

## Summary of Newspaper Articles

### Deseret Evening News – Salt Lake City, UT (last date searched 10/20/1909)

Headline: [Two Earthquakes Visit Salt Lake](#)  
Date: 10/06/1909  
[Info Categories:](#) B, E, G, L, N, P, S

Headline: [An Earth Tremor](#)  
Date: 10/07/1909  
[Info Categories:](#) S

Headline: [Earthquake Echoes From Brigham City](#)  
Date: 10/09/1909  
[Info Categories:](#) B, N

Headline: [Six Earthquake Shocks Felt At Plymouth](#)  
Date: 10/12/1909  
[Info Categories:](#) E, P

### Ogden Standard – Ogden, UT (last date searched 10/13/1909)

Headline: [Ogden And Other Utah Cities Are Shaken By An Earthquake](#)  
Date: 10/06/1909  
[Info Categories:](#) E, N

### Salt Lake Herald-Republican – Salt Lake City, UT (last date searched 10/15/1909)

Headline: [Salt Lake Shaken By Seismic Waves](#)  
Date: 10/06/1909  
[Info Categories:](#) E, L, N, P, S

Headline: [Many Inquiries Made About The Earthquake](#)  
Date: 10/06/1909  
[Info Categories:](#) P

Headline: [Ogden Feels Tremors In Valley And Canyon](#)  
Date: 10/06/1909  
[Info Categories:](#) E

Headline: [Logan Is Alarmed When Earth Trembles](#)  
Date: 10/06/1909  
[Info Categories:](#) E, N, P

Headline: [Small Earthquake Recorded](#)  
Date: 10/07/1909  
[Info Categories:](#) E, S

Headline: [University Notes](#)  
Date: 10/08/1909  
[Info Categories:](#) S

**Salt Lake Evening Telegram – Salt Lake City, UT (last date searched 10/15/1909)**

Headline: [Utah And Idaho Are Shaken By Two Strong Earthquake Shocks](#)  
Date: 10/06/1909  
[Info Categories:](#) E, H, L, N, P, S

Headline: [By Dr. Fred J. Pack](#)  
Date: 10/06/1909  
[Info Categories:](#) S

**Salt Lake Tribune – Salt Lake City, UT (last date searched 10/12/1909)**

Headline: [Utah Shaken Up By An Earthquake](#)  
Date: 10/06/1909  
[Info Categories:](#) E, N, P

**The Journal – Logan, UT (last date searched 10/14/1909)**

Headline: [County Is Visited By Earthquake](#)  
Date: 10/07/1909  
[Info Categories:](#) E, N, P

## Information Categories

### **A -- Aid:**

provide medical services, shelter, donations, loans, advice, encouragement, implement safety measures

### **B -- Building Damage:**

structure itself plus windows and chimneys (typically damage visible from outside the building)

### **E -- Earthquake Description:**

where, when, duration, direction, sound, motion, number and timing of aftershocks

### **G -- Geologic Effects:**

changes at the Earth's surface, fault scarps, rockfalls, landslides, ground cracks, ground subsidence, sand boils, water spouts; effects on springs, lakes, wells

### **H -- Humor:**

### **I -- Impact:**

changes in daily routine; rumors; influx of reporters, politicians, cost in dollars

### **L -- Lifelines:**

effects on transportation: roads, bridges, railroads, airports

effects on communications: telephone, telegraph

effects on power, gas, water, and sewer lines

effects on dams

### **N -- Nonstructural Effects:**

effects on plaster, furnishings (typically damage or rearrangement of furnishings visible inside a building)

### **P -- People:**

effects on and responses to, during and after; deaths, injuries, near misses

### **R -- Recovery:**

clean up, rebuild

### **S -- Scientific:**

explanation of the day

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**TWO EARTHQUAKES VISIT SALT LAKE**  
**The Disturbance Extends From Southern Idaho Points To Midvale**  
**Tremors Distinctly Felt**  
**No Extensive Damage Was Done, However,**  
**Though Many Walls Cracked Slightly Over City**

Earthquake shocks were felt last night in this city and throughout a strip extending from northeast to southwest and from Malad, Lewiston, Preston and other southern Idaho points on the north to a point slightly north of Lehi and American Fork. The strongest disturbances were recorded at a point about 11 miles north of Ogden. As far as can be learned no extensive damage was done. Geologists are in the hills today looking for possible upheavals and open seams. The average of reports from various places puts the shocks as occurring at 7:50 and 8:20. The record of the seismograph at the University places the time for the Salt Lake valley at 7:41 for the first shock and 8:24 for the second. Both shocks lasted for several minutes. Professor Fred J. Pack of the University assigns as the cause of the seismic disturbance, a shifting of rock ledges in the Wasatch mountains.

Brigham City and Logan report the disturbances as occurring at 7:50 and 8:20. From Preston, Lewiston and other Idaho points in the same district, the reports are to the effect that the shock was quite light but keenly perceptible and as occurring shortly before the time given at Logan and Brigham. At Park City the shock was not felt. At Ogden it was felt strongly, while at the Hot Springs north of Ogden the wave was extremely heavy. At some points the force of the disturbance was so great that generators were temporarily out of commission and the power lines in consequence were dead for a short time. In this city the power lines were not interrupted.

**Quotes Prof. Gilbert**

Professor Fred J. Pack of the University is of the opinion that the shocks of last night may have been merely forerunners of greater disturbances. He quotes Prof. Gilbert in regard to this view, stating that the basin is over a peculiar geological formation known technically as fault planes. These may cause a readjustment of the more recent strata, and in the "slipping" may cause the greater shocks. The geological aspect of the possibility is a parallel of the California shocks on April 18, 1906. Prof. Gilbert of the U. S. geological survey has repeatedly forecast the destruction of this region by earthquake.

The experiences of many Salt Lakers have come into The News offices today by telephone. In almost every instance they are the same, that the houses seemed to shift from under them, walls to crack, dishes rattled, windows cracked in some cases, people on streets wavered in their steps and experienced distinct nausea. Drop lights swung like pendulums and those in the higher stories of large buildings reported strong tremors, the sensation being much like that to be had in a small boat when riding a wave.

At Saltair last night the disturbance was peculiar. Attendants who were in the shooting gallery at the time report that the swinging targets set up a great commotion. A cat which has adopted Saltair as a home rushed from her sleeping mat and jumped into the lake out of sheer fright. It had not reappeared this morning. The great building swayed under the influence of the tremor and the attendants were of the opinion that a pile was

sinking under them. The lake was set in motion to a marked degree and waves were started rolling over the bathhouse pier. Many of the buildings today show evidences of the severity of the shock, being twisted, boards cracked and leaning far from the perpendicular. At Lucin cut-off the lake was rolling high and waves passed over the structure.

### **Felt Shock On Train**

Passengers on a northbound train when nearing Logan last night at the time of the shock felt the shock on the moving train. So strong was it that the engineer brought his train to a standstill until the disturbance had ceased. It was thought that the track was shifting and an examination was made. The train proceeded after the second shock. The Armory in Pierpoint street was shaken to quite an extent. The seams at the junction of walls and ceilings cracked open throughout the building and in many places plaster was shaken from the ceiling. Rifles leaning against walls fell down and in the shop of the Signal corps a row of bluestone batteries was shaken from a shelf and upset. Throughout the city many clocks stopped at the first shock. Operators in both telephone offices were restrained with difficulty from rushing from the buildings. At the hotels guests from California were especially perturbed, at the Kenyon a party rushing from their rooms and into the street, not returning until long after the second shock and then only when persuaded by suave employees that such slight disturbances were common here and had never been known to do any damage. It is believed that the higher ground swayed the most and that if any evidence of the shocks is found at all it will be along the west slope of the Wasatch range. The north and east benches report heavy shocks and several homes in the higher districts report windows broken and a marked swaying of their homes during both shocks.

At the smelters south and west of the city molten metal in the huge pots was set to motion, and in one case, at Midvale, slopped over the sides of a pot and barely missed several handlers. No accidents are reported from any points, however, in consequence of the disturbance.

### **Tremors Were Purely Local**

Dr. Pack, in a statement to The News this morning, said:

"The actual record of the two shocks places them at 7:41 and 8:24:45. The first shock is conclusively shown by the record to have been the most severe. We were particularly fortunate in seeing the record of the second shock made, which is a very rare privilege. I would say that the disturbance was purely local and was caused by a slipping in the fault plane lying along the west face of the Wasatch mountains and extending from Collinston on the north to Nephi. Slipping in this plane may be said to be almost constant, averaging at least once in a month and one week we have a record of three such slips. Many are so slight as to pass notice. Apparently the slipping of last night was confined to the northern portion of this fault plane.

"Salt Lake lies directly in this great fault plane and recently, speaking geologically, a great earthquake visited this section as is shown by the great fault escarpments at Farmington and at the mouth of Cottonwood canyon. If such a disturbance as this should visit this region again, I am sure that not a house would be left standing in this valley. The disturbance which I mention as having occurred recently, occurred since the Lake Bonneville period, but I could not place it in an expression of years."

Prof. Pack said that he would have at the fair tonight records of last night's earthquake shocks for general distribution.

**[Deseret Evening News; October 6, 1909]**

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## AN EARTH TREMOR

The slight earth tremors that were felt here on Tuesday evening were only a gentle reminder of the fact that our little globe is but an unstable habitation for the human family. Prof. Pack, of the University, is of the opinion that the disturbance was purely local and was caused by a slipping in the fault plane lying along the west face of the Wasatch mountains and extending from Collinston on the north to Nephi. Slipping in this plane, he said, may be said to be almost constant, averaging at least once in a month and one week we have a record of three such slips. Many are so slight as to pass notice. But he thought it possible that last night's shocks were but forerunners of greater disturbances in the strata that are constantly subject to adjustment.

This, if founded on facts, is an important opinion. We can only hope that the adjustment will continue to be so gradual as to cause no more destruction than it did on Tuesday, which was, practically, nil.

**[Deseret Evening News; October 7, 1909]**

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## EARTHQUAKE ECHOES FROM BRIGHAM CITY

Special Correspondence.

BRIGHAM CITY, Oct. 8--The earthquakes Tuesday evening were plainly felt in Brigham City, the first shaking was at 7:45, but no damage was done here. At Duckville and through the Bear river valley it was quite severe, several chimneys were shaken down; a lighted lamp was tipped off the table at one home, when the lamp exploded, but the fire was extinguished before much damage was done.

**[Deseret Evening News; October 9, 1909]**

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## SIX EARTHQUAKE SHOCKS FELT AT PLYMOUTH

Special Correspondence.

PLYMOUTH, Boxelder Co., Oct. 7--Six distinct earthquake shocks were felt here Tuesday evening, the first and third being very severe. The birds were shaken out of the trees and people were frightened out of their homes. Slight shocks have been felt several times since.

**[Deseret Evening News; October 12, 1909]**

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## OGDEN AND OTHER UTAH CITIES ARE SHAKEN BY AN EARTHQUAKE

Salt Lake City, Oct. 5--The whole valley of the Great Salt Lake and the upland areas as far northward as Preston, Idaho, were disturbed, almost violently at many points, by three earthquake shocks which occurred tonight between 7:41 and 8:24:45 o'clock p.m. At the University of Utah, where the disturbances were recorded on the seismograph, it was announced that the first shock, which was the more intense, was of full three minutes duration. Dr. Fred J. Pack, professor of geology, who noted the records declares that the tremors were the most violent ever experienced in this part of the country. While Dr. Pack was inclined to consider the disturbance as confined to a very local area, abundant proof was forthcoming tonight that the extent was far greater than the seismograph indicated.

At Logan, Utah, and at Cache Junction, pictures and other wall ornaments were visibly shaken, while dishes rattled distinctly in the cup boards. The movement at Logan appeared to take a northeasterly direction. At Cache Junction, the electric lights quivered and flickered for several minutes.

At Malad, Idaho, people manifested considerable alarm when the buildings trembled and many rushed into the open. Windows were broken in the town and other slight damage was reported. Holbrook, Idaho, also experienced a severe shaking up. In and around Salt Lake City, the effect of the shocks was considerably less noticeable. Murray and Sandy were sensible of the disturbances but no direct effects were observed.

Slight but distinct earthquake tremors were felt in Ogden City and other parts of Weber county last night. The first shock came at 7:40 o'clock and lasted about three minutes. Residents of various sections of the city felt the trembling of the earth. The other tremor began at 8:24 o'clock and lasted over half a minute.

People residing on Knob Hill to the east of the city say that both tremors were distinctly felt there. One of the residents living in this locality said that the first shock was of sufficient violence to rattle the windows and shake the flower pots on a shelf in a perceptible manner.

Reports received from West Weber and Plain City received in Ogden later in the evening declared that both shocks were distinctly felt in these localities.

The report of the seismograph, an instrument which records the slightest vibrations of the earth, owned by the University of Utah was awaited with interest.

From dispatches received last night the shocks felt in Ogden were as severe as were received in any part of the intermountain region to which the tremors of the earth seemed to have been confined.

The earthquake last night was as severe as ever felt in this section. The tremors at the time of the San Francisco disaster were not felt in Ogden to any greater degree.

**[Ogden Standard; October 6, 1909]**

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**SALT LAKE SHAKEN BY SEISMIC WAVES**  
**Two Distinct Shocks Felt**  
**Vigorous Tremblings Sweep From Northeast To Southwest**  
**Over A Long Stretch Of The Intermountain Country**  
**Brigham And Ogden Are Center Of Disturbance**  
**In Salt Lake Pictures Are Shaken To The Floors Of Many North Bench Homes--**  
**Walls Of Buildings Sag**  
**Repetition Is Expected**

Two distinct earthquake shocks, preceded by vigorous tremblings and seismic waves, swept from northeast to the southwest over 150 miles of intermountain territory between 7:30 and 8:30 o'clock last night.

From as far north as Preston, Ida., to a point south of Salt Lake the tremors and alarming jarrings of the earth were felt in varying degrees of strength, with Brigham City and Ogden, to the north, registering the strongest waves, indicating the center of the disturbance.

The seismograph at the University of Utah registered the strongest local disturbance in many years.

The first shock at 7:41 p.m., sent the sensitive recording needle zig-zagging across the recording plate in a lively manner. Fred J. Pack, professor in charge of the instrument, hurried from his home and arrived in time to witness the recording of the last tremor, which began at 8:24 and lasted several minutes. This was the first opportunity anyone at the university has yet had of observing the instrument in action. As the second shock came on, the heavy glass cases in which the seismograph is stationed, shook violently and for a moment the needle threatened to jump from the recording sheet, so wide was its zig-zag path.

**Shocks Felt Here**

Throughout the city the shocks were very distinctly felt. On the north bench absolute darkness reigned for several minutes following the first tremor, and in some instances the walls bulged slightly and shook pictures to the floor.

Telephone operators in the upper stories of the Rocky Mountain Bell and the Independent Telephone companies, several of whom had experienced the shocks which destroyed San Francisco, reported the same peculiar crackling of the wires, as though the sound had been picked up from the subterranean regions. Many were for the moment panic-stricken, but all stayed by their posts until it was over.

The second shock was the more violent of the two. It came on with a peculiar tremor preceding it, which grew into a wave, and ended abruptly with three jarring movements of the earth.

This last disturbance created something bordering on panic in several downtown buildings. Guests of the Kenyon and Wilson hotels, some of whom had been in the San Francisco earthquake, rushed from their rooms and down the stairs in fright, but the sudden cessation of the disturbance reassured them. Many people declared that the queer movements of the earth were identical with those of the great San Francisco quake.

### **Rock Ledge Settles**

Professor Fred J. Pack said that the great fault plane, or rock ledges, extending along the western slope of the Wasatch mountains had settled slightly. The ledge, which extends over 100 miles, is a formation distinctly conducive to earth disturbances. Inasmuch as earthquakes are caused either by volcanic disturbances or movement of fault planes, Professor Pack is convinced that yesterday's quake is to be attributed to the latter cause.

Professor Pack further said that the tremors might be but forerunners of a great disturbance. He quoted Professor Gilbert of the government survey, who has repeatedly prophesied the destruction of Salt Lake by earthquake. These surmises are based on the fact that the city and valley are directly over peculiar strata formations, so situated as to be termed fault planes, which Professor Gilbert contends may at any moment settle further down, creating earthquakes in the process.

The local weather bureau was not prepared to make any report on the quake last night, although several observations and recordings were taken and forwarded to the department of agriculture.

Bell Telephone reports from different parts of Utah and Idaho indicate that the earthquake shocks were felt at Preston, Ida., where the disturbance was quite pronounced. The shocks, however, were not noticeable at Pocatello, indicating that the disturbance did not extend farther north than Preston. The telephone reports are of shocks at Montpelier, Malad and Holbrook, Ida., and at Cache Junction, Logan and Ogden in Utah. The shocks were not felt, according to telephone reports, farther south than Midvale, Murray and Sandy, where they were slight. There was no disturbance reported from Provo, American Fork, Bingham Canyon, Park City or Tooele, indicating that the quake was confined to the stretch between Salt Lake valley and Preston, with no appreciable effect to the east or west.

### **Affect Electrical Current**

Reports from power stations throughout the state, received at the Salt Lake power house, told of marked tremors, which appeared to affect the electrical current for the time being.

At Brigham City the Oregon Short Line passenger train, due in Salt Lake at 9:30, was brought to a stop because of the undulating of the earth, which was felt by the passengers even while the train was speeding.

Reports from Hot Springs, eleven miles north of Ogden, indicate that point to have been the center of the quake. It is said that the entire valley seemed to undulate from the north, the approach of the shock being felt several seconds ahead of the wave.

The Nob Hill district of Ogden, which is close to the mountain, reports the severest shocks in that city. Dishes were knocked to the floor and pictures swayed to and fro on the walls. The lights went out all over the city for a moment.

It is highly probable that the worst shocks were felt in the mountains, and today some attempt will be made by professors at the university to learn if any seams or cracks in the earth's surface have opened in the hills to the east of the city.

**[Salt Lake Herald-Republican; October 6, 1909]**

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## **MANY INQUIRIES MADE ABOUT THE EARTHQUAKE**

In less than five minutes after the shock had been felt telephones in The Herald-Republican editorial rooms began to tinkle and inquirers wanted to know whether there had really been an earthquake or their senses were deceiving them. These calls increased as time went on.

Presently messages were received from persons who had been where the shock was so distinct they knew it had been a quake and they wanted to know the extent of territory affected by it. With almost incredible rapidity the news spread to outside towns where the quake had not been felt. Provo citizens and residents of other cities south of Salt Lake asked if it were really true an earthquake had occurred. They were eager for every scrap of information that could be given them.

Until far into the night inquiries kept coming from people in Salt Lake and on the outside, relating pranks played by the shock.

**[Salt Lake Herald-Republican; October 6, 1909]**

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## OGDEN FEELS TREMORS IN VALLEY AND CANYON

Ogden, Utah, Oct. 5--The earthquake shocks which were reported from Salt Lake this evening were felt in this city and its vicinity.

Residents of the Knob Hill district of Ogden report that two distinct shocks were felt--one at 7:43 and the other at 8:24 p.m. Stories of houses with contents, such as china and furniture, being shaken or disturbed by the tremor, are numerous.

The shocks were said to have been plainly felt in the upper portion of the higher buildings in the city.

Reports received from Ogden canyon were to the effect that the shocks were felt through that district.

Word from West Weber and Plain City, both in this county, tell practically the same tale.

**[Salt Lake Herald-Republican; October 6, 1909]**

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## LOGAN IS ALARMED WHEN EARTH TREMBLES

Logan, Oct. 5--Two distinct earthquake shocks caused considerable alarm among the people of this city tonight. The first shock occurred at 7:35 o'clock and lasted about 30 seconds; the second followed 35 minutes later at 8:10 o'clock, and was of about the same period of duration. The earthquake wave seemed to be running in a northeasterly direction and was felt in all parts of the city.

Following the shocks the central telephone station was kept busy answering queries from anxious people as to whether or not there had really been an earthquake. There was a noticeable quiver in the electric lights all over town just at the time of the earth tremors. From all reports the shocks seemed to have been felt most distinctly in Logan Island and in the Fifth ward, two sections closest to the foothills.

Word received here from Cache Junction is to the effect that the earthquake was very distinct there and that in some homes dishes rattled in cupboards and pictures were almost shaken from the walls.

**[Salt Lake Herald-Republican; October 6, 1909]**

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## SMALL EARTHQUAKE RECORDED

The University of Utah's seismograph detected another earthquake shock Wednesday at 9:30 a.m., but if it had not been for the seismograph nobody would have known anything about it. Records of earth waves were made on the instrument just before noon, but no shocks were felt.

Professor Fred J. Pack says that in past centuries the earth crust slipped in the Big Cottonwood canyon far up into the Cache valley. The cause of the quake Tuesday night, he said, was the slipping of the crust a small part of an inch. Professor Pack said that if a slip like the one centuries ago should occur in the vicinity of Salt Lake, there would not be left a chicken coop standing in the city. When asked as to the real significance of the earth tremor on Tuesday night, and if it would be possible for another similar or more serious quake to occur, he said:

"In our vicinity it is impossible to make any predictions which could be held exact.

Another similar shock might occur tonight, or it might not occur for many years. The shock was caused by what is known as a crustal slip, which is the slipping of one body of rocks over another. The slipping of a fraction of an inch would be enough to make a record similar to the one recorded last night. If a larger slip occurred it would do untold damage."

The seismograph at the university is the only one in the intermountain country, and has given valuable service in the location of the wave movements in the earth since it was established at the university. The following notice accompanied the diagrams of the seismograph records distributed at the state fair yesterday.

"The University of Utah maintains the only seismological station in the intermountain region. The above record was made by one of the two earthquakes which visited Salt Lake Tuesday evening at 7:41 and 8:24, Oct. 5. The disturbance was caused by a slipping of great crustal blocks at the western face of the Wasatch mountains and passing north and south immediately east of Salt Lake City and Ogden."

**[Salt Lake Herald Republican; October 7, 1909]**

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## UNIVERSITY NOTES

The seismograph at the University of Utah was unsteady during the greater part of Thursday. The needle on the drum traced uneven lines from about 11:30 until 4:30 o'clock. Dr. Fred J. Pack said that after a disturbance of the earth the waves continue to travel backward and forward in a manner similar to sound waves.

**[Salt Lake Herald-Republican; October 8, 1909]**

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## **UTAH AND IDAHO ARE SHAKEN BY TWO STRONG EARTHQUAKE SHOCKS**

### **Tremors Felt Distinctly Last Evening Attributed By Geologist Pack To Shiftings Of Earth's Crust Along Wasatch**

The seismograph used by the department of geology at the University of Utah is one of the best and most accurate instruments of its kind in the country. It consists of a heavy pendulum, which moves in accordance with the vibrations of the earth. A needle attached to the pendulum records its movements on a stationary drum. The record on the drum showing last night's disturbance is reproduced above. The drum revolves every hour and each horizontal line represents the path of the needle during a certain period in each hour, the minute being determined by the square dot registered on the hour line. While there is no disturbance the needle follows a perfectly straight path. In the record above it will be seen that the vibrations started promptly at 7:41 and continued more than a minute. The two lines below representing the same period during the second and third hour after show slight vibrations, indicating that the needle had not ceased to vibrate completely.

Three distinct sets of vibrations are recorded on the seismograph from every earthquake and the time between the first set and the last two determine the distance of the disturbance from the instrument. The first set of waves known as the preliminary tremors travels directly through the earth from the point of origin to the seismograph and consequently would arrive before the other two, which go along circumference of the earth. In going through the earth the first set loses its violence and the vibrations are slight compared with the sets that follow. In the above record it will be shown that the preliminary wave arrived at practically the same time as the other waves forming a jagged line. This proves that the origin was near at hand. The records of distant earthquakes show a set of preliminary tremors shortly followed by long clean sweeps of the needles and later another set not quite so violent as the second.

An earthquake, which is perhaps the most violent seismic disturbance that has visited this region since its habitation by white men, swept Salt Lake and the surrounding regions last evening. There were two distinct shocks coming as recorded on the seismograph at the university, at 7:41 and 8:24:45 p.m.

The agitation was especially noticeable along the face of the Wasatch mountains from Colliston to the southern part of Salt Lake county, confirming the theory of Dr. Fred J. Pack of the university that it was caused by a slipping along the fault escarpment of these mountains.

The disturbance was not confined to this state. It was keenly felt as far north as Preston, Idaho, and particularly at Malad, Logan and Ogden. No report of any damage has come from these districts, but at the time of the quake the people were terror stricken, and many relate startling experiences.

The tremblings were distinctly felt in this city, and many peculiar and amusing incidents resulted. People who had experienced the disaster in San Francisco said they felt exactly the same sensation as they did there and became panic stricken. Others rushed to their doors, and the telephone bureaus received a continuous string of inquiries. In some houses the dishes were jarred to the floor, windows rattled, and pictures and ornaments hanging from the wall swayed back and forth. The electric lights and

telephones were affected as the earthquake caused an irregular supply of current. It has been reported that in some instances, the walls bulged and plaster was shaken to the floor.

Many tell amusing experiences. One prominent politician tells a story that his young son who always comes down stairs to tell him a story just before retiring. Last night the boy said he was awakened from his sleep by a burglar shaking his bed. The parent took no faith in the yarn, but on the continued appeals from the child he made an investigation. He thought the lad was fibbing, but this morning found that the boy that time "had the goods" on his parents.

A TELEGRAM employee was about to sit in a rocker when the shock hastened the procedure so rapidly that the earthquake left more of a physical than a mental impression.

More than one person who had been decorating the "water wagon" saw the pictures swaying and the floor moving and thought that they had "fallen off" some time in their sleep.

The shocks were not noticed by many in the western part of the city, but were quite violent in the north and east benches.

Reports from outside the city show that the intensity of the seismic activity varied greatly throughout the state.

Sandy, eleven miles south of the city did not feel the shock, while Pocatello, Ida., on the north was also free. Bingham was unaffected, though at Midvale, a few miles east of Bingham, the shocks were distinctly felt.

#### **Violent to North**

Two sharp shocks were reported by Logan residents. The first was at 7:40 o'clock and the second at 8:20 o'clock. Dishes were rattled in the cupboards, pictures swayed on the walls, and many persons were nauseated. Similar effects were noted at Brigham City. The disturbances at Garland, in Box Elder county were especially severe. Considerable damage was done at Malad, where the earth seemed to sway from north to south, and where buildings were rocked to and fro to a dangerous extent. No one was injured.

At Ogden two shocks were felt. Other points in Weber county also reported the shocks. Residents on Nob hill, east of Ogden, reported that the shocks were so severe that flower pots were shaken from their stands. Telephone messages from West Weber and Plain City also reported two distinct shocks.

The Oregon Short Line passenger train pulling out of Brigham City, it is reported, was forced to stop because of the undulations of the earth.

**[Salt Lake Evening Telegram; October 6, 1909]**

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## **BY DR. FRED J. PACK**

(The Deseret professor of geology at the University of Utah has written exclusively for The Evening Telegram his views on the earthquake shocks felt last night in Salt Lake City, published below. He saw the delicate needle quiver during the second tremor last night, an experience seldom enjoyed by any one.)

Earthquakes in Salt Lake City do not carry with them the fear that they do in areas frequented by the seismic disturbances. A tremor such as last evening would carry horror to the inhabitants of certain parts of southern Italy and Sicily. We feel relatively secure, largely because of the fact that within the period of human occupancy of this country no violent disturbances have occurred, while the people of Sicily have before them a vivid picture of a recent disaster.

But it should be remembered that our security may be no more real than that of the early Italians who had built their homes farther and farther up the sides of the cone of Vesuvius. Vesuvius was looked upon as an extinct volcano; no one had ever seen it in the course of eruption, but in the year 79 A. D., without scarcely a note of warning, two large cities were buried under the ashes of a single outbreak.

The Cordillerian system furnished a very large number of mountains, which were built entirely by volcanic outbreaks. Whether their activity is now extinct or whether they may at any moment break out in violent fury we cannot say, but we should bear in mind that our country in the past has not been a stranger to the most violent and seismic disturbances.

### **Two Types of Earthquakes**

Earthquakes and their associated phenomena are occasioned by either of two causes. The simplest to understand and perhaps the more common is the explosion accompanying a volcanic outbreak. Some volcanoes, such as Vesuvius, Etna, Pelee, Krakatoa, etc., erupt with tremendous violence, and not infrequently throw the surrounding country into violent agitation. Earthquakes arising from this cause are usually very disastrous near the point of origin, but do not often extend over large areas. A second type of seismic activity is that set up by the slipping of one crustal block upon another.

It will be remembered that the interior of the earth is much more highly heated than the exterior and that the surface masses are constantly readjusting themselves to the various strains brought to bear upon them. The slipping of one block upon another for even a fractional part of an inch is often sufficient to throw the surface into violent agitation. When more violent this slipping makes itself visible at the surface in great cracks and seams.

The San Francisco disaster is properly ascribed to this cause. The existence of fissures occasioned by former readjustments had long been pointed out by scientific men. The almost unparalleled disaster of Calabria and Sicily at the dawn of the present year was brought about by a similar faulting of a large crustal block.

### **This One Was Crustal**

Even though complete advices have not as yet come in, we may feel well assured that the tremor of last evening was set up by a similar cause. Salt Lake is admirably situated for disturbances of this type. As far as the middle of last century geologists worked out and accurately mapped the existence of old fault planes some of which lie within

scarcely a stone's throw of the city limits. Dr. Clarence King of the United States geological survey, pointed out a tremendous fault escarpment along the western face of the Wasatch mountains extending from Nephi in the south to Collinston in the north. The great fault plane passes along Salt Lake City just east of Fort Douglas, it then swings to the northwest above Capitol hill and then rounds the point of the mountain beyond the Warm and Hot springs. Several other fault planes are associated with the basin mountains immediately to the westward.

### **What It Really Was**

Evidence at present, however, without doubt points to the conclusion that the disturbance of last evening was caused by a slip along the Wasatch fault plane. The nature of the record on the university seismograph made it possible for this conclusion to be reached long before any confirmatory evidence was received.

In the first place there were virtually no preliminary tremors, a fact which meant the disturbance was wholly a local one. And again, the very unsteady swing of the recording needle pointed to the same conclusion. If the disturbance had been a distant one, the waves would have been free of the peculiar vibrations, which made it appear in this case as if were drawn by a nervous hands.

### **Watched the Record**

Immediately after the first series of vibrations was felt, the writer rushed to the seismological station at the University of Utah, and while engaged in putting on a new record, the second series of waves were felt. An extraordinary opportunity was hereby afforded to study the action of the seismograph, while actually making a record. The first shock was recorded at exactly 7:41 p.m. and the second at 8:24:45 p.m.

The first disturbance as recorded at the university was slightly the more violent of the two and is herewith produced in the accompanying figure. It will be noticed that the shock covered a period of scarcely more than a minute, but that the pendulum did not settle down to steady work for nearly three hours.

Are we likely to have more disturbances of this kind?

Will future shocks be more severe?

Can their coming be foretold?

Salt Lake City and for that matter the strip of country extending from Colliston on the north and reaching to Nephi on the south lies within a well defined earthquake zone, a fact that is well shown in the fault plane on the western face of the Wasatch mountains. It is quite impossible to foretell the arrival of these disturbances, but that they will come, perhaps gently and perhaps violently, is in all probability true. The citizens of this area may, however, feel no undue alarm, as nature has full access to the storehouse of time, and often places these disturbances sufficiently far apart to span the history of generations.

**[Salt Lake Evening Telegram; October 6, 1909]**

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**UTAH SHAKEN UP BY AN EARTHQUAKE**  
**Disturbance Is Felt From Bingham Junction To Northern Boundary**  
**Eastern Part Of City Given Severe Shocks**  
**Conditions In Northern Utah Worse Than Those In Salt Lake**

A distinct earthquake disturbance, extending in a line from Preston, Ida., southward through Utah, as far south as Midvale, was felt Tuesday evening in two shocks about half an hour apart, the first occurring about 7:40 and the second at about 8:24. The tremor appeared to be most severe in the north, especially about Malad, where considerable damage was done. The tremor was lighter toward the southern line of the quake, although houses were shaken, chairs and tables moved, hanging lamps set in motion, and dishes rattled on the tables. In some of the houses, the electric lights were extinguished, although no disturbance was noted in electric power at the stations of the Utah Light and Railway company.

Men in charge of the east side car house reported queer sensations, similar to those experienced at the time of the great earthquake at San Francisco in the spring of 1906. Shortly after the disturbance and until nearly 10 o'clock, The Tribune office was literally besieged with telephone calls, asking the extent of damage and reporting experiences in different parts of the city.

A curious phase of the affair was the fact that there were no reports of any disturbance from the west side of the city. That the disturbance also was confined to a comparatively narrow area is also evident from the fact that it was not felt at Pocatello, Ida., on the north, or Sandy on the south, nor at Bingham on the west, although the shocks were sharp and distinct at Midvale, only a few miles east of the latter city. There was no evidence of disturbance at Park City, Brigham City, Logan and Ogden and other sections of Weber county reported considerable damage from the shock.

Logan residents reported two sharp shocks, the first occurring at 7:40, the second at 8:20. The earthquake shook everything there, rattled the dishes and produced nausea in many persons. Practically the same report was received from Brigham City. Things in the houses were badly shaken by the two shocks, which were sharp and clearly discernible. At Garland, the disturbance was especially severe. There were two shocks there, the first occurring at 7:45, and the second taking place thirty-five minutes afterward.

At Malad, the disturbance appears to have been felt worse than at any other place. Reports of considerable damage were received, the disturbance lasting several seconds on both occasions, and producing a swaying of the earth and rocking houses. In Salt Lake City, a number of persons reported the shock. L. D. Martin, who occupies an office on the sixth floor of The Tribune building, stated that he felt a swaying of the building at about 7:40, and that his first idea was that the building was about to fall. He considered what he could do and was about to hurry from the building when the disturbance ceased. Hanging electric lights were set to swinging violently and furniture was moved.

Tom Bowen, who lives at 667 East Third South, felt the shock and noticed that the glass in his front windows was cracked. The girls in the exchange of the Independent Telephone company felt the building shake, and were with difficulty restrained from rushing from the structure. Messages were sent at once to the offices of the fire

department, asking if an explosion had occurred there, as the place is immediately in the rear of the exchange building.

Mrs. Frank Latier, who occupies apartments at 142 East First South, just over the offices of the Wagener Brewing company, was playing at the piano in her rooms, felt the shock and noticed glass vases on the table rocking. Thinking that the safe in the offices below had been blown open, she rushed downstairs and called to the firemen seated in front of the station, asking if they had heard anyone in the offices or if they had seen anyone coming from the place.

Dr. Beatty was attending a patient in the Colonial flats at 453 East Third South street, when he felt the bed shake and chairs about the room rattle. Ivor Redman at 548 East Seventh South, thought the house was falling down. Articles of furniture were moved and bric-a-brac fell from shelves. People at 527 East Fifth South street felt disturbances for the first time at 7:42, when there were three shocks of a second's duration. Things were badly shaken up and articles of furniture moved.

E. W. Taylor, at 962 East Second South street, reported two distinct shocks, the first at 7:39 and another at 8:24. Judge Powers, at his home, "Lingerlonger," at the end of the Third avenue car line in Newhouse park, reported shocks at 7:40 and at 8:20. People at 654 East Sixth South street and at 252 East Fifth South street, reported very perceptible movements at 8:24. Reports of disturbances were received from W. R. Duval on Sixth East between Third and Fourth South streets, and the people at 443 East First South reported a distinct shock.

Reports from Ogden stated that two distinct earthquake shocks were felt during the evening at that city and at other points in Weber county. The first shock was at 7:40 and lasted about thirty seconds. The second was at 8:20 and continued for fully one minute. Residents on Nob hill, just east of the city, said that both shocks were so severe that flower pots were shaken from the shelves. Telephone messages from West Weber and Plain City say that shocks were felt there also.

**[Salt Lake Tribune; October 6, 1909]**

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## COUNTY IS VISITED BY EARTHQUAKE

Did you notice the earthquake shock on Tuesday evening? We didn't, but there are hundreds of citizens hereabouts who did, and who are very certain of that fact. The shock occurred a little before eight o'clock and in some parts of the city was pretty severe. In direction it seemed to extend from Southwest to Northeast and was most distinctly felt in the Second, Third and Fifth wards. In those localities it was sufficiently severe to rattle the dishes and spill water from wash basins. Some persons were rendered bilious by the shaking and in two or three instances people were terrified. One lady became so frightened that she ran a couple of blocks to the home of a relative, clad in her night clothes only.

In Millville, Wellsville, Cache Junction and other parts of the county the shock was distinctly felt and further north in Preston and Dayton the jarring was heavy and accompanied by a distinct rumbling noise. In Brigham, Ogden, and Salt Lake the shock was felt too.

**[The Journal (Logan, UT); October 7, 1909]**

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