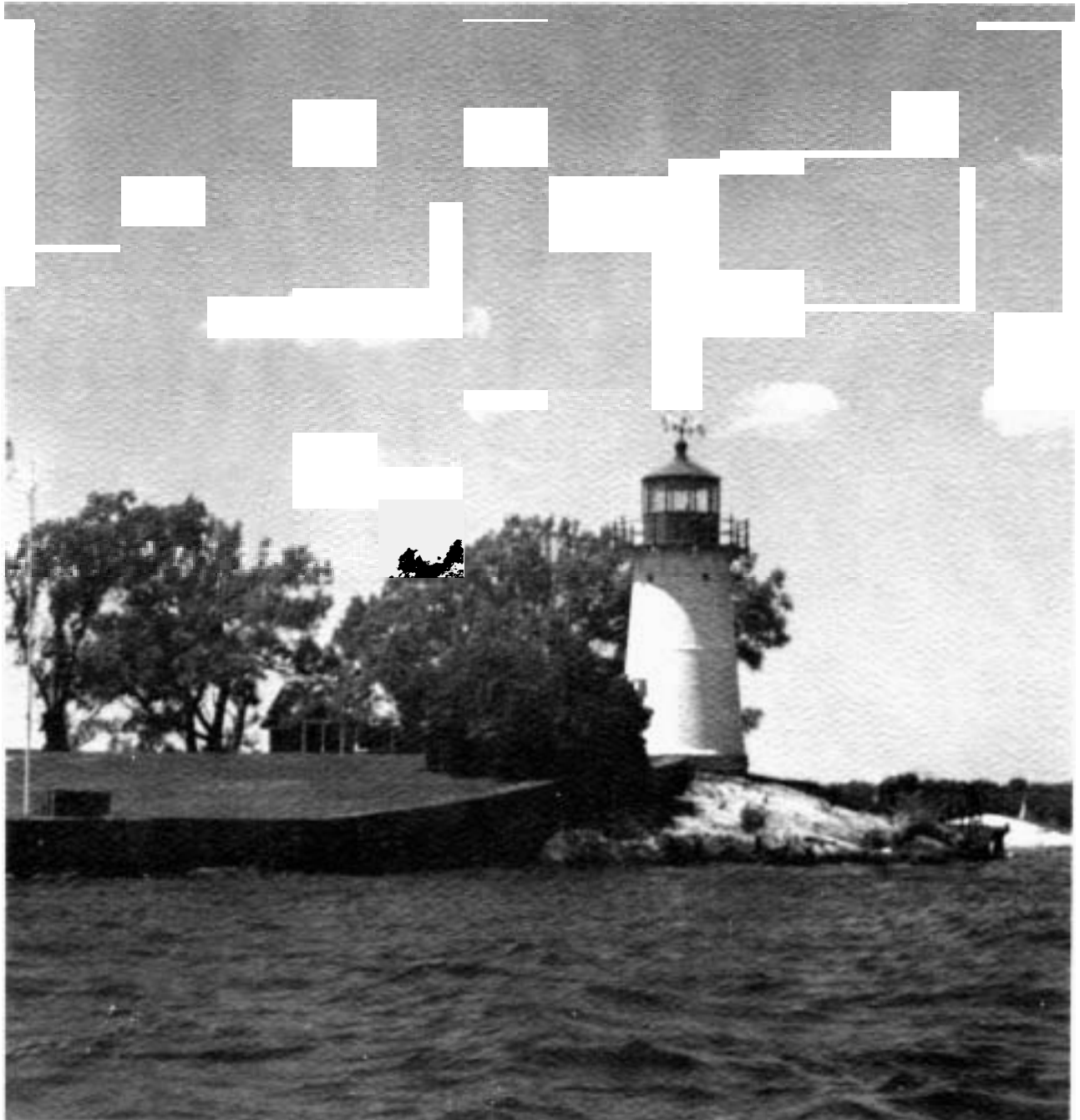


THE  
**QUARTERLY**

Official Publication of the St. Lawrence County Historical Association

October 1984



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**Cover:** The lighthouse on Crossover Island, no longer functional, as it looks in 1984. (Photo by John Ranlett)



*Navigational chart of the St. Lawrence River in the Oak Point-Crossover Island area. (Chart courtesy of Alice Taylor Gorham)*

## A Keeper of the Light: Daniel David Hill (1879-1960)

*Compiled by Alice Taylor Gorham from  
the letters of Ralph E. Hill and the scrapbooks of Daniel David Hill*

*Have you ever wondered what it was like to live on an island as a lighthouse keeper or a member of his family? Daniel David Hill kept the light on Crossover Island for over twenty years. Frequently interviewed by the press, Hill kept scrapbooks of material which interested him or which featured him. These scrapbooks, coupled with the reminiscences of his son Ralph E. Hill, provide rich material for telling his story and for describing the life of a lighthouse keeper's family. Crossover Island is presently being considered for inclusion in the National Register of Historic Places.*

In the middle of September, 1983, my husband, Tom, noticed a couple on our waterfront and introduced himself to Ralph and Leotis Hill of Kenmore, New York. Ralph turned out to be the son of Daniel David Hill, once the keeper of the light on Crossover Island. Ralph grew up on the tiny island and went to school #4 on the River Road near Oak Point. Tom took the couple to Crossover to look around and to take pictures. Ralph, who was 76, had not

been on the island for fifty years. He had many stories to tell of early times. I gave him a copy of my book, *A Short History of Oak Point*, and asked him to make corrections and additions. So began a correspondence which included not only Ralph's recollections but a history of his father's life.

Daniel David Hill (1879-1960), according to his son, had "the love of the sea more or less bred into him and was not . . . at ease unless he was near

water." His maternal great-grandfather was born in Sweden in 1780 and was captured with some other youths by a crew from a British warship. He was trained as a sailor and made to serve under the English flag for several years. He jumped ship five miles off the coast of New England and miraculously swam to shore arriving more dead than alive. He enlisted in the American Navy during the War of 1812 and fought against the "country



*Crossover Lighthouse and Island near Oak Point, N.Y. (Photo courtesy of Alice Taylor Gorham)*

he had reason to despise."

Daniel David's father, John Hill, was born in western England in 1825, and, according to the Ludington *Daily News* of April 8, 1915, "when a young man started to sail the salt water as an apprentice with an uncle, making voyages between England and Ireland. He later became an expert sailor and shipped to the East Indies and Hong Kong." Dan Hill's mother, Alice Potter Hill (1861-1883), died in childbirth when a second son, Louis Elsworth, was born and Dan was only four years old. According to Ralph, "Uncle Louis was adopted by a family named Randall and his name was changed to William Randall. Grandfather Hill and Dad lived together for a few years and then Dad at a[n] . . . early age started out on his own and Grandad went into the lumber woods. . . . I remember Dad telling of selling papers on the streets of Chicago as a small boy."

Apparently Dan felt the pull of the water, and at the age of ten he became a seaman on the Great Lakes. In 1899 when he was second mate on the "Adriatic," a three-masted schooner, the ship encountered heavy seas and D.D. Hill and another sailor were sent aloft to clear away the wreckage caused by the loss of the foremast. "They were at the peak of the spar and had been working there a half an hour. Still there was no hint of the condition of the spar. . . . [I]t became necessary to loosen the guy ropes that held the mainmast in place . . . the mast began to topple . . . the mast fell forward with a crash, and with it came the two unfortunate sailors." The men had fallen seventy feet and were seriously injured. Both recovered, but Dan had broken sixteen bones and was unable to resume the work of a seaman. Both feet and one arm were permanently injured.

"When he recovered he tried his hand at various occupations. He thought he might like pharmacy and entered the

University of Indiana to pursue this course but the atmosphere of the classroom palled on him." Ralph says he even tried Buffalo Bill's Wild West Show. "After he came to New York State he had many jobs—a foreman for the Erie Preserving Co. at North Collins, N.Y., a canning factory for farm produce; a setup man for the Baldwin Locomotive Works in Dunkirk; he worked as a mate on a yacht owned by the Kellogg family and finally as an assembly man for the Eclipse Bicycle Co. in Silver Creek and the George Pierce Bicycle Works in Buffalo. Pierce was the same George Pierce who started Pierce Arrow Auto Co."

"Dad met and married my mother, Cora Johnt (1882-1941), in Silver Creek in 1901. Her mother was Helen Parks, whose family was active in the founding of the village of Hamburg, N.Y." In 1904 a chance to return to the

life he loved came when he was appointed to the United States Lighthouse Service. Originally this was only a part-time job. He was stationed at Old Horseshoe Reef Light in Lake Erie, and in addition he worked for Spencer Kellogg and Lake Erie Boiler Works. During the winter of 1905-06, along with lighthouse work at the Buffalo Main Light, he was ship keeper for two lake steamers that were tied at the breakwall for the winter. About this time the federal government discontinued part-time employment in the Lighthouse Service, and Dan moved to Scottville, Michigan, and worked for his father on a farm and in a local hardware store. It was in Michigan that Ralph was born in 1907. In October of that year, "Dad was recalled to a full-time appointment and assigned to 30 Mile Point Light House. He was transferred to Crossover Island December 30, 1908."

Crossover Light Station was established in 1848 with Obed Robeson as keeper. In 1838, Lieutenant C.T. Platt of the United States Navy had urged the creation of such a light: "I conceive it to be my duty to represent in the strongest terms the necessity of establishing a beacon light upon Crossover Island, eight miles above Morristown. This island is situated between two channels and will be a guide for either. It would be a difficult task to attempt an adequate representation of the numerous shoals and sunken islands obstructing navigation of the river in the neighborhood of the Thousand Islands. Crossover in the midway of this cluster offers the only feasible channel."

Crossover Island is well named. It is



*The house on Crossover Island to which the Hill family moved in February, 1909. (Photo courtesy of Alice Taylor Gorham)*

the point at which the river's channel crosses from the American side of the St. Lawrence River to the Canadian side as the ships proceed down river to the sea. This course is reversed on the return trip. The island itself "is about eight rods in length and five rods wide: it is a solid rock with a few trees that have taken root through the crevices of the rocks." According to a history of Crossover Island in the Hammond Historical office, the first light was at the top of the keeper's residence, a building "so constructed as to admit of a cellar above ground, by giving the walls a sufficient height to admit of embankments, which it is presumed will effectually protect the basement story from frost. This may be done for a trifling expense compared to the blasting of a cellar from solid rock." The winters were hard on these buildings in this exposed position and they had to be repaired frequently. In 1882, Congress appropriated funds to build a new residence for the keeper and \$5000 for a new lighthouse tower. The old residence furnished bricks for the new tower, which rested "on a floor of concrete placed on the smoothed surface of the rock . . . and is lined with brick to the first landing and above that with wood."

It was to this house that the Hill family moved on February 16, 1909. "Can you just picture the task of moving a family of four small children, the oldest 6 years old, in the middle of the winter to an island in the middle of the river? The furniture and other goods were moved across the ice by horse and sled. My mother had a piano which was moved later in the summer. A man by the name of Horace Allen moved the piano on a scow which he towed behind a motor he had. Although only two years old, I remember when they moved that piano. They pulled the scow up against the seawall and carried the piano across the front lawn. Horace Allen used to carry a horse and garden implements on the scow and went around among the islands plowing and preparing the gardens for the people. As a small boy I thought they called him Horace because he carried a horse most everywhere he went—strange what small children think."

Dan called Crossover Island "Stoney Lonesome," and, according to his own account, "for the first two years we spent the winter right on this patch of land. Nothing to do all day but tinker around. It was cold. The house was warm enough, but when icy blasts sweep down the river, a palace couldn't be kept warm. Of course my children had to get to school and it was up to me to see that they got there. Once during the second year a blizzard struck this part of the country which tied up every-



*The Number 4 School attended by the Hill children. (Photo by Tom Jay Gorham)*

thing. For four weeks I dragged a scoop shovel over the road leading to the schoolhouse every day in an attempt to keep the way open. But it was no use. The only thing I succeeded in doing was to freeze my face a couple of times and at last I decided it would be better to keep the kids out of school until the mercury began to act more normally and the snow stopped falling. Let me tell you I was glad when spring came that year."

Between 1903 and 1918, Cora and Dan Hill had eight children, three sons and five daughters. Reminiscing about his mother, Ralph wrote, "During the long winter months and whenever she had time in the summer, Mother used to do what she called 'fancy work.' She was very clever at knitting or any kind of needle work and she used to make beautiful tatting."

She also had gardens—no easy task on "Stoney Lonesome." After a visit there in the summer of 1911, Frank R. Rosseel wrote in the *Buffalo Express*, "[F]ifteen different vegetables and more than that number of flowers grow upon it today. The process of making the gardens interested me greatly. Where the sides slope away to the water and in scattered pockets in the rock, the lower side is walled up with stone and a layer of broken stone thrown in for under drainage. Then for a summer, weeds and rushes and leaves that drift ashore in large quantities during every blow, garbage from the kitchen and

sweepings from the workshop are thrown in. The winter's ashes follow and in the spring earth enough to make a top dressing of from six inches to a foot is brought in bags from the main shore and the garden is ready to plant."

The children contributed to the gardens. "My Dad was one who did not like to see anything wasted. Each day we children had to go all around the island and pick up anything that floated up on shore, sticks, eel grass, bull rushes, dead fish, anything at all. . . . Fish and grass were spaded into one of Mother's gardens." Nothing else went to waste either. "Any wood that floated by was put into a pile that was later used in the kitchen stove or heater. . . . Whenever Dad went ashore he carried a basket. He would pick wild berries, apples from the roadside trees, glean wild mushrooms and puff balls from the pastures and fields. Seldom did he come home without something."

Still recalling those early years, Ralph continued, "Dad's workshop was in the upper story of the building with the boathouse below that is still on the island. It seems strange that those buildings are in such good condition after 102 years. I remember the 1882 date on the base of the lighthouse tower. Out of that workshop came a lot of different things." Dan Hill made rocking chairs as well as "fern stands and waste baskets with rawhide lacings and repaired broken furniture and





The "O-My," Daniel Hill's motorboat. (Photo courtesy of Ralph E. Hill and Alice Taylor Gorham)

farm equipment." "Nearly every canoe and rowboat owned by the people who owned cottages [nearby] were in his shop some time for repairs." "Father had tools for doing almost any kind of work, crow bars, log chains, heavy cross cut saws for timber, dozens of wrenches, pipe cutters and dies for cutting pipe threads, and all types of wood working tools down to fine tools for scroll work. The strange part was he knew how to use all of them."

But Dan himself once said, "A lighthouse keeper has got to be a jack-of-all trades and a master of every one of them. He has got to know everything about a boat there is to know which means he must be a carpenter and a mechanic and he has to keep his own house and property in shape which means he must be a house painter, a furniture maker and an odd job man. And in addition to this he must know book keeping because Uncle Sam demands that I keep accurate records of all expenditures."

Uncle Sam also apparently expected lighthouse keepers to keep track of the weather. "The government furnished Dad with a barometer and a thermometer and a chart showing how a flag would fly on a pole at different wind speeds. Each day Dad would make a

morning and evening reading of the barometer and thermometer and check the flag to see how hard the wind was blowing. All of this was recorded along with whether it was raining, snowing or the sun was shining and each month this was sent to headquarters. I understand that some of the rural mail carriers were required to make the same reports. Dad could never see what good it was to know what the weather had been. We know now that this was a forerunner of our weather service; from these reports they learned the weather patterns."

"The government used to furnish each station with a book of medicine and a chest full of drugs and remedies with instructions. A traveling library which was a big box with doors and handles full of books was moved from one station to the next. Each station got so many gallons of kerosene oil and so many tons of coal. They furnished one flat bottom punt and one large skiff. The skiff was equipped with a center board, rudder and sail plus plenty of oars. They did not, however, furnish any type of motor boat or provide any funds for the operation of one." One of the products of Dan's workshop, built with the help of his wife, was "the O-My, his first motor boat which he had

for over twenty years."

Dan's tasks also included rescue work. About 1930, he estimated that he had aided 405 persons from 65 motorboats, five steamboats and nine barges! His most spectacular rescues included those of the crew of the "Barlow," which occurred in near-zero temperatures in 1926, and of the "Lambert," for which he was commended by the Department of Commerce and Labor in Washington.

The nearest community to Crossover was Oak Point, a small village and landing on the river. A 1939 Syracuse *Post-Standard* article maintained that Oak Point's "location seemed to offer exceptional shipping facilities. Behind the point proper a little bay extends to afford a harbor for small boats and a spring upon higher land behind delivers running water. When schooners gave place to side wheelers as river craft, Oak Point got a new call for products. The little island with the bridge connection became a wooding station. Logs of four foot lengths rolled down the hill to fuel the steamers. Three or four taverns were required by the demands of visitors and the floating population attracted by the town's importance." The "Island Belle" and the "Riverside" both stopped at Oak Point as late as



*Oak Point in the Town of Hammond was the nearest community to Crossover Island. (Photo courtesy of Alice Taylor Gorham)*

1935, and, before the depression, the hotel run by the Gallaghers was in its heyday.

Ralph therefore included some recollections of Oak Point. "When we all first came to Crossover Island some of the first people my father got to know were the Daniels family. The old gentleman whose name was Nahum and his wife Bertha. They had two girls and three boys: Elizabeth, Loudon, Ransom, Roland and Lois and a big collie dog that I was scared to death of cause he bit me once on the arm. [There was also] Capt. Smith and family. Capt. Smith was a watch tinker (as we used to call them) and lived in the house that stands on the corner across from where the hotel used to be at Oak Point. His son Claude owned one of the first outboard motors on the river. Capt. Smith owned a little red car with bucket seats and a tool box and gasoline tank on the back behind the seats. Sometimes he would drive up to the #4 school house to pick up his granddaughter. It was the first car I ever saw. Claude Smith and Loudon and Ransom Daniels used to iceskate over to the island and with Dad they would play a game they called Shinny with a stick and a block of wood on the ice something like hockey."

The land along the shore of Schermerhorn Bay at Oak Point had been owned by Abel P. Morse and his wife, Susan Daniels Morse. In 1867, they sold this land to Burns Billings. In 1911, Burns Billings began to sell the

land. Soon Dan Hill was in demand to build summer cottages on this undeveloped shore. He hired Walt Plantz to help him. "Walt and Dad had a partnership going for a number of years. Dad helped him build his houseboat (which is still part of Sid Dake's house at Oak Point). Walt and Dad used to set thousands of feet of night line with scads of hooks to catch sturgeon which they packed in barrels and shipped to Lakeside Fish Co." Cottages at Oak Point originally built by D.D. Hill include those now owned by Beverly and Preston Lewis (built 1911) and by Mrs. James Jefferies (built 1913) as well as the T.D. Davis and Anthony cottages (built 1914).

Ralph remembers another piece of property at Oak Point, that now owned by May and William Legg, who purchased it from Agnes Morgenthau, wife of Maximillian Morgenthau. This cottage was built about 1880 and "was one of the first with indoor plumbing. The water tower, made of wood, was filled by a pump operated by hand. It consisted of a long handle that had to be moved back and forth. Each day the people in residence took their turn getting their exercise. This cottage was occupied mostly by two very wealthy girls named Alice and Irene Lewisohn and their money manager, Mrs. Von Nagy. They were the first ladies to wear pants, which they said were the only real comfortable thing to wear when getting in and out of boats. These girls owned and ran the Grand Street

Playhouse in New York City and used to bring some of their starving artists with them to spend the summer. One of them was Howard Barlow who later became a very famous music conductor." (He conducted the Firestone Orchestra.) "One year the girls treated my mother and father to a trip to N[ew] Y[ork] C[ity] for two weeks and showed them a wonderful time. For a Christmas present they gave mother a complete set for 12 of Holmes and Edwards silver. The Morgenthau family used to own the Mirror Candy Co. so each year we children got a box of filled and hard candy."

Since there was no navigation on the St. Lawrence in winter, it was not necessary to keep the light glowing on Crossover; therefore, the Hills eventually spent the winters at Oak Point. "Winters that we lived in the cottage at Oak Point Dad used to work helping Les Marceau pack ice in his ice house. He also spent time working for Loudon Daniels in his woods cutting wood for firewood and logs to go to Soper's mill for lumber. We boys were busy with our traps, muskrat, coon and skunk. We always had 22 caliber rifles for hunting rabbits and squirrels. It was a way of life . . . something to eat. Each spring we would go through the woods and tap all the maple trees for sap and then boil it into syrup on the stove that Dad had in his workshop. We made the spigots out of sumac tree branches by pushing a red hot wire through the sap pithy center to make a hole for the sap



*Daniel D. Hill in 1941 with one of his model working lighthouses. (Photo courtesy of Ralph E. Hill and Alice Taylor Gorham)*



*Fixed marker Number 160 installed off Crossover Island in 1980. (Photo by John Ranlett)*

to run through."

By 1928 the Hill family had taken to wintering in Ogdensburg while still tending the light at Crossover in the summer. "In later years when the family used to spend the winters in Ogdensburg, Dad worked for the Huff-Deland Airplane Co. making pontoons for sea planes. He worked on the pontoons that were on the NC4 Navy planes that flew around the world. One other year he spent most of the winter repairing all of the furniture in the Masonic Temple. He liked that job; he could work awhile and then play pool awhile."

In 1931 an automatic light was installed at Crossover and Dan Hill was transferred to the Ogdensburg Light on January 1, 1932. When that light also became automatic, he was transferred to Huron, Ohio. There he continued with a variety of activities, including serving as a justice of the peace. He continued to repair furniture "more as a hobby than a business but as he used to say, 'he met a lot of interesting people bringing in the antiques to be put back together.'" And, when a new sewer system and disposal plant were installed in Huron, "My father was quite proud that the engineers in

charge picked him to be the inspector on all the sewer lines to see that they were installed according to the blue print. Dad was nearly 80 years old at the time and they were paying him \$16 per hour." Daniel David Hill died in 1960.

**What has been the fate of Crossover Island?** The light station was discontinued in 1941. For a while it was leased to Glen Ostrander of DeWitt, New York. Then in 1960 this "surplus government property" was put up for sale—it was described "as ten acres of land . . . of which 1.5 acres is presently above water"—and purchased by H.B. Edwards of Rome, New York. In 1970 it was acquired by its present owners, Betty Jo and Maynard Dutcher of Canton.

Use of radio beams and radar helped make conventional lighthouses such as Crossover obsolete. Channel markers, however, continue to be useful for navigation. If there is a partial functional successor to Crossover Light it is the fixed marker, Number 160, installed off Crossover in 1980.

**Editor's Note:** Summer visitors to Oak Point remembered by Ralph Hill were an interesting lot. Maximillian Morgenthau, Jr., from whom the Leggs

purchased their cottage, was the first cousin of Franklin D. Roosevelt's Secretary of the Treasury, Henry Morgenthau, Jr.'s, first wife, Rita Wallach Morgenthau (died 1964), was an associate of Lillian D. Wald at the famous Henry Street Settlement in New York City. There Mrs. Morgenthau worked closely with Irene (1892-1944) and Alice Lewisohn (whose Uncle Adolph had donated Lewisohn Stadium to New York) in founding the Neighborhood Playhouse on Grand Street, one of the first and most important "little theaters" in the United States. Howard Barlow (1892-1972), who conducted the CBS Symphony from 1927 to 1943, was also involved in the Neighborhood Playhouse in the mid-1920's.

For more on Oak Point, see the article by Mary Hadlock Smallman in the July, 1978, *Quarterly* and that by Alice Taylor Gorham in the July, 1980, *Quarterly*.

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#### **About the Author**

A long-time summer resident of Oak Point, former chemist Alice Taylor Gorham is the author of *A Short History of Oak Point*.



# The Massena-Cornwall Earthquake of September 5, 1944

by Frank A. Revetta

*Many factors which shaped the history of St. Lawrence County—its border with Canada, the presence of the St. Lawrence River, the climate, for example—come readily to mind. Seismicity might not be among the first such factors one lists. In fact, St. Lawrence County lies in a very active earthquake zone (as events of October 1983 reminded everyone), and the largest earthquake ever to strike New York State had its epicenter in Massena Center. Taking a very long view of local history indeed, geologist Frank Revetta looks at the earthquake history of this region, focussing on the Massena-Cornwall earthquake of 5 September 1944 and its origins in geologic history of millenia past. In doing so, he deals with some of the most frequently asked questions such as "What caused it?" and "Will it ever happen again?"*

On September 5, 1944 at 12:38 A.M. Eastern War Time, an earthquake of magnitude 5.9 on the Richter Scale shook Eastern Canada and Northeastern United States. The epicenter of the earthquake was located at Massena Center at 75° W. Longitude and 45° N. Latitude. This location is about two miles south of the St. Lawrence River and southwest of the city of Cornwall. The maximum intensity at the epicenter

was VIII on the Modified Mercalli Scale. The earthquake was felt as far west as Detroit, east beyond Quebec City and north to James Bay. It was recorded on seismographs as far as Pasadena, California and Tuscon, Arizona. The earthquake was the largest to occur in New York State and caused over \$2,000,000 damage in the villages of Massena, N.Y. and Cornwall, Ontario, Canada. As is the case with

most large earthquakes, there were many aftershocks during the next few days.

### Destructive Effects

The Massena-Cornwall earthquake caused \$2,000,000 damage in 1944 (\$8,000,000 today's dollars). The earthquake destroyed 90% of the chimneys in Massena and did extensive damage to schools, churches and other buildings. The most obvious damage was

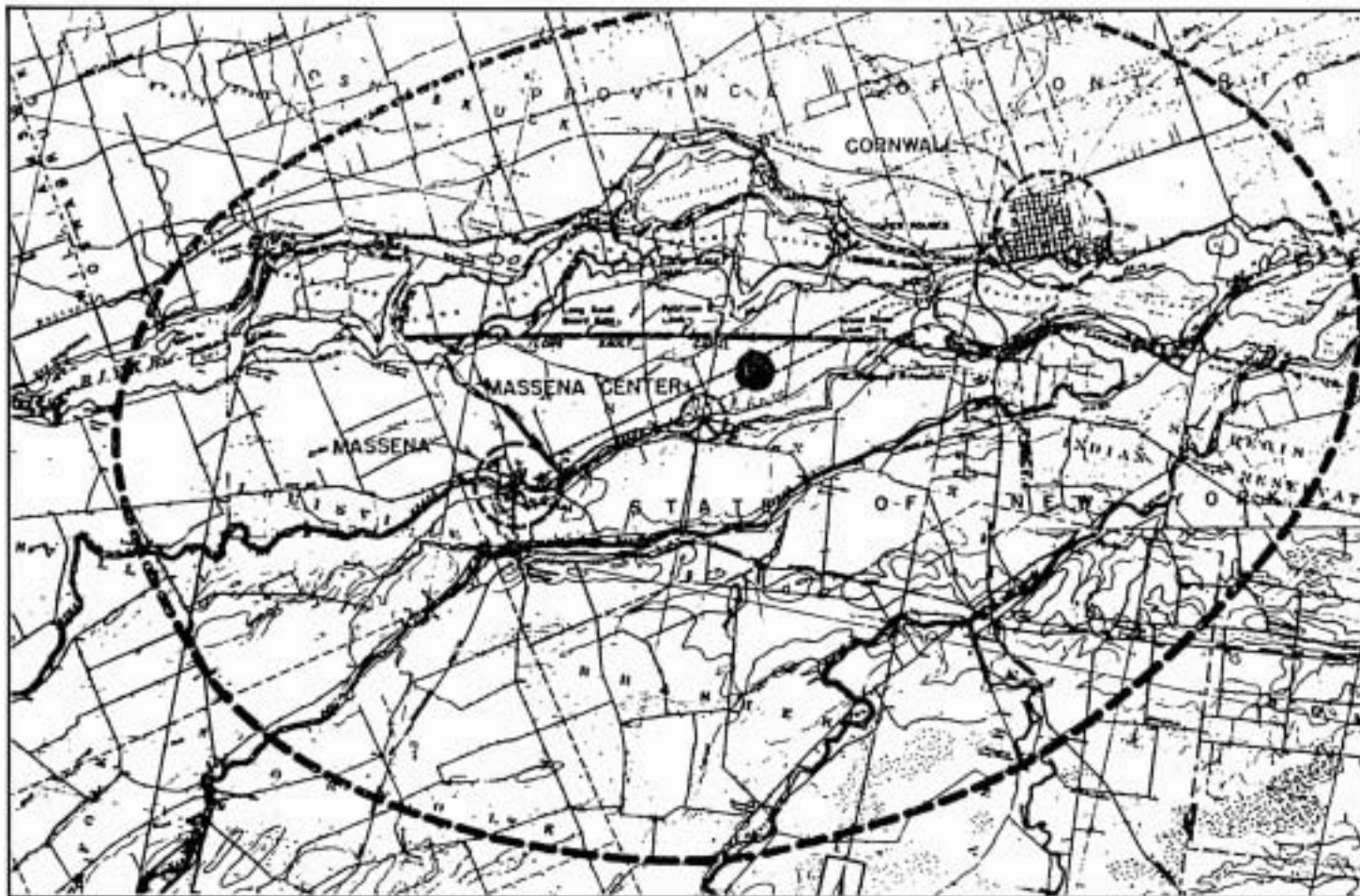


Fig. 1: Map of Massena-Cornwall area showing location of Massena-Cornwall earthquake epicenter and area of most intense damage. (From Berkey, 1945).

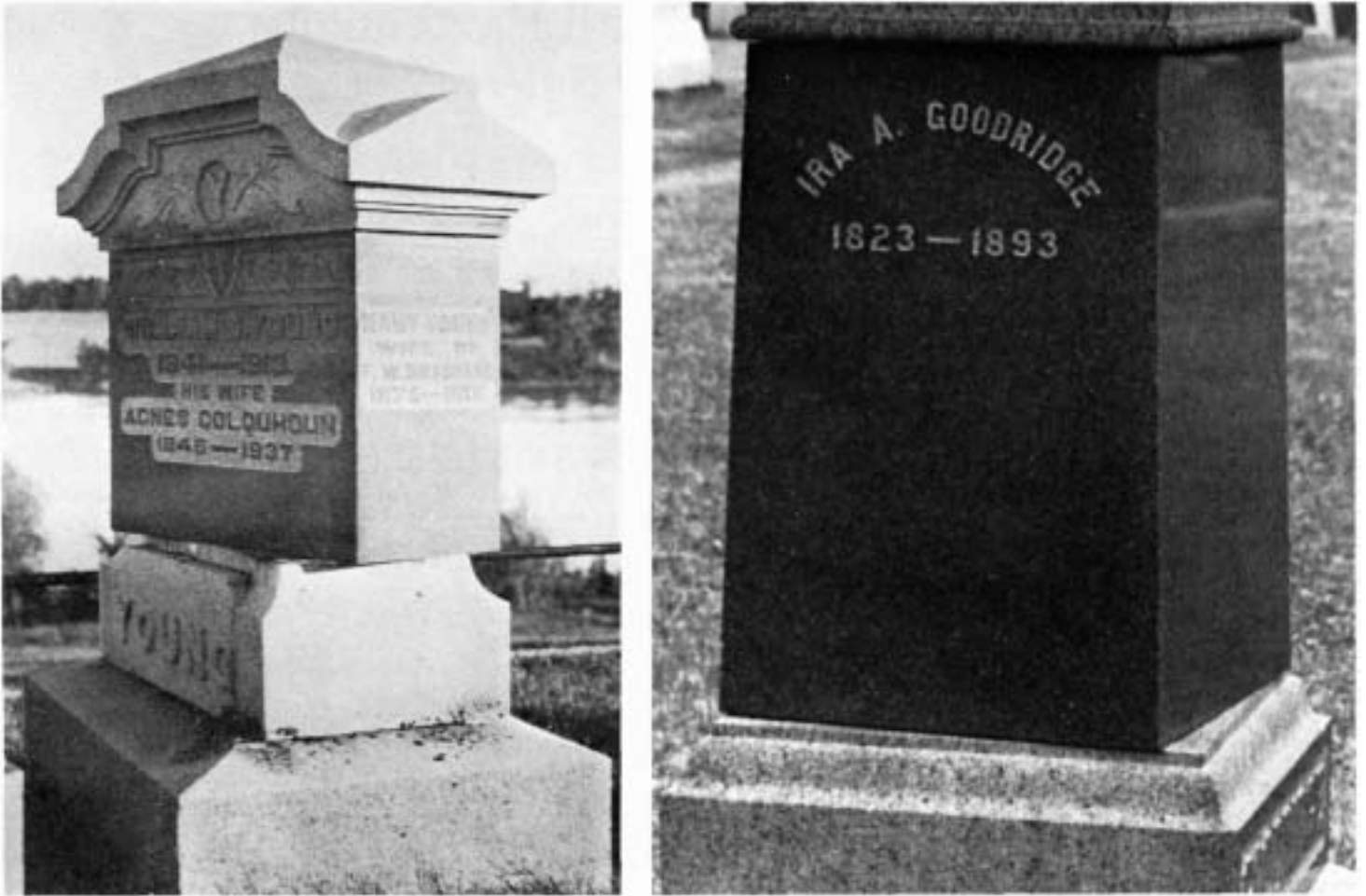


Fig. 2. Tombstones were rotated, translated, and thrown over by the Massena-Cornwall earthquake. (Figure on left from p. 347, Milne, 1949; figure on right from personal collection of Frank Revetta.)

wrecked or turned chimneys and cracked brick walls. The most common damage inside of buildings was broken shelf-ware and cracked plaster. The Massena operations of ALCOA was damaged and production was interrupted for several hours. Massena schools had 125 panes of glass broken. Many water mains were broken and cemeteries suffered a great deal of damage. Surprisingly there was little damage to major engineering structures.

The area of most intense damage is outlined in Figure 1. The most violent disturbance was about 25 miles east-west and 20 miles north-south within the dashed ellipse. Most damage was done in local areas which are underlain by marine clays and mixed silts. Wherever the marine clays (Massena or Leda clay) or silty sands occur in a considerable body, there is more evidence of destructive movement than in adjacent areas. The low areas where the loose marine silty clays are found show the principal destructive effects. The Massena or Leda clay is a sensitive clay that undergoes liquefaction or becomes unstable when vibrated by seismic waves. This is a common cause

of damage due to earthquakes. No buildings located on bedrock or glacial till were destroyed. Although the total damage was considerable, no buildings were entirely wrecked. Many water wells went dry because of the earthquake and farmers had to have water delivered for months after the quake.

#### Cemetery Damage

Cemeteries in the Massena-Cornwall area suffered a great amount of damage during the Massena-Cornwall earthquake. Tombstones are moveable objects that are easily displaced; thus they provide direct evidence of the disturbed area. In fact the cemeteries furnished the best evidence for the relative violence of the earthquake in different areas and served to outline the area of major damage shown in Figure 1.

Over thirty cemeteries in the Massena-Cornwall area were visited and the number of monuments displaced and the nature of the displacement was noted (Figure 2). An interesting fact regarding the tombstones was that on the Canadian side of the river the tombstones were generally rotated counterclockwise and on the American side they were generally rotated clockwise.

This was interpreted to indicate an epicenter somewhere between Cornwall and Massena which was later confirmed from a study of seismograms. Those cemeteries underlain by marine clays and silts were most affected by the earthquake while cemeteries on a different quality of ground showed little damage.

#### Intensity Study

The intensity of an earthquake is based on the Modified Mercalli Scale and measures the effects of seismic shaking as reported by people who felt the earthquake. It is determined by the distribution of questionnaires throughout the felt area. The questionnaires elicit such information as whether the observer was indoors or outdoors, lying down, sitting or standing; whether buildings shook and how vigorously they did so; whether hanging objects moved and by how much; whether there was noise and what kind of damage was observed. Intensities are assigned to each questionnaire according to the Modified Mercalli Scale. Intensity values are plotted on a map for each location and the values are contoured to construct an isoseismal map. (See

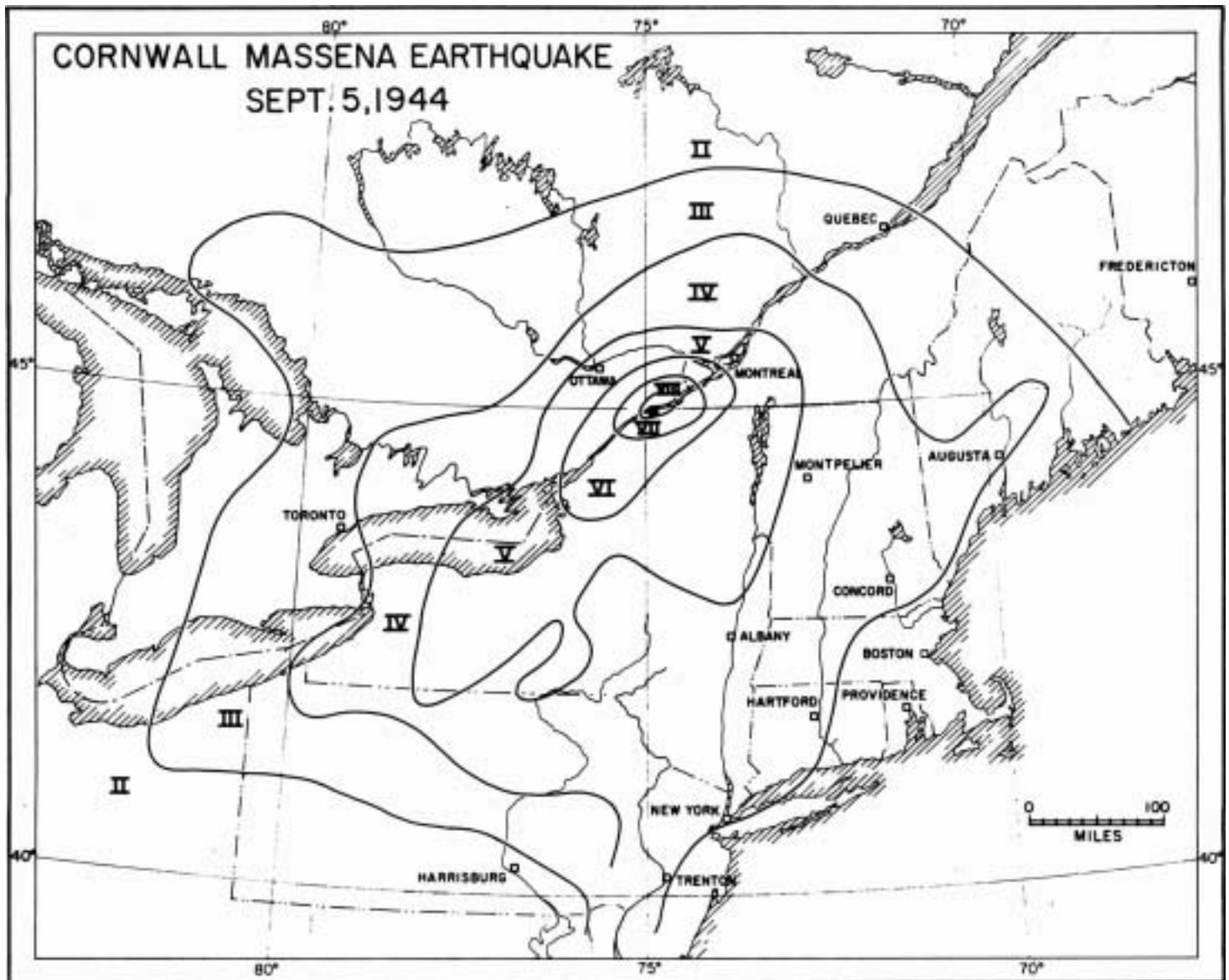


Fig. 3. Isoseismal map of the Massena-Cornwall earthquake of September 5, 1944. (From Smith, 1966).

figure 3)

An intensity study of the Massena-Cornwall earthquake indicated a maximum of VIII in the Massena-Cornwall area. (See figure 3) An intensity of VIII on the Modified Mercalli Scale means "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."

The area over which the earthquake was felt extends from James Bay south to Virginia and from New Brunswick west to Lake Michigan (Smith, 1966). The earthquake was felt over an area of 448000 km.<sup>2</sup>; however, the area in which the shock was felt with intensity

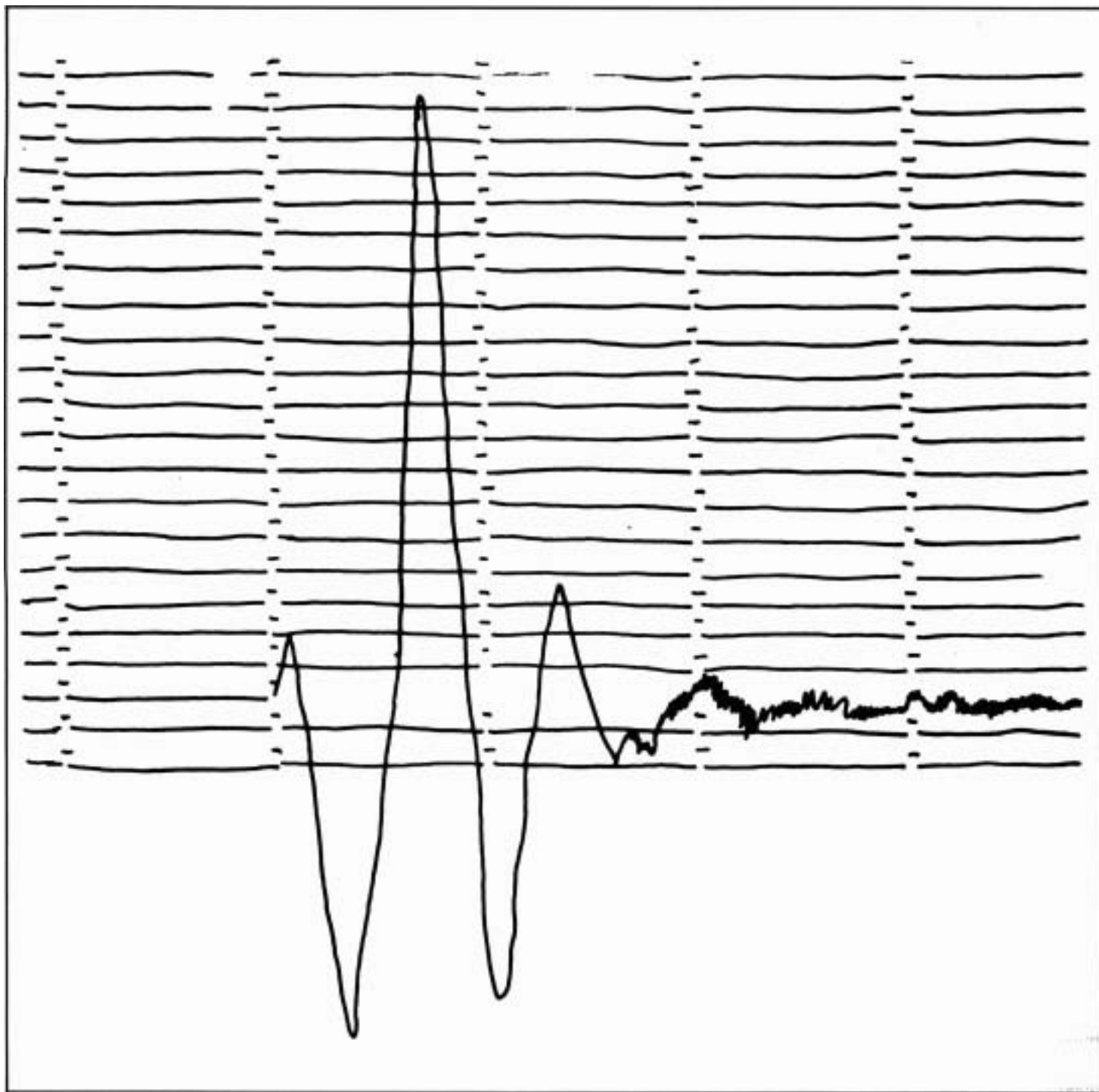
greater than V was very small. This small area of severe damage may be due to the shallow focal depth of the earthquake and the nature of the surface materials in the Massena area. The fact that the earthquake was felt over a large area is typical of earthquakes in eastern United States.

The area of greatest intensity extends along the St. Lawrence River rather than perpendicular to it. The quake was felt with an intensity of VI from the Thousand Islands to Montreal but at Ottawa which is closer to the epicenter the intensity was only V. The isoseismals on the isoseismal map show this by being elongated in a northeast-southwest direction along the St. Lawrence River. This indicates the area of greatest intensity extends along the St. Lawrence River rather than perpendicular to it. The isoseismals of recent earthquakes in the Cornwall area in 1981 have the same general shape, i.e.,

they are elongated in a northeast to southwest direction.

#### Noises Produced by the Earthquake

The Massena-Cornwall earthquake occurred forty years ago. Many people who experienced the earthquake are still alive. Many newspaper accounts are available in the *Watertown Daily Times*, *Massena Observer* and *Cornwall Standard Freeholder*. It appears that the earthquake produced many sounds like thunder and passing trains and trucks. In many cases the sounds frightened the residents more than the accompanying ground shaking. The noises continued all night long causing some people to leave their residences. Residents at Massena Center described the rumbling noises as resembling distant thunder moving nearer and nearer their homes. The noise seems to have been more evident than the quake itself. The noises were probably generated because the focus of the quake



*Fig. 4. Ottawa Long-period Benioff record of the Massena-Cornwall earthquake of September 5, 1944. (From Milne, 1949).*

was shallow so when rocks broke under stress they produced vibrations in the audio frequency range. It is a common thing for noises to accompany earthquakes. Many residents in the Blue Mt. Lake region of New York heard the rumbling sounds of an earthquake swarm that occurred there in 1971 and 1973.

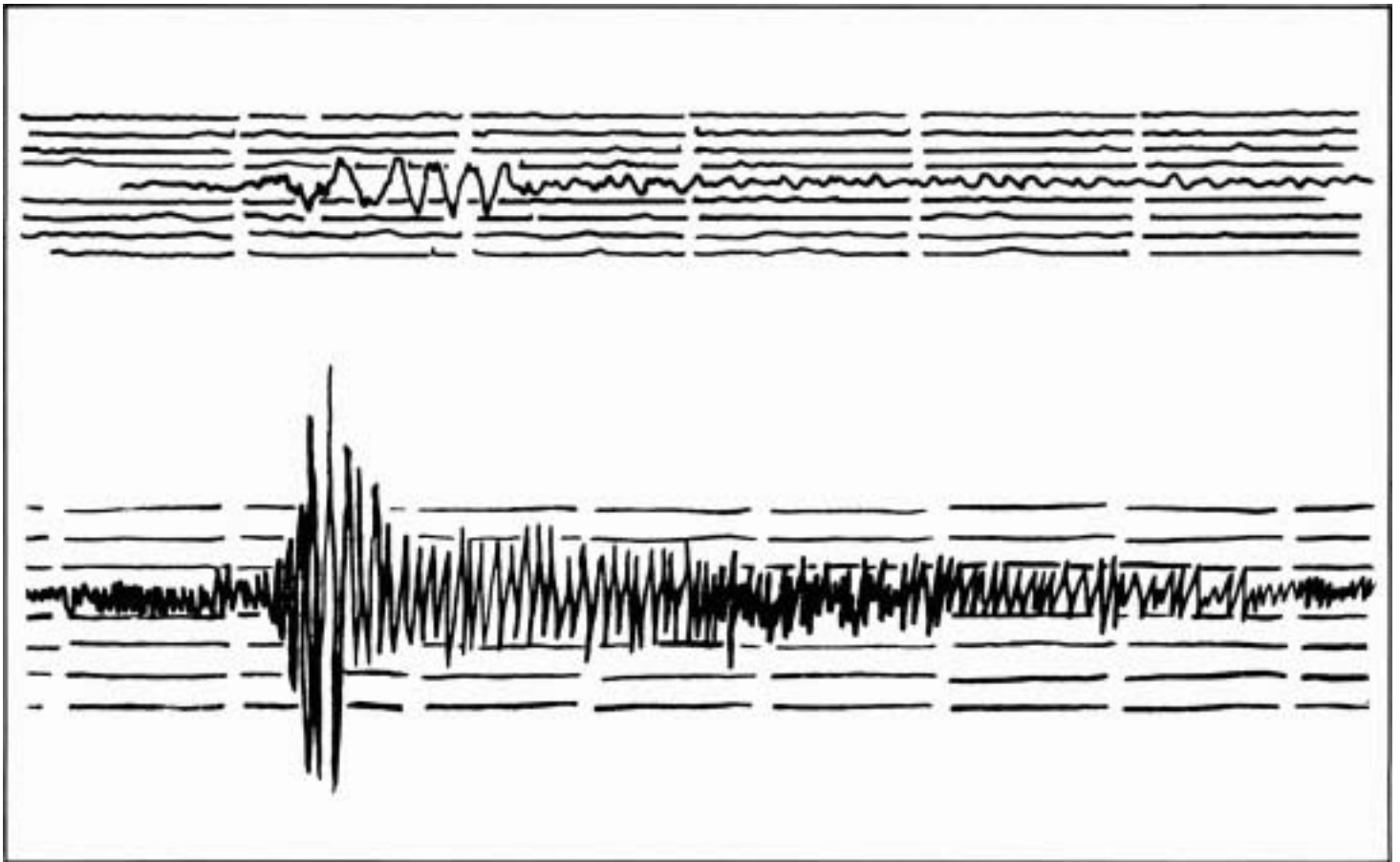
#### **Instrumental Study of the Earthquake**

The Massena-Cornwall earthquake was recorded on seismographs through-

out the United States. A record of the earthquake made by a seismograph station at Ottawa is shown in Figure 4. The earthquake had a magnitude of 5.9 on the Richter Scale. This is considered a damaging earthquake. It did not register well at stations over 1000 kms from the epicenter; however, it was recorded on seismographs as far as Pasadena, California. Seismographs from stations located at Pasadena, California and St. Louis, Missouri are shown in Figure 5. Twenty-three seis-

mic stations (Figure 6) were used to locate the epicenter of the earthquake. The location of the epicenter was  $44^{\circ} 58.5' N.$  Lat and  $74^{\circ} 53.9' W.$  Long or slightly north of a line between Massena and Cornwall. The epicenter is very close to the present day Moses-Saunders power dam, Eisenhower Locks and Long Sault Canal.

Seismograms were studied for the two-year period preceding the earthquake by the Dominion Observatory to search for foreshocks that may have



*Fig. 5. Seismograms of the Massena-Cornwall earthquake recorded at Pasadena, California (above) and St. Louis, Missouri (below).*

preceded the Massena-Cornwall quake. No foreshocks were found for certain; however, two small earthquakes were recorded on August 9 and 10, 1944 that may have been near Cornwall. There was no warning that the earthquake was about to occur on September 5, 1944; however, the day before the earthquake the waters of Lake Placid suddenly were disturbed by some unknown force. The disturbance was reported as waves of long period on an otherwise calm lake. This phenomenon may or may not be related to the earthquake.

Aftershocks are smaller earthquakes that occur after the primary earthquake. They originate at the epicentral region of the main earthquake and may last for several months or years. There were 26 aftershocks after the Massena-Cornwall quake to the first of 1948. The aftershocks for the first few days were quite severe and occurred frequently. A list of aftershocks is shown in Figure 7. All these aftershocks were felt in the immediate vicinity of the earthquake. Aftershocks are most frequent immediately following the earthquake and decrease in number with time after the earthquake. By 1948 they decreased to perhaps one every six months.

The aftershocks are very useful to seismologists because they usually originate near the focal region of the main earthquake. By installing portable seismographs in the epicentral region immediately following an earthquake, seismologists may locate the focus of an earthquake to within a kilometer.

Mr. H.R. Horton, a resident of Massena Center at the time of the earthquake kept a record of aftershocks for several months. He states that

"After the first shock of September 5, and until morning, disturbances were occurring quite frequently; fairly strong quakes accompanied by a dull thunder-like noise at a distance which was quite loud.

In fact a noise like rolling thunder was almost continuous for two or three hours after the first shock on September 5, even when no shaking of the earth was felt."

#### **Focal Depth of the Earthquake**

The seismograms studied by Canadian seismologists did not yield any definite depth of focus for the earthquake. It is difficult to determine the focal depths of an earthquake unless there is a dense network of seismic stations in the epicentral region spaced at a distance approximately equal to the focal depth of the quake. No net-

work of seismic stations existed in New York at the time of the Massena-Cornwall quake. Whenever concrete evidence of the focal depth is lacking, the depth is considered to be normal focus. A normal focus earthquake has a depth of focus of not more than thirty kilometers. Seismologists estimate the depth was between 25 to 30 kms. This is considered shallow for an earthquake. The surface damage indicates a shallow origin also. The surface damage was severe and restricted to a localized area as one expects for a shallow quake. With deep-focus earthquakes the damage is often more widespread. Other evidence for a shallow focus depth are the noises produced by the earthquake. Rumbling and terrifying noises appear to have lasted all night and traveled much farther than actual destructive effects. A shallow focus earthquake may produce earthquake waves with frequencies within audio range.

The geological structure at depth beneath the Massena area is not well understood; however, geophysicists can determine geologic structure by measuring the arrival times of waves from mine or quarry blasts. Such studies indicate the crust in the Massena area is 36 kms thick and consists of two



layers, an upper layer of thickness 17.3 kms and a lower layer of thickness 18.7 km. It seems likely that the earthquake had its origin at the boundary between these two layers or in the lower layer.

#### Geology of the

#### Massena-Cornwall Area

A generalized geologic section across the St. Lawrence Valley is shown in Figure 8. The general geologic structure of the region consists of three major formations:

- (1) Overburden of loose earthy and stony material chiefly glacial drift and marine clay
- (2) Sedimentary strata, chiefly limestones of Paleozoic Age
- (3) Precambrian rocks.

The focus of the earthquake was well within the Precambrian rocks in the lower crust. The following discussion of the geology is taken from Berkey's report and Alice Wilson's report on the Geology of the St. Lawrence River Valley.

The overburden consists of glacial till deposited directly from the ice. It is bouldery and stony in places with an abundance of clay-sand mixture as matrix. This formation has an uneven surface and all the hills are of this type of material. As the glacier melted the

waters produced by thawing and rain washed over the deposited material to transport and deposit gravels, sands, silts and clays to lower lying areas which border the hilly structures of glacial drift. After the ice melted marine waters backed up from the sea into the St. Lawrence lowland flooding the whole area and in these waters were laid down marine clays. In this manner the depressions between the hills and ridges were filled with silty clay deposits of marine origin. It was on these marine silty clay deposits (Massena or Leda Clay) that the most extensive damage was done by the earthquake.

The bedrock of Ordovician Age are Trenton-Black River series, Chazy formation and Beekmantown formation. The first two are frequently absent in the area and the Beekmantown formation makes up the immediate bedrock. The Potsdam sandstone of Cambrian age lies below the Beekmantown. The Precambrian or basement rocks are the oldest and lie below the Potsdam sandstone. The focus of the earthquake was well within the Precambrian rocks. The most extensive damage was on the lone overburden especially the marine silty clays. Geologists reported no sur-

face evidence of any major fault in the immediate area.

#### Cause of the Earthquake

Earthquakes have occurred in the St. Lawrence Valley from time to time and have been reported as early as the 1530s. The St. Lawrence River Valley is often cited as the most active seismic area in eastern United States and Canada. Seismologists call the earthquakes in this area intraplate earthquakes because the quakes occur within a plate and not along a plate boundary. The cause of earthquakes in this area such as the Massena-Cornwall earthquake is not fully understood.

The Massena-Cornwall earthquake was attributed to isostatic rebound by Milne. Isostatic rebound refers to the earth's surface adjusting to the melting of the glacier that once depressed the land. The rising of the land may take thousands of years and as the crust adjusts itself upwards there is displacement along a fault or weak zone to produce an earthquake. This theory is no longer accepted by most geologists as the cause of the earthquake for several reasons. There is very little or no correlation between the distribution of earthquakes and the former ice margins. Also geologists found no surface

TABLE II

Number	Station	$\Delta$ (kms.) Computed	P-Observed	P-Computed
1.....	Ottawa.....	88.7	4 : 39 : 00.3	4 : 38 : 59.3
2.....	Shawinigan Falls.....	242.7	4 : 39 : 21.2	4 : 39 : 19.6
3.....	Seven Falls.....	395.6	4 : 39 : 39.5	4 : 39 : 41.3
4.....	Weston.....	399.1	4 : 39 : 40.6	4 : 39 : 42.8
5.....	Fordham.....	455.9	4 : 39 : 47.7	4 : 39 : 47.8
6.....	Philadelphia.....	550.4	4 : 40 : 00.6	4 : 39 : 59.8
7.....	Pittsburgh.....	648.7	4 : 40 : 14.0	4 : 40 : 14.1
8.....	Cheltenham.....	706.0	4 : 40 : 23.0	4 : 40 : 22.0
9.....	Cincinnati.....	1024	4 : 41 : 01.1	4 : 41 : 01.6
10.....	Chicago.....	1093	4 : 41 : 06	4 : 41 : 10
11.....	Columbia.....	1325	4 : 41 : 37	4 : 41 : 40
12.....	Saskatoon.....	2465	4 : 43 : 46	4 : 43 : 44
13.....	San Juan.....	3058	4 : 44 : 34	4 : 44 : 38
14.....	Grand Coulee.....	3369	4 : 45 : 00	4 : 44 : 58
15.....	Tuscon.....	3407	4 : 45 : 02	4 : 45 : 02
16.....	Pierce Perry.....	3429	4 : 45 : 03	4 : 45 : 03
17.....	Overton.....	3443	4 : 45 : 04	4 : 45 : 04
18.....	Boulder City.....	3500	4 : 45 : 16	4 : 45 : 12
19.....	Tinemaha.....	3655	4 : 45 : 27	4 : 45 : 23
20.....	Riverside.....	3808	4 : 45 : 33	4 : 45 : 35
21.....	Mount Wilson.....	3846	4 : 45 : 35	4 : 45 : 38
22.....	Pasadena.....	3861	4 : 45 : 36	4 : 45 : 40
23.....	Shasta Dam.....	3865	4 : 45 : 36	4 : 45 : 40

Assumed  $H'$  = 4h38m45s2 G.C.T.  
 $\lambda$  = 74°50' 0 W. Long.  
 $\phi$  = 44° 55' 0 N. Lat

Fig. 6. Seismograph stations recording the Massena-Cornwall earthquake that were used to locate the epicenter. (From Milne, 1949).

evidence of any major fault in the area nor was there any noticeable ground displacement after the earthquake.

During the past decade many regional geologic and tectonic investigations of the St. Lawrence River were conducted because of a proposed nuclear facility at Waddington, New York. Also data of local earthquakes have been recorded by a network of seismic stations installed by the Lamont-Doherty Geological Observatory. These data and investigations have led to some new explanations for the cause of earthquakes in the area. None of the newer theories are accepted by all geologists. Following are some of the most recent explanations of earthquakes in New York State.

One explanation is that the earthquakes are due to an extension of a fracture zone that lies offshore of the

Boston area. This is known as the Kelvin-Seamount fracture zone and it has been proposed that it extends from Boston to Ottawa to trigger the earthquakes in the Boston-Ottawa seismic zone. Another explanation is that the earthquakes are related to mafic intrusions, i.e., igneous plutons that have intruded into the basement rocks; the earthquakes are thought to occur along their boundaries. A third explanation is that the earthquakes may be related to faults that extend from the Ottawa-Bonnechere graben southeastward into New York. Geophysical (seismic and electromagnetic) investigations indicate the Gloucester Fault crosses the St. Lawrence River between Massena, N.Y. and Cornwall, Ontario. Some investigators believe the sharp right turn in the St. Lawrence River in this area may be due to a fault. These hypotheti-

cal faults are not visible by surface geologic mapping in the Massena area.

The most acceptable theory for earthquakes in the area is that they are related to the reactivation of pre-existing faults. Fault plane solutions of earthquakes indicate the faults have a northwest trend and are due to compressive stresses. Very few N W trending faults have been mapped in the area so the northwest trending faults indicated by earthquakes are canceled. Most of the faults that have been mapped by surface geologic methods have northeast trends and earthquakes don't occur along these faults. The ultimate source of the energy for the earthquakes is probably plate movements.

**Recurrence of Another Massena-Cornwall Earthquake**

Historic earthquake data from Smith (1966) indicate that the Cornwall-

**TABLE III**  
LIST OF AFTERSHOCKS RECORDED ON THE CANADIAN SEISMOGRAPHS

Date	Station	Δ (kms.)	Time of First Arrival	Magnitude
1 Sept. 5, 1944	Ottawa.....	90	8 : 31 : 05	Weak
2 " 5, 1944	Ottawa.....	90	8 : 51 : 21	Strong
" 5, 1944	Shawinigan Falls.....	240	8 : 51 : 41.5	Strong
" 5, 1944	Seven Falls.....	410	8 : 52 : 05.5	Strong
3 " 5, 1944	Ottawa.....	90	10 : 57 : 07	Weak
4 " 5, 1944	Ottawa.....	90	11 : 11 : 09.5	Weak
5 " 7, 1944	Ottawa.....	90	13 : 55 : 29.5	Weak
6 " 8, 1944	Ottawa.....	90	10 : 11 : 30	Weak
7 " 8, 1944	Ottawa.....	90	19 : 35 : 36.5	Weak
8 " 9, 1944	Ottawa.....	90	23 : 25 : 04	Strong
" 9, 1944	Shawinigan Falls.....	240	23 : 25 : 25	Strong
" 9, 1944	Seven Falls.....	410	23 : 25 : 48.5	Strong
9 " 13, 1944	Ottawa.....	90	22 : 00 : 43.5	Weak
10 " 24, 1944	Ottawa.....	90	19 : 30 : 41.5	Weak
11 Oct. 4, 1944	Ottawa.....	90	0 : 36 : 41	Weak
12 " 9, 1944	Ottawa.....	90	1 : 46 : 11.5	Weak
13 " 13, 1944	Ottawa.....	90	2 : 34 : 03	Weak
14 " 31, 1944	Ottawa.....	90	8 : 42 : 40.5	Strong
" 31, 1944	Shawinigan Falls.....	240	8 : 43 : 01.5	Strong
" 31, 1944	Seven Falls.....	410	8 : 43 : 25	Strong
15 July 24, 1945	Ottawa.....	90	1 : 56 : 32	Weak
16 Dec. 2, 1945	Ottawa.....	90	15 : 22 : 45	Moderate
" 2, 1945	Shawinigan Falls.....	240	15 : 24	
17 May 22, 1946	Ottawa.....	90	14 : 28 : 10.5	Weak
18 " 22, 1946	Ottawa.....	90	14 : 30 : 16.5	Weak
19 Sept. 4, 1946	Ottawa.....	95	19 : 29 : 36	Weak
20 Nov. 24, 1946	Ottawa.....	90	10 : 20 : 59.5	Weak
21 Dec. 25, 1946	Ottawa.....	90	4 : 48 : 16.5	Moderate
Dec. 25, 1946	Shawinigan Falls.....	240	4 : 49	Moderate
Dec. 25, 1946	Seven Falls.....	410	4 : 50	Moderate
22 Aug. 4, 1947	Ottawa.....	90	8 : 26 : 01	Weak
23 " 14, 1947	Ottawa.....	90	2 : 18 : 48.5	Weak
24 Sept. 6, 1947	Ottawa.....	100	21 : 35 : 24.5	Weak
25 Oct. 3, 1947	Ottawa.....	90	15 : 28 : 47.5	Weak
26 " 29, 1947	Ottawa.....	95	15 : 45 : 50	Weak

Fig. 7. List of aftershocks recorded on Canadian seismographs till October 29, 1947. (From Milne, 1949)

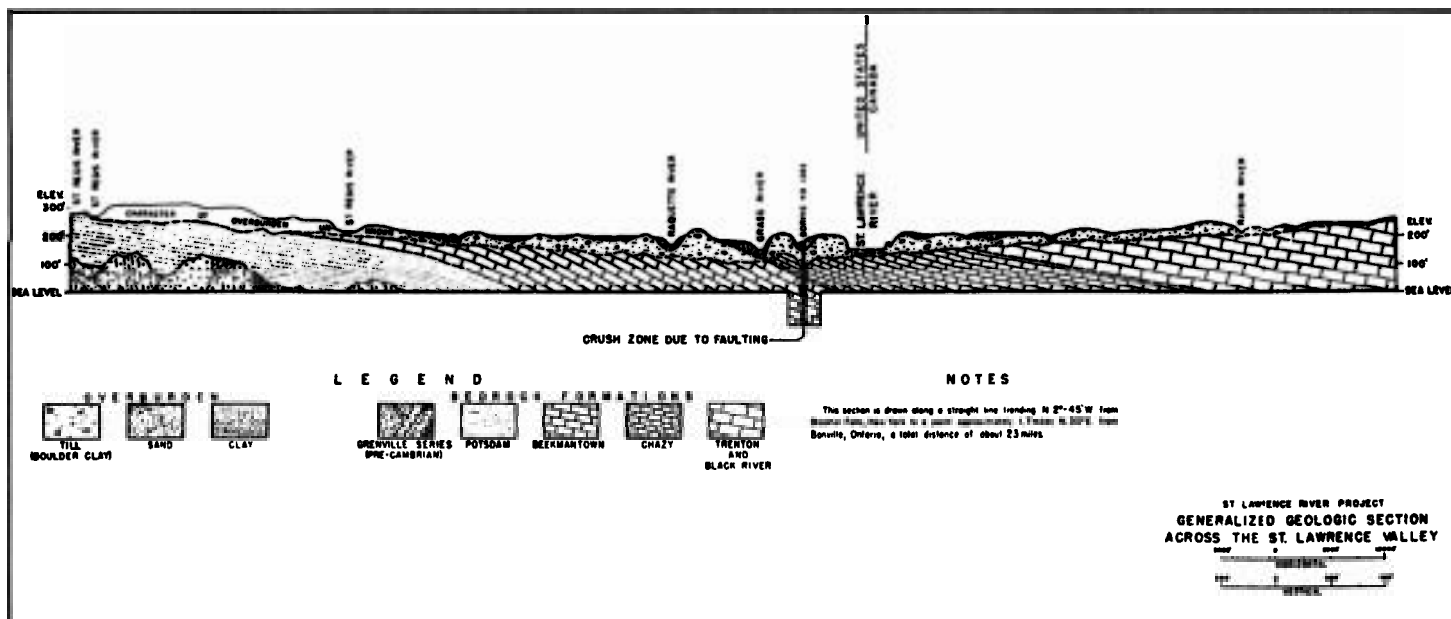


Fig. 8. Generalized geologic section across the St. Lawrence Valley from Brasher Falls, New York, to Bonville, Ontario. Distribution of overburden and primary bedrock units are shown. (From Berkey, 1945)

Massena area is a region of relatively high seismic activity. In fact, the northern New York area is the most active seismic region in New York state. The earthquake activity is persistent over a 400-year period of observation and it is likely that another damaging earthquake could occur in the Massena-Cornwall area.

No one can predict with certainty when such an event will occur. Statistical studies based on past earthquakes have been made to determine the probability of another earthquake. The official seismic zoning map for Canada shows earthquake effects specified in terms of peak ground acceleration. According to this map the chance of another earthquake occurring that is the size of the Massena earthquake in any year is only 1 in 100. This implies that the chances of having an earthquake the size of the Massena-Cornwall quake would be one in a hundred year period.

Earthquakes greater than the Massena-Cornwall earthquake have not been observed in New York State; however, there is no reason to believe that such events cannot occur. The average repeat times of such large earthquakes is larger than the available historic record. For example, the repeat time for an earthquake of intensities IX and X are 376 and 1360 years. Meanwhile, smaller earthquakes continue in the area. In July, 1981, two earthquakes of magnitude 3.3 and seventeen aftershocks occurred near the epicentral region of the 1944 Massena-Cornwall earthquake. This earthquake activity is persistent, and it is likely that another damaging earthquake could occur in the Massena-Cornwall area.

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#### About the Author

Frank Revetta is professor of geology at Potsdam College. He provided all the illustrative material which accompanies this article.

### Can anyone help?

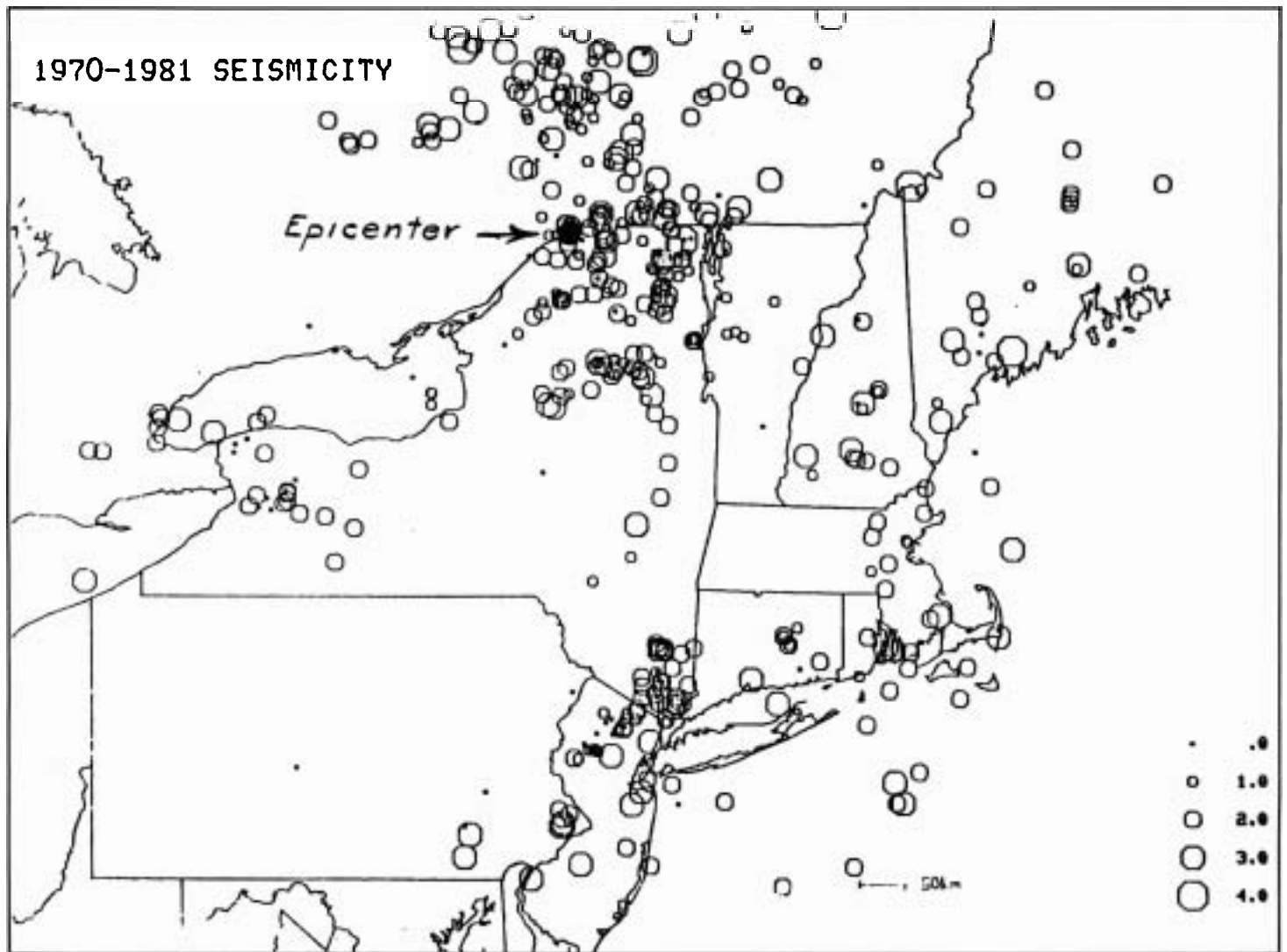
Do you have or know of any nineteenth-century correspondence between New York State residents and the British Isles? If you have such letters, in either direction, please contact Roger Haydon. He is working on British immigration to America and would like to hear from you.

Roger Haydon  
966 East State St.  
Ithaca, N.Y. 14850

### Coming in the January Quarterly

An issue devoted to St. Lawrence County families, featuring the Brannens of Waddington, the Judds of Canton, the Allens of Potsdam, and the Denaults of Ogdensburg.

An issue devoted to St. Lawrence County families, featuring the Brannens of Waddington, the Judds of Canton, the Allens of Potsdam, and the Denaults of Ogdensburg.



Seismicity map showing the location of the Massena-Cornwall earthquake of 5 September 1944 and other earthquake epicenters from 1970 to 1981. (From Schlesinger-Miller, 1981; courtesy of Frank Revetta)

## 5 September 1944

*Five September Nineteen Eighty-Four marked the fortieth anniversary of the great Massena earthquake. Anticipating that anniversary, a group of faculty from Potsdam College, St. Lawrence University, and Clarkson University, aided by the Associated Colleges of the St. Lawrence Valley, explored ways that episode in local history could be incorporated into instructional plans. One result was a seminar in history at Potsdam College conducted by Arthur L. Johnson in which history majors explored the impact of the earthquake on the lives and thoughts of Massena and Cornwall residents. Beginning with an understanding—provided by Frank Revetta—of the geologic events which precipitated the earthquake, the students used both traditional historical research sources such as local newspaper accounts and oral interviews with Massena and Cornwall residents to reconstruct aspects of that 1944 experience. Excerpts from a few of the papers produced in that seminar follow; footnotes have been omitted.*

Experiences and reactions during the earthquake were described:

Chimneys toppled and panes of glass shattered as peoples' homes wavered under the force of the earthquake. Mrs. Nancy Perkins, a resident of Massena in '44, recalls a heavy oak dresser dancing across the floor of her home during the quake. Similarly, Professor Annette

Plante, of Potsdam College, then too a resident of Massena, recalls clinging to a doorframe while her whole house shook and swayed. Dishes and pictures flew from their resting places, while bells from various sources clanged in many towns.

Linda M. Roscoe

Household pets showed signs of panic

and restlessness just prior to the initial rumbling. Cornwall and Massena residents alike can remember their cats and dogs making noises and running to the door. One Cornwall woman can even recall the horses and cows on the farm across the way scattering in all directions. . . .

The extent of the noises produced by the Massena-Cornwall earthquake also

seems to be the reason for some of the reactions. For example, one Cornwall man described the sound to be ". . . especially loud, and sounded as if a railway train had left the tracks nearby and was going through the house." Others in the Massena area were startled by the false fire alarm which was set off during the fierce rumblings. Some residents recall a smell of sulfur and a weird dust was reported lurking in the air. Many people remember that the sky was very bright, almost as if it was daytime, while others distinctly remember a full, harvest moon on a warm and calm evening.

Cynthia Brisco

Two Cornwall residents who experienced the quake recalled that a number of people in Cornwall were admitted to the hospital with "nervous conditions" brought on by the quake, and that some children, for whom the disturbance had proven especially traumatic, were reluctant to retire for several nights after the quake. As is seemingly typical in earthquakes of moderate proportions, the immediate reaction of those in the vicinity of the epicenter was to run outdoors. Although at least one woman resolved to remain in her house with her children, the greater number of those interviewed indicated that most residents of Massena and Cornwall evacuated their houses and gathered in the streets immediately after the first shock, many still in their nightclothes. One Cornwall man insisted that women were generally the first to leave their dwellings. In this respect, popular reactions to the earthquake of 1944 differed little from reactions to earlier quakes of like intensity. Witnesses to the London earthquake of 1692, the New England earthquakes of 1727, 1744, and 1755, and the New Madrid, Missouri, earthquake of 1811 all noted similar behavior.

Paul D. Lockhart

The fact that the earthquake occurred during war time colored immediate reactions:

The earthquake occurred at the height of World War II. Rumors were flying that Hitler had developed a secret weapon and was about to unleash it on the world. Suddenly, in the darkest hours of a deceptively calm harvest night, a brilliant flash (some say) preceded a wind-like rumbling, which grew to a deafening roar. The normally terra firma began rocking violently; explosions (attributable to the crashing of heavy objects) ripped through the air. Many people assumed the worst: Massena had been bombed! "The Germans are bombing!" screamed some Massena residents as they ran towards the presumed target—the Alcoa plant.

An Alcoa worker, Mr. Spadafore of Massena, reports having heard a noise more similar to an explosion than a rumbling.

Linda M. Roscoe

Remarks from war-conscious citizens were widespread in both Canada and the United States:

At least this has given us some idea of what it is like to be aroused out of our beds at the same time as they have been in England for years. It must be terrible over there, but we don't have the fires and disrupted services.

One Cornwall school teacher stated that many children "felt the earthquake was an air raid or bomb dropping, which was not too imaginative because they had been hearing and reading about bombs dropping everywhere." Her son asked if the Germans had come, probably the most universal inquiry of that area during the quake. Most who were jarred out of their homes were afraid World War II combat had come to the North Country.

Lorraine Hurlbutt

A substantial number of people, not only in Massena and Cornwall but also in New York City, feared initially that war had finally come to this industrial center on the Saint Lawrence. Some believed that the area had been the target of one of Nazi Germany's dreaded V-2 self-propelled bombs, and a number of children were convinced that they had been the victims of an air raid. A man who had been working in an Alcoa power plant at the time of the first tremor heard an explosive-like noise over the usual loud humming of the plant, and surmised that a saboteur had planted an explosive somewhere within the confines of the facility; after all, Alcoa was considered to be a vital war industry, and security had been fairly tight at the plant. Several Massena residents first attributed the tremors to the explosion of an ammunition dump in Canada.

Paul D. Lockhart

In the days following 5 September came the assessments of damage, of the costs of repairs, and of future needs given the reality of earthquakes in the area:

Schools, both public and private, as well as churches, were hard hit. At approximately 6:30 a.m., news came that school would not be held that day, pending the inspection of the buildings. Numerous panes of glass were shattered in both the high school and in St. Mary's Parochial School. In some classrooms, plaster was found covering the floor, with holes in the wall where it formerly stood. Blackboards were found

which had popped out of their frames, and, as was common, the chimneys of the schools were damaged. Few buildings were so badly damaged in the Massena area that they were unsafe for further use, although it is certain that those built of brick or stone suffered more severely than those of stucco and frame. The First Methodist Church in Massena is an example, for it suffered a displacement of stone structures and broken glass.

Cynthia Brisco

In Cornwall and Massena, local builders and contractors were deluged with requests for their services in repairing chimneys. . . . Harrison Construction Crew . . . had an increased demand for their services. These men, about 275 strong, were employed by the Alcoa Company for repair work. . . . Some of them gained permanent employment at the plant after finishing the repair work. All crews hired to repair the damaged buildings scoured the area in search of competent bricklayers to hire as help.

Extensive damage was not singular to local stores. It was pervasive in homes, businesses, and schools as well. Manufacturers and retailers profited from this rise in demand. Cornwall general food and department stores did a brisk business the day of the 'quake, despite broken glass and scrambled displays. Restaurants and cafes also benefited. . . . The Hawes Lumber Company and the Massena Lumber and Supply Company were stores that benefited as well. They supplied many of the local contractors with the lumber for repairs. . . .

Although "No agent in Massena wrote earthquake insurance [policies] before the 'quake, "every agent wrote [them] afterwards". . . .

"Are You Insured Against EARTHQUAKE?" questioned the Milton M. Pitt Insurance Service of Potsdam. Ads promising protection sprang up in newspapers as soon as one day following the earthquake. Agents also peddled policies door-to-door.

Linda M. Roscoe

Long-range planning after the earthquake took the form not only of earthquake insurance, but of taking another look at plans for a projected St. Lawrence Seaway:

The 1944 Massena-Cornwall earthquake was an important event for American and Canadian government and business leaders. A seaway had been tentatively agreed upon by American and Canadian government officials in 1941. The proposed seaway called for the construction of locks and dams in the Massena-Cornwall region. Business leaders in Massena and Cornwall



were counting on the proposed seaway to revitalize the economics of the neighboring communities.

Dr. Berkey was hired by the United States government to explore the geologic makeup of the Massena-Cornwall region, and to give his recommendations on the construction of the proposed Saint Lawrence Seaway system. Dr. Berkey submitted his report to the United States government in the spring of 1945. Dr. Berkey reported that earth movements in the Massena-Cornwall region were likely to continue. He recommended that areas underlain by solid bedrock were the best for any proposed construction sites. He warned the government officials about construction on marine clay. Dr. Berkey advised a reexamination of the proposed sites at Iroquois Bay and Grass River. He reported finding minor faulting in these areas. Although the other proposed construction sites appeared to be geologically sound, Dr. Berkey urged further explorations at these sites as well.

Four of the five main seaway construction sites were located immediately within the vicinity of Massena and Cornwall. The proposed locks at Grass River and Robinson Bay, the proposed power dam at Barnhart Island, and the proposed reservoir at Long Sault, would all be vital to the success of the seaway and power project. Deposits of marine clay were found near the proposed lock site at Robinson Bay. The clay, however, was far enough removed from the proposed construction site, that it was not deemed a threat to the lock. The proposed site for the Grass River lock, however, was relocated 450 feet to the east. Geologic drilling has revealed a fault zone immediately beneath the initially proposed construction site.

After ascertaining the geologic soundness of the proposed construction sites, engineers had to design structures capable of withstanding an earthquake. The construction materials were to be steel and concrete. Potential stresses, such as bending, shearing, tension, and compression, were calculated and allowed for within the structural design of each lock and dam. The Robinson Bay lock design was tested for response to normal, temporary, and abnormal conditions. Included in the category of abnormal conditions were earthquakes and earth movements. The designs were drawn with an eye toward uplifting, overturning, and sliding. All construction to be undertaken as part of the seaway project, such as bridges, canals, locks, and dams, was to be built with an allowance for a horizontal movement of 0.1 gravity per second. Thus, in case of severe earth movements, these struc-

tures would be able to sway and move and would not topple or break easily.

. . . The threat of earthquakes, however, remains a major concern for seaway officials. An official of the Saint Lawrence Seaway Development Corporation informed me that accelerometers had been installed on the International bridges, and more were being sought for use on the Eisenhower and Snell Locks. Accelerometers are instruments used to measure the rate and direction of acceleration. They help the engineers of the Saint Lawrence Seaway Development Corporation to detect earth movements that might disrupt the bridges or the locks.

The Massena-Cornwall earthquake of 1944 was a dramatic event for most of the people in the area. . . . The 1944 earthquake did help to reawaken residents and scientists to the earthquake activity of this region. Geologists undertook new efforts to examine the geologic structure of this region and to propose theories about the causes of earthquake activity in the Massena-Cornwall region. Engineers were forced to reexamine the blue prints and construction sites of the Saint Lawrence Seaway. Allowances had to be made in structural designs for the potential of a future earthquake.

David Rishe

In the aftermath of the earthquake, people sought explanations for what had happened. The scientific explanations initially offered may have subsequently proved inaccurate, but they were scientific. This kind of endeavor to understand the earthquake differed from those of previous times:

Prior to the present century, earthquakes were considered by many to be miraculous or of supernatural origin, and were consequently regarded with awe as divine portents. With an increased awareness of geological phenomena and the popularization of science in the late nineteenth and early twentieth centuries, however, earthquakes began to lose much of their supernatural importance for those who experienced their terrors. The Massena-Cornwall earthquake of 1944 provides us with an excellent example of what may be termed this "secularization" of the human experience in recent earthquakes, particularly when compared with earlier earthquakes of similar intensity. . . .

The real difference between these earlier quakes and that which struck the Saint Lawrence Valley in 1944 lies not within their respective destructive effects—for they were all of equal magnitude—but rather within the manner in which they were interpreted by those who experienced them. Earth-

quakes were viewed as being supernatural or divine in nature well into the nineteenth century. Some Canadians claimed to have seen "spectres and fiery phantoms, bearing torches in hand" during the Saguenay River (Quebec) earthquake of 1663; many, frightened by the visible undulation of the ground surface and the "crying of porpoises" in the river, spent the night of the quake in prayer.

This tendency to fear earthquakes as tokens of God's wrath and power was accelerated by the large number of significant earthquakes which struck the Western Hemisphere during the eighteenth century. A number of these occurred on holy days—the New England quakes of 1727, 1744, and 1755 all happened on Sundays, and the disastrous Lisbon earthquake of 1755 struck on All Saints' Day—thus prompting the arguments of some clergymen that the earthquakes were manifestations of God's righteous anger over the profanation of His sabbath. Popular pamphlets reinforced this idea, and hence popular reaction to earthquakes became characterized more by fear of divine retribution than by dread of natural calamity.

While a significant number of Massena and Cornwall residents first thought that the disturbances were due to some form of military calamity, few, if any, persons seem to have made the connection between the earthquake and supernatural activity. Only one sermon, entitled "Unshakable Things," preached the Sunday following the earthquake, seems to have been concerned with the quake, although its content is unknown. . . .

Instead of attempting to consider the theological aspects of the earthquake, most papers offered their readers brief, if not wholly accurate, scientific explanations of the geological disturbances; they were attributed variously to "Logan's Fault slipping another notch," a "resettling of crust in the Laurentian Fault," and to a "resettling disturbance." The three Massena residents interviewed were all of the opinion that the earthquake was attributable to Logan's Fault, although geologists have recently taken exception to this view.

Thus explained to the public in a scientific fashion, the Massena-Cornwall earthquake of 1944 seems to have been robbed of any supernatural or portentous aspects, and apparently did not hold the same kind of significance for its "victims" that earlier earthquakes had held for theirs.

Paul D. Lockhart



# Echoes from the Valley

by Doris Parker  
edited by Judith B. Ranlett

Doris Parker, born in 1899, is a descendant of families who settled in the Potsdam area early in the nineteenth century; some of her forebears were members of the Union, that elusive cooperative group of early settlers which existed from about 1804 to 1810 and about which so tantalizingly little is known. (Intriguingly, and probably based on family oral tradition, Miss Parker claims the Union dissolved "because some of the women were not satisfied as they felt they were doing more than their share of the work, while others were taking a more leisurely life.") Long interested in family history—"it seemed to be a trait in the family for the women folks to talk over the past family history. That's how I came to know quite a bit about it. . . ."—Miss Parker also desired to write the family history her mother had long contemplated but never attempted. The result is "Echoes from the Valley," written as a series of stories for her nieces, a handwritten copy which she also deposited in the Potsdam Public Museum. It is accompanied by sketches of houses and floor plans which even show the placement of furniture in the houses she remembers from her childhood.

"Echoes from the Valley" contains a wealth of information on early Potsdam families. One of its richest and most informative sections is based on the diary of her grandmother's first husband, Henry Allen, who died at age 30 in 1865, the son of the Rev. Ira Allen and his wife, Betsy. (Miss Parker is descended from her grandmother's second marriage.) Miss Parker utilizes the diary to tell Henry Allen's story. At times she condenses his diary, putting his story in her own words. At other times, she quotes long passages. In places she interjects her comments into his text. It is not always possible to determine with certainty the original text: what was Henry Allen's and what Doris Parker's. Nevertheless, at all times the rich texture of this diary shines forth. Judith B. Ranlett has further edited the sections of this diary which appear in "Echoes from the Valley" for inclusion in this and subsequent issues of *The Quarterly*.

Henry Allen began to keep his "Day Book" in 1851. The selections which appear here are from the years between 1851 and 1864; early in the latter year he married Delia Ellis. During these years, Henry Allen attended St. Lawrence Academy, taught school in Parishville (for \$14. a month) and at the Union School in his own neighborhood, and attended (1855-58), along with brothers Ira and Albert, Antioch College in Yellow Springs, Ohio, where sister Elizabeth also gave music lessons. He followed Antioch with a brief stay (September 1858 through March 1859) at Union College in Schenectady, New York.

These first excerpts introduce Henry Allen and Delia Ellis, and they prepare the way for the more intense coverage which Miss Parker provides for the brief married life of the couple.



The 1865 St. Lawrence County Atlas shows the location of the Rev. Ira Allen's property, which his son Henry farmed. (Map courtesy of the History Center Archives)

I'll quote more from Henry Allen's diary. . . . He . . . seemed to be a very serious young man for one of 16, when he started his diary. . . .

His "Day Book" tells some things that seem very interesting as well as some quite amusing to us now, as we read it well over 100 years later. E.g., Jan. 8, 1852 he took his brother Albert to Canton to catch the "Stage" for Watertown at half past 7 bound for Albany Agricultural School. On Jan. 8 [he] was 17 years old, but forgot his birthday till the next day. Jan. 10, 1852 he wrote, "Father married Mr. Rogers to Miss Wilkins in the sleigh, sitting down, and without witnesses."

This was during the Gold Rush days in the West. On April 6, 1852, four boys started on their travels, "Allen V. Ellis, Albert Smith, Isaac E. Shaw, & a Mr. Drake from Stockholm; A.V.E. for California, I.E.S. for Texas . . . and A.S. for St. Louis. (These three were next door neighbor boys.) Allen Ellis but 18 years of age, his folks did not like to have him go, but he was determined, money or not, and as they could not advise him to stay at home & go to

school, they finally gave him money to go with. I am reminded of the swiftness of time, when I see my youthful companions leaving, some for one part of the world, & some for another because it has been but a short time since we were small." . . .

"April 24, 1852. Today Albert returned home from Albany; he fetched quite a library of Agricultural books and a great many new sorts of grains and seeds, mostly from England."

"May 30, 1852. Today Alden and Elizabeth (his brother & sister) were baptized by Father in Isaac Ellises Mill Pond."

"July 9, 1852. Heard from Allen, Drake & Albert; they were on the plains 500 mi. from St. Louis; they said they saw new made graves along the way, which were the effects of colery [cholera?]."

"This day the 25th of July 1852, I with Charles (his brother) and Wayland Ellision also Luman Currier baptized at the "Union Falls" by Father."

"Sept. 16. Went to Canton to a "Fair" with Frederick Howe (his brother-in-law), the first I ever went to." . . .

"Oct. 16, 1852. Today I heard that Albert Smith was dead with the "Humbolt Fever." He was buried on the bank of Carson River. He died without a struggle. I never before heard of a death which made me feel so mournful. He was a person of great ambition. His aspirations were higher than the stumps, as he once told me. His death is much mourned of by his friends, and all who knew him. Isaac Shaw and Allen Ellis got thru safe, but had to pass through some sickness."

[Jan. 9, 1853]. "18 years of my life have past & gone, never to return. It makes me feel quite sad to think of it. To think that 18 years of my youthful life has gone & all that too except one year in sinning against God and that I am now so poorly prepared for a useful life, makes me feel sorrowful. Now I am resolved that if God permits me to live 18 years more, to spend it [in] as useful a manner as I know how, so when they are past I can look back with pleasure feeling assured that I have done my Heavenly Father[s] pleasure concerning me.["]

[Between ages 18 and 24, Henry Allen taught school, attended St. Lawrence Academy, Antioch College and Union College. Shortly before leaving Union, on March 13, 1859, when he was 24, he wrote:]

"My college days are rapidly drawing to a close, for which I am both glad & sorry. Glad to get free & to see my friends, to be earning instead of expending & depending on others for help & sorry that the happiest part of my life has passed and that I must go out into the world to fight my way



Henry Sweet Allen, 1835-1865, the diarist. (Photo courtesy of Doris Parker)

among the conflicting elements; sorry that I have learned so little. I yet know nothing in comparison to what there is to be known. We can know but little in this world. Our knowledge is very limited. Those that study all their life-time learn but little. They seem to us . . . to know a great deal but they do not. We in this life hardly begin to fathom the dep[t]h of things yet to be revealed to us. . . ."

[Henry wasn't always so serious, and he was capable of the sharp comment:]

"Sept. 26, 1860. I went to help John Barton raise his great two story house, a house just 3 times too large & expensive for him to build."

[Some time after his return home from Union College, he began courting Delia Ellis. Two passages which illustrate their courtship follow.]

On June 26, 1861, Henry called at Ellises and asked Delia "to take a pleasure ride on the Fourth." Then July 4th he wrote, "Five couples of us, from this place went to Madrid with our teams, then took the cars for Ogdensburg & Canada. We took dinner in Prescot[t], visited the old Fort, then came back to Ogdensburg & put up at Jones' Hotel, then took a walk, each couple where they pleased before & after supper. We rode to the cars, nearly an hour before they started & then found them nearly full. At Madrid Depot Hotel, where we left our teams, we found a dance going on. We could

not get our supper nor teams till after 2 o'clock, so we stayed & saw them dance. It was about 3 o'clock when we got away. The stars looked bright & the comet looked splendid. It was daylight in about half an hour and was much pleasanter riding than it would have been in the night. We, as we were riding East, saw the day come on in all its glory. The sun was half an hour high, when we got home."

[Sept. 25, 1862] Canton Fair Week, "Went out to the fair with horses & carriage. Carried Miss Delia Ellis. A mile this side of Canton, I let 4 teams pass me; the last one was a double wagon containing 3 Irishmen, brothers, who were intoxicated. They drove against my neckyoke, broke a strap, let the tongue part way to the ground, frightened the horses so that they jumped & threw the end of the tongue & neck yoke upon their wagon & fastened on, so that they drag[g]ed us several rods. I tried to have them stop their horses, but they whipped them and broke away from us, when I stopped my horses and they put out of my reach. As soon as I stopped several persons came to our relief. We were not hurt at all, which is a wonder. The pony had one leg fast thru the leather dash board. She kicked several times, got her legs well galled among the whiffletrees & braces. She broke 2 wood crosspieces. The accident was not my fault. They had all the room to pass that they needed. It happened in front of Mr. Roaches, who was very kind to invite us to stay with them till I could get the tongue mended, which I took to the village (Canton) then came back & took pony & put her into a single buggy . . . and went to the fair & had plenty of time to see all that we cared to see. There was not much to be seen except people. We met Mr. Bigelow & wife (Aunt Rhoda) who invited us to take tea with them. Miss Delia went home with them & I got my carriage together & horses & came to Mr. Bigelow's. After tea we visited the corpse of Col. Goodrich, who was killed a few days ago in the dreadful battle in Maryland; he was embalmed & lay in a glass covered coffin. . . . We had a pleasant ride home in the evening. Stars & 'Northern Lights'—Aurora Borealis—shone brightly."

**Editor's note:** See the article by Cecil Graham on Colonel William B. Goodrich in the January 1978 *Quarterly*, and that by Varick Chittenden editing the diary of Colonel Goodrich's young daughter in the April 1984 *Quarterly*.

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#### About the Author

Doris Parker, Potsdam native, resides in Hagerstown, Maryland.

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