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**GEOLOGICAL SURVEY OF CANADA
OPEN FILE 8737**

**Photographs taken in the field by E.A. Hodgson
following the 1925 magnitude 6.2 Charlevoix,
Quebec, earthquake**

M. Lamontagne

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Photographs taken in the field by E.A. Hodgson following the 1925 magnitude 6.2 Charlevoix, Quebec, earthquake

M. Lamontagne

Abstract

The 28 February, 1925, magnitude 6.2 Charlevoix Earthquake occurred at 9:19 p.m. local time. The main shock occurred in the Charlevoix-Kamouraska area and was felt more than 1000 km from the epicenter. Damage was reported in the epicentral zone, as well as in the cities of Québec and Shawinigan. Chimneys and unreinforced masonry buildings, especially those located on unconsolidated deposits, were particularly impacted by the ground vibrations. Between March 1925 and July 1926, Dr. Ernest A. Hodgson, seismologist of the Canadian Dominion Observatory, made a total of six visits in the areas where damage was reported. In addition to documenting the damage, he also aimed to better define the epicentre position. He visited the regions of Charlevoix, Kamouraska, Quebec City, Shawinigan, and the Saguenay-Lac-St-Jean. This Open File Report includes all pictures that were taken by E.A. Hodgson during his field visits. Some of them are evidence of damage and impacts on infrastructures and monuments, others are more of geographic interest. Finally, other pictures of damage from other reports are also included.

Résumé

Le tremblement de terre de Charlevoix, d'une magnitude de 6,2, survenu le 28 février 1925, s'est produit à 21 h 19, heure locale. Le choc principal s'est produit dans la région de Charlevoix-Kamouraska et a été ressenti à plus de 1000 km de l'épicentre. Des dommages ont été constatés dans la zone épiscopentrale, ainsi que dans les villes de Québec et de Shawinigan. Les cheminées et les bâtiments de maçonnerie non armée, surtout ceux situés sur des dépôts non consolidés, ont été particulièrement touchés par les vibrations du sol. Entre mars 1925 et juillet 1926, le Dr Ernest A. Hodgson, sismologue de l'Observatoire du Dominion du Canada, a effectué un total de six visites dans les zones où des dommages

avaient été signalés. En plus de documenter les dégâts, il s'est efforcé de mieux définir la position de l'épicentre. Il a visité les régions de Charlevoix, Kamouraska, Québec, Shawinigan et le Saguenay-Lac-St-Jean. Ce dossier public comprend toutes les photos qui ont été prises par E.A. Hodgson lors de ses visites sur le terrain. Certaines d'entre elles témoignent de dommages et d'impacts sur les infrastructures et les monuments, d'autres présentent davantage un intérêt géographique. Enfin, des photos de dommages provenant d'autres rapports sont également incluses.

Dedication

This Open File report is dedicated to the excellent work of the Dominion Observatory E.A. Hodgson who in addition to his work as a seismologist, devoted much time in the field, documenting the impacts of many Canadian earthquakes of the first half of the 20th century, including the 1925 Charlevoix earthquake.

Introduction

The 28 February 1925 Charlevoix earthquake is among the strongest earthquakes recorded in eastern Canada. This Moment Magnitude (**M**) 6.2 earthquake (Bent, 1992) occurred in the Charlevoix Seismic Zone (CSZ), near Ile-aux-Lièvres. In some older reports, this earthquake was also known as the 1925 St. Lawrence earthquake or the 1925 La Malbaie earthquake (Cajka, 1999).

The main shock occurred on 28 February 1925 at 9:19 p.m. local time. It was felt from Newfoundland to the east to Sault Ste. Marie, Ontario to the west and as far south as Virginia, more than 1000 km from the epicenter (Figure 1). Damage was concentrated near the epicenter on both sides of the St. Lawrence River, in Quebec City and in Shawinigan.

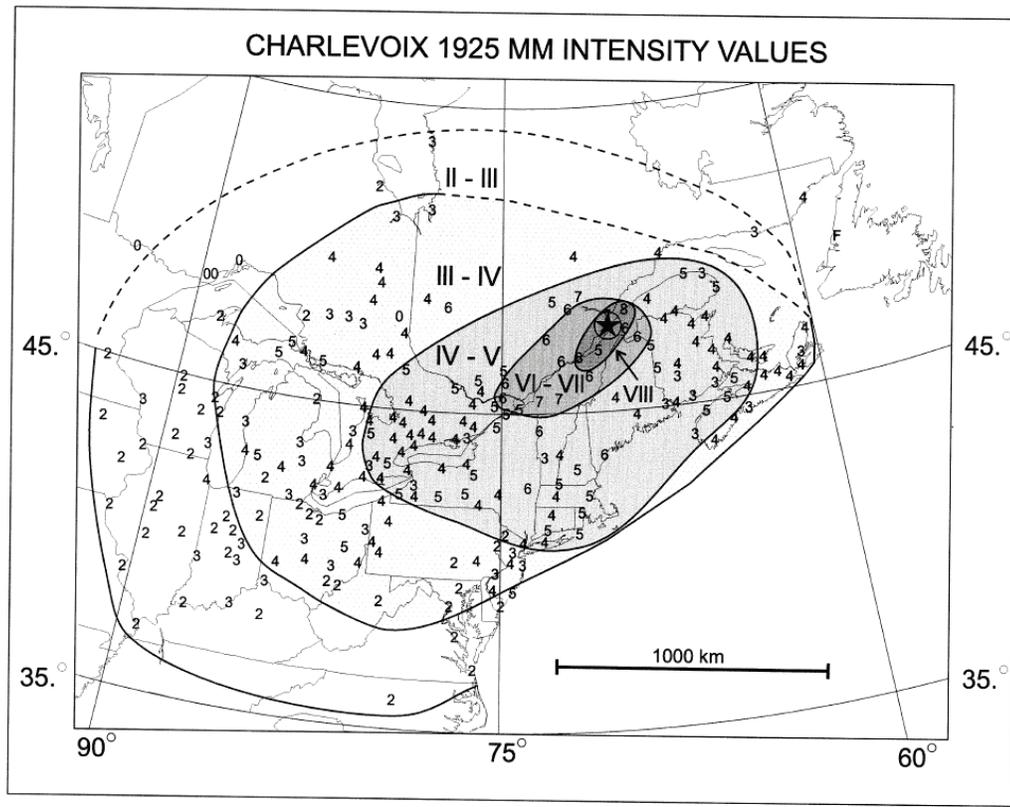


Figure 1. Iseismal Map of the 28 February 1925 Charlevoix earthquake (Cajka, 1999). Roman numerals refer to the intensity levels of the Modified Mercalli scale described in Appendix 1.

In the months following the main shock, field studies conducted by E.A. Hodgson, seismologist of the Dominion Observatory (Figure 2), confirmed the location of the epicentre beneath the St. Lawrence River, between La Malbaie and Rivière-Ouelle. Years later, re-examination of the seismograms refined the location near the aux Lièvres Island, an area where several earthquakes with magnitudes of 4.0 and higher occurred in the 20th century (Stevens, 1980).



Figure 2. Dr E.A. Hodgson, seismologist at the Dominion Observatory. ESS photo database Number 1995155

E.A. Hodgson visited the regions most affected by the earthquake in six different occasions (Hodgson, 1926). The first two field excursions were dedicated to locating the earthquake epicentre and documented the damage. The last four had more specific goals such as looking for a suitable site for a seismograph station near St-Joachim, but Hodgson made use of these visits to better document certain aspects of the earthquake. The six visits were as follows:

1. From March 5th to 21st, 1925, Hodgson visited the north shore of the St. Lawrence between Quebec City and La Malbaie (Murray Bay). This included La Malbaie, Pointe-au-Pic, Baie-St-Paul, Saint-Urbain, Québec, Lac St-Jean, Chicoutimi (now City of Saguenay), Baie des Ha! Ha! (Ville de Saguenay, Secteur La Baie). He also stopped at Shawinigan (Shawinigan Falls). On the south shore from Lévis to Trois-Pistoles, he visited Lévis, Rivière-Ouelle, Saint-Pacôme, Sainte-Anne-de-la-Pocatière, Rivière-du-Loup, and Trois-Pistoles. Hodgson (1925); Hodgson (1926).

2. From April 2nd to the 17th, 1925, he visited the south shore of the St. Lawrence. Sainte-Anne-de-la-Pocatière, Sainte-Louise, Rivière-du-Loup, Notre-Dame-du-Lac, Edmundston, Saint-Pascal, Kamouraska, Saint-Philippe-de-Néri, Saint-Denis, Mont-Carmel, Rivière-Ouelle and Saint-Pacôme.
3. From July 31st to August 7th, 1925, he visited the south shore again. Sainte-Anne-de-la-Pocatière, Rivière-Ouelle and Saint-Pacôme.
4. From May 27th to June 7th, 1926, he went to Shawinigan Falls and St-Joachim-du-Cap-Tourmente (probably to set up a seismograph at Sept-Chutes).
5. From June 21 to the 24th, 1926, Saint-Joachim region (probably to set up a seismograph at Sept-Chutes).
6. From July 14th to July 24, 1926, E.A. Hodgson was accompanied by J.W. Goldthwait. They visited Shawinigan, along the St. Lawrence River to Quebec City and St-Joachim, with a tour of Ile d'Orléans, to finish on the south shore near Ste-Anne-de-la-Pocatière and Kamouraska.

In these field visits, Hodgson took numerous pictures. In August 1926, he added a few, probably from Goldthwait, identified as the Geological Survey of Canada. These pictures were printed in a postcard-size format. In the 1990's, these pictures were kept in a filing cabinet in the basement of the Observatory Building in Ottawa along with some other documents from the 1920s. With a desire to archive them and to make them available to researchers, the author asked his colleague Michael Szadurski of the NRCan Library Service to scan them. The current Open File Report is the end result of this effort.

Because the pictures represent six different field excursions, they were taken at different times of year: some showed ice monuments and deep snow, some show spring time conditions and others, late spring or summer. In general, the figure captions did not include the dates that the pictures were taken (except for a few from the Geological Survey in August 1926). They were copied verbatim and can be

found in Appendix 1. Only one exception: photo 281 was not found as a postcard. It was copied from a lantern slide and the text is taken from Hodgson (1950).

Overview of the impact

Hodgson made a series of talks on this important earthquake. Interestingly, he was only able to publish his final report in 1950 because it was feared that the quake would keep tourists away and harm investment. The following descriptions are based on some of Hodgson's personal observations of the damage as published in Smith (1962).

La Malbaie: The town is built partly on rock and partly on unconsolidated deposits at the mouth of La Malbaie river. The church, which was built on solid rock, was not damaged. The jail and courthouse which was located on such deposits, though massively constructed of stone, was badly cracked throughout. 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. Several stoves moved but no fires resulted. Many chimneys fell.

The old Cabot manor house (Figure 3), 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. Picture 3 shows in-plane shear failure between the two rows of windows. Hodgson (1925) states that the house was standing on a deep sand slope. Other buildings in the vicinity were not seriously damaged.



Figure 3. Manoir Cabot house near La Malbaie suffered severe interior and exterior damage. Hodgson (1950) and Bruneau and Lamontagne (1994) described the damage to this construction. Photograph by E.A. Hodgson. NRCan photo number: (NRCan photo: 2012-075).

Pointe-au-Pic: Damage was more severe than elsewhere on the north shore of the St. Lawrence. Most chimneys were damaged, fireplace masonry was cracked, and some statues moved or fell. Most of the chimneys were broken, fireplace masonry was cracked and twisted, and statues rotated or fell. The main shock was felt by the crew on a moving train approaching Pointe-au-Pic at the time.

Baie-Saint-Paul: Because the town is built on the unconsolidated deposits of the Rivière du Gouffre valley, minor damage was widespread, including broken windows, fallen chimneys, broken dishes. Two bells from the 45 m tower of the stone church came off their axle and a cubic metre of stone was dislodged from the bell tower.

Saint-Urbain: Broken windows and fallen chimneys were common, though houses of wood-frame construction were otherwise unharmed. The stone church which had survived the earthquake of 1870

was practically destroyed (Figure 4). The spire was dangerously tilted towards the northeast and finally fell in the middle of the night, 11 days after the earthquake (March 11).



Figure 4. The Saint-Urbain church: the earthquake caused the bell tower to lean dangerously beyond repair and the church had to be demolished. *Photograph by E.A. Hodgson. (NRCan photo: 2012-084).*

Kamouraska Region (south shore): The villages of Sainte-Anne-de-la-Pocatière, Saint-Pacôme, Rivière-Ouelle, Saint-Denis, and Saint-Pascal were affected. Several churches and chimneys were damaged. Broken windows were reported in Rivière-du-Loup.

Rivière-Ouelle: This village was one of the most affected. Most chimneys fell. The church was badly damaged and the monuments in the adjacent cemetery fell or were rotated (Figures 5-9). Two stone houses had to be demolished. The train station was also damaged.



Figure 5a and b. Two views of the exterior damage to the Rivière-Ouelle church. *Photographs by E.A. Hodgson. (NRCan photo: 2012-079) (main photo)*



Figure 6. Overturned tombstones at Rivière-Ouelle. *Photograph by E.A. Hodgson. (NRCan photo: 2012-082).*



Figure 7. Rotated tombstones at Rivière-Ouelle. *Photograph by E.A. Hodgson. (NRCan photo: 1995-139D)*

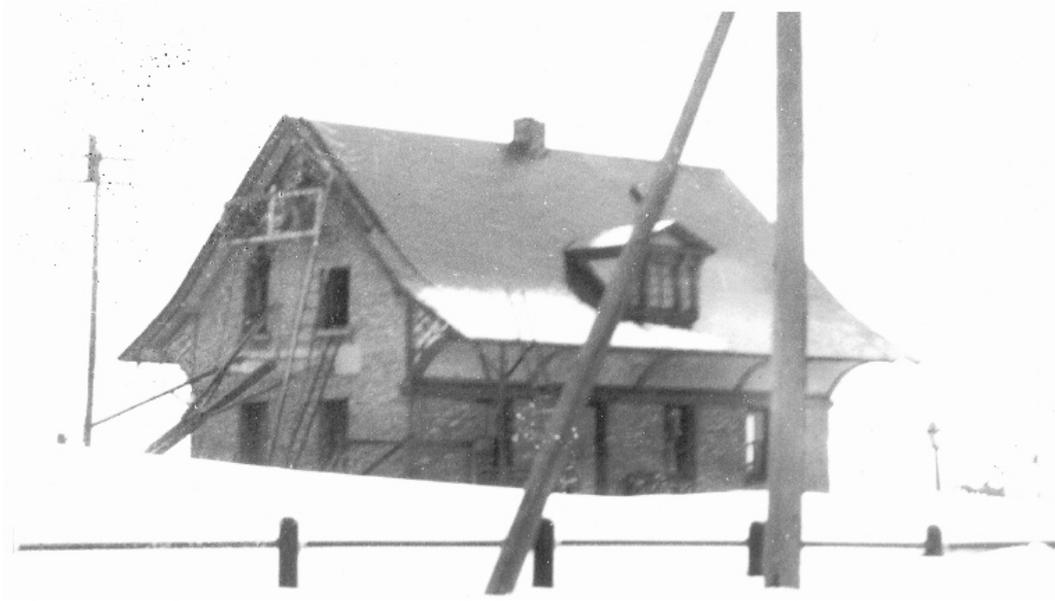


Figure 8. Rivière-Ouelle: A wall of the railroad station almost fully collapsed. *Photograph by E.A. Hodgson. (NRCan photo number: 2012-080).*



Figure 9. Rivière-Ouelle: Collapsed chimney and damaged masonry. *Photograph by E.A. Hodgson. (NRCan photo: 2012-081)*

Shawinigan: Damage was reported to a series of unreinforced masonry houses and to a church built on the clay portions of the city (figures 10-12).



Figure 10. Shawinigan: damaged unreinforced masonry wall. Hodgson (1950) and Bruneau and Lamontagne (2008) described the damage sustained by this construction. Photograph by E.A. Hodgson. (NRCan photo: 2012-083; this photo was used as Figure 12 in the Hodgson (1950) report).).



Figure 11. Shawinigan. Damaged masonry wall. Hodgson (1950) and Bruneau and Lamontagne (2008) described the damage sustained by this construction *Photograph courtesy of F. Larochelle*



Figure 12. Shawinigan. Partial collapse of a masonry wall of St. Marc's church. *Photograph from Geological Survey of Canada Archives.*

Québec: Most of the damage was to large buildings, such as churches, hospitals, the train station, and grain elevators, particularly in the city's lower town and port, where buildings were constructed on unconsolidated deposits or fill (figures 13-15). A full account of damage caused by the earthquake can be found in Lamontagne (2007; 2009).



Figure 13. Quebec City : Gare du Palais train station. Hodgson (1950) and Lamontagne (2008) described the damage to this building during the Charlevoix earthquake of March 1, 1925. Photograph by E.A. Hodgson. Additional details in Lamontagne (2007). (NRCan photo: 2012-078).

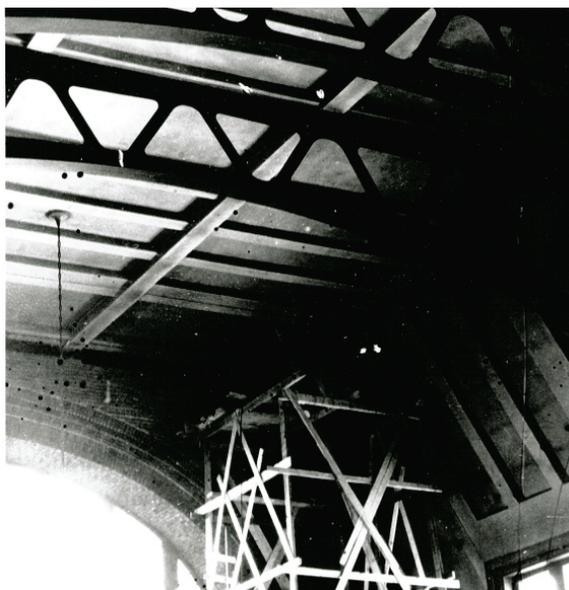


Figure 14. Quebec City : Gare du Palais train station interior: fallen row of bricks, damaged leaded windowpanes. Hodgson (1950) and Bruneau and Lamontagne (1994) described the damage to this construction. Additional details in Lamontagne (2007). *Photograph by E.A. Hodgson. (NRCan photo: 2012-077).*



Figure 15: Quebec City : Position of grain elevators (black arrow) and of the Gare du Palais train station (white arrow) in Québec's lower town. This picture was taken in the late 1920s. (*NRCan photo: 2012-076*).

Trois-Rivières: In Trois-Rivières, only the masonry of industrial buildings was damaged.

Conclusions

We are confident that this Open File includes all photographic evidence on this earthquake. We hope that it will be useful for research on this earthquake as well as on other intraplate earthquakes.

Acknowledgments

We thank Michael Szadurski of the NRCan Library Service who diligently scanned the pictures. We also thank our GSC colleague Stephen Halchuk for his review of this Open File; and Ms. Heather Crow, and Drs Greg Brooks and John Cassidy for supporting this project.

References

Bent, A.L., 1992. A re-examination of the 1925 Charlevoix, Quebec earthquake, *Bulletin of the Seismological Society of America*, 82, p 2097-2113.

Cajka, M.G., 1999. The 1925 Charlevoix, Quebec earthquake: re-evaluation of the Canadian intensity data using the Modified Mercalli Scale. Geological Survey of Canada Open File Report 3786, 70 p. (<https://doi.org/10.4095/211009>)

Hodgson, E.A. 1925. Preliminary Report on the earthquake of February 28, 1925. Memorandum to R.M. Stewart, Director of the Dominion Observatory. (copy included)

Hodgson, E.A. 1928. Tremblement de terre sur les rives du Saint-Laurent, le 28 février 1925. Analyse finale des données recueillies. *Bulletin de la société de géographie de Québec*. Vol. 22; (nos. 1-2); p. 56-63. (copy included)

Hodgson, E. A., 1950. The Saint Lawrence earthquake, March 1, 1925: Dominion Observatory Publications, Ottawa, v. 7, No. 10, 361-436. (copy included)

Lamontagne, M. 2007. Les dommages dus aux tremblements de terre dans la région de Québec entre 1608 et 2006. Geological Survey of Canada Open File 5547. (<https://doi.org/10.4095/224834>)

Lamontagne, M. 2009. Description and analysis of the Earthquake damage in the Quebec City region between 1608 and 2008, *Seismological Research Letters*, 80: 514-524.

Lamontagne, M. 2012. The Charlevoix-Kamouraska earthquake of 1925. Geological Survey of Canada. *Popular Science* 96, poster. (<https://doi.org/10.4095/291572>)

Lamontagne, M., Halchuk, S., Cassidy, J.F. and Rogers, G.C. 2018. Significant Canadian Earthquakes 1600-2017. Open File 8285, 2018, 37 pages, (<https://doi.org/10.4095/311183>).

Smith, W.E.T., 1962. Earthquakes of eastern Canada and Adjacent areas 1534-1927; Publications

of the Dominion Observatory, Vol. 26, no. 5, 32 pages (1 sheet) (<https://doi.org/10.4095/8704>)

Wood, H.O. and Neumann F. 1931. Modified Mercalli Intensity of 1931. Bulletin of the Seismological Society of America, 21: 277-283.

Appendix 1: Modified Mercalli Intensity Scale (Wood and Neumann, 1931)

I. Not felt -- or, except under especially favorable circumstances.

Under certain conditions, at and outside the boundary of the area in which a great shock is felt:

- sometimes birds, animals, reported uneasy and disturbed;
- sometimes dizziness or nausea experienced;
- sometimes trees, structures, liquids, bodies of water, may sway; doors may swing, very slowly.

II. Felt indoors by few, especially on upper floors, or by sensitive or nervous persons.

Also, as in grade I, but often more noticeably:

- sometimes hanging objects may swing, especially when delicately suspended;
- sometimes trees, structures, liquids, bodies of water, may sway, doors may swing, very slowly;
- sometimes birds, animals, reported uneasy and disturbed;
- sometimes dizziness or nausea experienced.

III. Felt indoors by several, motion usually rapid vibration.

- Sometimes not recognized to be an earthquake at first.
- Duration estimated in some cases.
- Vibration like that due to the passing of light or lightly loaded trucks or heavy trucks some distance away.
- Hanging objects may swing slightly.
- Movements may be appreciable on upper levels of tall structures.
- Rocked standing motor cars slightly.

IV. Felt indoors by many, outdoors by few.

- Awakened few, especially light sleepers.
- Frightened no one, unless apprehensive from previous experience.
- Vibration like that due to the passing of heavy or heavily loaded trucks.
- Sensation like heavy body striking building or falling of heavy objects inside.
- Rattling of dishes, windows, doors; glassware and crockery clink and clash.

- Creaking of walls, frame, especially in the upper range of this grade.
- Hanging objects swung, in numerous instances.
- Slightly disturbed liquids in open vessels. Rocked standing motor cars noticeably.

V. Felt indoors by practically all, outdoors by many or most: outdoors direction estimated.

- Awakened many, or most.
- Frightened few -- slight excitement, a few ran outdoors.
- Buildings trembled throughout.
- Broke dishes, glassware, to some extent.
- Cracked windows -- in some cases, but not generally.
- Overturned vases, small or unstable objects, in many instances, with occasional fall.
- Hanging objects, doors, swing generally or considerably.
- Knocked pictures against walls, or swung them out of place.
- Opened, or closed, doors, shutters, abruptly. Pendulum clocks stopped, started, or ran fast, or slow.
- Moved small objects, furnishings, the latter to slight extent.
- Spilled liquids in small amounts from well-filled open containers.
- Trees, bushes, shaken slightly.

VI. Felt by all, indoors and outdoors.

- Frightened many, excitement general, some alarm, many ran outdoors.
- Awakened all.
- Persons made to move unsteadily.
- Trees, bushes, shaken slightly to moderately.
- Liquid set in strong motion.
- Small bells rang -- church, chapel, school, etc.
- Damage slight in poorly built buildings.
- Fall of plaster in small amount.
- Cracked plaster somewhat, especially fine cracks; chimneys in some instances.
- Broke dishes.
- Fall of knick-knacks, books, pictures.
- Overturned furniture in many instances.

- Moved furnishings of moderately heavy kind.

VII. Frightened all -- general alarm, all ran outdoors.

- Some, or many, found it difficult to stand.
- Noticed by persons driving motor cars.
- Trees and bushes shaken moderately to strongly.
- Waves on ponds, lakes, and running water.
- Water turbid from mud stirred up.
- Incaving to some extent of sand or gravel stream banks.
- Rang large church bells, etc.
- Suspended objects made to quiver.
- Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary buildings, considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc.
- Cracked chimneys to considerable extent, walls to some extent.
- Fall of plaster in considerable to large amount, also some stucco.
- Broke numerous windows, furniture to some extent.
- Shook down loosened brickwork and tiles.
- Broke weak chimneys at the roof-line (sometimes damaging roofs).
- Fall of cornices from towers and high buildings.
- Dislodged bricks and stones.
- Overturned heavy furniture, with damage from breaking.
- Damage considerable to concrete irrigation ditches.

VIII. Fright general -- alarm approaches panic.

- Disturbed persons driving motor cars.
- Trees shaken strongly -- branches, trunks, broken off, especially palm trees.
- Ejected sand and mud in small amounts.
- Changes: temporary, permanent; in flow of springs and wells; dry wells renewed flow; in temperature of spring and well waters.
- Damage slight in structures (brick) built especially to withstand earthquakes.

- Considerable in ordinary substantial buildings, partial collapse: racked, tumbled down, wooden houses in some cases; threw out panel walls in frame structures, broke off decayed piling.
- Fall of walls.
- Cracked, broke, solid stone walls seriously.
- Wet ground to some extent, also ground on steep slopes.
- Twisting, fall, of chimneys, columns, monuments, also factory stacks, towers.
- Moved conspicuously, overturned, very heavy furniture.

IX. Panic general.

- Cracked ground conspicuously.
- Damage considerable in (masonry) structures built especially to withstand earthquakes:
- threw out of plumb some wood-frame houses built especially to withstand earthquakes;
- great in substantial (masonry) buildings, some collapse in large part; or wholly shifted frame buildings off foundations, racked frames;
- serious to reservoirs; underground pipes sometimes broken.

X. Cracked ground, especially when loose and wet, up to widths of several inches; fissures up to a yard in width ran parallel to canal and stream banks.

- Landslides considerable from river banks and steep coasts.
- Shifted sand and mud horizontally on beaches and flat land.
- Changed level of water in wells.
- Threw water on banks of canals, lakes, rivers, etc.
- Damage serious to dams, dikes, embankments.
- Severe to well-built wooden structures and bridges, some destroyed.
- Developed dangerous cracks in excellent brick walls.
- Destroyed most masonry and frame structures, also their foundations.
- Bent railroad rails slightly.
- Tore apart, or crushed endwise, pipe lines buried in earth.
- Open cracks and broad wavy folds in cement pavements and asphalt road surfaces.

XI. Disturbances in ground many and widespread, varying with ground material.

- Broad fissures, earth slumps, and land slips in soft, wet ground.
- Ejected water in large amount charged with sand and mud.
- Caused sea-waves ("tidal" waves) of significant magnitude.
- Damage severe to wood-frame structures, especially near shock centers.
- Great to dams, dikes, embankments, often for long distances.
- Few, if any (masonry), structures remained standing.
- Destroyed large well-built bridges by the wrecking of supporting piers, or pillars.
- Affected yielding wooden bridges less.
- Bent railroad rails greatly, and thrust them endwise.
- Put pipe lines buried in earth completely out of service.

XII. Damage total -- practically all works of construction damaged greatly or destroyed.

- Disturbances in ground great and varied, numerous shearing cracks.
- Landslides, falls of rock of significant character, slumping of river banks, etc., numerous and extensive.
- Wrenched loose, tore off, large rock masses.
- Fault slips in firm rock, with notable horizontal and vertical offset displacements.
- Water channels, surface and underground, disturbed and modified greatly.
- Dammed lakes, produced waterfalls, deflected rivers, etc.
- Waves seen on ground surfaces (actually seen, probably, in some cases).
- Distorted lines of sight and level.
- Threw objects upward into the air.

Appendix 2. Original photo captions as written on the back of the photo prints. Numbers refer to the picture number in the folder. No editing of text, including place names, was made (comments by Lamontagne in red)

1. Interior Office. Ottawa
2. The Palais station, Quebec. The inside of the north wall of this station was damaged. Several rows of bricks falling into the waiting room. (NRCan photo: 2012-078)
3. Interior of Palais Station, Quebec. Showing scaffold in place. (NRCan photo: 2012-077)
4. The skylight of Palais Station Quebec, damaged by the earthquake. This picture was taken before the damage.
5. View from city hall Quebec. Showing ice arches and statues (this photo was used as Figure 11 in the Hodgson (1950) report)..
6. Icicles on Neptune Inn, Quebec. Not dislodged by the earthquake. (Note; current address is 113-117, côte de la Montagne; (this photo was used as Figure 10 in the Hodgson (1950) report).)
7. Ice on warehouse near river, Quebec – not fallen 6 days after earthquake.
8. Sous le Cap, Quebec.
9. Malbaie Mts. From Pointe au Pic.
10. Mr. Hector Warren, Pointe au Pic. He laid out the north-south line for the determination of the line of shift of the pool table.
11. Philippe Warren's Store, Pointe au Pic, Quebec.
12. Manor Cabot near Murray Bay. This is an old house but was in good repair. It has been badly cracked by the earthquake and is now being examined by experts to see if it can be saved. (NRCan photo: 2012-075)
13. A chimney and fire place in the Cabot manor near Murray Bay. Note the dust and broken marble on the floor. The whole chimney is twisted.
14. The Church at Baie St. Paul. Very little damaged by the earthquake.
15. Mon(?) Danais – a civil engineer who assisted at Baie St. Paul.
16. Mountain between Baie St. Paul and St. Urbain seen across the river Gouffre.
17. Mountain near Baie St. Paul seen across the river La Gouffre.
18. Earth slide near St. Urbain.

19. Church St. Urbain. Tower leaning back. It subsequently had to be taken down. (NRCan photo: 2012-084)
20. View toward grain elevators Palais Station, Quebec.
21. The grain elevator and the sheds on the St. Charles River, Quebec. This picture was taken from the deck of the ferry at Levis.
22. View of grain elevator and grain galleries above shed 29 at Harbour Quebec.
23. The grain elevator and shed 29 Quebec. (NRCan photo: 1995-139A; this photo was used as Figure 7 in the Hodgson (1950) report).
24. Shed 29, Quebec Harbour Commission.
25. The grain elevators, Quebec – Harbour Commission.
26. Shed 29. Quebec – Harbour Commission.
27. The interior of Shed 29 at the Harbour Quebec. The picture shows a section of the roof of the shed made of blocks of concrete, falled in after the earthquake. No one was in the building at the time.
28. This indicates the shift of the column feet in shed 29. The columns are of steel I beams, the cross of the beam being 15” and the base 25” square. The actual shift is indicated below. (this photo was used as Figure 8 in the Hodgson (1950) report).
29. Showing the way in which the angle iron braces between the north column feet and the feet of the columns in the next row were bent down and to the east in the centre at the time of the earthquake (this photo was used as Figure 9 in the Hodgson (1950) report)..
30. Crack in the ground at Quebec. This crack runs almost due east-west and is between the shed 29 etc. and the St. Charles River.
31. Chambord, Ouest Quebec, seen from point west on way to Val Jalbert.
32. View near Chambord.
33. View looking toward Val Jalbert.
34. Looking ahead as one goes from Chambord Jct. Toward Val Jalbert. The mountains in the distance border the valley plain in which lies Lake St. John.
35. View near Chambord.
36. A gravel pit near Val Jalbert, on the shore of Lake St. John. There was no indication of a slide at this point and no damage to the rails at any point on the road.
37. Looking backward as one approaches Val Jalbert from Chambord Jct. Showing the mountains in the distance, bordering the valley plain surrounding Lake St. John.

38. Lake St. John from near Val Jalbert.
39. The college at Roberval of Lake St. John. The character of the ground – sandy – is shown at the side where additions are to be made. The lake is immediately behind the building. In spite of the combination of circumstances favourable to damage, no damage occurred.
40. Rapid transit at Roberval on Lake St. John. This is a very satisfactory way of getting over the snow. In the summer the front pair of wheels are taken off and put in place of the runners and you have your summer Ford.
41. College at Roberval.
42. Roberval from across an arm of Lake St. John.
43. Rapid transit in the north. The space between the rails is very smooth and slippery. The big dogs, harnessed to the sleighs make very fast time with heavy loads on the right-of-way.
44. St. Prime – nearer view.
45. The village of St. Prime, Que. Near the west end of Lake St. John. The church was not damaged by the earthquake. No damage was suffered by any building in this region.
46. Coudé Hotel St. Félicien
47. Church St. Félicien.
48. This old frame of a barn is standing near Chambord Jct, Quebec. Part of it consists of a single upright stem unsupported at the bottom by no boards. A heavy piece is attached at the top. If the shock had been at all strong at this point the whole or part of this would have fallen (this photo was used as Figure 23 in the Hodgson (1950) report).
49. Chicoutimi from the hill.
50. Looking up river from hill at Chicoutimi.
51. Saguenay river from centre of town at Chicoutimi.
52. Chicoutimi. Looking toward the Saguenay river from the centre of the town. These houses are built on sand and are on the bank of the river but there was no damage even to things on shelves.
53. Chicoutimi Church from foot of hills.
54. The church at Chicoutimi. It is built on rock. There was no damage to this building.
55. Port Alfred Pulp and Paper Co. Mill. Seen from hills near Bagotville, P.Q.
56. Private Chapel near Bagotville.
57. Distant view Bagotville, Port. Alfred.
58. Baie des Ha! Ha!, seen from the hills. The church is at Bagotville. No damage occurred here.

59. Bagotville, P.Q. on Baie Ha! Ha! This is a centre one of three pictures showing the region around this bay.
60. Port Alfred.
61. At Alfred Pulp & Paper Co. Mill
62. This picture shows the Canadian Govt Steamer- Ice Breaker – Lady Grey on the St. Lawrence near Portneuf. Photo taken through window of a train traveling about 30 miles an hour. Bright sun snow on ground. March 20th ‘25.
63. St. Pierre section of Shawinigan Falls. The street of houses damaged by the earthquake runs parallel to the face of this hill and at its top. The picture was taken from the platform of the C.P.R. station.
64. Shawinigan Falls, seen from St. Marks.
65. The SE wall of the transept of St. Marks Cathedral, Shawinigan Falls. The temporary wall has been put in the building paper and battens to last till spring.
66. No text (close up view of the transept of St. Marc Cathedral; (this photo was used as Figure 14 in the Hodgson (1950) report.)
67. Damage to a house of Hemlock St. St. Pierre section of Shawinigan Falls. (NRCan photo: 2012-083; this photo was used as Figure 12 in the Hodgson (1950) report.).
68. This house is on Hemlock St. St. Pierre section of Shawinigan Falls. There are two houses within a block of each other on this street with the same damage. This house stands on the slope of a steep hill of sand.
69. Looking from Hemlock St. Shawinigan Falls toward the river and dam. The hill is of sand and houses built on the slope are damaged.
70. The Frigon Block, Hemlock St., St. Pierre section of Shawinigan Falls. The end walls of this building were badly damaged, one falling out completely.
71. A house on Hemlock St., St. Pierre Section of Shawinigan Falls. (this photo was used as Figure 13 in the Hodgson (1950) report).
72. The wall of a house on Hemlock St., Shawinigan Falls. St. Pierre section. This house is on the edge of a sand hill and both end walls fell, this one completely, the other partially.
73. Rivière-du-Loup. Looking SW View #1 Panorama.
74. Rivière-du-Loup. Looking SW View #2 Panorama.
75. Rivière-du-Loup. View #3 Panorama.
76. Rivière-du-Loup. View #4 Panorama.

77. Rivière-du-Loup. View #5 Panorama.
78. Waterfall Rivière-du-Loup.
79. Looking into falls at Rivière-du-Loup.
80. Rivière-du-Loup. Looking toward R.R. bridge from falls.
81. Looking across the St. Lawrence.
82. Looking across St. Lawrence from point half way up first slope Fraserville. Rivière-du-Loup.
83. Rivière-du-Loup. Old chimney and Summer house.
84. Anglican Cemetery in Fraserville. Rivière-du-Loup.
85. St. Patrick's Church at Rivière-du-Loup. Chandeliers oscillated till noon March 1st.
86. Looking toward the Cemetery and St. Lawrence from Rivière-du-Loup.
87. A monument top turned counter-clockwise Rivière-du-Loup.
88. A monument top turned counter-clockwise Rivière-du-Loup.
89. Stores whose windows were broken in Rivière-du-Loup.
90. Looking up side of theatre wall.
91. The pulp mill at Edmundston, N.B.
92. Madawaska Inn. Edmundston, N.B. Chimney cracked plaster of walls. Slightly (inside Chimney).
93. The valley south of Edmundston.
94. Ste. Rose. Quebec near N.B.
95. Lake Temiscouata from Notre Dame.
96. Hamlet on route, Rivière-du-Loup to Edmundston, N.B.
97. View looking east from point south of Rivière-du-Loup.
98. Looking South East from St. Pascal toward escarpment.
99. St. Pascal and Kamouraska from hill S.E. St. Pascal.
100. Looking North N.E Kamouraska. from escarpment South east of St. Pascal.
101. St. Pascal and from near top of escarpment S.E. St. Pascal.
102. St. Pascal Valley View #1 Looking north Series Panorama.
103. St. Pascal Valley View #2 Series Panorama.
104. St. Pascal Valley View #3 Series Panorama.
105. St. Pascal Valley View #4.
106. St. Pascal Valley View #5.
107. Looking toward St. Philippe and St. Denis from escarpment.

108. Crack in stone wall St. Pascal.
109. Looking from St. Pascal toward St. Philippe and Mt. Carmel.
110. St. Pascal church South side. Cracks over last window to right.
111. St. Pascal Church.
112. St. Pascal Church walls on other side cracked. Sacristy and church separated by cracks on this side.
113. Broken window edge outside. South wall St. Pascal church.
114. Broken window edge inside. South wall St. Pascal church.
115. Three monuments in row. St. Pascal cemetery 1st cc, 2nd clockwise, 3rd cc – considerable turn rest not turned (?)
116. Marie Angel – monument St. Pascal south side. Turned cc.
117. Hudon monument turned counter-clockwise.
118. Monument St. Pascal turned.
119. Robitaille monument turned.
120. Monument St. Pascal turned and upset.
121. Cemetery as a whole, St. Pascal.
122. Monument in cemetery, St. Pascal.
123. Monument in cemetery.
124. Mountain St. Pascal, south side, viewed looking north.
125. Mountain St. Pascal, north side viewed looking south.
126. Kamouraska - viewed from the south.
127. The church in Kamouraska.
128. The cemetery at Kamouraska.
129. Dr. Michaud Monument in Kamouraska. Only one displaced.
130. The St. Lawrence viewed from Kamouraska.
131. St. Denis and St. Philippe from a mountain S.E. of town (latter).
132. Church St. Philippe de Neri. No damage.
133. Cemetery St. Philippe de Neri, P.O.
134. Cross turned counter clockwise at St. Philippe de Neri.
135. Chimney fallen into the house at St. Philippe.
136. Mt. Carmel seen across the valley – looking SE.
137. Mt. Carmel seen from centre of valley – looking SE.

138. Mt. Carmel cemetery – no damage.
139. Looking toward St. Pascal from Mt. Carmel.
140. Looking NW from centre of valley view Mt. Carmel looking NW.
141. Looking SE from near St. Denis looking toward St. Philippe.
142. Looking toward St. Philippe from bridge near St. Denis, PQ.
143. St. Denis from bridge SE of the village. Note extremely high tower on church.
144. St. Denis from the SE note extreme height of tower on the old church – not damaged.
145. Back of church at St. Denis. Chip of stone shoved out at corner edge due to sway of tower.
146. General view of graveyard at St. Denis.
147. Father beside monument turned counter clockwise at St. Denis.
148. Father S. Denis and the driver beside a monument turned counter clockwise.
149. Pelletier monument St. Denis turned clockwise.
150. Hudon Monument – St. Denis. Turned counter clockwise.
151. The station at Rivière-Ouelle. The west wall of the building is practically fallen out. (NRCan photo: 2012-080)
152. Rivière-Ouelle church viewed across the river.
153. The end of the transept at the church at Rivière-Ouelle. Note too the crack parallel to the extreme right edge of the tower. The front wall of the tower is falling forward and the edge stones are out of their bedding.
154. The old (53 yrs) church at Rivière-Ouelle on the south shore. The end of the transept fell out, the bells in the tower were dislodged, the stones in the graveyard were upset and the building itself is damaged so much that it will have to be torn down. (NRCan photo: 2012-079)
155. West transept wall, Rivière-Ouelle Church (this photo was used as Figure 4 in the Hodgson (1950) report)..
156. Steeple Rivière-Ouelle church viewed from east.
157. East side of front of church at Rivière-Ouelle. (this photo was used as Figure 3 in the Hodgson (1950) report).
158. East wall of church Rivière-Ouelle.
159. Interior of church at Rivière-Ouelle. Showing the falling away of the sacristy behind the altar.
160. Interior of church at Rivière-Ouelle showing the falling away of the east transept.
161. Interior of church Rivière-Ouelle showing the falling away of the east transept wall.

162. The interior of the church at Rivière-Ouelle showing the damage to the pipe organ. This instrument fell into the auditorium.
163. The interior of the transept of the church at Rivière-Ouelle. The whole balcony is cracked rather widely.
164. The graveyard at Rivière-Ouelle, only the stone remains standing.
165. Monument Rivière-Ouelle cemetery – turned counter clockwise.
166. No text. (fallen monument at Rivière-Ouelle).
167. Tombstone fallen SE at Rivière-Ouelle.
168. No title received, this film discarded. Photo by J.SV Goldthwait, 1926. (E.A. Hodgson, standing by restored Letellier Monument, Rivière-Ouelle (compare with damaged monument, photo 169)) – this photo was used as Figure 21 in the Hodgson (1950) report)
169. Letellier Monument. Rivière-Ouelle 45 degrees turn of column 80 degrees plus turn of cap, cross fallen off top. No central pin except between cross and cap. (this photo was used as Figure 20 in the Hodgson (1950) report).
170. Deschenes Monument Rivière-Ouelle Cemetery.
171. Deschenes Monument Rivière-Ouelle Cemetery scratches (out of form).
172. JS Plourde Monument turned shifted SE and fallen SE Rivière-Ouelle. Print missing. (this photo was used as Figure 19 in the Hodgson (1950) report).
173. Vista of monuments turned shifted SE and fallen SE Rivière-Ouelle .
174. Old stone house near Rivière-Ouelle no trees.
175. A heavy old stone house near Rivière-Ouelle, Que. It was occupied up to the time of the earthquake. The chimney has fallen off and the walls are so badly damaged that it has had to be abandoned. Visited Jul 26th. Torn down and rebuilt. (Same picture as 174) (NRCan photo: 2012-081)
176. Old stone house near Rivière-Ouelle completely shaken into discrete blocks by the earthquake.
177. The flat nature of the country near Rivière-Ouelle on the south shore of the St. Lawrence. This alluvial plain has a high water table and the frozen surface of the plain oscillated about on the saturated sand below, causing serious damage to chimneys in the district.
178. Looking toward St. Pacome from near Rivière-Ouelle Stn.
179. Church St. Pacome.
180. Looking through tennis court fence near St. Pacome toward Rivière-Ouelle station.
181. Looking from St. Pacome toward Rivière-Ouelle.

182. Looking toward St. Lawrence from St. Pacome.
183. A badly “staggered” chimney St. Pacome.
184. Monuments in cemetery practically complete view St. Pacome.
185. Dubé Monument St. Pacome turned clockwise.
186. Hudon Monument St. Pacome turned counter clockwise.
187. Lévesque Monument St. Pacome turned counter clockwise.
188. Lévesque monument St. Pacome Cemetery Turned clockwise and shifted
189. Monument fallen in two directions St. Pacome.
190. A small house near St. Pacome. Note that the chimney came off in one solid piece and that it fell to the south side of the house. Note also the tin chimney. Many houses in this region and Rivière-Ouelle are so equipped till spring.
191. A chimney near St. Pacome, Que. This chimney fell as a solid unit, toward the south of the house.
192. St. Pacome from entrance to Pulp Power Co plant
193. St. Pacome from St. Pacome Station.
194. Door of St. Pacome. Locked a shown at the time of quake it stood open but still locked after the shock (this photo was used as Figure 18 in the Hodgson (1950) report).
195. The reported crack in the ground at St. Pacome is at the house in the distance. The nature of the ground (sand) and the fact that there is a very steep slope coupled with the circumstances of frozen surface and height of the water table, (very near the surface) are probably to be considered more than proximity to the epicenter.
196. Hill near St. Pacome.
197. Hill near St. Pacome.
198. Valley near St. Anne. No train.
199. Hill near St. Pacome. Train.
200. This tall and old stone mill is near St. Pacome. In spite of the general damage to buildings built on sand in this region this old mill is not damaged. It is on the rock.
201. The Rock Islands, formation near Ste. Anne de la Pocatière.
202. View near Ste. Anne de la Pocatière Station.
203. The country in the region of Ste. Anne de la Pocatière, seen from the RR Station and looking toward the NNW. The characteristic rock islands (small mountains rising abruptly from an alluvial plain) are shown.

204. The village of Ste. Anne de la Pocatière seen from the RR. The building in the extreme left of the picture is the Agricultural School in which the temporary set of the new seismograph will be made.
205. Classics College – Ste Anne.
206. Church and Classics College Ste. Anne de la Pocatière viewed from north.
207. North side of mountain Ste. Anne de la Pocatière.
208. North side of mountain Ste Anne de la Pocatière.
209. North side of mountain Ste. Anne.
210. Looking north from the corner of mountain at Ste. Anne de la Pocatière. (this photo was used as Figure 2 in the Hodgson (1950) report).
211. The play ground at Classics College. Ste. Anne de la Pocatière.
212. L’Ecole d’Agriculture Ste. Anne de la Pocatière.
213. Seismograph set up. L’Ecole d’Agriculture Ste. Anne de la Pocatière.
214. From Agriculture School looking south Panorama. View #3.
215. View from L’Ecole d’Agriculture Ste. Anne View #2 Panorama.
216. From agriculture school looking south view #1 Panorama.
217. Pathological Laboratory Ste. Anne de la Pocatière.
218. The cemetery of Ste. Anne. Looking toward Baie St. Paul.
219. A monument in the cemetery Ste. Anne de la Pocatière.
220. A monument slid NW. Ste. Anne de la Pocatière.
221. A monument slid NW. Cemetery Ste. Anne de la Pocatière.
222. A monument slid NW. Cemetery Ste. Anne de la Pocatière.
223. A monument turned clockwise in Cemetery Ste. Anne.
224. A monument turned clockwise in Cemetery Ste. Anne de la Pocatière.
225. Looking North from Station Ste. Louise, Quebec.
226. Ste. Louise viewed from the Station.
227. Ste. Louise old cemetery.
228. Ste. Louise old cemetery.
229. Monument Ste. Louise cemetery.
230. Monument turned cc. Ste. Louise, Quebec.
231. The new cemetery Ste. Louise, Quebec.
232. Monument displaced Ste. Louise, Quebec (see notes).

233. Monument turned counterclockwise Ste. Louise.
234. Crack in snow-leading to gravel Ste. Louise, Quebec.
235. Crack (?) Gravel. Ste. Louise.
236. Rect. Cracks in snow. Ste. Louise cemetery.
237. Crack in snow. Ste. Louise (?)
238. Crack in snow Old cemetery, Ste. Louise.
239. Looking toward Baie St. Paul fro crack in earth Ste. Anne de la Pocatière.
240. Looking toward Ste. Anne Mt from cracks in soil, Ste. Anne de la Pocatière.
241. Cracks in soil. Ste. Anne de la Pocatière (this photo was used as Figure 15 in the Hodgson (1950) report)..
242. Crack in earth Ste. Anne de la Pocatière.
243. Snow bank north side of mountain Ste. Anne de la Pocatière.
244. Deep side crack in snow-north side mountain, Ste. Anne de la Pocatière.
245. Crack in snow-north side of mountain. Ste. Anne de la Pocatière, Quebec.
246. Deep wide crack in snow in bank north side of mountain at Ste. Anne de la Pocatière. See (19)
247. Crack in snow West of mountain at Ste. Anne de la Pocatière.
248. Crack in road which runs approximately EW (road) Ste. Anne du la Pocatière.
249. Cracks in snow Ste. Anne Orchard of L'Ecole de l'Agriculture, see notes.
250. Crack in earth in orchard at L'Ecole d'Agriculture. Ste. Anne de la Pocatière, Quebec. As place reported by Hon. Mr. Caron.
251. Crack in roadway near St. Pacome.
252. Typical crack in roadway near St. Pacome.
253. In the position marked by the five inch marks there was reported to have been a crack 6 inches wide, many yards long and over 20 feet deep. There was no indication of this when the site was examined about 2 weeks after the shock.
254. Place where layer crack appeared at St. Pacome. Taken after 6 weeks after quake.
255. Poor visibility. Large crack in sand near St. Pacome.
256. Crack on side of hill near St. Pacome. Several hundred yards long 4 inches wide (at first) and 20 feet deep. The stick is 16 inches long. It can be moved to full depth freely in the crack – 6 weeks after quake.
257. Crack in ground near Rivière-Ouelle.
258. Crack in ground near Rivière-Ouelle.

259. Crack near Rivière-Ouelle Church.
260. Crack in ground near Rivière-Ouelle. Crack 150' long 2" to 3" wide depth – at least 2' in places at time picture was taken 6 weeks after quake (this photo was used as Figure 17 in the Hodgson (1950) report)..
261. Crack in road, near Kamouraska (this photo was used as Figure 16 in the Hodgson (1950) report).
262. Crack in snow near Kamouraska.
263. Crack near St. Urbain. Taken going to St. Urbain. Horse facing north (approx..)
264. Crack in ground near St. Urbain.
265. Crack near St. Urbain seen returning. Horse facing approx. south.
266. No text. Unidentified village along the south shore of the St. Lawrence..
267. St. Anne de la Pocatière. Photo by local photographer.
268. Hotel Victoria Ste. Anne de la Pocatière, local photographer again.
269. Agricultural School Ste. Anne de la Pocatière by local photographer.
270. Seven Falls – the 5 highest. (Department of Mines Geological Survey August 19 1926) (Sept-Chutes, near St-Ferreol-les-Neiges, Qc)
271. View across peneplain from road ½ mile south of St. Ferreol toward Seven Falls. Foreground and stony till fields. Alt. +/- 1000' Deep gorge off St. Ann R. (Department of Mines Geological Survey August 21 1926)
272. Tidegauge. Pte aux Orignaux (Department of Mines Geological Survey August 26 1926)
273. Chimney left standing. I. d'Orléans. bet. Pt. Grave & Ste Famille on notted(?) slate (Department of Mines Geological Survey August 19 1926)
274. Chimney not thrown down 8mi East of Montmagny ledge under it.
275. Chimney not thrown down 8mi e of Montmagny ledge under it. (Department of Mines Geological Survey August 19 1926) (this photo was used as Figure 22 in the Hodgson (1950) report).
276. Chimney left standing I. Orleans 1 ½ mile e of Ste. Famille. (Department of Mines Geological Survey August 19 1926)
277. Valley near power plant Seven Falls
278. No text. (Damaged unreinforced masonry house in Shawinigan Falls; same as picture 71)
279. No text. (Shed no 29 in Quebec Harbour; same as picture 29).
280. No text. (Shed no 29 in Quebec Harbour; same as picture 29).

281. Monuments all fallen eastward, Rivière-Ouelle cemetery (text from Fig 5 of Hodgson, 1950).