*

265. 1916 APRIL 24. 11:07:45 a.m. V. 47°0N, 77°0W (?). This shock, though large enough to be recorded by the Ottawa seismograph (magnification 160) at a distance of 125 miles was not reported as felt. It seems probable therefore that it was centred in an uninhabited region of Quebec some 125 miles north of Hull. *S3.*

266. 1917 JANUARY 26. 2:35:48 p.m. V. 46°8N, 74°5W. The shock seems to have been felt about equally strongly at Ottawa and Montreal. The Ottawa record shows that the epicentre was about 115 miles from that station. Since this shock does not seem to have been felt widely in the United States, it was probably centred to the north of Ottawa and Montreal in an uninhabited area of the province of Quebec. *H15, M3, R1.7, S1.7, S2, S3, T3.*

267. 1917 MAY 22. 4:00:26 a.m. IV–V. 45°1N, 75°6W. Felt at Ottawa, Ont. and Ogdensburg, N.Y. Ottawa record indicated that the shock was 20 miles from that station. It was probably in the general direction of Ogdensburg, N.Y. *B5, H15, M3, S1.8, S2, S3, T3.*

268. 1917 JUNE 11. 9:00 p.m. V. 49°0N, 68°0W. Felt along the south shore of the St. Lawrence from Father Point to Cap Magdalen, Que., and strongly at Godbout on the north shore. Not well enough recorded at the Ottawa seismograph station to establish the distance from Ottawa. *R1.7, S2, S3.*

269. 1918 JULY 23. 9:00 a.m. IV. Felt at Loretteville, just north of Quebec City. *S2.*

270. 1919 OCTOBER 26. 5:28 a.m. IV. 47°6N, 70°0W. Felt along the north shore of the St. Lawrence River. No damage was reported. *S2, T3.*

271. 1920 FEBRUARY 6, IV. Felt at Tadoussac, Que. Taken from a list of shocks received by the Director of the Dominion Observatories, on March 2, 1925.

272. 1920 NOVEMBER 8. 2:26 p.m. IV–V. Felt at St-Thomas-de-Joliette, Quebec but did not cause damage. Barely recorded on the Ottawa seismograph. *S2, S3.*

273. 1921 AUGUST 27. 3:12:16 a.m. IV–V. 47°0N, 76°0W. Recorded on the Ottawa seismograph but not reported as felt. It was therefore probably centred in an uninhabited part of Quebec about 196 km north or northwest of Hull. *S3.*

274. (374) 1921 OCTOBER 10. 8:00 a.m. IV. 44°8N, 67°0W. Near Eastport, Me. Felt at Perry and Pembroke, Me. and at Campobello, N.B. Plotted as No. 374 in U.S.A. *H15, M3, S2.*

275. 1922 JULY 2. 5:25:35 p.m. VI. 46°5N, 66°6W. Estimated from reports to be in an uninhabited part of central New Brunswick. Chimneys fell at Bathurst. Dishes rattled on shelves and doors were opened at Fredericton. The shock was felt distinctly all over New Brunswick and at Charlottetown and Summerside in Prince Edward Island and at Londonderry, Oxford, and Truro in Nova Scotia. The eastern parts of Nova Scotia seem to have escaped the disturbance. It was also felt at Wytopitlok, Me. *H15, S2.*

276. 1922 JULY 26. 2:31:08 a.m. VI–VII. 50°0N, 50°0W. Under the Atlantic Ocean west of Newfoundland. Epicentre given in the International Seismological Summary. *B1, S3.*

277. 1923 SEPTEMBER 27. 4:20 a.m. II. Felt at Quebec City. *M2.*

278. 1924 MARCH 4. 2:15 p.m. V. 47°8N, 70°2W. About 20 miles north of La Malbaie, Que. The shock was felt for 50 miles along the north shore of the St. Lawrence River, from Les Eboulements to Tadoussac, Que. The shaking lasted for about a "minute and a half" but no damage was reported. *S2.*

279. 1924 JULY 14. 7:10 p.m. V–VI. 45°7N, 76°5W. A few miles north of Shawville, Que. Felt quite markedly from Pembroke to Ottawa along the Ottawa Valley. Reports from Renfrew stated that "buildings rocked and doors were shaken from their holdings". It appears however that no serious damage occurred. *B1, N1, S2, S3.*

280. 1924 SEPTEMBER 30. 03:52.5 a.m. VII–VIII. Instrumental magnitude 6.1. 47°6N, 69°7W. Some indication that the focus is about 20 km deep. Situated about 40 miles west of La Malbaie, Que. The shock was felt from Ottawa Ont. eastward through Quebec, New Brunswick and northern Maine, over an area of about 30,000 sqaure miles. No serious damage was reported. *B1, B5, H1, H14, P2, M2, M3, S1.10, S2, S3.*

281. 1924 NOVEMBER 14. 8:32 p.m. IV. 45°5N, 76°3W. In the Ottawa Valley between Arnprior, Ont., and Quyon, Que., the only points at which the shock was felt. *S2. S3.*

282. 1925 FEBRUARY 28. 9:19:20 p.m. IX. Instrumental magnitude 7 (*G3*). 47°6N, 70°1W. (a). In the St. Lawrence River between the mouth of Rivière la Malbaie on the north and the mouth of Rivière Ouelle on the south. The position of the epicentre was determined from the instrumental data of 29 seismograph stations throughout the world and confirmed by extensive field studies.

Replies to questionnaires indicate that the tremors were felt as far south as Virginia, as far west as the Mississippi, as far east as the Atlantic and as far north as a lone camp 80 miles north of Lake Saint John. This comprises an area of over 1,000,000 square miles and it seems likely that an additional 1,000,000 square miles of uninhabited northern wilderness and Atlantic Ocean bed were similarly shaken. Heck (*H1*) suggests that since the earthquake was felt with an intensity of IV at Boston and New York, it probably affected more people in the United States than any previous shock.

Three separate areas experienced severe effects. The first was that of maximum damage confined to a narrow belt 20 miles long on both shores of the St. Lawrence about 90 miles below Quebec City in the immediate vicinity of the epicentre. In this area damage at Baie-St-Paul, St-Urbain, Les Eboulements, Pointe-au-Pic, La Malbaie, Tadoussac and villages adjacent to these on the north shore as well as Ste-Anne-de-la-Pocatière, St-Pacôme, Rivière-Ouelle, St-Philippe, St-Denis, and St-Pascal on the south shore, was owing largely to the strength of the tremors aggravated in a few cases by the deep alluvial soil on which the damaged structures were built. The two other locations were at Quebec City and in the Trois Rivières—Shawinigan Falls area. In these the damage was owing, not so much to the intensity of the shock, as to the unstable nature of the terrain. A few details of the damage at various places are given below.

Baie-St-Paul.—The town is built on the delta of the Gouffre river. Here the distribution of minor damage was very general. There were fallen chimneys broken windows, overthrown dishes, etc. At the Catholic church, a stone structure with a tower 150 feet high, two of the large bells were thrown out of their bearings, and a cubic yard of stone was dislodged from the top of the tower.

St-Urbain.—The village is eight miles up the Gouffre river from Baie-St-Paul. Broken windows and fallen chimneys were general though the houses, being of frame construction, were otherwise unharmed. The stone church which had survived the earthquake of 1870 was practically wrecked. The spire was tilted dangerously towards the northeast and finally fell at 3:00 a.m. eleven days after the earthquake (March 11), breaking the telephone line connecting Chicoutimi with Quebec. Water and sand oozed from cracks which opened in the frozen floor of the valley between St-Urbain and Baie-St-Paul.

Les Eboulements.—This village is on the north shore of the St. Lawrence, nine miles below Baie-St-Paul. Much plaster was cracked and thirteen chimneys fell—mostly toward the northwest. In several cases the walls of stone houses were cracked.

Pointe-au-Pic.—Pointe-au-Pic and La Malbaie adjoin. Damage in these two villages was more severe than elsewhere on the north shore of the St. Lawrence. At Pointe-au-Pic most of the chimneys were broken. Fireplace masonry was cracked and twisted. Statues rotated or fell. Foundations here were more solid than at Baie-St-Paul, many being on rock. Had this not been so the damage would have been much greater. The main shock was felt by the crew on a morning train approaching Pointe-au-Pic at the time.

La Malbaie.—This village is built partly on rock and partly on the alluvium at the mouth of Rivière La Malbaie. It affords an excellent example of the difference in damage sustained by structures on the two types of terrain. The jail, on alluvium, though massively constructed of stone, was badly cracked throughout. An old manor house on the bank of the St. Lawrence, also of solid stone construction, suffered severe damage. The south wall bulged out the great chimneys were tilted and the verandah came loose from the wall. On the other hand the church, built upon solid rock, was not damaged. The bond between the stone front and the plaster walls remained unbroken. Several stoves were overturned but no fires resulted which was most remarkable considering the circumstances. Many chimneys were "twisted off". That is, they fell in a manner which left the bricks strewn out in a sort of spiral from the foot of the chimney.

Tadoussac.—Many chimneys were broken and as a rule fell towards the east.

Ste-Anne-de-la-Pocatière.—This village is on the south shore of the St. Lawrence. Most of the chimneys were thrown down. Plumbing was broken. The plaster tops of pillars in the chapel of the college were destroyed. Some monuments in the cemetery were thrown down while many others were rotated. Crockery was broken throughout the village. The snow, which was frozen hard at the time of the shock, was cracked generally in this district. The frozen earth beneath the snow was cracked into huge rectangular grids and buried water conduits were broken.

St-Pacôme.—The destruction of chimneys was general. Goods were upset or moved along the floor and in one case a heavy safe was shifted more than a foot. The frozen road surface was cracked more or less regularly at distances of 100 feet or less, in some places as close as 15 feet. A great crack opened in the clay where the valley floor rises to the cliff.

Rivière Ouelle.—Every chimney for several miles around was destroyed. The wall of the railway station was thrown out from foundation to roof by the first shock. Between the station and the St. Lawrence three stone houses with walls up to two feet thick were destroyed. The church, a fine stone structure built in 1872 was severely damaged. The organ pipes were projected upward and outward into the auditorium. Stones were jarred loose from the walls and the

great stone chimney crashed through the roof. In the churchyard the monuments were overturned or rotated. Those which fell lay to the southeast. A great crack formed beside the roadway about a mile from the church.

St-Philippe.—Here the houses were of frame construction and founded upon rock. The damage was relatively light.

St-Denis.—This village had few houses. The church steeple was extraordinarily high and was swayed by the earthquake so that the joint between the roof and the wall was chipped. Statues in the church fell southeast.

St-Pascal.—The village has a fine church which had suffered damage in the earthquake of 1870. The walls, though very thick, were much cracked by this earthquake and every statue but one in the building was thrown down. The cost of repairs was said to be $5,000.

Québec.—The chief damage here was to the Palais Railway Station and to the grain elevators and shipping sheds which border the St-Charles river. The station is of steel and brick construction. The earthquake swayed the steel, breaking many panes of glass in the skylights and battering the top rows of bricks out of the wall in the north end waiting room. The grain elevator and loading sheds are built on made ground which was dredged from the river and placed behind a row of piles along the waters edge. The sheds are about 30 feet high. A row of grain galleries, on an open steel framework, stands above the shed to a height of about 100 feet. The galleries are connected to the elevator by an overhead passageway. In the top of the elevator, there are immense scales capable of handling 60 tons of grain. Clearly these structures tend to be top heavy. At the time of the earthquake the made ground yielded and the galleries lurched back and forth shifting the lower ends of the steel supporting columns on their concrete piers and bending the bracing steelwork. Several sections of the concrete ceiling of the sheds were thrown down. Some of the scales in the elevator were thrown from their pivots and fell to the south, others swung back and forth battering the doors. The superstructure of the elevator with its heavy machinery swayed sufficiently to break the reinforced concrete support columns at their junctures with the main building. Less than half a mile from the elevator and shed stands the Chateau Frontenac Hotel. It is built upon a rocky cliff in the central part of the city. Some persons in the hotel did not feel the earthquake at all and none were greatly alarmed by it. The difference between the observed effects at the two locations so close together is due entirely to the difference in terrain.

Trois-Rivières.—Damage here was not serious. A water tank supported on steel columns tied into the walls of a factory swayed hard enough to crack the walls. About 25 feet of the top of a 250-foot brick stack was thrown down.

Shawinigan Falls.—Many stone and brick walls, though well built, were cracked because the buildings were placed on or near the slopes of clay banks. The steel frame of one factory plant, acting as a battering-ram under the influence of the earthquake, dislodged portions of the gable ends from the structure. Abbott (*A1*) who made a survey of the damage at both Trois-Rivières and Shawinigan Falls placed the total loss for both at $17,000.

The main shock was followed by many aftershocks. These were described as almost continuous during the night. Fifty-five are listed below and of these seventeen have been assigned numbers and dealt with individually. The remainder are of slight intensity and are generally based on single reports from places close to the epicentre.

FEBRUARY 28. 11:30:42 p.m. See No. 283.
MARCH 1. 1:25:21 a.m. See No. 284.
MARCH 1. 2:25:10 a.m. See No. 285.
MARCH 1. 8:21.5 a.m. See No. 286.
MARCH 1. 9:10 a.m. Felt at Pointe-au-Pic.
MARCH 1. 9:20 a.m. Felt at Pointe-au-Pic.
MARCH 1. 9:30 a.m. Felt at Pointe-au-Pic.
MARCH 1. 10:39 a.m. Felt at Pointe-au-Pic.
MARCH 1. 11:27 a.m. Felt at Pointe-au-Pic.
MARCH 1. 12:24 p.m. Felt at Pointe-au-Pic.
MARCH 1. 1:35 p.m. Felt at Pointe-au-Pic.
MARCH 1. 2:55 p.m. Felt at Pointe-au-Pic.
MARCH 1. 3:26 p.m. Felt at Pointe-au-Pic.
MARCH 1. 4:15 p.m. Felt at Pointe-au-Pic.
MARCH 1. 7:15 p.m. Felt at Pointe-au-Pic.
MARCH 2. 6:35 a.m. Felt at Pointe-au-Pic.
MARCH 2. 9:42 a.m. Felt at Pointe-au-Pic.
MARCH 2. 9:43 a.m. Felt at Pointe-au-Pic.
MARCH 2. 10:29 a.m. Felt at Pointe-au-Pic.
MARCH 2. 3:25 p.m. Felt at Pointe-au-Pic.
MARCH 2. 5:26 p.m. Felt at Pointe-au-Pic.
MARCH 2. 6:14 p.m. Felt at Pointe-au-Pic.
MARCH 2. 6:45 p.m. Felt at Pointe-au-Pic.
MARCH 3. 6:05 a.m. Felt at Pointe-au-Pic.
MARCH 3. 8:23 a.m. Felt at Pointe-au-Pic.
MARCH 3. 11.15 a.m. Felt at Pointe-au-Pic.
MARCH 3. 2:34 p.m. Felt at Pointe-au-Pic.
MARCH 3. 6:33 p.m. Felt at Pointe-au-Pic.
MARCH 3. 10:25 p.m. Felt at Pointe-au-Pic.
MARCH 4. 2:30 p.m. Felt at Pointe-au-Pic.
MARCH 5. 12:20 p.m. Felt at Pointe-au-Pic.
MARCH 5. 3:32 p.m. Felt at Pointe-au-Pic.
MARCH 5. 5:45 p.m. Felt at Pointe-au-Pic.
MARCH 5. 6:43 p.m. Felt at Pointe-au-Pic.
MARCH 6. 7:34 a.m. Felt at Pointe-au-Pic.
MARCH 6. 10:30 a.m. Felt at Pointe-au-Pic.
MARCH 6. 2:10 p.m. Felt at Pointe-au-Pic.
MARCH 6. 9:30 p.m. See No. 287.
MARCH 6. 11:30 p.m. Felt at Pointe-au-Pic.
MARCH 7. 7:00 p.m. Felt at Pointe-au-Pic.
MARCH 8. 9:02 a.m. Felt at Pointe-au-Pic.
MARCH 8. 10:42 a.m. Felt at Pointe-au-Pic.
MARCH 8. 5:45 p.m. Felt at Pointe-au-Pic.
MARCH 14. 5:18 a.m. See No. 288.
MARCH 17. 9:45:20 a.m. See No. 289.
MARCH 18. 8:15:22 a.m. See No. 290.
MARCH 21. 10:22:04 a.m. See No. 291.
APRIL 10. 4:30 a.m. See No. 292.

April 11. 6:30 a.m. See No. 293.
April 25. 11:50 p.m. See No. 295.
May 30. 10:57 p.m. See No. 297.
July 5. See No. 298.
July 6. 4:33:04 p.m. See No. 299.
July 26. 9:20–9:45 p.m. See No. 303.
July 27. 4:00 a.m. See No. 304.

The above information has been taken, in many instances verbatim, from a 75-page account of this earthquake by Dr. E. A. Hodgson (*H11*). *A1, B1, B5, G3, H1, H2, H3, H5, H6, H7, H9, H10, H11, H14, M2, M3, N1, S2, S3.*

283. 1925 February 28. 11:30:42 p.m. VI. Aftershock of No. 282. Felt at La Malbaie, Tadoussac, Chicoutimi, Baie-St-Paul, Quebec City, Lévis and Trois-Pistoles, Que., and recorded at Ottawa. *H11, S3.*

284. 1925 March 1. 1:25:21 a.m. IV–V. Aftershock of No. 282. Felt at La Malbaie, Tadoussac, Chicoutimi, Baie-St-Paul, Quebec City, Lévis and Trois-Pistoles, Que., and recorded at Ottawa. *H11, S3.*

285. 1925 March 1. 2:25:10 a.m. IV–V. Aftershock of No. 282. Felt at La Malbaie, Tadoussac, Chicoutimi, Baie-St-Paul, Quebec City, Lévis and Trois-Pistoles, Que., and recorded at Ottawa. *H11, S3.*

286. 1925 March 1. 8:21.5 a.m. IV. Aftershock of No. 282. Felt generally over the epicentral area and recorded at Ottawa. *H11, S3.*

287. 1925 March 6. 9:30 p.m. V. Aftershock of No. 282. Felt at Pointe-au-Pic. Trois-Pistoles, Rivière-du-Loup, St-Pacôme, Rivière-Ouelle, Tadoussac, Chicoutimi and La Malbaie, Que., and recorded at Ottawa. *H11. S3.*

288. 1925 March 14. 5:18 a.m. IV. Aftershock of No. 282. Reported from Chicoutimi and from a point in the woods about midway between Chicoutimi and La Malbaie Que., and recorded at Ottawa. *H11.*

289. 1925 March 17. 9:45:20 a.m. IV. Aftershock of No. 282. Recorded at Ottawa. Presumably felt at the epicentre. *H11, S3.*

290. 1925 March 18. 8:15:22 a.m. IV. Aftershock of No. 282. Recorded at Ottawa. Presumably felt at the epicentre. *H11, S3.*

291. 1925 March 21. 10:22:04 a.m. VI. Aftershock of No. 282. Reported as felt on board an icebreaker near Richelieu Rapids. Felt also at Misère, St-Adalbert, St-Donat, Rivière-du-Loup, La Malbaie, Ha! Ha! Bay and Quebec City, all in Quebec. Registered on the Ottawa seismograph. *H11, M2, S3.*

292. 1925 April 10. 4:30 a.m. III. Aftershock of No. 282. Felt at St-Pascal, La Malbaie and Chicoutimi, but not at St-Bruno, all in Quebec. *H11.*

293. 1925 April 11. 6:30 a.m. III. Aftershock of No. 282. Felt at St-Pascal, La Malbaie, and Chicoutimi, but not at St-Bruno, all in Quebec. *H11.*

294. 1925 April 16. 4:30–5:00 a.m. III. Two shocks were felt by several people at Fredericton, N.B. *S2.*

295. 1925 April 25. 11:50 p.m. IV. Aftershock of No. 282. Felt at St-Pascal, Kamouraska, Ste-Anne-de-la-Pocatière, and Chicoutimi, Que. but not on the Canadian National Railway from Monk to Rivière-Bleue. *H11.*

296. 1925 May 6. 4:14 a.m. (?) III. 46°9N, 71°6W. Felt for a few seconds at Quebec City, and reported from St-Albans, Portneuf county, 40 miles to the west. *M2.*

297. 1925 May 30. 10:57 p.m. III. Aftershock of No. 282. Felt at La Malbaie but not at Quebec City. *M2.*

298. 1925 July 5. II. Aftershock of No. 282. Felt on the north shore of the St. Lawrence east of Baie-St-Paul, Que. *M2.*

299. 1925 July 6. 4:33:04 p.m. IV. Aftershock of No. 282. Felt on the north and south shores of the St. Lawrence, particularly in the county of Kamouraska, Que. *M2, N1.*

300. 1925 July 12. 10:56:30 a.m. II. Felt at Quebec City. *M2, N1.*

301. 1925 July 12. 5:09:40 p.m. II. Very feeble. Felt at Quebec City. *M2, N1.*

302. 1925 July 20. "Early" III. 46°9N, 71°3W. Felt north and northwest of Quebec City. *M2.*

303. 1925 July 26. 9:20–9:45 p.m. IV. Aftershock of No. 282. Felt at Ste-Anne-de-la-Pocatière and Les Eboulements, Que. *H11, M2.*

304. 1925 July 27. 4:00 a.m. III. Aftershock of No. 282. Felt locally in the county of Kamouraska. Reported slight. Two tremors noted in Ste-Hélène, Que. *H11, M2, N1.*

305. 1925 October 1. 8:58 a.m. II. Felt feebly at Quebec City. *M2.*

306. 1925 October 8. 12:00 midnight IV. Felt for about two minutes at Quebec City. *M2.*

307. (386) 1925 October 9. 9:00 a.m. V. 43°7N, 71°1W. Felt feebly at Quebec City. Plotted on the map as No. 386 in U.S.A. *B5, H1, H14, M2, M3, N1, S2.*

308. 1925 October 19. 7:05:17 a.m. V. 47°0N, 73°0W. Felt at Montreal and at Quebec City, for about ten seconds. *H14, M2, S3.*

309. 1925 October 27. III. Reported felt by personnel of the Quebec Development Co. at Isle-Maligne, Que.

310. 1926 February 19. 3:20 p.m. IV. 47°7N, 71°0W. Felt at Quebec City and Chicoutimi, Que. and other points along the St. Lawrence. *M2, S2.*

311. 1926 February 21. 4:55 p.m. IV. 47°6N, 70°9W. Felt at Quebec City, Pointe-au-Pic and Chicoutimi, Que. *M2, S2.*

312. 1926 March 1. III. Five or six slight tremors were felt in the upper section of Quebec City, and although considerable commotion was created, no damage was reported. *S2.*

313. 1926 March 15. 11:42 p.m. III. Felt for about one minute at Quebec City. *M2.*

314. 1926 July 4. 3:20 a.m. III. Felt by a few people at Sherbrooke, Que. *M2, S2.*

315. 1926 July 18. 1:00 a.m. IV. 71°5N, 47°0W. Felt at Quebec City, Lac-St-Joseph and Ste-Catherine, Que. *M2.*

316. 1926 August 23. 11:40–11:50 a.m. IV. Felt sharply and rattled dishes, etc., at Pembroke, Ont. *S2.*

317. 1926 SEPTEMBER 21. 6:30 a.m. IV. 48°.0N, 70°.5W. Felt at St-Siméon and Baie-St-Paul, Que. *S2*.

318. 1926 OCTOBER 27. 1:40 p.m. II. Felt at Quebec City. *M2*.

319. 1926 OCTOBER 27. 2:20 p.m. II. Felt for fifteen seconds at Quebec City. *M2*.

320. (407) 1926 NOVEMBER 24. 2:30 p.m. IV. 45°.0N, 67°.5W. In southeastern Maine. Felt strongly at Eastport, Me., and St. Stephen, N. B. Plotted as No. 407 in U.S.A. *N1*, *S2*.

321. 1926 DECEMBER 7. 10:52 p.m. II. Felt feebly for a few seconds at Quebec City. *M2*.

322. 1926 DECEMBER 20. 11:28 a.m. II. Felt feebly at Quebec City. *M2*.

323. 1926 DECEMBER 28. 8:21–8:22–8:25 p.m. III. Three distinct tremors felt at Quebec City. *M2*.

324. 1926 DECEMBER 29. 12:30 a.m. IV. 46°.2N, 60°.2W Awakened many residents of Sydney and North Sydney, N.S. *S2*.

325. 1927 JANUARY 8. 11:45 p.m. II. Felt for twenty seconds at Quebec City. *M2*, *N1*.

326. 1927 FEBRUARY 5. 12:30 p.m. II. Felt for ten seconds at Quebec City. *M2*, *N1*.

327. 1927 FEBRUARY 6. 11:20 a.m. II. Felt for ten seconds at Quebec City. *M2*, *N1*.

328. 1927 FEBRUARY 9. 6:30 p.m. III. Reported by a resident of La Malbaie, Que.

329. 1927 FEBRUARY 9. 7:40–7:42 p.m. II. Felt feebly for ten seconds at Quebec City. It seems unlikely that this is the same disturbance as that listed above for if felt from La Malbaie to Quebec City, it should have been felt more generally. *M2*, *N1*.

330. 1927 FEBRUARY 16. 7:30 a.m. II. Felt for eight or nine seconds in the choir loft of Notre Dame Church at Hull, Que. *S2*.

331. 1927 FEBRUARY 24. 1:14 p.m. II. Felt feebly at Quebec City. *M2*

332. 1927 MARCH 20 or 27. "Sunday night". III. Felt at La Malbaie, Que. Mentioned by Massey (*M2*) in a letter dated April 4, 1927.

333. 1927 MAY 22. 9:09 p.m. II. Two tremors felt at Quebec City. *M2*.

334. 1927 MAY 23. 1:14 p.m. II. Feeble tremor felt at Quebec City. *M2*.

335. 1927 JULY 24. 7:56 p.m. V. 47°.3N, 71°.0W. Felt from Lac-Sergent to Petite-Rivière on the north shore of the St. Lawrence River and at the following points between: Loretteville, Giffard, Beaupré, St-Joachim and St-Féréol as well as Cap Tourmente on the Isle-aux-Grues. It was reported felt at Quebec City also, but Massey (*M2*) says it was not felt there. *M2*, *N1*, *S1.18*, *S2*.

336. 1927 AUGUST 17. 10:57 p.m. III. Several distinct shocks felt at Quebec City. *M2*.

337. 1927 NOVEMBER 12. 7:50 p.m. IV. Two distinct earth shocks felt within a short period of time at Niagara Falls, Ont. An Oshawa paper said that occupants of houses rushed out into the street. A Toronto paper reported that police on both sides of the international border had not received any report of the shock. *N1*, *S1.19*, *S2*.

338. 1927 NOVEMBER 24. 4:40 p.m. III. 44°.0N, 60°.0W. Light earthquake felt by persons on Sable Island and reported by radio to the Seismograph Station at Halifax, N.S.

GEOGRAPHICAL INDEX*

32°N-33°N
80°W-81°W No. **181** (**293** US) Not plotted.

40°N-41°N
74°W-75°W No. **160** (**278** US)
84°W-85°W No. **161** (**279** US)

41°N-42°N
67°W-68°W No. **17** (**47** US)

42°N-43°N
79°W-80°W Nos. **145**, **146**.
80°W-81°W No. **86**.

43°N-44°N
65°W-66°W No. **46**.
66°W-67°W Nos. **41**, **112**.
71°W-72°W No. **307** (**386** US)
75°W-76°W No. **53** (**151** US)
78°W-79°W Nos. **68** (**180** US), **116**, **175**.
79°W-80°W Nos. **38**, **54**, **71**, **106**, **107**, **124**, **152**, **180**, **182**, **211**, **221**, **251**, **253**, **337**.

44°N-45°N
60°W-61°W No. **338**.
63°W-64°W No. **108**.
65°W-66°W Nos. **56**, **63**, **239**, **262**.
66°W-67°W Nos. **60**, **218**, **219**, **220**, **226**, **228**.
67°W-68°W Nos. **89**, **274** (**374** US)
73°W-74°W Nos. **85** (**191** US), **225** (**305** US)
74°W-75°W Nos. **104** (**201** US), **118** (**234** US)
75°W-76°W No. **256**.
76°W-77°W No. **259**.
77°W-78°W Nos. **174**, **202**.
78°W-79°W Nos. **42**, **43**.
79°W-80°W No. **234**.

45°N-46°N
63°W-64°W No. **45**.
64°W-65°W No. **34**.
66°W-67°W Nos. **18**, **87**, **91**, **157**, **173**, **217**, **245**, **294**.
67°W-68°W Nos. **147**, **216** (**304** US), **231** (**315** US), **258**, (**346** US), **320** (**407** US)
68°W-69°W No. **255** (**341** US)
71°W-72°W No. **314**.
72°W-73°W Nos. **72**, **73**, **149**, **168**.
73°W-74°W Nos.
3, **15**, **24**, **25**, **29**, **40**, **44**, **47**, **49**, **51**, **59**, **62**, **64**, **67**, **70**, **74**, **79**, **83**, **90**, **103**, **110**, **123**, **129**, **144**, **201**, **205**, **209**, **212**, **214**, **215**, **222**, **223**, **224**, **243**, **244**.
74°W-75°W Nos.
28, **50**, **58**, **95**, **105**, **115**, **119**, **130**, **139**, **148**, **150**, **151**, **162**, **163**, **166**, **167**, **170**, **195**, **198**, **208**, **227**, **240**, **257**.
75°W-76°W Nos. **55**, **65**, **66**, **78**, **125**, **126**, **127**, **128**, **137**, **197**, **206**, **232**, **248**, **267**, **330**.
76°W-77°W Nos. **120**, **121**, **237**, **241**, **279**, **281**.
77°W-78°W Nos. **196**, **316**.
80°W-81°W Nos. **189**, **192**.

* Serial numbers in bold-faced type designate those earthquakes of intensity V or greater. Serial numbers followed by "US" refer to the United States list on page 289.

46°N-47°N
53°W-54°W No. **82**.
60°W-61°W Nos. 183, **249**, 324.
64°W-65°W No. **61**.
66°W-67°W Nos. **31**, **275**.
67°W-68°W No. **242**.
69°W-70°W No. **26** (**94** US)
70°W-71°W No. 264.
71°W-72°W Nos.
11, 16, 20, 21, 27, 30, **80**, 84, **94**, 99, 100, 102, 131, 230, 263, 269, 277, 296, 300, 301, 302, 305, 306, 312, 313, 318, 319, 321, 322, 323, 325, 326, 327, 329, 331, 333, 334, 336.
72°W-73°W No. **2**.
73°W-74°W Nos. **39**, **260**, 272.
74°W-75°W Nos. 179, 246, 247, **266**.
76°W-77°W No. 109.

47°N-48°N
53°W-54°W No. **159**.
65°W-66°W No. 52.
69°W-70°W Nos. 48, 75, 117, 200, 207, **252**, **280**.
70°W-71°W Nos.
1, **4**, **5**, **6**, 7, 8, 9, **10**, **12**, **22**, **32**, **33**, 35, 36, **57**, **77**, **88**, **92**, 93, **96**, 97, 98, **101**, 122, 132, 134, 135, 136, 138, 140, 171, 191, **193**, 199, 213, 229, 233, 235, 236, 238, 270, **278**, **282**, **283**, 284, 285, 286, **287**, 288, 289, 290, **291**, 292, 293, 295, 297, 298, 299, 303, 304, 311, 328, 332.
71°W-72°W Nos. 310, 315, **335**.
73°W-74°W No. **308**.
76°W-77°W No. 273.
77°W-78°W No. **265**.

48°N-49°N
64°W-65°W No. 165.
67°W-68°W No. 76.
68°W-69°W Nos. 81, 111, 203.
69°W-70°W Nos. 13, 14, 113, 114, 271.
70°W-71°W Nos. **250**, 317.
71°W-72°W No. 309.

49°N-50°N
66°W-67°W Nos. 187, 210.
67°W-68°W Nos.
133, 141, 142, 143, 153, 154, 155, 156, 158, 164, 169, 172, 176, 177, 178, 184, 185, 186, 188, 190, 194, 204, 261.
68°W-69°W Nos. 254, **268**.

50°N-51°N
50°W-51°W No. **276**.

53°N-54°N
79°W-80°W No. **19**.

55°N-56°N
60°W-61°W No. **37**.

57°N-58°N
62°W-63°W No. **23**.

58°N-59°N
62°W-63°W No. 69.

EARTHQUAKES OF NORTHEASTERN UNITED STATES

1. 1568 Rhode Island VII.
2. 1574 Rhode Island VII.
3. 1584 Rhode Island VII.
4. 1592 Rhode Island VII.

"Soon after this earthquake," (referring to that on June 11, 1638, listed as No. 2 in Eastern Canada,) "perhaps in the same month, Roger Williams writing to Governor Winthrop from Rhode Island, says that the young men among the Indians knew nothing of previous earthquakes, but that elders among them told him that the earthquake of June 1, 1638," (being June 11 by the Gregorian calendar,) "was the fifth great earthquake in less than four-score years, the earliest of which was about seventy years before that date, and the others about sixty-four years, fifty-four years and forty-six years, respectively prior to 1638." *P1.1.*

These may have originated near Moodus or East Haddam in the Connecticut River valley. Seismic activity in this region is indicated by the Indian name *Morehemoodus* meaning place of noises. The first severe shock recorded in this area occurred May 16, 1791. *B4, B5, P1.1.*

5. 1627 VI. Felt at Essex, Mass. *M3.*
"Reported only from Essex, Mass." *M3.*
"Equally violent to earthquake of 1638." *M3 quoting C1.*
6. 1638 July 1. III. Felt at Salem, Mass. *M3.*
7. 1639 January 25. III. Felt at Lynn ,Mass. *M3*, W*4.1.*
8. 1643 March 15. 7:00 a.m. V. Northeastern Massachusetts. Felt at Danvers, Lynn, and Haverhill. *A7, B4, B5, H14, M3, P1.1.*
9. 1643 June 11. 1:00 p.m. IV. Felt at Newbury, Mass. *B4, B5, M3.*
10. 1653 November 8. IV. Felt at Danvers, Mass. Very slight shock. *B3, B4, B5, M3, P1.1.*
11. 1658 April 14. V. Felt at Lynn, Mass. *B3, B4, B5, D2, H1, M3.*
12. 1668 April 3. 9:00 a.m. IV at Boston, Mass. Probably local. *B4, M3.*
13. 1668 June 26? II. Felt at Roxbury, Mass. *M3.*
14. 1669 November 30. II at Boston, Mass. *B4, B5, M3.*
15. 1670 II at Boston, Mass. *B4, B5, M3.*
16. 1686? February 18. IV. Felt at Danvers, Mass. *M3.*
17. 1698 IV. Felt at Danbury, Conn. *M3.*
18. 1701? February 10. III. Felt at Danvers, Mass. *M3.*
19. 1701 March 8. III. Felt at Danvers, Mass. *M3.*
20. 1702 IV. Felt at Danbury, Conn. *M3.*
21. 1706 II at Boston, Mass. *B4, B5, M3.*
22. 1711 IV. Felt at Danbury, Conn. *M3.*
23. 1721 January 19. II at Boston, Mass. *B4, M3.*
24. 1727 November 9. 10:40 p.m. IX. 42°.8N, 70°.8W(b). In the mouth of the Merrimac River, near Newbury, Mass. Felt from Maine to Delaware. This extent (75,000 square miles) suggests that it could have been felt in southern Quebec; however no Canadian record of the shock has been found. In a history of Newbury, Stephen Jacques wrote the following eye witness account:

"On the twenty-ninth day of October," (November 9 Gregorian Calendar,) "between ten and eleven, it being sabath day night, there was a terabel earthquake. The like was never known in this land. It came with a dreadful roreing, as if it was thunder, and then a pounce like grate guns two or three times close one after another. It shook down bricks from ye tops of abundance of chimnies, some allmost all the heads . . . . All that was about ye houses trembled, beds shook, some cellar walls fell partly down. Benjamins Plumer's stone without his dore fell into his cellar. Stone wals fell in a hundred plasis. Most peopel gat up in a moment. It came very often all ye night aftar, and it was heard two or three times some days and nights, and on the sabath day night on ye twenty-fourth of December following, between ten and eleven, it was very loud, as any time except ye first, and twice that night aftar but not so loud. The first night it broke out in more than ten

places in ye town in ye clay low land, blowing up ye sand, sum more, sum less. In one place near Spring Island it blew out, as was judged twenty loads, and when it was cast on coals in ye night, it burnt like brimstone." *Quoted by B4.*

This earthquake was followed by many aftershocks. The Rev. Matthias Plant kept a record of all shocks felt at Newbury from 1727–1741. His notes on some sixty-seven earthquakes were originally published in the *Philosophical Transactions*. The essential portions were later reprinted in Brigham's paper (*B4*). Most of these shocks were a continuance of the seismic activity near Newbury, although some were centred as far away as the St. Lawrence Valley. Newbury is less than five miles from the seat of the November 9, 1727, disturbance. The fifty-odd small shocks from the same source felt only in Newbury have little bearing on the seismicity of Eastern Canada. Accordingly, of Plant's list, only those felt over a wider area and those centred at places other than Newbury are included herein. *A7, B3, B4, B5, D2, H1, M3, M7.*

25. 1727 November 18. About 11:00 (?). V. Near Newbury, Mass. Aftershock of No. 24. Flet over southern New England. *A7, B4, B5, M3.*

26. 1727 December 28. 10:30 p.m. VI. Near Newbury, Mass. Aftershock of No. 24, Felt over southern New England. *B4, H14, M3.*

27. 1728 January 4. 10:00–11:00 p.m. VI. Aftershock of No. 24. Felt over southern New England. Mentioned by Stephen Jaques (see No. 24) as having occurred on December 24, by the Julian calendar. *B4, M3.*

28. 1728 January 12. III. Felt at New Hampton, N.H. *M3.*

29. 1728 February 10. 2:00 p.m. VI. Near Newbury, Mass. Felt over southern New England. Probably an aftershock of No. 24. *B3, B4, B5, D2, M3.*

30. 1729 August 6. IV. 41°.4N, 73°.5W. New Danbury, Conn. Presumably confined to the Connecticut Valley region. *M3.*

31. 1729 December 8. 8:00 p.m. V. 42°.3N, 70°.5W. Felt over eastern Massachusetts. *B5, M3.*

32. 1730 April 23. III. Felt at Lynn, Mass. *W4.1.*

33. 1730 December 23. 10:30 p.m. V. 42°.8N, 70°.9W. Near Newbury, Mass. Felt over eastern New England. *B4, B5, M3.*

34. 1737 February 17. 4:15 p.m. IV. 42°.8N, 70°.9W. Near Newbury, Mass. Felt over the eastern part of the state. *B3, B4, B5, D2, H1, M3, W4.1.*

35. 1737 September 20. 10:20 a.m. V. 42°.8N, 70°.9W. Near Newbury, Mass. Felt of the eastern part of the state. *B4, B5, M3.*

36. 1737 December 18. 10:30–11:00 p.m. VII. 40°.8N, 74°.0W. Near New York City. Felt at New York and over southern New England. Several chimneys were knocked down and bells tolled at New York. *B3, B4, B5, D2, H1, M3, M7.*

37. 1741 June 24.10:35 a.m. V. 42°.2N, 71°.2W. Near Boston, Mass. Felt over 1,000 square miles. *B4, B5, H1, M3.*

38. 1741 December 17. 8:00 a.m. IV. Felt at Boston, Mass. *B3, B4, B5, D2, H1, M3, T4.*

39. 1744 June 14. 10:00 a.m. VIII. 42°.6N, 70°.0W. Off Cape Ann. Felt over southern New England. *B3, B4, B5, D2, H1, M3.*

40. 1744 June 14. 5:00 p.m. VI. Aftershock of No. 39. Felt over eastern Massachusetts. Three more aftershocks that night and next morning. *M3, W4.1.*

41. 1744 July 1. V. Felt at Salem(?), Mass. *M3, W4.1.*

42. 1744 July 9. III. Felt at Salem (?), Mass. *M3.*

43. 1745 January 3. 12:00 noon. III. Felt at Newbury, Mass. *B4, B5, M3.*

44. 1747 February 13. 9:00 p.m. III. Felt at Boston, Mass. *B3, B4, B5, D2, M3, T4.*

45. 1747 August 25. "Sabbath morning." III. Felt at Dover, N. H. (?). *M3.*

46. 1751 July 21. "In the morning." III. Felt at Dover, N.H. (?). *M3.*

47. 1755 November 18. 4:12 a.m. IX. 41°.5N, 67°.0W. Under the Atlantic Ocean about 200 miles east of Cape Ann, Mass. Accompanied by a tsunami which withdrew the water from St. Martins Harbour in the West Indies leaving vessels aground. The shock was felt from Halifax, N.S. southward to Chesapeake Bay in Maryland and from Lake George, N.Y., eastward to a ship 200 miles east of Cape Ann. The ship is thought to have been near the epicentre because those on board felt the shock so strongly that they believed the ship had run aground. The greatest damage occurred at Boston. *A7, B3, B4, B5, D2, H1, H10, K1, P1.1, M3, M7, W1.*

"Mr. John Hyde," (an eye witness) "says: 'Many chimneys I conjecture (from observation) not much less than an hundred, are levelled with the roofs of the houses; many more I imagine not fewer than twelve or fifteen hundred are shattered and thrown down in part.' " *B4.*

This shock was carefully chronicled by Professor John Winthrop of Cambridge, Mass., who gave the following account of the damage at Boston:

"Besides the throwing down of glass, pewter, and other movables in the houses, many chimneys were levelled with the roofs of the houses, and many shattered and thrown down in part. Some were broken off several feet below the top, and, by the suddenness and violence of the jerks, canted horizontally an inch or two over, so as to stand very dangerously. Some others were twisted or turned round in part. The roofs of some houses were quite broken in by the fall of chimneys; and the gable ends of some brick buildings thrown down, and many were cracked. The vane upon the public market house was thrown down; the wooden spindle which supported it, about five inches in diameter, and which had stood the most violent gusts of wind, being snapped off. A new vane upon one of the churches was bent at its spindle, two or three points of the compass; and another at Springfield was bent to a right angle. A distiller's cistern, made of plank, almost new, and very strong put together, was burst to pieces by the agitation of the liquor in it; which was thrown out with such force as to break down one whole side of the shed that defended the cistern from the weather." *Quoted by B4.*

48. 1755 November 18. 5:29 a.m. IV. Aftershock of No. 47. Felt in Massachusetts. *B3, B4, B5, D2, H1, T4.*

49. 1755 November 22. 8:27 p.m. VI. Aftershock of No. 47. Felt in southern New England. *B3, B4, B5, D2, H1, M3, T4.*

50. 1755 DECEMBER 19. 10:00 p.m. III. Aftershock of No. 47. Felt in eastern Massachusetts. *B3, B4, B5, D2, H1, M3, T4.*

51. 1756 JANUARY 2. III. Felt at Boston (?), Mass. *B4, B5, D2, M3.*

52. 1756 NOVEMBER 16. 4:00 a.m. III. Felt at Boston (?), Mass. *B4, B5, D2, M3, T4.*

53. 1756 DECEMBER 4. 10:00 p.m. III. Felt at Boston (?), Mass. *B4, B5, D2, M3.*

54. 1757 JULY 8. 2:15 p.m. III. Felt at Boston, Mass. *B3, B4, B5, D2, M3, T4.*

55. 1759 FEBRUARY 2. 2:00–3:00 a.m. IV. Felt in the northeast of Boston, Mass. *B3, B4, B5, D2, M3.*

56. 1760 FEBRUARY 3. II. Felt at Boston, Mass. *B3, B4, B5, D2, M3.*

57. 1761 MARCH 12. 2:15 a.m. VI. 42°.5N, 71°.0W. Northeast of Boston, Mass. Felt throughout New England. *B4, B5, D2, M3.*

58. 1761 MARCH 16. IV Felt at Boston, Mass. *B4, B5, D2.*

59. 1761 NOVEMBER 1. 8:00 p.m. V. 43°.1N, 71°.5W. Southern New Hampshire. Felt through New Hampshire and Massachusetts. *B3, B4, B5, D2, M3.*

60. 1766 JANUARY 23. 5:00 a.m. V. Felt at Portland, Me. Several aftershocks occurred on the following day. *M3.*

61. 1766 FEBRUARY 2. VI. 42°.0N, 68°.0W. Felt throughout Massachusetts, Rhode Island and other parts of New England. May have been centred off the coast. *B4, B5, D2, M3.*

62. 1766 JUNE 14. III. 42°.7N, 70°.9W. Essex County, Mass. *B4, B5, M3.*

63. 1766 AUGUST 25. V. Felt at Newport, R.I. A violent shock lasting twenty-five minutes. *B4. B5. D2, M3.*

64. 1766 DECEMBER 17. 6:48 (?). IV. Felt at Portsmouth, N.H. *B4, B5, D2, M3.*

65. 1769 OCTOBER 19. "During night and at noon". IV. Felt at Portland, Me. *M3.*

66. 1780 NOVEMBER 29. IV. Felt at Lynn, Mass. *M3, W4.1.*

67. 1783 NOVEMBER 29. 10:50 p.m. VI. 41°.0N, 74°.5W. West of New York City. Felt from New Hampshire to Pennsylvania. A foreshock at 9:00 p.m. and an aftershock at 2:00 a.m. on November 30, were felt at both New York and Philadelphia but not elsewhere. *B4, B5, H1, M3.*

68. 1785 JANUARY 2. 7:15 a.m. VII. Felt Portland, Me., to Baltimore, Md. This shock was so light along the United States coast, yet felt over such a wide area that it would seem to have been centred far out to sea from the New England coast. *B4, B5, D2.*

69. 1786 NOVEMBER 29. 4:00 p.m. III. Felt at Cambridge, Mass. *B4, B5, D2, M3.*

70. 1787 FEBRUARY 25. 1:00 a.m. III. Felt at Cambridge, Mass. *B4, B5, D2, M3.*

71. 1791 MAY 16. 8:00 VIII. 41°.5N, 72°.4W. (b). Near Moodus, Conn. Felt over southwestern New England. Chimneys and stone fences were overturned near Moodus. *A3, A7, B4, B5, D2, H1, M3, M7.*

"The region around East Haddam on the Connecticut River, a few miles below Middletown, has been the scene of a series of local disturbances which have been noticed since the country was settled, and are referred to by Indian tradition and their name of the place, Morehemoodus, or place of noises. The first shock of which the time is recorded was on May 16, 1791, at eight o'clock in the morning, when it began by two very heavy shocks in quick succession. The first was more violent. Stone walls were shaken down, chimneys were untopped, latched doors thrown open, and a fissure in the ground several rods long supposed to be then opened as it was discovered soon after. Thirty lighter shocks succeeded in a short time, and more than a hundred were counted during the night." *B4.*

72. 1791 MAY 18. 10:00 p.m. VIII. 41°.5N, 72°.4W. (b). Near Moodus, Conn. Felt at New York and Boston. Considerable damage near Moodus. The following is an eyewitness account by Rev. Elijah Parsons:

"Many of our chimneys were untopped and consternation for a few minutes was spread through every family. It was a night to remember, for beside the concussion that was perceived at New York and Boston, and the same distance to the northward, there were perhaps fifty or a hundred which were felt only at a distance of a few miles around us. The next day apertures and fissures were found in the northeast part of this society. Of late years, since the earthquake I have been describing, these noises have been so rare that we hardly hear them named." *Quoted by P1.2.*

According to Brigham (*B4*) it is probable that this shock and that listed above for May 16, 1791, are one and the same. *A3, B3, B4, B5, D2, M3, P1.2.*

73. 1792 AUGUST 28. 10:00 p.m. IV. Felt at East Haddam, Conn. *A3, B4, B5, M3.*

74. 1792 OCTOBER 24. 1:00 a.m. IV. Felt at East Haddam. Conn. Three shocks were felt. *A3, B4, B5, M3.*

75. 1793 JANUARY 11. 8:00 a.m. IV. Felt at East Haddam, Conn. *A3, B4, B5, M3.*

76. 1793 JULY 6. 6:00 a.m. IV. Felt at East Haddam, Conn. *A3. B4, B5, M3.*

77. 1794 MARCH 9. 2:00 p.m. and 11:00 p.m. IV. Felt at East Haddam, Conn. *A3, B4, B5, M3.*

78. 1800 DECEMBER 25. VI. 41°.9N, 71°.1W. Felt in eastern Massachusetts. Felt at Newport, R.I., Boston, Concord, etc., Mass. *B4, B5, D2, M3.*

79. 1801 MARCH 1. 3:30 p.m. IV. Felt at Salem, Mass. *B4, B5, M3.*

80. 1803 JANUARY 18. 9:50 a.m. IV. Felt at Salem, Mass. *M3.*

81. 1804 MAY 18. III. Felt at New York, N.Y. *D2.*

82. 1805 APRIL 6. 2:15 p.m. IV. Felt at Lynn, Mass. *M3, W4.1.*

83. 1805 JUNE 12. 7:30 a.m. IV. 44°.5N, 69°.0W. Felt in southern Maine. *M3.*

84. 1805 AUGUST 11. 7:00 p.m. IV. 41°.5N, 72°.4W. Felt in the Connecticut Valley. *A3, B4, B5, H1, M3.*

85. 1805 DECEMBER 30. 6:00 a.m. IV. 41°.5N, 72°.4W. Felt in Connecticut Valley. *A3, B4, B5, M3.*

86. 1807 FEBRUARY 22. 2:00 p.m. III. Felt at Windham, Me. *M3.*

87. 1808 JUNE 26. 2:51 p.m. IV. 44°.4N, 69°.0W. Felt in southern Maine, *M3.*

88. 1810 NOVEMBER 9. 9:15 p.m. VI. 42°.8N, 70°.5W. North of Cape Ann. Felt over southeastern New England. *B4, B5, D2, H1, M3.*

89. 1811? JULY. III. 41°5N, 72°4W. Connecticut Valley. Felt at East Haddam. *M3.*

90. 1812 FEBRUARY 9. 9:00 a.m. III. 41°5N, 72°4W. Connecticut Valley. Felt at East Haddam. *A3, B4, B5, M3.*

91. 1812 JULY 5. 8:00 a.m. III. 41°5N, 72°4W. Connecticut Valley. Felt at East Haddam. *A3, B4, B5, M3.*

92. 1813 DECEMBER 28. 4:00 p.m. IV. 41°5N, 72°4W. Connecticut Valley. Felt at East Haddam. *A5, B4, B5, M3.*

93. 1814 NOVEMBER 28. 7:20 p.m. V. 43°7N, 70°4W. Near Windham, Me. Felt over southern Maine and eastern Massachusetts. *M3, W4.1.*

94. 1817 MAY 22. 3:00 p.m. VII. Central Maine. Felt all over New Brunswick as well. *K1, M3.*

95. 1817 SEPTEMBER 7. III. Felt at Lynn, Mass. *M3, W4.1.*

96. 1817 OCTOBER 5. 11:45 a.m. VII. 42°5N, 71°2W. Northeastern Massachusetts. Felt over southern New England and New York. *B4, B5, H1, M3, M7, W4.1.*

97. 1821 MAY 10. 7:30 a.m. IV. Felt at Belfast, Me. *M3.*

98. 1823 MARCH 7. 10:00 a.m. IV. Felt at Brunswick, Me. *M3.*

99. 1823 MAY 30. IV. 41°5N, 81°0W. On the shore of Lake Erie. Slight shock but water rose to a height of nine feet. *B4, B5, D2.*

100. 1823 JUNE 10. "About noon." III. Felt at Belfast, Me. *M3.*

101. 1823 JULY 23. Felt at Sanford, Me. *M3.*

102. 1827 AUGUST 23. IV. 41°4N, 72°1W. Near New London, Conn. *B4, B5, D2, H1, M3.*

103. 1828 JULY 25. 6:00 a.m. IV. Felt at Brunswick, Me. *M3.*

104. 1829 JANUARY 1–7. IV. Felt at Portsmouth, N.H. *B4, B5, D2, M3.*

105. 1829 AUGUST 26. 9:00 and 9:15 p.m. III. Felt at Brunswick, Me. *M3.*

106. 1829 AUGUST 27. 10:00 p.m. IV. Felt at Belfast, Me. *M3.*

107. 1830 DECEMBER 1. 8:00 p.m. III. Felt at Lynn, Mass. *M3, W4.1.*

108. 1837 JANUARY 15. 2:00 a.m. IV. Felt at Lynn, Mass. *M3, W4.1.*

109. 1837 APRIL 12. V. 41°7N. 72°7W, Near Hartford, Conn. Strong enough at Hartford to swing a pendant lamp. *A2, B4, B5, D2, H1, M3.*

110. 1840 AUGUST 9. 3:30 p.m. V. 41°5N, 72°9W. Near Hartford, Conn. Felt strongly in the Connecticut Valley, over 7,500 square miles. *A3, B4, B5, D2, H1, M3.*

"... and in Hartford was so severe as to cause considerable alarm, especially in churches in which many people were assembled..." *A. 3*

111. 1841 JANUARY 25. a.m. III. Felt for fifteen to twenty seconds at New York City. *B4, B5, D2, H1.*

112. 1843 MARCH 14. IV. 44°4N, 72°5W. Vermont. *B5, L2, M2.*

113. 1844 JUNE. 8:00 p.m. III. Felt at East Haddam, Conn. *B5, M3.*

114. 1845 JANUARY 1. III. Felt at East Haddam, Conn. *M3.*

115. 1845 OCTOBER 26. VI. 42°5N, 73°7W. Hudson Valley. Felt at New York and throughout western New England. *B4, B5, M3.*

116. 1845 NOVEMBER. IV. Felt at Lebanon, N.H. *B5, L2, M3.*

117. 1846 MAY 30. 1:30 p.m. IV. 42°7N, 70°3W. Off Cape Ann, Mass. Distinctly felt at Newburyport and Salem. *B4, B5, M3.*

118. 1846 JULY 10. III. Felt at Deerfield, N.H. *B4, B5, M3.*

119. 1846 AUGUST 25. 4:45 a.m. V. 42°8N, 70°6W. North of Cape Ann, Mass. Felt in southern Maine, southeastern New Hampshire and northern Massachusetts. *B5, L2, M3.*

120. 1846 SEPTEMBER 12. 6:30 p.m. III. Felt at Deerfield, N.H. *B4, B5, M3.*

121. 1846 OCTOBER 29. 9:00 p.m. III. Felt at Deerfield, N.H. *B4, B5, M3.*

122. 1846 OCTOBER 31. "At night." III. Felt at Deerfield, N.H. *B4, B5, M3.*

123. 1846 NOVEMBER 12. 7:40 p.m. III. Felt at Deerfield, N.H. *B5, L2, M3.*

124. 1846 DECEMBER 2. III. Felt at Deerfield, N.H. *B4, B5, M3.*

125. 1847 JANUARY 11. 11:30 p.m. II. Felt at Albany, N.Y. *B4, B5, W4.4.*

126. 1847 JANUARY 20. IV. 44°3N, 68°3W. Felt from Camden to Bangor, Me. *B4, B5, M3.*

127. 1847 FEBRUARY 2. IV. Felt at Camden, Me. *W4.4.*

128. 1847 FEBRUARY 2. III. Felt at Deerfield, N.H. *B4, B5, M3, W4.4.*

129. 1847 FEBRUARY 14. III. Felt at Meredith, N.H. *B4, B5, M3.*

130. 1847 FEBRUARY 19. III. Felt at Belfast, Me. *B4, B5, M3.*

131. 1847 FEBRUARY 21. III. Felt at Deerfield, N.H. *B4, B5, M3.*

132. 1847 APRIL 1. 9:00 p.m. III. Felt at Limington, Me. *B4, B5, M3.*

133. 1847 JULY 9. a.m. III. Felt at Glens Falls, N.Y. *B4, B5, W4.4.*

134. 1847 AUGUST 8. 10:00 a.m. VI. 42°0N, 71°0W. Southeastern Massachusetts. Felt over an area of 7,500 square miles. *B4, B5, H1, M3, W4.4.*

135. 1847 SEPTEMBER 2. V. 40°2N, 72°0W. Felt from Newport, R.I. to Philadelphia, Pa. *W4.4.*

136. 1847 SEPTEMBER 29. V. 40°5N, 70°4W. Near New York City. Felt from Rhode Island to Philadelphia, Pa. *M3.*

137. 1848 SEPTEMBER 8. 11:00 p.m. V. Near New York City. Felt from Rhode Island to Philadelphia, Pa. *B4, B5, H1, L2, M3.*

138. 1849 FEBRUARY 4. III. Felt at Newport, R.I. *B4, B5, M3.*

139. 1849 FEBRUARY 15. III. Felt at Springfield, Mass. *B4, B5, M3.*

140. 1849 OCTOBER 8. "Afternoon." IV. 42°.5N, 71°.4W. Middlesex county, Mass. *B4, B5, M3.*

141. 1850 JULY 20. "Afternoon." III. Felt at Portland, Me. *B4, B5, M3.*

142. 1851 JANUARY 3. 11:30 p.m. III. Felt at Waterville, Me. *B4, B5, M3.*

143. 1851 OCTOBER 11. 9:30 p.m. III. Felt at Deerfield, N.H. *B5, L2, M3.*

144. 1851 DECEMBER 25. 7:45 a.m. III. Felt at Bridport, Vt. *B5, L2, M3.*

145. 1852 JANUARY 10. 6:40 a.m. IV. 41°.2N, 71°.4W. Off the coast of Rhode Island. Felt from Bedford, Mass. to New London, Conn. *B4, B5, M3.*

146. 1852 JUNE 30. III. Upper Connecticut Valley. Felt at Claremont, N.H., and Windsor, Vt. *B4, B5, M3.*

147. 1852 AUGUST 1. III. Felt at Groton, Conn. *B4, B5, M3.*

148. 1852 AUGUST 11. p.m. III. Felt at Deerfield, N.H. *B4, B5, M3.*

149. 1852 NOVEMBER 27. 11:45 p.m. IV. 42°.8N, 70°.6W. North of Cape Ann, Mass. Houses shaken and people awakened at Exeter, N.H. *A4, B4, H1, M3.*

150. 1852 DECEMBER 15. 4:00 p.m. III. Felt at Carlton, N.Y. *B5, L2.*

151. 1853 MARCH 12. 2:00–3:00 a.m. VI. 43°.7N, 75°.5W. Near Lowville, N.Y. Machinery was thrown down. Felt also in Canada. *B4, B5, H1, M7, W4.4.*

152. 1853 JUNE 17. III. Felt at Portland, Me. *B5, L2.*

153. 1853 JUNE 20. III. Felt at Portland, Me. *B5, L2.*

154. 1853 JULY 17. 5:00–6:00 a.m. IV. Off southern coast of Maine. Two shocks felt at Portland, Saco, and other places in Maine. *B4, B5, M3, W4.4.*

155. 1853 JULY 20. "Afternoon." III. Felt at Portland, Me. *B5, L2, M3.*

156. 1853 AUGUST 17. III. Felt at New Bedford, Mass. *B5, L2, M3.*

157. 1853 SEPTEMBER 7. 11:10 p.m. III. Felt at New Bedford, Mass. *B4, B5, M3, W4.4.*

158. 1853 NOVEMBER 21. III. Felt at Antrim, N.H. *B5, L2, M3,*

159. 1853 NOVEMBER 27. 11:45 p.m. IV. 43°.0N, 69°.0W. Off Cape Ann. Felt in southern Maine and northeastern Massachusetts. *M3.*

160. 1853 NOVEMBER 28. IV. Felt at Antrim, N.H. *B5, L2, M3.*

161. 1854 JANUARY 24. 7:00 a.m. III. Felt at Palmer, Mass. *B4, L2, M3.*

162. 1854 JANUARY 27. 7:00 a.m. III. Felt at Palmer, Mass. *B5, L2, M3.*

163. 1854 FEBRUARY 22–23. 12:00 midnight. III. Felt at Reading, Mass. *B4, B5, M3.*

164. 1854 OCTOBER 24. 10:00 p.m. IV. Felt at Keene, N.H. *B4, B5, L2, M3.*

165. 1854 DECEMBER 10. 12:30 p.m. IV. 42°.7N, 70°.2W. Off Cape Ann, Mass. Felt along the coast. *B4, B5, H1, M3.*

166. 1855 JANUARY 16. 6:00 p.m. V. 44°.0N, 71°.0W. Felt in southwestern Maine near the New Hampshire Mountains. *B5, L2, M3.*

167. 1855 JANUARY 16. 7:20 p.m. IV. Aftershock of No. 166 in southwestern Maine. *L2.*

168. 1855 JANUARY 17. II. 40°.8N, 73°.6W. A shock felt at Mount Vernon and Freeport, N.Y. *B5, L2.*

169. 1855 JANUARY 19. 11:00 a.m. III. Felt at Portland, Me. *B5, L2, M3.*

170. 1855 JANUARY 19. 8:00 p.m. III. Felt at Portland, Me. *B5, L2, M3.*

171. 1855 JANUARY 23. 3:00 p.m. III. 42°.6N, 70°.4W. Off Cape Ann. Mass. Felt on the Cape. *B5, L2, M3.*

172. 1855 FEBRUARY 6. 11:30 p.m. VI. 42°N, 74°W. Hudson River Valley. Felt east as far as Springfield, Mass. *B5, L2, M3.*

173. 1855 FEBRUARY 19. III. 45°.0N, 69°.0W. Felt in Maine. *B4, B5, D2, M3.*

174. 1855 FEBRUARY 23. 5:30 a.m. III. Felt at Belfast, Me. *M3.*

175. 1855 MAY 29. 5:00 a.m. IV. Felt at Coos, N.H. *B5, L2, M3.*

176. 1855 DECEMBER 17. 2:00 p.m. IV. Felt at French Mountain, N.Y. *B5, L2.*

177. 1856 MARCH 12. 10:00 p.m. IV. 41°.4N, 72°.6W. Southern Connecticut River valley. A shock of thirty seconds duration felt at Madison, Conn., and neighboring cities. *L2, M3.*

178. 1856 JUNE 10. II. 43°.1N, 72°.5W. Central Connecticut River valley. *M3.*

179. 1857 JUNE 30. 10:45 p.m. III. 41°.5N, 72°.5W. Connecticut. *B5, L2.*

180. 1857 OCTOBER 23. 3:15 p.m. VI. 43°.2N, 78°.6W. (b). Centered near Buffalo, N.Y. Felt from Warren, Pa. to Port Hope on Lake Ontario and also in the Montreal region. The date given by Brigham (*B4*) is October 8, 1858. It was corrected to that given above by Lancaster (*L2.*) *B4, B5, H1, L2, W1.*

181. 1857 DECEMBER 23. 1:30 p.m. VII. 44°.1N, 70°.2W. Near Lewiston, Me. Felt in southwestern Maine. *M3.*

182. 1857 DECEMBER 28. IV. Maine. Probably an aftershock of No. 181. *B5, L2.*

183. 1858 JUNE 27. III. 41°.4N, 72°.8W. Southern Connecticut River valley, near New Haven. *B5, D2, L1, M3.*

184. 1858 JUNE 30. 10:45 p.m. IV. 41°.3N, 73°.0W. Southern Connecticut River Valley. Felt at Derby and New Haven, Conn. *B4, B5, H1, M3.*

185. 1860 MARCH 12. "Early in the morning." III. Felt at Moodus, Conn. *B5, M3, P1.3.*

186. 1860 MARCH 16. 9:30 and 10:15 p.m. V. 42°.2N, 70°.5W. Felt from Provincetown to Dedham, Mass. *B4, B5, M3.*

187. 1861 MARCH 1 or 8 (?). III. Two shocks felt at Charlestown, Mass. *B4, B5, L2, M3.*

188. 1861 MARCH 5. 12:00 noon. III. Two distinct shocks felt at Newark, N.J. *L2.*

189. 1862 FEBRUARY 2. 8:00 p.m. IV. 41°.5N, 72°.5W. Connecticut River valley. *B4, B5, M3.*

190. 1862 FEBRUARY 4. 7:30 a.m. III. 42°5N, 71°2W. Felt in Middlesex county, Mass. *B4, B5, M3.*

191. 1867 DECEMBER 18. 3:00 a.m. VII. 44°0N, 73°0W. Near the New York–Vermont border. Felt south to Whitehall on this boundary and in Canada from Belleville, Ont. eastward to Sackville, N.B. Most of the inhabitants of Burlington, Vt. were awakened. *A5, B4, B5, H1, M3.*

192. 1868 MARCH 1. III. Felt at Augusta, Me. *B5, M3.*

193. 1870 OCTOBER 23. 6:30 a.m. III. Felt in the Connecticut Valley at Springfield, Mass. *B5, L2, M3.*

194. 1872 FEBRUARY 6. 8:00 a.m. V. 43°5N, 83°8W. Felt as three shocks at Wenona, Mich. *H1.*

195. 1872 JULY 11. 5:25 a.m. IV. 40°9N, 73°8W. Felt within a ten mile radius of New Rochelle, N.Y. *B5, H1, R4.3.*

196. 1872 NOVEMBER 18. 2:00 p.m. IV. 43°2N, 71°6W. Felt at Concord, N.H. *B5, H1.*

197. 1873 JANUARY 11. 5:00 a.m. III. Felt at Brunswick, Me. *R4.3.*

198. 1873 FEBRUARY 22. 7:30 a.m. III. Felt at Eastport, Me. *R4.3.*

199. 1873 MARCH 18. a.m. II. Felt at Canton, N.Y. *R4.4.*

200. 1873 APRIL 17. 1:00 a.m. III. Felt at Waterville, Me. *R4.4.*

201. 1873 APRIL 25. 2:00–3:00 p.m. V. 44°8N, 74°2W. Several shocks were felt in northern New York, most heavily at Malone and along the St. Lawrence River. *F1, R4.4.*

202. 1873 JULY 16. a.m. II. Felt at Worcester, Mass. *R4.5.*

203. 1873 OCTOBER 5. 2:30 a.m. III. Felt at Village, N.H. *R4.5.*

204. 1873 NOVEMBER 4. 11:30 p.m. and 12:00 midnight. III. Two distinct shocks at Burlington, Vt. *R4.5.*

205. 1873 NOVEMBER 13. "In the night". III. A slight shock at Bangor, Me. *R4.5.*

206. 1874 JANUARY 5. 4:00 p.m. II. Felt at Odgensburg, N.Y. *R4.5.*

207. 1874 JANUARY 6. II. Felt at Wolfeboro, N.H. *R4.6.*

208. 1874 JANUARY 25. 12:00 noon. II. Felt at Chelmsford, Mass. *R4.5.*

209. 1874 JANUARY 26. 2:00 a.m. IV. Felt at Manchester, N.H. *R4.6.*

210. 1874 JANUARY 26. 5:00 a.m. III. Felt at Manchester, N.H. Probably an aftershock of No. 209. *R4.6.*

211. 1874 FEBRUARY 12. 6:30 a.m. II. Felt at Saco, Me. *R4.6.*

212. 1874 FEBRUARY 27. 10:40 p.m. V. 44°8N, 68°7W. A severe shock at Bangor and Eastport Me. Felt over 6,000 square miles. *B5, H1, R4.6.*

213. 1874 NOVEMBER 24. IV. 42°7N, 70°9W. A slight shock at Salem, Newburyport and throughout Essex county, Mass. *R4.6.*

214. 1874 DECEMBER 10. 10:25 p.m. V. 40°9N, 73°8W. Felt in and around New York City. "The shock was most severe in the neighbourhood of Tarrytown..." *B5, H1, M1, R4.6.*

215. 1875 FEBRUARY 9. II. Three slight shocks at Preston, Conn. *R4.6.*

216. 1875 MAY 6. II. A slight shock at Wolfeboro, N.H. *R4.7.*

217. 1875 MAY 15. 10:15 a.m. II. Felt at Cambridge, Mass. *R4.7.*

218. 1875 JUNE 18. 7:43 a.m. VII. 40°2N, 84°0W. In southwestern Ohio. Most severe at Urbana and Sydney where walls were cracked and chimneys thrown down. Felt over 40,000 square miles. *H1, M7.*

219. 1875 JULY 28. 4:10 a.m. V. 41°8N, 73°2W. Felt throughout northwestern Connecticut. *B5, H1, R4.7.*

220. 1875 SEPTEMBER 25. 9:00 p.m. II. Felt at Stepney, Conn. *R4.7.*

221. 1875 OCTOBER 31. 9:18 p.m. II. Felt at Cambridge, Mass. *R4.7.*

222. 1875 DECEMBER 1. 4:00 a.m. III. Felt at Keene, N.H. *R4.7.*

223. 1875 DECEMBER 1. 6:00 a.m. II. Probably an aftershock of No. 222. Felt at Keene, N.H. *R4.7.*

224. 1876 JANUARY 8. 4:30 p.m. II. One shock at Lockport, N.Y. *R4.7.*

225. 1876 JANUARY 15. 12:00 midnight. III. Felt at China, Me. *R4.7.*

226. 1876 SEPTEMBER 21. 11:30 p.m. V. 41°8N, 71°0W. Southeastern Massachusetts. Felt at Fairhaven, Woods Hole and Bedford, Mass., and at Newport, R.I. *B5, H1, R4.8.*

227. 1876 NOVEMBER 20. II. Shock felt at Eastport, Me. *R4.8.*

228. 1877 FEBRUARY 18. 2:20 p.m. III. Felt at Portland, Me. *R4.8.*

229. 1877 APRIL 23. 11:00 a.m. II. A slight shock at Auburn, N.H. *R4.8.*

230. 1877 MAY 14. "Afternoon" II. Slight shock at Schenectady, N.Y. *R4.8.*

231. 1877 AUGUST 17. 10:50 a.m. IV. 42°3N, 83°3W. In southeastern Michigan. Felt at Redford and Greenfield near Detroit, Mich. *H1.*

232. 1877 SEPTEMBER 10. 2:00 a.m. III. Felt at Cambridge, Mass. *R4.9.*

233. 1877 SEPTEMBER 10. 9:59 a.m. IV. 40°1N, 74°8W. Centered near Burlington, N.J. Felt all along the Delaware River in New Jersey and Pennsylvania. *H1.*

234. 1877 NOVEMBER 4. 1:56 a.m. VII. 44°5N, 74°0W. In northeastern New York state. Felt in New York state and northern New England, over an area of 90,000 square miles. It was most severe along the St. Lawrence River and Lake Champlain. Crockery was overturned, ceilings cracked, and chimneys thrown down. Felt also in Ontario and Quebec. *A8, B5, D5, D6, D7, F1, H1, L1, M3, R4.8.*

"In so far as the published reports give information the shock would seem to have been limited to the area along the St. Lawrence River, extending from near Three Rivers on the east, to Kingston on the west and in a direction transverse to the St. Lawrence from Ottawa to the southern part of New England. So far as can be learned from the reports, the shock seems to have been most severely felt on the northern

side of the Valley of the St. Lawrence and about Lake Champlain, or may be said to have had its centre in the Adirondack and Green Mountain region." *D5 and D6.*

235. 1878 FEBRUARY 5. 11:20 a.m. V. A shock strong enough to break windows at Flushing, N.Y. *R4.9.*

236. 1878 MARCH 12. II. Two shocks felt at Milford, Vt. *R4.9.*

237. 1878 OCTOBER 4. 2:30 a.m. V. 41°.5N, 74°.0W. In the Hudson River Valley, N.Y. Felt from Marlborough to Peekskill, N.Y. *B5, H1, M7, R4.9.*

238. 1878 DECEMBER 24. 9:00 p.m. II. Felt at Flushing N.Y. *R4.10.*

239. 1878 DECEMBER 28. 9:32 p.m. III. Felt at Schoharie, N.Y. *R4.10.*

240. 1879 OCTOBER 24. 6:12 p.m. II. Felt at New Haven, Conn. *R4.10.*

241. 1879 OCTOBER 25. 10:30 p.m. II. Two shocks at Peterboro, N.H. *R4.10.*

242. 1879 NOVEMBER 3. 7:15 a.m. II. A slight shock at Contoocook, N.H. *R4.10.*

243. 1880 MARCH 29. III. Near Sanford, Me. *M3.*

244. 1880 APRIL 3. 2:00–3:00 a.m. III. A slight shock at Fort Fairfield, Me. *R4.11.*

245. 1880 MAY 12. 7:45 a.m. IV–V. 42°.8N, 70°.9W. Near Newburyport, Mass. Felt from Amesbury to Salem and inland to Lawrence, Mass. *B5, H1, R4.11.*

246. 1880 JULY 12. 11:00 p.m. II. A slight shock at Concord, N.H. *R4.11.*

247. 1880 JULY 20. 7:00 p.m. III. A shock at Contoocook, N.H. *R4.11.*

248. 1880 AUGUST 21. II. A slight shock at Barrington, N.H. *R4.11.*

249. 1880 SEPTEMBER 23. 6:00 p.m. II. Felt at Charlotte, Vt. *R4.11.*

250. 1881 JANUARY 20. 9:40 p.m. IV–V. 44°N, 70°W. Near Bath, Me. Felt also at Lewiston and Portland and for 50 miles to the north. *B5, H1, R4.11. R4.12.*

251. 1881 FEBRUARY 2. 4:00 a.m. II. A slight shock at Boston, Mass. *R4.12.*

252. 1881 FEBRUARY 3. 4:00 a.m. II. A shock and loud report at Plymouth, Mass. *R4.12.*

253. 1881 FEBRUARY 4. II. A loud report and earthquake shock at Greenland, N.H. *R4.12.*

254. 1881 FEBRUARY 12. II. A shock at Portsmouth, N.H. *R4.12.*

255. 1881 FEBRUARY 26. 10:55 p.m. III. Slight shock at Augusta, Me. *R4.12.*

256. 1881 MARCH 18. 9:30 p.m. III. Four slight shocks at Schenectady, N.Y. *R4.12.*

257. 1881 APRIL 3. 4:25 a.m. III. Slight shock at Antrim, N.H. *R4.12.*

258. 1881 APRIL 21. 11:30 a.m. III. A heavy shock accompanied by a rumbling noise was felt at Port Jefferson, N.Y. *R4.12.*

259. 1881 MAY 18. 12:20 a.m. III. Felt at Contoocook, N.H. *R4.12.*

260. 1881 MAY 18. 3:00–4:00 a.m. III. Felt at Contoocook, N.H. Possibly an aftershock of No. 259. *R4.12.*

261. 1881 JUNE 19. 3:25 a.m. IV. Felt at Newburyport, Mass. *R4.12.*

262. 1881 JULY 31. 9:45 p.m. III. Felt at Bangor, Me. *R4.12.*

263. 1881 AUGUST 13. "Early morning." III. Felt at Contoocook, N.H. *R4.12.*

264. 1881 SEPTEMBER 25. II. Slight shock at Elmira, N.Y. *R4.12.*

265. 1881 OCTOBER 6. 12:03 a.m. III. Felt at Concord, N.H. *R4.12.*

266. 1881 OCTOBER 31. 1:40 a.m. II. Felt at Contoocook, N.H. *R4.12.*

267. 1881 DECEMBER 16. 4:00 p.m. III. Felt at Dorchester, Mass. *R4.12.*

268. 1882 APRIL 2. a.m. II. Felt at Amsterdam, N.Y. *R4.13.*

269. 1882 APRIL 17. "A few minutes past two o'clock." IV. A sharp shock felt at Hopkinton, N.H. *R4.13.*

270. 1882 MAY 8. 4:00 a.m. III. A shock at Concord, N.H. *R4.13.*

271. 1882 DECEMBER 19. 5:20 p.m. V. 43°.2N, 71°.4W. In the Merrimac River valley. Felt at Contoocook and Newmarket and most strongly at Concord all in New Hampshire. *B5, H1, R4.13.*

272. 1883 JANUARY 1. 2:58 a.m. IV. Felt at Addison, Me. *R4.14.*

273. 1883 JANUARY 1. 8:28 a.m. II. Possibly an aftershock of No. 272. Felt at Addison, Me. *R4.14.*

274. 1883 FEBRUARY 4. 3:05 p.m. II. A slight shock felt at Wolfeboro, N.H. *R4.14.*

275. 1883 FEBRUARY 27. 10:30 p.m. V. 41°.5N, 71°.5W. In southern Rhode Island. Felt from New London, Conn., to Fall River, Mass. and from Bristol, R.I. to Block Island. *B5, H1.*

276. 1884 JANUARY 18. 2:00 a.m. IV. 43°.2N, 71°.7W. Near Contoocook, N.H. *H1, R4.15.*

277. 1884 MAY 31. V. 40°.6N, 75°.5W. Near Allentown, Pa., where dishes were reported thrown from tables. *B5, H1.*

278. 1884 AUGUST 10. 2:07 p.m. VII. 40°.6N, 74°.0W. At New York City. Strong shock in New England and the middle states, light in Canada. Felt over 70,000 square miles. Damage was greatest at Jamaica and Amityville where walks were cracked. Thirty towns from Hartford, Conn. to West Chester, Pa., reported fallen bricks and cracked plaster. *A7, B5, D7, H1, M7, R4.15.*

279. 1884 SEPTEMBER 19. 2:14 p.m. VI. 40°.7N, 84°.1W. In western Ohio near Lima. Chandeliers swayed north-south at Columbus, Ohio. Felt from Pennsylvania to Kentucky and West Virginia to Michigan. *D7, H1, M7, R4.15.*

280 1884 OCTOBER 10. "Early morning." II. Felt at Roxbury, Mass. *R4.15.*

281. 1884 OCTOBER 26. 8:00 p.m. II. Felt at Nashua, N.H. *R4.15.*

282. 1884 NOVEMBER 12. 7:50 p.m. II. Felt at Concord, N.H. *R4.15.*

283. 1884 NOVEMBER 23. 12:30 a.m. V–VI. 43°.2N, 71°.7W. In southern New Hampshire. The foundation of a boiler was displaced at Henniker, N.H. Felt in New Hampshire, eastern Massachusetts, Connecticut and eastern New York. *B5, H1, R4.15.*

284. 1884 DECEMBER 4. 12:18 a.m. II. Felt at Northampton, Mass. *R4.15.*

285. 1884 DECEMBER 17. 2:00 a.m. III. Felt at Center Harbor, N.H. *R4.15.*

286. 1885 JANUARY 3. 2:00 a.m. II. Felt at Laconia, N.H. *R4.16.*

287. 1885 JANUARY 4. 6:06 a.m. III. Felt at Peekskill, N.Y. *R4.16.*

288. 1885 JANUARY 15. 4:10 a.m. Felt at Schaefferstown, Pa. *R4.16.*

289. 1885 JANUARY 31. 5:05 a.m. III. Felt at Yorktown, N.Y. *R4.16.*

290. 1885 MARCH 18. 12:00 noon. II. Felt at Contoocook, N.H. *R4.16.*

291. 1885 APRIL 28. 5:10 p.m. III. Felt at Guilford, Conn. *R4.16.*

292. 1885 MAY 3. 9:00 (?). III. Two shocks at Dover, Me. *R4.16.*

293. 1886 AUGUST 31. 9:50 p.m. X. 32°.9N, 80°.0W. (b) Near Charleston, S.C., where great damage was caused. Many chimneys were overthrown at Augusta, which is 100 miles distant, near the boundary of South Carolina and Georgia. The epicentre is not plotted on the map as it lies outside the scope of this work. However, the shock is included in both lists for it was felt all over eastern United States, and in Canada at Toronto, London and St. Catherines, Ont. It was also felt in Cuba and in Bermuda, about 1,000 miles away. There were ten severe aftershocks in the succeeding month, many of which added to the damage at Charleston. The area affected is estimated by Heck (*H1*) to be about 2,000,000 square miles. *D7, H1, M4, M7.*

294. 1886 SEPTEMBER 5. IV. 41°.5N, 72°.5W. Near East Haddam, Conn. *B5.*

295. 1888 FEBRUARY 1. 11:20 a.m. IV. Felt at Industry, Me. *M3.*

296. 1889 MARCH 8. 6:40 p.m. V. 40°.0N, 76°.0W. In southeastern Pennsylvania. Felt at Harrisburg, Philadelphia, Reading, York and other places. *B5, H1.*

297. 1891 MAY 1. 7:10 p.m. V. 43°.2N, 71°.6W. In southern New Hampshire. People were frightened at Melrose, Mass. *B5, H1.*

298. 1891 MAY 29. 7:00 p.m. IV. 43°.1N, 71°.5W. Southern New Hampshire. *M3.*

299. 1893 MARCH 9. 12:30 a.m. V. 40°.6N, 74°.0W. Centred in New York City. Animals at the zoo were disturbed and billiard playing affected. *B5, H1.*

300. 1894 APRIL 10. "Early morning." IV. 41°.6N, 72°.5W. Connecticut River valley near Moodus, Conn. *M3, P1.3.*

301. 1894 NOVEMBER 23. 8:30 a.m. III. Felt at New London, Conn. *M3.*

302. 1895 MAY 28. 11:15 a.m. III. 43°.0N, 72°.5W. Southeastern Vermont. *M3.*

303. 1895 SEPTEMBER 1. 6:09 a.m. VI. 40°.7N, 74°.8W. Centred near High Bridge in Hunterdon county, N.J. At Philadelphia windows were broken and crockery overturned. Felt from Virginia to Maine over an area of 35,000 square miles. *B5, H1.*

304. 1896 MARCH 22. 8:00 p.m. V. 45°.2N, 67°.2W. In southeastern Maine. Felt over 8,000 square miles. *B5, H1, K1, M3.*

"This shock was felt in Charlotte and York Counties, New Brunswick, and in Washington County, Maine. The area disturbed has a diameter of about 100 miles and lies adjacent to the shores of the Bay of Fundy and the Gulf of Maine." *K1.*

305. 1897 MAY 27. 10:13 p.m. VI. 44°.5N, 73°.5W. Near Lake Champlain, N.Y. Felt in New Work, New Hampshire, Vermont and Massachusetts. Felt also in Canada—in all, over an area 150,000 square miles. The shock was reported to be severe but little damage was done. *B5, H1, M3.*

306. 1897 JULY 1. 4:20 a.m. IV. 43°.7N, 71°.6W. Central New Hampshire. *M3.*

307. 1897 SEPTEMBER 5. IV. 41°.5N, 72°.5W. In the Connecticut Valley near Moodus, Conn. *B5, M3. P1.3.*

308. 1897 SEPTEMBER 25. 1:05 p.m. IV. 44°.2N, 68°.8W. Penobscot Bay. Felt at Bangor, Belfast and Ellsworth, Me. *K1, M3.*

309. 1898 SEPTEMBER 17. 10:54 a.m. IV. 44°.3N, 69°.1W. Near Belfast, Me. *B5, H1, M3.*

310. 1899 MAY 16. 8:15 p.m. V. 41°.5N, 72°.5W. In the Connecticut Valley. Felt from Windsor to Saybrook, Conn. *B5, M3, P1.3.*

311. 1903 JANUARY 21. a.m. V. 42°.1N, 70°.9W. Eastern Massachusetts. Crockery was broken at Whitman, Mass. *B5, H1.*

312. 1903 JANUARY 22. IV. Felt at Attleboro, Mass. *M3.*

313. 1903 APRIL 24. 7:30 a.m. IV. 42°.7N, 71°.0W. In the lower Merrimac Valley, Mass. *B5, H1, M3.*

314. 1903 DECEMBER 25. 7:30 a.m. V. 44°.7N, 75°.5W. Near Ogdensburg, N.Y. *B5, H1.*

315. 1904 MARCH 21. 1:04 a.m. VII. 45°.0N, 67°.2W. Near Eastport, Me. Chimneys were overthrown at East port and at St. Stephen, N.B. Felt in New England and the Maritime Provinces over an area of 150,000 square miles. *B5, H1, M3, R2, W3.*

316. 1905 JULY 15. 5:10 a.m. V. 44°.3N, 69°.8W. Southwestern Maine. Felt through Maine and New Hampshire over an area of 20,000 square miles. *B5, H1, M3.*

317. 1905 AUGUST 30. 5:40 p.m. IV. 43°.0N, 71°.0W. Rockingham County, N.H. Three shocks felt from Portsmouth to Newton, N.H. *B5, H1, M3.*

318. 1905 OCTOBER 22. a.m. IV–V. 44°.9N, 72°.2W. Felt over a limited area of northern Vermont. *B5, H1.*

319. 1906 MAY 8. 8:30 a.m. IV. 41°.5N, 72°.5W. In the Connecticut Valley near Haddam, Conn. *B5, M3.*

320. 1906 JUNE 27. 4:10 p.m. V. 41°.4N, 81°.6W. Two shocks centred south of Cleveland, Ohio. *H1.*

321. 1906 OCTOBER 19. "Evening" III. 43°.8N, 68°.8W. Off coast of southern Maine. Possibly foreshock of No. 322. *M3.*

322. 1906 October 20. 9:00–9:30 a.m. V. 43°8N, 68°8W. Off coast of southern Maine, *M3*.

323. 1906 October 21. III. Felt at Portland, Maine. *A7*.

324. 1907 January 10. 4:45–5:30 a.m. IV. A series of shocks were felt at Williamsport, Pa., accompanied by rumbling sounds. *S2*.

325. 1907 January 24. 6:30 a.m. IV. 42°8N, 74°0W. Several moderate shocks near Schenectady, N.Y. *B5, H1*.

326. 1907 October 15. 7:10 p.m. V. 42°8N, 71°0W. Felt in northeastern Massachusetts and southeastern New Hampshire. *B5, H1*.

327. 1908 February 5. 2:00 a.m. III. Felt at Needham, Mass. *M3*.

328. 1908 February 5. 3:20 a.m. IV. 41°4N, 73°2W. Housatonic Valley, Conn. *B5, H1*.

329. 1908 May 31. 12:42 p.m. VI. 40°6N, 75°5W. A few chimneys were knocked down at Allentown, Pa., however the affected area was very small. *B5, H1*.

330. 1908 August 16. III. Felt at Milton, Vt. *M3*.

331. 1909 August 15. 8:30 p.m. III. Felt at Needham, Mass. *M3*.

332. 1910 January 22. 8:30 p.m. IV. 43°8N, 70°4W. In southern Maine. Articles were thrown from shelves at Windham, Me. *B5, H1, M3, R1.1*.

333. 1910 March 3. III. Light shock at Saranac Lake, N.Y. *R1.1*.

334. 1910 May 1. II. 40°7N, 73°5W. Slight shock in the western Part of Long Island, N.Y. *R1.1*.

335. 1910 August 21. 1:45 p.m. IV. In the Merrimac Valley, Mass. *M3, R1.1, W4.1*.

336. 1910 August 30. 9:30 a.m. III. 43°4N, 72°1W. In southeastern New Hampshire. *B5, M3, R1.1, W4.1*,

337. 1910 October 20. 4:50 p.m. IV. 44°3N, 68°8W. In Penobscot Bay. *B5, M3*.

338. 1911 January 29. III. Slight shock felt at Ogdensburg, N.Y. *R1.2*.

339. 1911 February 6. 6:36 p.m. II. Felt at Cambridge, Mass. *M3, W4.1*.

340. 1912 March 20. 7:00 a. m. III. Felt at Calais, Me. *M3, W4.2*.

341. 1912 December 11. 5:15 a.m. VI. 45°0N, 68°0W. Centred west of Eastport, Me. and felt from Augusta, Me. to Fredericton, N.B. *B5, H1, R1.3, S2, W4.3*.

342. 1913 March 31. 11:00 a.m. II. Felt at Worcester, Mass. *M3*.

343. 1913 August 10. 12:15 a.m. IV. 44°N, 74°W. Near Lake Placid, N.Y. *B5, H1, S2*.

344. 1913 November 3. 9:30 a.m. V. In the Narragansett Bay Region, R.I. *B5, M3, R1.3, R1.4, W4.3*.

345. 1913 November 15. III. Connecticut Valley near Moodus and Haddam, Conn. *B5, M3, P1.3*.

346. 1914 January 13. 3:00 a.m. V. 45°1N, 67°2W. Near Calais Me. and St. Stephen, N.B. *B5, H1, M3, R1.4*

347. 1914 January 13. 7:00–7:15 p.m. III. A resident of Needham, Mass. reported a slight shock from 7:00 to 7:45 p.m. The Harvard seismograph recorded a disturbance at 7:46 p.m. *W4.4*.

348. 1914 February 21. 7:15, 7:20 and 7:35 p.m. V. 45°0N, 70°5W. Near Rangeley Lake, Me. It was reported from Eustis, Flagstaff, Oquissa and Rangeley. *B5, H1, M3, R1.4, S1.4, W4.4*.

349. 1915 January 22. VI. 41°0N, 60°0W. The British ship *Aleppo* reported a "tremendous shock" in the Atlantic about 300 miles southeast (not southwest) of Halifax, N.S. The correction was made by Woodworth (*W4.5*). *R1.5, W4.5*.

350. 1915 February 20. 8:20, 8:39, 9:20, 9:35 and 10:09 p.m. V. In the Merrimac Valley. Felt in northeastern Massachusetts and southern New Hampshire. *B5, H15, M3, R1.5, S1.5, W4.5*.

351. 1915 February 21. 6:41 p.m. IV. 44°7N, 73°4W. A light shock was felt at Beekmantown, N.Y. and throughout the area west of Lake Champlain in New York state. *H15, R1.5*.

352. 1916 January 5. 8:56 a.m. V. 43°7N, 73°7W. Near Lake George, N.Y. Felt at Caldwell and Gloversville, N.Y. *B5, H1, H15, R1.6*.

353. 1916 February 2. (*T3*) or 3. (*H15*). 11:26 a.m. IV–V. 42°9N, 74°0W. In the Mohawk Valley, N.Y. Buildings were shaken at Amsterdam and many were awakened at Ballston Lake, N.Y. Felt also at Schenectady, N.Y. *B5, H1, H15, R1.6, S1.6, T3*.

354. 1916 June 8. 4:15 p.m. IV. 41°0N, 73°8W. Felt at many points in Westchester county, N.Y. though not at New York City. *B5, H1, H15, R1.6*.

355. 1916 November 1. 9:32 p.m. V. 43°3N, 73°7W. Near Glen Falls, N.Y. *B5, H1, H15, R1.7*.

356. 1916 December 2. 4:00–5:00 a.m. III. Felt at Moodus, Conn. *B5, H15, M3, R1.7*.

357. 1917 February 16. 4:00–5:00 a.m. IV. Felt at Moodus, Conn. *B5, M3, R1.7*.

358. 1917 March 11. III. 41°5N, 72°5W, Near East Haddam, Conn. *B5*.

359. 1917 October 1. 9:14 p.m. III. 43°3N, 73°6W. Felt at Glens Falls, N.Y. *H15*.

360. 1918 January 14. 2:20 a.m. IV. 45°0N, 67°3W. In eastern Maine. Felt at Calais and Eastport, Me. *H15, M3*.

361. 1918 August 20. 11:20 p.m. VII. 44°2N, 70°6W. In southern Maine. Felt over an area of 15,000 square miles. Felt severely at Bridgton, Norway and South Paris, Me. At the latter place chimneys were damaged and latched doors flew open. Recorded on Ottawa seismograph. *B1, B5, H1, H15, M3, S3*.

362. 1918 December 11. 10:30 p.m. IV. Felt at Bangor, Me. *M3*.

363. 1919 July 10. 8:40 p.m. IV. Felt at Brunswick, Me. *M3*.

364. 1919 July 23. 6:50 a.m. IV. Felt at Portland, Me. *M3*.

365. 1919 August 11. III. Felt at East Haddam, Conn. *B5*.

366. 1920 May 23. 3:00 a.m. IV. 43°1N, 71°5W. Distinct jar felt at Concord, N.H. *H15*.

367. 1920 June 7. 3:00 a.m. IV. Felt at Saco, Me. *M3*.

368. 1920 November 8. 7:40 p.m. IV. 45°.0N, 67°.1W. Felt at Eastport and several other towns in Maine. *H15.*

369. 1921 January 19. 5:00 a.m. IV. 43°.3N, 73°.7W. Near Glens Falls, N.Y. Felt around Lake George, N.Y. *B5, H1, S1.9. T3.*

370. 1921 January 26. 6:40 p.m. V. 40°.0N, 75°.0W. Felt most strongly at Riverton and Riverside, N.J. *H15, T3.*

371. 1921 January 27. a.m. IV. 43°.3N, 73°.7W. Near Glens Falls, N.Y. *B5, H1, S1.9, T3.*

372. 1921 July 29. 4:14 p.m. IV. Felt at Cambridge, Mass. but not reported from elsewhere. Possibly the epicentre was submarine as the seismograph at Cambridge showed the distance from that station to be 65 miles. *M3, P2.*

373. 1921 September 26. 11:32 p.m. III. 42°.1N, 80°.2W. Felt at Erie, Pa. *H15.*

374. 1921 October 10. 8:00 a.m. V. 44°.8N, 67°.0W. Near Eastport, Me. Felt at Perry and Pembroke, Me. and in Canada at Campobello, N.B. *H15, M3, S2.*

375. 1922 March 16. 4:30 a.m. III. Felt faintly by a few persons at Port Huron, Mich. *H15.*

376. 1922 May 7. 5:40 p.m. IV. 43°.4N, 71°.4W. Near Pittsfield, N.H. *H15, M3.*

377. 1922 September 9. 1:00 a.m. III. Felt at North Perry, Me. *H15.*

378. 1922 December 8. 4:24 p.m. V. Felt at Canton, N.Y. *H15.*

379. 1923 II. A slight tremor reported from Groveland, Mass., and vicinity. *H14.*

380. 1925 January 7. 8:07 a.m. V. 42°.6N, 70°.6W. (a). Off Cape Ann. Located instrumentally. Felt in eastern New England. *B5, H1, M3, N1, P2.*

381. 1925 March 9. IV. Felt at Goff's Falls, N.H. *N1.*

382. 1925 April 7. 3:18 p.m. III. Felt in the southern part of Syracuse and Onondaga Valley, N.Y. *N1, S1.11.*

383. 1925 April 24. 2:56 a.m. IV. 41°.8N, 70°.8W. Felt at New Bedford, Mass., and vicinity. *B5, H1, M3, S1.12.*

384. 1925 May 4. 12:51 p.m. IV. Felt at Lynn, Mass. *M3, N1.*

385. 1925 May 23. III. 43°.4N, 77°.1W. Slight earth tremors felt at Sodus Point, N.Y., accompanied by a tidal wave on Lake Ontario which was observed for 26 miles along the American shore. *N1.*

386. 1925 October 9. 9:00 a.m. V. 43°.7N, 71°.1W. Near Lake Winnepesaukee. Felt most strongly at Ossipee, N.H. Reported as felt slightly at Quebec City. *B5, H1, H14, M2, M3, N1, S3.*

387. 1925 October 18. 4:30–5:00 p.m. IV. Felt at Lewiston, Me. *H14, M3, N1.*

388. 1925 October 23. 8:30 p.m. III. 41°.4N, 73°.3W. Western Connecticut around Sandy Hook and Newton. *H14, M3, N1.*

389. 1925 October 29. "Night." IV. Felt at Moodus, Conn. *M3.*

390. 1925 November 1. II. Rumbling and tremors reported from Moodus ,Conn. *H14.*

391. 1925 November 14. 8:04 a.m. V. 41:5N, 72°.5W. Reported most strongly felt at Hartford, Conn. Believed to be centred near Moodus, Conn. *B5, H1, H14, M3, N1.*

392. 1925 November 16. 1:20 a.m. IV. Felt at Hartford, Conn. *H14, M3, S2.*

393. 1925 November 22. 12:00 midnight. III. 41°.8N, 71°.3W. Felt at Fall River, Mass., and at Providence and Warren, R.I. *H14, M3, N1, S2.*

394. 1926 January 4. IV. 41°.6N, 71°.8W. Felt at Uncasville, Plainfield and Sterling, Conn. *B5, H14.*

395. 1926 January 21. 2:57 p.m. III. 42°.4N, 71°.1W. Near Cambridge, Mass. Felt at Sommerville, Arlington, Lexington, Medford, Malden and Melrose, Mass. *H14, M2, N1.*

396. 1926 January 26. 6:40 p.m. V. 40°.0N, 75°.0W. In western New Jersey. *H1.*

397. 1926 January 27. IV. "Early". Felt at Saranac Lake, N.Y. Particularly strong at Lake Fower, N.Y. *H14, N1, S1.13.*

398. 1926 March 4. 4:00 p.m. II. Felt at Lynn, Mass. *M3.*

399. 1926 March 18. 4:00 p.m. VI. 43°.2N, 72°.0W. Southern New Hampshire. Felt at Manchester and chimneys were thrown down at Cornish, N.H. *B5, H14, M2, M3, N1, S3.*

400. 1926 May 11. 10:30 p.m. V. 40°.9N, 73°.9W. Felt most strongly at New Rochelle, N.Y. *B5, H1, H14, N1, S1.41.*

401. 1926 May 15. 6:00 a.m. III. Felt at Portland, Me. *B5, H14, M3, N1, S1.14.*

402. 1926 May 22. II. Felt at Poughkeepsie, N.Y. *H14, N1.*

403. 1926 May 25–26. "About midnight." III. Felt at Orono, Me. *M3.*

404. 1926 August 28. 4:30 p.m. V. 44°.7N, 70°.0W. Felt over 3000 square miles of Oxford and adjacent counties of Maine. *B5, H1, H14, M3, S1.15, S2.*

405. 1926 October 24. 8:52 p.m. III. Felt at Brockton, Mass. *M3.*

406. 1926 October 28. 2:42 a.m. III. Felt by several, and rattled windows at Toledo, Ohio. *N1, S2.*

407. 1926 November 24. 2:30 p.m. IV. 45°.0N, 67°.5W. In southeastern Maine. Felt strongly at Eastport, Me. and St. Stephen, N.B. *N1, S2.*

408. 1927 February 16. 11:30–12:00 p.m. IV. Felt at Mansfield, Ohio. *N1, S1.16.*

409. 1927 March 8. 11:08 p.m. V. 43°.3N, 71°.4W. Felt at Concord, N.H. *B5, H1, N1, S2.*

410. 1927 March 12. 5:14 p.m. IV. 44°.6N, 75°.2W. Felt by many at Canton, N.Y. *N1.*

411. 1927 March 14. 9:15 a.m. IV. 44°.6N, 75°.4W. Felt at Canton and Ogdensburg, N.Y. *N1.*

412. 1927 March 29. 3:30 p.m. III. Felt on the south side of Syracuse, N.Y. *N1.*

413. 1927 March 30. "Late in the day" IV. Felt at New Britain, Conn. *M3.*

414. 1927 March 31. 4:00 and 4:30 p.m. III. Felt at Syracuse, N.Y. *N1.*

415. 1927 June 1. 7:23, 7:31 and 7:39 a.m. VI. 40°.3N, 74°.0W. Felt along the New Jersey Coast between Toms River and Sandy Hook. *B5, H1, N1, S1.17, S2.*

416. 1927 August 20. IV. 42°.3N, 71°.0W. Near Quincy, Mass. Felt at Boston, Dedham, Quincy and Hingham Mass. *N1.*

417. 1927 October 24. 6:00 a.m. IV. Felt by many at Dannemora, N.Y. *N1.*

APPENDIX

The following numbered shocks from *Earthquakes of Eastern Canada* were felt also in parts of northeastern United States: 1, 2, 3, 4, 10, 15, 22, 24, 32, 33, 60, 61, 77, 78, 87, 89, 92, 101, 107, 147, 209, 222, 224, 240, 242, 250, 256, 259, 266, 267, 275, 280, 282. These do not include those United States shocks which were repeated in the Canadian list.

GEOGRAPHICAL INDEX*

32°N–33°N
80°W–81°W No. **293.** Not plotted.

40°N–41°N
67°W–68°W No. **68.**
70°W–71°W No. **296.**
72°W–73°W No. **135.**
73°W–74°W Nos. 168, 195, **214, 235,** 238, 258, 334, **400.**
74°W–75°W Nos. **36,** 81, 111, **136, 137,** 188, 233, **278, 299, 303, 415.**
75°W–76°W Nos. **277, 329, 370, 396.**
76°W–77°W No. 288.
82°W–83°W No. 408.
84°W–85°W Nos. **218, 279.**

41°N–42°N
60°W–61°W No. **349.**
67°W–68°W Nos. **47,** 48, **49,** 50.
70°W–71°W Nos. 156, 157, 252, 383.
71°W–72°W Nos. **63, 78,** 138, 145, 215, **226, 275,** 312, 324, **344,** 393, 394.
72°W–73°W Nos. **1, 2, 3, 4, 71, 72,** 73, 74, 75, 76, 77, 84, 85, 89, 90, 91, 92, 102, **109, 110,** 113, 114, 147, 177, 179, 183, 185, 189, 240, 291, 294, 300, 301, 307, **310,** 319, 345, 356, 357, 358, 365, 389, 390, **391,** 392, 413.
73°W–74°W Nos. 17, 20, 22, 30, 184, **219,** 220, 287, 289, 328, 354, 388, 402.
74°W–75°W Nos. **67, 237.**
81°W–82°W Nos. 99, **320.**
83°W–84°W No. 406.

42°N–43°N
68°W–69°W No. **61.**
70°W–71°W Nos. **5,** 6, 7, 9, 10, **11,** 16, 18, 19, **24, 25, 26, 27, 29, 31,** 32, **33,** 34, **35, 39, 40, 41,** 42, 43, 62, 66, 79, 80, 82, **88,** 95, 107, 108, 117, **119,** 149, 165, 171, **186,** 213, 245, 261, **311, 380,** 384, 398.
71°W–72°W Nos. **8,** 12, 13, 14, 15, 21, 23, **37,** 38, 44, 51, 52, 53, 54, 55, 56, **57,** 58, 69, 70, **96, 134,** 140, 163, 187, 190, 202, 203, 208, 209, 210, 217, 221, 232, 236, 241, 251, 267, 280, 281, 313, **326,** 327, 331, 335, 339, 342, 347, **350,** 372, 379, 381, 395, 405, 416.
72°W–73°W Nos. 139, 161, 162, 164, 193, 222, 223, 284.
73°W–74°W Nos. **115,** 125, 230, 256.
74°W–75°W Nos. **172,** 239, 268, 325, 353.
76°W–77°W No. 264.
80°W–81°W No. 373.
82°W–83°W No. 375.
83°W–84°W No. 231.

43°N–44°N
68°W–69°W Nos. 321, **322.**
69°W–70°W Nos. 98, 103, 105, 159, 197, 363.
70°W–71°W Nos. 45, 46, **60,** 64, 65, 86, **93,** 101, 104, 132, 141, 152, 153, 154, 155, **169,** 170, 211, 228, 243, 253, 254, 323, 332, 364, 367, 401.
71°W–72°W Nos. 28, **59,** 118, 120, 121, 122, 123, 124, 128, 129, 131, 143, 148, 158, 160, 196, 207, 216, 229, 242, 246, 247, 248, 257, 259, 260, 263, 265, 266, 269, 270, **271,** 274, 276, 282, **283,** 285, 286, 290, **297,** 298, 306, 317, 366, 376, **386, 409.**
72°W–73°W Nos. 116, 146, 178, 302, 336, **399.**
73°W–74°W Nos. 133, 144, 176, **352, 355,** 359, 369, 371.
75°W–76°W No. **151.**
76°W–77°W Nos. 382, 412, 414.
77°W–78°W No. 385.
78°W–79°W Nos. 150, **180,** 224.
79°W–80°W No. **107** C.
83°W–84°W No. **194.**

44°N–45°N
66°W–67°W No. **60** C.
67°W–68°W Nos. **89** C., 198, 227, 272, 273, **374.**
68°W–69°W Nos. 126, 205, **212,** 262, 308, 337, 362, 403.
69°W–70°W Nos. 83, 87, 97, 100, 106, 127, 130, 142, 174, 192, 200, 225, 255, 309, **316.**
70°W–71°W Nos. **181,** 182, 250, 295, **361,** 387, **404.**
71°W–72°W Nos. **166,** 167, 175.
72°W–73°W Nos. 112, 318.
73°W–74°W Nos. **191,** 204, 249, **305,** 330, 351, 417
74°W–75°W Nos. **201, 234,** 333, 343, 397.
75°W–76°W Nos. 199, 206, **256** C., **314,** 338, **378,** 410, 411.
76°W–77°W No. **259** C.

45°N–46°N
66°W–67°W No. **87** C.
67°W–68°W Nos. **147** C., **304, 315,** 340, **346,** 360, 368, 377, 407.
68°W–69°W No. **341.**
69°W–70°W Nos. 173, 292.
70°W–71°W No. **348.**
73°W–74°W Nos. **3** C., **15** C., **24** C., **209** C., **222** C., **224** C.
74°W–75°W No. **240** C.
75°W–76°W Nos. **78** C., 267 C.

46°N–47°N
64°W–65°W No. **61** C.
66°W–67°W No. **275** C.
67°W–68°W Nos. **242** C., 244.
69°W–70°W No. **94.**
72°W–73°W No. **2** C.
74°W–75°W No. **266** C.

47°N–48°N
69°W–70°W No. **280**
70°W–71°W Nos. **1** C., **4** C., **10** C., **22** C., **32** C., **33** C., **77** C., **92** C., **101** C., **282** C.

48°N–49°N
70°W–71°W No. **250** C.

* Serial numbers in bold-faced type designate those earthquakes of intensity V or greater. Serial numbers followed by "C" refer to the Canadian list on page 275.

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