

## Summary of Newspaper Articles

### Deseret Evening News – Salt Lake City, UT (last date searched 06/03/1910)

Headline: [Three Earthquake Shocks Sway Beneath Salt Lake](#)  
Date: 05/23/1910  
[Info Categories:](#) B, E, N, P, S

Headline: [Gas Mains On Ninth East Leaking Like a Sieve](#)  
Date: 05/23/1910  
[Info Categories:](#) L

Headline: [Tremblor Incidents Tersely Told](#)  
Date: 05/23/1910  
[Info Categories:](#) E, G, H, N, P

Headline: [Record Of Calls On Telephone Exchanges](#)  
Date: 05/23/1910  
[Info Categories:](#) I, P

Headline: [The Earthquake \(editorial\)](#)  
Date: 05/23/1910  
[Info Categories:](#) S

Headline: [Shook Out Good Collection](#)  
Date: 05/23/1910  
[Info Categories:](#) H, P

Headline: [Tremblor Awakens Residents This Morn](#)  
Date: 05/25/1910  
[Info Categories:](#) E

Headline: [Another Tremblor Felt This Morning](#)  
Date: 05/23/1910  
[Info Categories:](#) E

Headline: [The Daily Shake](#)  
Date: 05/26/1910  
[Info Categories:](#) E

### Ogden Morning Examiner – Ogden, UT (last date searched 05/27/1910)

Headline: [Earthquake in Salt Lake City](#)  
Date: 05/23/1910  
[Info Categories:](#) E, N, S

**Ogden Standard – Ogden, UT (last date searched 05/28/1910)**

Headline: [Earthquake In Salt Lake](#)  
Date: 05/23/1910  
[Info Categories:](#) S

Headline: [Earthquake In Salt Lake City](#)  
Date: 05/23/1910  
[Info Categories:](#) B, E, P

Headline: [Growing Rather Serious](#)  
Date: 05/24/1910  
[Info Categories:](#) E, H

**Salt Lake Telegram – Salt Lake City, UT (last date searched 05/29/1910)**

Headline: [Earthquake Scares Some Salt Lakers](#)  
Date: 05/23/1910  
[Info Categories:](#) B, E, N, P

Headline: [Seismograph Records No Additional Temblors](#)  
Date: 05/23/1910  
[Info Categories:](#) S

Headline: [Geologist At University Discusses Recent Temblor](#)  
Date: 05/23/1910  
[Info Categories:](#) S

Headline: [The Earthquake \(editorial\)](#)  
Date: 05/23/1910  
[Info Categories:](#) E, P

Headline: [Slight Tremor Of Earth At Brighton](#)  
Date: 05/25/1910  
[Info Categories:](#) E

**Salt Lake Tribune – Salt Lake City, UT (last date searched 06/02/1910)**

Headline: [Salt Lake Is Rocked By Earthquake](#)  
Date: 05/23/1910  
[Info Categories:](#) E, H, N, P, S

Headline: [Quakes Discussed From Scientific Standpoints](#)  
Date: 05/23/1910  
[Info Categories:](#) S

Headline: [It Was Straight Business](#)  
Date: 05/23/1910  
[Info Categories:](#) E

Headline: [Another Earthquake Shock Felt Monday](#)  
Date: 05/24/1910  
[Info Categories:](#) E

Headline: [No Damage Done](#)  
Date: 05/24/1910  
[Info Categories:](#) E

Headline: [Trumpet Of Moroni Is Jarred By Quake](#)  
Date: 05/25/1910  
[Info Categories:](#) N

Headline: [This Man Knows Wasatch Fault](#)  
Date: 05/26/1910  
[Info Categories:](#) S

## 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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**THREE EARTHQUAKE SHOCKS SWAY BENEATH SALT LAKE CITY  
FOR TWO MINUTES SUNDAY MORNING  
Experiences Most Severe Tremblor In Its History  
Not Much Damage Done But Plenty Of Excitement While It Lasted  
Prof. J. Fred Pack Tells The Causes Of The Disturbance**

**FAULT PLANES RESPONSIBLE FOR QUAKE**

Three distinct earthquake shocks were felt in Salt Lake Sunday morning. No damage was done aside from the breaking of some dishes in residences and the cracking of plates in houses and business blocks. Salt Lake was the center of the disturbance which was felt throughout the valley more or less.

The quake is attributed to the slipping of a huge crustal block along the base of the Wasatch range.

Dr. James E. Talmage in an interview printed in the Deseret News at the time of the San Francisco earthquake foretold just such a tremblor, a recurrence of which may happen at any time in the future.

Swaying and tottering as if shaken in the convulsive grip of an all-powerful but hidden force, and sending its inhabitants into a panic of apprehensive fear, Salt Lake for two minutes yesterday morning was rocked about in the tremors of the most severe earthquake in its history.

There were distinct shocks felt and recorded by the seismograph at the University of Utah, the first at 7:28 a.m., with a duration of 2 minutes, 10 seconds; the second at 8:38 a.m., lasting 20 seconds and the third at 11:26 a.m. continuing 20 seconds.

Salt Lake was the center of disturbance, and few nearby towns reported the shocks.

Although the first shock came with startling suddenness, and was of sufficient severity to sway and rock buildings and houses in all portions of the city, practically little damage resulted and there was no serious loss reported. Here and there in different sections of the city plastered walls showed cracks, mirrors were broken and in some instances chimneys toppled down. In the downtown buildings no damage was reported at all, and the worst effect of the quake was upon the nerves of those awakened from their sleep in startling fear at the strange rumbling and uncanny sensation of the rocking floor, heightened in its effect by the jangling of dishes and the kitchen ware.

At the hotels the excitement reached its height when the guests scurried through the hallways, in a panic of dread, and wondering what had happened. In several instances the fire escape was resorted to, but after the shaking had subsided the fears of the guests were soon allayed by the clerks.

The second and third tremors were barely noticeable as compared with the first and were not felt by many.

To the slipping of a huge crustal block along the base of the Wasatch range, a fault plane, is attributed the earth's disturbance of yesterday, and a recurrence of which may be expected in the future according to scientists.

**Record at University**

According to Prof. J. Fred Pack, the disturbance was entirely local with the centrum almost directly under the University grounds. In the three shocks and waves ran from northwest to southeast.

"The interior disturbance must have been decidedly violent," Dr. Pack said, "as the needle of the seismograph after being driven fully three inches off its tangent did not swing back like a pendulum, but was held to one side from its starting point.

"Salt Lake is the center of an earthquake zone, and we may expect recurring disturbances from time to time. The disturbance Sunday morning may be directly traced to the moving of great fault planes or rock ledges extending along the western slope of the Wasatch range. The ledge, which extends over 100 miles, is a formation distinctively conducive to disturbances.

"Never in the history of the city, or at least since the seismograph was installed, has there been such a distinctly local shock, though such shocks have been experienced elsewhere.

### **Same as San Francisco**

"Of the two conditions, volcanic activity and land mass readjustment, which are generally responsible for earthquakes, the latter was responsible for the shocks of Sunday forenoon. The same condition was responsible for the San Francisco earthquake. This section of the west has the advantage, however, over that part of the earth on which San Francisco is located, in that it passed through the worst stages of land mass readjustment several thousand years ago. The coast line is subject at any time to serious crustal slips.

"Other shocks in this section will undoubtedly follow in the future, though I am not apprehensive of any extreme danger from the land mass readjustments.

"Oftentimes one of the two conditions I mentioned may be entirely responsible, but not infrequently disturbances may be traced back to a combination of the two. The terrible disaster of a little over a year ago, in Calabria and Sicily, appears to have been the result of a sudden readjustment of the earth block separating the two, which was undoubtedly influenced by the presence of Vesuvius, Aetna and the Laparian volcanoes, immediately to the northward. The almost complete destruction of Charleston several years ago seems to have been the result of tectonic activity alone. The Japanese islands have suffered largely by a combination of the two causes. The lesser Antilles are frequently disturbed by earthquakes originating solely through vulcanism.

"The Salt Lake valley was formed not by erosional activity, but by crustal movement, which brought the Wasatch mountains to the eastward to their present elevation."

### **Many Small Slips**

"Clarence King, at one time director of the United States geological survey, has estimated that the great throw at the western face of the Wasatch mountains aggregated 4,000 feet. This displacement, it will be remembered, is not the result of a single slip, but in all probability the result of many, many smaller ones. And again erosional activity acted contemporaneously with the deformation and faulting processes; so that now many of the Basin range mountains have lost the true external evidence of their block nature. The city of Salt Lake is situated immediately west of this great plane and directly upon one of the down thrown blocks which is now covered by alluvium washed from the surrounding hills. The old escarpment, or face, left through faulting in many places, still stands out precipitously, such as, for instance, directly east of Provo, and east of Willard City, while at other places this great fault scarp has been much

eroded and occasionally almost effaced. Movement along this great fracture has continued up to the present.

### **Recent Slips**

"Evidence of recent slipping along this old Wasatch fracture may be seen at almost every point from Collinston on the north to Nephi on the south. In point of intensity the disturbances caused by the slipping of the great Wasatch block has likely no parallel within the history of the human occupancy of America. The greatest throw shown in the San Francisco earthquake amounted in no case to more than two feet; a fact which, when compared to the local fault escarpment, may give some clue as to the intensity of the wave set up by the latter. From the standpoint of years, it is scarcely possible to arrive at the date of this recent occurrence, but it can be said, and that most emphatically, that it was very recent compared with other important geological phenomena of this valley, and from the standpoint of the geologist we are not prepared to state that this slipping is entirely a thing of the past.

"There is no occasion for alarm, however. In the disturbance of Sunday it is probable that the slipping of the crustal block was not more than an inch or so. So long as the readjustment of the crustal block goes on we are bound to have shocks."

**[Deseret Evening News; May 23, 1910]**

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## **GAS MAINS ON NINTH EAST LEAKING LIKE A SIEVE**

One costly freak of the quake was the separation of the joints in the large gas main on Ninth South, between Eighth East and Second West. These were tested on Saturday and found to be all right. This morning they were tested again and found to be leaking like a sieve.

**[Deseret Evening News; May 23, 1910]**

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## TREMBLOR INCIDENTS TERSELY TOLD

The Western Union and Postal telegraph companies report no damage to line or instruments.

At Saltair the only damage was a smashing of dishes in the restaurant and the cracking of two mirrors in the Mystic Maze.

At the residence of Mrs. S. A. Bitner on Center street the house rocked back and forth and pieces of plaster fell into the sitting room.

Richfield, Park City, and Manti are out of the false escarpment zone and the inhabitants were not treated to even sympathetic tremors.

DeWitt B. Lowe, at the Touraine hotel, says the Japanese light over his bed oscillated to and fro in a most tantalizing manner.

The disturbance was distinctly felt at the state prison, but the calm reflections that obtain there from day to day, were not disturbed.

Colonel P. W. Somers was sitting on his bed at 325 Fifth East street, and declares that things got decidedly lively in his room for a minute.

At Fort Douglas no damage is reported, but the shock was distinctly felt.

The sisters and attendants at the Judge Mercy hospital report that the building rocked perceptibly for some time but no damage resulted.

The Webster school house was so shaken that the flagpole swayed to and fro, the motion being exaggerated by the waving of the ball on the top.

While the shock was very apparent at Garfield, Manager Whitley of the smelters reports that no damage was done and operations were not interfered with.

All along the north and east benches buildings were shaken, windows rattled and curtains flapped as if struck by a sudden gust of wind, but no damage was reported.

The earthquake jarred down two piles of bookcases in the Deseret News bindery on the sixth floor of the annex and scattered them over the floor in confusion.

Immediately after the earthquake yesterday a large artesian well owned by Mrs. Ellen Knowlton at Kaysville, which had been dormant for a year or so, started in full force.

The News correspondent at Grantsville writes that the shock was distinctly felt in Tooele county with the accompanying rattle of dishes, but otherwise there was no damage.

J. B. Snyder, who sleeps on the top floor of the Boston building, says his clock stopped at 7:27 a.m.; that he was rudely awakened and that the building swayed perceptibly.

At the Buena Vista race track, two horses are said to have broken out of their stables, adding to the excitement of the men, who made a break for the open. No damage was done.

A Fifth ward youngster who was awakened by his mother's scream from the next room rushed down stairs shouting, "Daddy, the folding bed's shut up with Mamma in it."

Julian Riley, U.S. deputy marshal, who lives at Sixth South and Fourth East, says the folding doors in his home rattled loudly and the chandeliers vibrated in an astonishing manner.

Col. J. F. Conroy of Los Angeles was at the Knutsford and felt the shock. He says at exactly the same hour of the day, a week ago in Los Angeles he had a shaking up that he won't soon forget.

One guest at the Cullen hotel was preparing to jump into his tub of water for his morning ablution, but when he saw the water in the tub begin to dash to and fro, he changed his mind and retired.

The American Sunday School Union chapel at Fifth North and Oakley avenue, was badly shaken, the plaster being jarred from the interior onto the floor, where the books of the library were thrown also.

The elevator operator in the Deseret News annex on starting up his cage found a scrub woman on the fourth floor on the verge of collapse. The shake had tipped her bucket over and she was too scared to run.

Samuel Kelsey, janitor of the Tribune building, says he saw the buildings on Second South, near State sway to and fro, and he wonders that some of the old buildings near the corner did not collapse.

In the kitchen of the Schramm-Johnson restaurant on the ground floor of the Boston building, the employees had just reported for duty, when the shock came and they all rushed out into the street.

William Johnson, a fruit man of Corrine, was at Garfield. He says the smelter drug store was hardest hit; that mirrors were cracked, bottles broken on the shelves and the contents ran together in pools on the floor.

At the Oregon Short Line depot in this city the shock was distinctly felt. In the ticket office the plaster on the walls was badly cracked and a portion of it fell, but no damage was done to the handsome rotunda in the main waiting room.

W. R. Clark, proprietor of the Sugar Ward drug store, was shaken out of bed by the quake. Several bottles of perfumery and other toilet articles were tipped over by the vibration, but no damage to amount to anything was reported.

The clock in the local United States weather bureau situated on the top floor of the Boston building, was stopped by the quake. The eleven-story building was felt to sway back and forth distinctly, stopping the government clock at 7:27 a.m.

J. S. Morgan, stamp clerk at the post office, who lives near Second West and Third North, was looking out of the window when the shock came. He feared a house across the street would collapse. There were several distinct shocks.

Members of the Commercial club declare that the shock at that building was so severe that had the rooms been filled with guests as they are often in the evening, they fully believe the floors would have given way, precipitating a disaster.

A resident on Third avenue was nearly thrown out of bed. The good wife, thinking her husband was having a chill, started for the medicine chest, but when she felt the house rocking she suddenly changed her mind and gasped "The comet."

J. R. Letcher, clerk of the U. S. District court, whose home is at Tenth East and Sixth South streets, was sprinkling his lawn at the time. He did not notice it, but his wife came rushing out of the house declaring the building rocked violently.

People had all sorts of stories to tell during the day of being awakened rudely from "Sunday morning snoozes;" in fact it may be asserted without fear of contradiction, that there were more early Sunday breakfasts than ever before in the history of the city.

S. B. Ricaby, who recently came to Salt Lake as publicity agent of the Commercial club, was in his room on the top floor of the Knutsford, when the shock knocked a bottle of Florida water off the dresser, breaking with a crash on the floor. Nothing else in the room was disturbed.

Building Inspector A. B. Hirth reports no special damage to the houses of the city, the rocking motion having been comparatively short. "It awoke me and I thought somebody was shaking me violently. My house was shaken so violently it made the weights rattle in the casings," he said.

Mrs. L. K. Demus of California, residing at 39 D street, stated that she has felt many shocks in California, but the one Sunday morning was the most severe she had ever felt. Mrs. Demus said it was difficult for her to keep her feet. Glasses were thrown from a table and dishes rattled.

A man owning some chickens at the rear of the Moxum claims when the birds felt the shock they began pecking into the soil, endeavoring to hide their heads from the pending danger, which they seemingly felt, and that they got their wings close to the ground and their cackling ceased.

A baker who was on his way passing through the city and county building grounds, looked at the big clock to see what time it was, and when he looked he forgot all about the time. The big tower was swaying back and forth. The baker rubbed his eyes and looked again and the swaying motion continued.

People who passed through the earthquake at San Francisco and felt the shock yesterday morning said that there was little difference in the violence of the shocks, but the ones which destroyed a great portion of the coast city were deeper than those at Salt Lake and hence more destructive.

At police and fire headquarters there was considerable excitement, as a brick chimney on the police station house fell with a crash, the brick tumbling between the station and the Y. M. C. A. building. Several of the men ran out of the buildings and many of them thought the comet had struck the earth.

Except for being shaken up a little resulting in some nervousness among the patients, the inmates of the local hospitals were not greatly disturbed by the shocks. No damage was reported from the institutions. St. Mark's was an exception to the rule, the patients there becoming alarmed and hysterical.

Only slight indications of the shock were felt at Ogden. Several parties on the east bench noticed slight tremors about 7 o'clock in the morning, two of these being distinct enough to be classed as shocks. About the vicinity of the union depot, however, and the lower part of town there was no indication of the quake apparent.

Declaring the vibrations were so bad that the water slopped over in her pail, Mrs. Leslie, who is employed at the city and county building, who was on the fourth floor when the first shock came, does not care to have her experiences repeated. C. F. Fisher, watchman, who was in the basement at the same time, failed to notice the wave.

At Midvale the foreign element, which occupies rude shacks and frame huts, ran screaming into the open when the earthquake began to shake things up yesterday morning. At Sandy the shock was also distinctly felt, many believing that the comet had at last come in contact with the earth. The shock was said to be only slightly felt at Murray.

One of the amusing incidents reported in connection with the quake was the experience of C. O. Farnsworth, clerk of the city board of health office. Mr. Farnsworth was seated at the breakfast table at the time of the shock, and was just in the act of elevating a cup of coffee to his lips, when the quake came and the coffee was thrown out of the cup.

Bingham was not slighted in the matter of the earthquake visitation, as quite a heavy shock was distinctly felt there at 7:30 yesterday morning. In some places the shaking was so vigorous that people became alarmed, and rushed out of their doors into the streets. No damage is reported at the mines, although the buildings rocked and the timbers creaked, and no shutdown were necessary.

There was a great aggregation of "cullud pussons" in exodus from the colored quarter immediately after the quake, not a few believing the end of the world had come, while some thought the comet had struck the earth. The orientals of Plum alley were also deeply affected, and the people from Sunny southern Europe on the west side fled from their domiciles in dismay to take refuge in the street.

There was some excitement at the residence of L. E. Camomile, 1090 Ninth East street, Sunday morning. Two sons who sleep upstairs were taking their usual Sunday morning sleep when the tremblor came. Simultaneously both boys sat up in bed and glared at each other. "Quit it," cried the one as the other yelled "You cut that out." Then hostilities started. Each thought the other had been taking an unfair advantage.

Along the Jordan bottoms southwest of town, the earliest shocks was severe enough to shake loose bricks from chimneys, and was there accompanied by an ominous and awe-creating rumbling. An open flowing well on Cannon farm spouted 30 feet high in air during and for five minutes after the tremblor; chickens squawked, children screamed and a flock of motherless lambs plunged in terror into the dark muddy waters of a local carp pond.

Most of the large clocks in the jewelers' windows were stopped by the earthquake. Some of the timepieces stopped as early as 7:15 a.m., but the majority of them registered between 7:25 and 7:30 when they were brought to a standstill by the quake shocks. This difference is accounted for by the statement made that some of the clocks may not have been just right, while others went on ticking some minutes after the quake took place. Some clocks did not stop at all, while most of the small clocks of the alarm variety went on about their business of recording time as if nothing out of the ordinary had happened.

The theorists who explain that the temperature of the Hot and Warm Springs is maintained by the friction of underground rocks slipping over each other in the geological readjustment continually going on, received no comfort or support from the big shake. The flow of water was not affected, the temperature remained unchanged, the odor was neither more nor less sulphurous than usual, nor was the water even the least bit roiled.

Reports from points over the state show that the shock was distinctly felt at Nephi, Bingham and Tooele, while no shocks were felt at Richfield, Brigham City, Park City, Manti and only slight tremors at Ogden. Plaster was shaken from the ceilings at Tooele. The shock at Nephi was distinctly felt at about 7:30 a.m. The town is at the end of the great false escarpment that extends from Collinston on the north along the base of the Wasatch mountains southward to Juab county. Houses were rocked by the earth tremors, plaster was shaken from the ceilings and bric-a-brac was thrown about the rooms.

Miss Mabel Henderson, daughter of H. A. Henderson, who is at the Cullen hotel, created a stir among the guests. When roused by the shock she went screaming down the hall, clad in night clothes only, and pounded furiously at a score of doors desiring to

give the occupants a last opportunity to up and flee for their lives. The father was awakened by the girl, leaped from his bed and pursued his daughter down the hall, and presently had her safely back in her own room. As a result of the shock, Miss Henderson is now confined to her room suffering from nervous prostration. These people passed through the terrors of the San Francisco disaster.  
**[Deseret Evening News; May 23, 1910]**

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## RECORD OF CALLS ON TELEPHONE EXCHANGES

The telephone offices had peculiar experiences, doing "a land office business" pretty much the entire morning. The Bell building is one of the strongest in town, of reinforced concrete, but it shook with an undulating movement, as the floor seemed to move under the high chairs of the operators, while the great switchboard appeared to make a bow to the girls. The day shift had just come on deck, and the girls were badly frightened. There was an unpremeditated rush for the stairs, but the local officials in charge and the older girls retained their heads, and the exodus was speedily recalled as it was realized there was really no occasion for danger. The day operators took their places, as quiet was restored, and the entire switchboard became a blaze of light, with "everybody in town" wanting to know right off all about it. It is claimed that 5,000 calls were sent in within 20 minutes after the shock. As the Sunday force is much smaller than the regular business day force, anything like prompt service was a physical impossibility. So the information and chief operators and such men clerks and officials as were in the building took their places at the board to help out. The addition of men's voices to "Central" produced some confusion in the minds of "anxious inquirers" who thought others on their party lines must be talking also, and refused to be convinced. Then such queries were heard as "has the earthquake changed your voices to men's?" "They've got boys as operators now," etc.

At the Independent Telephone office pretty much the same experiences were recorded, only the local officials claim that although the girls were terribly frightened, they "stuck to their posts." Immediately the force was worked as never before, being fairly swamped with calls. Some were facetious, wanting to know if the change in shifts was usually accompanied by seismic phenomena, and was the earthquake due to the general superintendent getting out of bed too early Sunday morning? Both companies were kept busy until a comparatively late hour in the day, replying to the rush of calls, and when the night shift of operators came on, the day force retired worn out. The building of the Independent company, like the Bell's, is of reinforced concrete construction, practically earthquake proof, as well as fireproof.

**[Deseret Evening News; May 23, 1910]**

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## THE EARTHQUAKE

The earth tremors experienced here Sunday morning, though not severe enough to cause any really serious damage, was a gentle reminder of the instability of all earthly things. A great many people were frightened.

The most acceptable explanation of the cause of the tremor is that given by local scientists who tell us that the earth strata are slipping along the very steep western slope of the Wasatch range. A similar explanation was offered for the San Francisco earthquake in 1906. This started from a crack which extends from the mouth of Alder Creek, near Point Arena, running parallel with the coast line mostly inland, then entering the sea near San Francisco and turning again inland between Santa Cruz and San Jose, finally proceeding via Chittenden up to Mount Pinos, a distance of about 400 miles. Along this crack the two masses of the earth were displaced so that the ground situated to the southwest of the fissure was moved about 10 feet toward the northwest. The tremor here was nothing compared to that of California. But it was a reminder of the possibilities of the region.

Worlds like individuals are subject to changes. They may come suddenly, or they may take place gradually.

The earth has reached a period of its development when the fused matter in the interior has ceased to expand and to explode the shell, as was the case in earlier stages of its existence. The interior of the earth is contracting and the shell is consequently falling. This causes a wave-like action in the surface, sometimes for many miles in extent. The loose strata of the earth naturally adjust themselves to the movement of the shell. The great earthquakes of 1884 and 1886, at Long Island and Charleston, are instances of such contractive earthquakes. Sometimes the earth, at the center of seismic disturbances has fallen as much as 18 inches. The earth crust has broken and the fused matter of the interior has forced itself up through the fissure, as the contents of an egg oozes out from a crack in the shell. Since 1872 there have been considerably over 1,700 severe earthquakes and tremors in the various parts of the world, and the number seems to be increasing yearly. The interior is rapidly parting with its heat, and the globe is gradually shrinking.

No country is absolutely free from earthquakes. Where, however, the crust of the Earth has been lying undisturbed for long geological epochs and has not been fractured, they generally prove harmless. There are certain earthquake centers, the most important comprising India, the Sunda Isles, Northern Guinea and Northern Australia. Another center comprises the most important fold in the crust of Old World, including the mountains from the Alps to the Himalaya. Other centers are situated near the lines of fracture in the crust along the American west coast and the Caribbean sea.

Earth tremors are a great deal more frequent than people generally are aware of. Many are never reported. In March 1868 there were more than 2,000 tremors in Hawaii. In Greece, in 1870-73, about half a million shocks occurred, of which only 35 were deemed important enough to report to the public. The San Francisco earthquake lasted for days. Twelve smaller shocks followed the first, during the first hour and during the next hour there were nineteen more, and for days afterwards smaller disturbances were felt.

Everything is in commotion and it is well to be reminded of this fact occasionally lest we should fall into the error of skeptics and assume that everything remains as it was from the beginning.

**[Deseret Evening News; May 23, 1910]**

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## SHOOK OUT GOOD COLLECTION

The Salvation Army speakers took advantage of the presence of the comet and the morning's occurrence of the earthquake as object lessons in their street preaching Sunday. The hat contributions were unusually large.

**[Deseret Evening News; May 23, 1910]**

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## **TREMBLOR AWAKENS RESIDENTS THIS MORN**

### **Reports From Pleasant Green Of A Definite Shock Shortly After Midnight**

Reports received from two separate localities in this county as to a distinct shock of earthquake at about 12:30 this morning lack confirmation so far as the University of Utah seismograph is concerned. Prof. Pack declares there was no disturbance indicated by the instrument, though the delicate machine was a little unsteady for about an hour and a half during the earliest part of the morning.

Nevertheless there are those who insist there was a definite shock or shudder, short of duration but severe, according to reliable though non-scientific observers west of this city. One man reports that he had just returned to his home and was sitting reading when the shock came. His daughter who had gone to her room, and was about to retire, screamed with fright as the house quivered. From Pleasant Green also comes news of an unmistakable tremor noted by the various residents. All reports as to the time and nature of the shake agree so exactly that the fact of its occurrence appears to be proved, the seismograph to the contrary notwithstanding.

W. S. Reid of Pleasant Green stated this morning that he was about to retire when the quake came, shaking the house and making the dishes rattle. His brother George A. Reid also stated over the telephone that he was awakened by the house rocking and windows rattling. His neighbors on comparing notes this morning told of similar experiences.

**[Deseret Evening News; May 25, 1910]**

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**ANOTHER TREMBLOR FELT THIS MORNING**  
**Seismograph Registers A Slight Quake At 8:45 A.M.--W. N. Anderson First To Identify It**

The seismograph at the university registered another earthquake shock at 8:45 this morning. Dr. Fred J. Pack, geologist at the university, stated that the record was of exactly the same type as those of 11:24 and 8:38 a.m. yesterday.

The shock was first reported to the Deseret News by W. N. Anderson, bailiff in the U. S. marshal's office, and although there are many who did not feel the shock there are others, generally calm and truthful, who are positive about it, too.

Mr. Anderson has had previous earthquake experience, notably in South Carolina. He was in that state when the great catastrophe occurred which wrought such havoc in the city of Charleston, and caused the loss of so many lives. On that occasion numbers of people were literally shaken to death--that is, fright or some other mental shock so overcame certain sufferers from heart trouble that they fell down and died without any external evidence of injury whatever.

Mr. Anderson was 300 miles from Charleston when the tremblor burst upon that devoted town. He recalls distinctly that for 16 minutes before the earth began to shake in his locality, the rumbling approach of the horror, ever drawing nearer and nearer, was to be heard. The fact that the quake of yesterday came heralded by no such preliminary warning, the rumbling and the shake being simultaneous, indicates that the disturbance was purely local.

**[Deseret Evening News; May 23, 1910]**

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## **THE DAILY SHAKE**

### **Two Slight Tremblors Noted During Night--No Damage**

An earthquake shock was felt at 12:06 o'clock this morning which lasted for several seconds. In some parts of the city residents were awakened by the rattle of doors, windows and dishes. The shock was quite severe at Garfield and Pleasant Green and a number of other places.

Another slight disturbance was noticed about an hour later. It was only a tremor and few people felt it.

Dr. Pack, geologist at the University of Utah, stated that the official time, as shown on the record, of the quake was 12 [hours] 8 min., 8 secs. a.m. There was only one tremor, he declared, making five recorded since Sunday morning.

**[Deseret Evening News; May 26, 1910]**

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## **EARTHQUAKE IN SALT LAKE CITY**

### **Severe Shock Does Damage In Vicinity Of Utah Capitol**

SALT LAKE CITY, May 22--The Sunday morning slumber of this city and immediate vicinity was disturbed this morning by a violent rocking of the earth which lasted apparently about two seconds although the seismograph at the state university recorded a disturbance of thirty seconds.

The earthquake was quite sharp and caused considerable damage to crockery, chimneys and old adobe house.

The tremor was local in extent, being confirmed with in a radius of 50 miles.

Some damage is reported from the town of Bingham and Garfield. The shock occurred at 7:28 a.m. and was followed by two other shocks, one at 8:38 a.m. and the other at 11:24. Both were barely perceptible.

#### **Recorder in East**

LAWRENCE, Kas., May 22--The seismograph at the University of Kansas recorded an earthquake shock this morning from 12:37 to 2:15 o'clock.

Professor H. P. Cady, who observed the movement said:

"The quake appeared to be about 2,000 miles distant. It had all of the characteristics shown by the recent disturbance in Costa Rica."

SALT LAKE CITY, Utah, May 22--Local scientists say that the shock was caused by the slipping of a great fault scarp at the base of the Wasatch mountains east of the city. When this movement is completed it will be after further slight subsidence, no more quakes will originate in this valley.

**[Ogden Morning Examiner; May 23, 1910]**

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## EARTHQUAKE IN SALT LAKE

Students of the geological formation along the west side of the Wasatch range are agreed on the cause of the earthquakes which now and then add to the novelty of life in this region and occasionally, as in Salt Lake City on Sunday morning, break the monotony with intense excitement, but Charles Johnson of Salt Lake, in his conclusions as to what might happen, is quite the most candid prognosticator of the direful. He says: "The great fault scarp at the mouth of Cottonwood canyon, near Salt Lake, which I photographed seven years ago shows conclusively that this valley was the scene of a very violent earth convulsion. The comparatively small shocks experienced during the last ten years and the more violent one of Sunday morning tend to show that the readjustment is not yet complete, and I believe that we will experience a very severe shock before the crust of this portion of the earth will be in normal position.

"My view is that in the age when the great quake came here the old Lake Bonneville largely sank into the earth and, heated by subterranean fires, escaped in south Utah.

"In Millard and Washington counties are countless evidences of volcanic activity. The craters and bubble holes yet remain as evidence.

"The long series of shocks that took place in this portion of southern Utah ten years ago show that the readjustment was then taking place.

"It is hard to estimate these things from the standpoint of time, but I believe that another readjustment of the crust in this valley will make us safe for a thousand years."

"Another readjustment" and then stability for 1,000 years! The promise of the long period of quiet offers consolation to those who are to experience "a very severe shock" before the crust of the earth rests from its labor of readjustment.

United States geologists have advised, in the past, that houses along the faulting of the Wasatch range be not more than two stories, if built of brick, as they recognized in the great fault scarp to the east of Ogden, Salt Lake, Provo and other cities at the base of the mountains an unsettled condition of the earth's crust.

If the earth slips are gradual, the readjustment will be almost unnoticed, except where a place is located directly over the source of the tremors as was Salt Lake City during the crustal disturbance of Sunday morning.

Of course, the earth shocks of Sunday may be preliminary to greater shocks in that city. There are no means of determining how extensive these movements will be.

Dr. Fred J. Pack of the University of Utah quotes Clarence King, of the United States geological survey, as saying:

"Clarence King, at one time director of the United States geological survey, has estimated that the great throw at the western face of the Wasatch mountains aggregated 40,000 feet. This displacement, it will be remembered, is not the result of a single slip, but in all probability the result of many, many smaller ones. And again erosional activity acted contemporaneously with the deformation and faulting processes, so that now many of the basin range mountains have lost the true external evidence of their block nature. The city of Salt Lake is situated immediately west of this great plane and directly upon one of the down thrown blocks which is now covered by alluvium washed from the surrounding hills. The old escarpment, or face, left through faulting in many places, still stands out precipitously, such as, for instance, directly east of Provo, and east of Willard City, while at other places this great fault scarp has been much

eroded and occasionally almost effaced. Movement along this great fracture has continued up to the present.

"Evidence of recent slipping along this old Wasatch fracture may be seen at almost every point from Collinston on the north to Nephi on the south. In point of intensity, the disturbances caused by the slipping of the great Wasatch block has likely no parallel within the history of the human occupancy of America. The greatest throw shown in the San Francisco earthquake amounted in no case to more than two feet; a fact which, when compared to the local fault escarpment, may give some clue as to the intensity of the wave set up by the latter. From the standpoint of years, it is scarcely possible to arrive at the date of this recent occurrence, but it can be said, and that most emphatically, that it was very recent compared with other important geological phenomena of this valley, and from the standpoint of this geologist we are not prepared to state that this slipping is entirely a thing of the past.

**[Ogden Standard; May 23, 1910]**

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**EARTHQUAKE IN SALT LAKE CITY**  
**Many Buildings Damaged By The Severest Shock Ever Felt In Utah**  
**Large Structures Sway Perceptibly--Hotel Guests Frightened**  
**Chimneys Knocked Down--Excitement Intense**

Yesterday morning Salt Lake swayed and rocked, tall buildings wavered, windows and doors rattled, clocks stopped, and Mother Earth was menacingly unsteady. Then the rumblings ceased, the buildings stood still, hearts that seemed for the time to have ceased beating thumped with hope again--and the Utah capital's first big earthquake was a thing of the past. The shock lasted two minutes and fifteen seconds.

Two subsequent shocks were of less violence.

The earthquake was, according to the best of authority, the shifting of a gigantic earth block almost directly under the city.

The first shock came at 7:28, the second at 8:38, and the third at 11:26, the last being barely perceptible.

The center of the disturbance was Salt Lake. Other sections of the state suffered but little. The total property loss in Salt Lake probably will be heavy, comprising numerous minor damages. City Building Inspector A. B. Hirth says the solid construction of the local business blocks undoubtedly saved them from serious damage or from destruction.

Salt Lake's panic, while it lasted, was widespread. Hotel guests rushed frantically from their rooms and down stairs, many being restrained by force from descending fire escapes. The few Sunday morning occupants of the big down-town buildings--mostly janitors and scrub women dashed in terror into the streets. Slumberers in the residence districts, rudely awakened by the first shock, hastened out of doors.

Roy Worthington, an employee in the business department of The Tribune, was just coming to work when the convulsion of this portion of the earth occurred. When the shock became apparent, Mr. Worthington was in front of Gardner's store on Main street, a few doors north of The Tribune building, he says, "I heard the windows in the Gardner store creaking and twisting it seemed to me, and then looking up at The Tribune building I could see the top of it a kind of swaying, it looked as if the cement or plaster was breaking loose from the brick. There was dust coming out in clouds from the side of the building. Everybody on the sidewalks ran to the middle of the street. Many of those who were in the restaurants rushed into the street with the napkins still adorning them--the meal was forgotten, they were seeking a place of safety in the middle of the street. As I was running across the street I bumped into a pole. I was trying to get away from the large window in the office. Of course I do not know whether it was the earthquake shock that threw me against the pole or whether it was in my hurry to get away from the window that I came in contact with the post. But from the Brigham Young monument down to Third South on Main street it seemed as if everyone in the buildings had fled to the street."

**Thought Fire the Cause**

At the Wilson hotel many of the guests were of the opinion that the hotel was on fire. At the Knutsford the majority feared that a boiler had exploded. At the Semloh, Kenyon, Moxum and Cullen the guests were at a loss to figure out just what had happened. Some thought Halley's comet had struck the earth, others remembered the recent



explosion of dynamite at Beck's Hot Springs, and some few suspected an earthquake. H. M. Hawkins was in charge of the Knutsford when the first shock was felt. Mrs. Nellie Shoudy and Mrs. Anna Oakley also were in the office. Mr. Hawkins realized almost instantly that the city had been visited by an earthquake and within a short time he had quieted the guests who had been awakened by the tremor. The hotel was not damaged. W. D. Ahern of the Cullen was in charge when the building began to rock. Many of the guests were awakened, but there was no general exodus from the hotel. N. S. Wolf of the Semloh was on the job when the seismic disturbance occurred, and it took him several minutes to quiet the guests of the house. The building was rocked violently, and several chandeliers were damaged. An after inspection showed that the new structure had not been damaged in the least by the quake.

#### **Waiters Desert Posts**

Colored waiters at the Knutsford lost no time in leaving the building. Before Clerk Hawkins had time to realize exactly what had happened, the waiters had unceremoniously dropped their dishes and trays and fled pell mell through the main lobby of the hostelry.

The greatest damage done in the district was at the home of F. A. Bitner at 59 Center Street, where the vibration loosened the inner brickwork of the front part of the house just near its apex. The bricks came rumbling down, crushing through the ceiling of Mr. Bitner's front parlor, and carrying lath and plaster with them, fell to the floor. The piano barely escaped damage but other articles of furniture were badly damaged. The bricks tore a hole in the ceiling at least four feet wide, and Mr. Bitner estimates his loss at \$300.

Mr. Bitner and his family were at breakfast when the first and greatest shock came. After the house had stopped shaking, they were startled to hear a deafening noise issuing from the front room, and rushing in saw the bricks piling down through the ceiling.

#### **Five Homes Damaged**

The block on the south side of Third South street, between First West and Second West streets, probably sustained more damage than in a like area in any part of the city. Here there were no less than five houses damaged from the quake.

At the house occupied by Joseph Larsen, 229 West Third South street, the shock caused quite a number of the bricks from the chimney to fall. At 245 West Third South street, which is a double house, occupied by William Schonert and owned by the Windsor company, two chimneys were badly damaged. One of these, which is about fifteen feet high, is cracked its entire length, and is so badly damaged that it is dangerous.

At 273 West Third South street, which is in a terrace, a number of bricks from the front coping of the building have been displaced. One of the members of the family, when leaving the house just after the first shock, narrowly escaped having several bricks fall on his head.

The old church, standing at the northwest corner of Third South and First West streets, and now used as a hotel, also sustained some damage. The two wooden turrets, which surmounted the building in the front were badly shaken and the one on the east side gave way after the shock and toppled over. Its downward progress was stayed by the

large chimney on the First West street side of the building where it now rests wedged in between the chimney and the roof.

**[The Daily Standard; May 23, 1910]**

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## GROWING RATHER SERIOUS

Salt Lake City's quake was so severe as to have had a sobering effect on the inhabitants of that community. The warning has been heeded, and hereafter Salt Lakers will be as correct in conduct and as modest and decorous as the citizens of Ogden and elsewhere.

These subterranean rumblings have been interpreted as the near approach of an imp with a tail as long as Halley's comet, and Salt Lake mothers now hush their tots with stories of how the Evil One resides in the depths, all eager to start another rattling of dishes and shaking down of chimneys.

In obscure paragraphs the morning Salt Lake papers tell of another earthquake in that city yesterday. If this shaking of the earth continues, the novelty will grow monotonous and Salt Lakers will be as chary of mentioning the vibrations as were the people of San Francisco after their disastrous experience.

**[The Evening Standard; May 24, 1910]**

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## **EARTHQUAKE SCARES SOME SALT LAKERS**

### **Unusual Occurrence Brings Many Citizens From Bed--Little Damage**

Salt Lake City and vicinity were shaken by three distinct shocks of earthquake yesterday morning, according to the seismograph at the University of Utah.

The first shock, occurring at 7:28 o'clock in the morning, was the most severe that had ever been experienced here. This shock continued for two minutes and ten seconds and caused considerable alarm and some damage.

The second shock was lighter in its effect, and occurred at 8:38 o'clock, continuing for twenty seconds. Comparatively few felt it. The third and last shock was at 11:26 o'clock, continuing for twenty seconds, but was so slight that worshipers in the various churches were not disturbed. Few noticed it.

Reports received from other parts of the state showed that the shock was felt at various points in the southern part of the state. In the northern part, however, it was not noticed.

The shock at Tooele was quite severe, occurring at about 7:30 o'clock. Plaster was shaken from a number of buildings and some other slight damage was done.

At Nephi the shock was distinct. Houses were rocked, plaster was shaken from the ceilings and small articles were knocked from shelves. Nephi is at the end of a great fault escarpment, extending from Collinston on the north to Juab county on the south.

At Bingham the shock was so pronounced that the people were frightened. Cupboards rattled and dishes were thrown from the shelves. At the mines the buildings were shaken, but no damage was reported.

Slight shocks were noted at Ogden, and were most noticeable on the east bench. No damage was done.

At Midvale, the foreign element was badly frightened. Their frail houses were shaken, but were not damaged.

The impression at Sandy was that the comet had struck the earth. There was no damage. The shock was felt but slightly at Murray.

The local shock was especially severe at Garfield, but no damage was done to the great smelting plant, and none of the machinery was thrown out of alignment. Though the tall brick stacks swayed visibly, they were not damaged.

While the tall buildings in the business section of Salt Lake City swayed and smaller buildings in all parts of the city were rocked, no heavy damage was reported.

#### **Were Moving House**

Only one building was seriously damaged. It is a small frame house, unoccupied, on Washington street between Second West and Third West streets, south of Ninth South street. This building was being moved, and had been raised from its foundations. The shock was of such character that the supports were knocked out and the building was thrown to the ground and splintered to kindling wood. No one was injured and the property loss was small.

Plaster was shaken from many ceilings and glassware was broken in some homes, but the damage was limited in extent.

The manner in which the tall business blocks have been constructed saved them from damage. The Newhouse and Boston buildings swayed noticeably, it is declared by persons in the streets.

No one in the city was injured. Falling objects failed to strike men, women or children. Many were frightened because earthquakes are not usual here, but no one was hurt. The home of F. A. Bitner, 59 Center street, was damaged to the extent of \$300 by the results of the earthquake shock. The inner brickwork was loosened at a point near the apex of the roof, the bricks falling through the ceiling, into the parlor and barely missing the piano. Other articles of furniture were damaged.

### **Chimneys Are Cracked**

The house occupied by Joseph Larson, 220 West Third South street, was damaged by bricks falling from the chimney. Two chimneys were badly damaged at the house at 245 West Third South street, occupied by William Schoernert. One chimney fifteen feet in height is cracked for its entire length.

Several bricks were shaken from the top of the terrace at 273 West Third South street. The old building at the northwest corner of First West and Third South streets, which was originally a church, afterward a hospital and now is used as a hotel, was also damaged. The chimneys were cracked and the towers were shaken so badly that they must be removed.

At the Union Foundry and Machine plant at Seventh South and Fifth West streets part of the roof fell in and the debris caused considerable damage in the interior of the plant. F. A. Pfeiffer was in the building at the time, but was not injured.

The walls in the residence of Bishop A. H. Woodruff, Eleventh South and Fifth East streets, were badly cracked. Crockery and glassware on the shelves were broken.

### **Tests New Walls**

In the walls of the store building just completed at Fourth East and Eleventh South streets, crevices an inch in width were formed.

A crack an inch and a half in width and extending from the foundation to the eaves, was caused in the rear wall of the home of C. L. Woodbury, 1810 South Fourth East street. Walter Raleigh was painting his house at Curtis and Fourth East streets. The swaying of the earth threw him from his ladder, a distance of fifteen feet, to the ground. He fell on a pile of sod and was uninjured. The contents of his paint pail drenched him.

At the chapel of the American Sunday School Union at Fifth North and Oakley avenue, the plaster was cracked, and much of it fell to the floor. Books were thrown from the library shelves and other damage was done.

At the Sugarhouse drug store in the southeastern part of the city, dozens of bottles and jars of drugs were thrown to the floor and broken, and a stream of drugs flowed across the floor.

The new Short Line-Salt Lake route passenger station was also slightly damaged, the plaster being cracked in a number of places.

### **Saltair Suffers Again**

The shock was so distinctly felt at Saltair beach that one of the attractions was badly damaged. In the restaurant many dishes were broken. The building swayed and rocked as it does when pounded by the heavy waves that sometimes sweep the lake, and threaten destruction to the resort.

The confusion in the hotels was great, many guests and employees believing that a repetition of the San Francisco horror was in progress. Dust particles filled the air in a majority of the hotels immediately after the first and most severe shock. This was mistaken for smoke and fear was aroused that a big fire was in progress.

Miss Mabel Henderson, daughter of a wealthy mining man of San Francisco, who was a guest at the Cullen hotel, had gone through the horrors of the disaster at San Francisco. She had not arisen when the first shock was felt. Her mother, a sufferer from a nervous trouble, died as a result of the terrible scenes in San Francisco.

When the first shock was recorded Miss Henderson leaped from her bed and ran into the hall, clad only in her night robe. Screaming "Earthquake! Earthquake!" she ran from door to door in the long hall on the fifth floor, pounding at the doors and awakening the guests.

Mr. Henderson was awakened, not by the shock, but by his daughter's screams. He followed her and succeeded in quieting her fears.

While chandeliers swayed like pendulums and dishes and glassware danced merrily on shelves and tables, no damage was done to any of the hotel buildings.

At the hospitals the first shock was so sudden that it was with difficulty that the nurses were able to keep the patients in their beds, and prevent the stronger of them from attempting to leave the buildings.

In the city and county jails there was terror among the evildoers who were confined in the big steel cells. At the county jail men were thrown from their cots in the rotary cells. The prisoners began pounding on their cell doors for release. They soon became quiet, however. At the city jail similar conditions prevailed, to a lesser extent. A brick chimney was shaken down. At the state prison the shock was noticed by only a comparatively small number of prisoners.

**[Salt Lake Evening Telegram; May 23, 1910]**

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## SEISMOGRAPH RECORDS NO ADDITIONAL TEMBLORS

No earth tremors have been recorded on the seismograph at the University of Utah following the third shock, which was recorded by that delicately adjusted instrument shortly after 11 o'clock yesterday morning.

"The record on the seismograph plate shows that the shock was of local origin," said Dr. Fred J. Pack, Deseret professor of geology at the University of Utah, to THE TELEGRAM at noon today.

"The proof that the disturbance was local is twofold" continued Dr. Pack. "First, the vibrations of the recorder were all on the right of the center of the plate. If the wave recorded was of distant origin, the indicator would have swung from side to side, following the undulatory character of the movement.

"Let me illustrate: Suspend an apple on a string and strike the apple. The apple will swing from side to side, back and forth like a pendulum. This is the movement given by the undulatory movement of the earth's surface when the disturbance is at a distant point.

"But if, when the apple returns to the center, it is struck rapidly again and again as it returns to the center, it cannot swing past that point. If a pen were attached to the apple and its path were recorded on a sheet of paper, the lines would not pass beyond the point where the apple is stopped on its journey by the repeated blows.

"Another indication that the earthquake was of purely local origin was that there were no preliminary records made. There were no undulatory movements prior to the first sharp shock.

"Let me explain this more clearly, and at the same time explain another phenomenon that was observed. The question may be asked, 'If the shock originated at a point, say near the university or the northeast bench, why was it felt more distinctly at Garfield, Bingham and other distant points than at points nearer its origin?'

"Drop a stone into a still pool of water. At the point where the stone strikes the water there will be a splash. But the waves that are caused will grow in height and force to a considerable distance from the point where the stone struck the water. These waves correspond with the undulatory waves of the earth's surface following the shock. Thus they are more apparent at points distant from the origin than they are near at hand. It is this movement of the earth's surface that causes the greatest damage to buildings and property.

"We have watched the instrument with great care since the third shock was recorded, but there have been no repetitions."

**[Salt Lake Evening Telegram; May 23, 1910]**

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## **GEOLOGIST AT UNIVERSITY DISCUSSES RECENT TEMBLOR**

"Never in the history of the city, or at least since the seismograph, has there been such a distinctly local shock, though similar shocks have been experienced elsewhere," said Dr. Fred J. Pack, Deseret professor geology at the University of Utah, in discussing the temblor.

Dr. Pack said that the three shocks traveled northwest to southeast, and were purely local in character. He declares that the geographical center of the disturbance was within a stone's throw of the university. The record shows that there were no preliminary tremors, such as characterize earthquakes at distant points.

"The recording point swung over fully three inches when the first shock occurred and was kept in that position for several seconds by repeated tremors from the northwest, and was not permitted to travel back, as would have been the case had the shock come from a distance," said Dr. Pack.

Dr. Pack said that the greater number of earthquakes originate at points far below the surface of the earth, at a point known as the centrum. The point on the surface immediately above the centrum is known as the epicentrum. The tremors which traveled from the epicentrum along the surface are far more severe than those coming from the centrum to the surface at right angles.

"We know that the centrum was directly beneath us," said Dr. Pack, because of the violence of the first vibrations, without preliminary tremors. There is always violent vibration and disturbance just at the epicentrum, but as the earth wave gets further away the undulatory motion is greater.

### **Land Mass Readjustment**

"There are two conditions causing shocks. One of these is volcanic disturbance and the other land mass readjustment. The latter was responsible for the shock of yesterday. This condition was also responsible for the San Francisco disturbance. The coast is more subject to these readjustments, this section having passed through the most severe changes of this character many thousands of years ago.

"It is likely that other shocks of a similar character will follow in the future, though it is not likely that they will be of sufficient severity to cause great damage.

"The Salt Lake valley was formed not by erosional activity, but by crustal movement, which brought the Wasatch mountains to the eastward to their present elevation."

"Evidence of recent slipping along this old Wasatch fracture may be seen at almost every point from Collinston on the north to Nephi on the south. In point of intensity the disturbances caused by the slipping of the great Wasatch block has likely no parallel within the history of the human occupancy of America. The greatest throw shown in the San Francisco earthquake amounted in no case to more than two feet; a fact which, when compared to the local fault escarpment, may give some clue as to the intensity of the wave set up by the latter. From the standpoint of years, it is scarcely possible to arrive at the date of this recent occurrence, but it can be said, and that most emphatically, that it was very recent compared with other important geological phenomena of this valley, and from the standpoint of the geologist we are not prepared to state that this slipping is entirely a thing of the past.



"There is no occasion for alarm, however. In the disturbance of Sunday it is probable that the slipping of the crustal block was not more than an inch or so. So long as the readjustment of the crustal block goes on we are bound to have shocks."

**[Salt Lake Evening Telegram; May 23, 1910]**

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## THE EARTHQUAKE

Kingsley makes one of his characters talk to his dog. They are on the verge of a field where a great battle was fought early in the day. While he talks the dog, not heeding what his eccentric master is saying, suddenly gets down and begins to scratch himself for fleas, whereupon the man takes the view that the old earth is only an animal bothered with fleas and, like the dog, now and then has such fleas as civil wars or earthquakes to vex it.

If this is true then a big flea got hold of the world yesterday morning and made it scratch itself. That is more comforting and every bit as sensible as to believe that the comet caused the tremblor, for one has just as good proof behind it as the other. It was but a quiver and lasted only a few seconds, but in some places filled people with fear. There is no other just such fear as an earthquake causes. It affects especially persons with lively imaginations. The reason why, we presume, is first, because no one can estimate the menace behind the shock, and then no one can estimate what will be in the next ten seconds.

Such people stand for a second like the victim on the scaffold--he does not know when the trap will be sprung.

It is nature's most potential way to scare poor human beings and they never outgrow the sensation, for they never know when the terror will reach them.

**[Salt Lake Evening Telegram; May 23, 1910]**

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## SLIGHT TREMOR OF EARTH AT BRIGHTON

At some points along the Wasatch mountains there was a slight earthquake shock this morning according to reports that have reached this city. At Brighton it was stated that a shock was experienced, similar in intensity to the second of Sunday last. Garfield also reports feeling a shock about the same time, shortly after midnight.

Dr. Fred J. Pack stated that there is no record on the seismograph at the University of Utah of any shock, though the needle shows a "slight uneasiness" between 12:15 and 2 o'clock.

"It did not travel in an exactly straight line," said Dr. Pack, "but its variation was so slight that under ordinary circumstances we would not report it at all.

**[Salt Lake Evening Telegram; May 25, 1910]**

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**SALT LAKE IS ROCKED BY EARTHQUAKE  
THREE DISTINCT SHOCKS ARE FELT IN THE CITY  
First, Which Is Of Two Minutes And Ten Seconds Duration,  
Occurs At 7:28 A.M. And Is Most Severe Of Three  
General Feeling Of Alarm Caused Throughout City By The Tremors  
Damage Done, However, Is Slight; Seismograph At The University Of Utah  
Registers Perfect Record Of Disturbances**

Shocks	Time	Duration
First	7:28 a.m.	2 minutes, 10 seconds
Second	8:38 a.m.	20 seconds
Third	11:26 a.m.	20 seconds

The slipping of a mighty crustal block along the fault escarpment near the base of the Wasatch mountains was responsible Sunday forenoon for three distinct earthquake shocks of purely local origin, which caused the city and immediate vicinity to rock and tremble as though shaken violently by some Titanic hand.

The record of the seismograph at the state university shows that the first shock occurred at 7:28 a.m. and for two minutes and ten seconds the city was in the throes of earth tremors. For the first twenty seconds of the duration of the shock the tremors were intense and caused a general feeling of alarm throughout the city. The shock was the worst in the history of the city.

The second shock occurred at 8:38 a.m. and had a duration of about twenty seconds. The third shock began about three hours later, at 11:26 a.m., and continued for about twenty seconds. Both of these shocks were slight when compared to the first one earlier in the forenoon. Some people report having felt the second and third shocks, while others did not observe them at all. The first was so severe, however, that there was hardly a person in the city who did not have at least his equanimity disturbed.

While the first shock was one of unusual intensity for this section of the west, swaying great buildings like reeds in a windstorm, from all reports obtainable no one was killed, nor was anyone injured and only slight property damage resulted.

In various parts of the city plaster was shaken from the ceilings of houses and bric-a-brac was scattered about over the floors. Instances are also reported of where handsome mirrors were cracked by the earth tremors. Chimneys on several buildings poorly constructed were toppled over, but luckily no damage was done by the falling brick.

#### **Hotel Guests Frightened**

Halley's comet, the comet's missing tail, fire, explosion and hurricane were individually held responsible for the tremors by guests of the different hostelrys of Salt Lake, and the residents of the city generally, before the real cause of the consternation was known.

A filmy, heavily-laden atmosphere that accompanied the initial shock was mistaken by many persons for smoke. This resulted in a cry of fire in many quarters. At the Wilson hotel, James Venables, one of the oldest and best known hotel men of the city, was in charge when the seismic disturbance occurred. It was largely owing to his prompt action in quieting the fears of the guests that a panic was averted.

The interiors of the different hostelrys of Salt Lake were filled with dust after the first shock. Guests who had been aroused by the swaying of the buildings rushed into the hallways scantily clad, only to be partially blinded and frightened back into their apartments. Switchboards were replete with blinking lights for several minutes after the tremor, and the exchange girls were kept busy explaining the cause of the disturbances. Considering the extent and force of the vibrations, it was remarkable that there were no injuries sustained by the occupants of the different hotels, many of whom fled to the streets, clad only in their night clothes.

### **Thought Fire the Cause**

At the Wilson hotel many of the guests were of the opinion that the hotel was on fire. At the Knutsford the majority feared that a boiler had exploded. At the Semloh, Kenyon, Moxum and Cullen the guests were at a loss to figure out just what had happened. Some thought Halley's comet had struck the earth, others remembered the recent explosion of dynamite at Beck's Hot Springs, and some few suspected an earthquake. H. M. Hawkins was in charge of the Knutsford when the first shock was felt. Mrs. Nellie Shoudy and Mrs. Anna Oakley also were in the office. Mr. Hawkins realized almost instantly that the city had been visited by an earthquake and within a short time he had quieted the guests who had been awakened by the tremor. The hotel was not damaged. W. D. Ahern of the Cullen was in charge when the building began to rock. Many of the guests were awakened, but there was no general exodus from the hotel. N. S. Wolf of the Semloh was on the job when the seismic disturbance occurred, and it took him several minutes to quiet the guests of the house. The building was rocked violently, and several chandeliers were damaged. An after inspection showed that the new structure had not been damaged in the least by the quake.

### **Waiters Desert Posts**

Colored waiters at the Knutsford lost no time in leaving the building. Before Clerk Hawkins had time to realize exactly what had occurred, the waiters had unceremoniously dropped their dishes and trays and fled pell mell through the main lobby of the hostelry.

"Ah don't mind confidin' to you, boy, that Ah was movin' some. When Ah found myself, Ah was movin' rapidly 'cross Main street. And Ah had plenty of company," said the head waiter, after the excitement had subsided.

Steward Vaughn Paul of the Wilson hotel had considerable trouble calming his colored waiters, many of whom had fled when the hotel began to tremble. Paul restored order in a few minutes, and the following tremors didn't cause any particular excitement among the servants in the house.

### **SAW THE TRIBUNE BLOCK ROCKING AND SWAYING**

Roy Worthington, an employee in the business department of The Tribune, was just coming to work when the convulsion of this portion of the earth occurred. When the shock became apparent Mr. Worthington was in front of Gardner's store on Main street, a few doors north of The Tribune building, he says. "I heard the windows in the Gardner store creaking and twisting it seemed to me, and then looking up at The Tribune building I could see the top of it a kind of swaying, it looked as if the cement or plaster was breaking loose from the brick. There was dust coming out in clouds from the side of

the building. Everybody on the sidewalks ran to the middle of the street. Many of those who were in the restaurants rushed into the street with the napkins still adorning them--the meal was forgotten, they were seeking a place of safety in the middle of the street. As I was running across the street I bumped into a pole. I was then trying to get away from the large window in the office. Of course I do not know whether it was the earthquake shock that threw me against the pole or whether it was in my hurry to get away from the window that I came in contact with the post. But from the Brigham Young monument down to Third South on Main street it seemed as if everyone in the buildings had fled to the street."

### **SOME INCIDENTS CONNECTED WITH THE EARTHQUAKE**

Captain Tibbetts, who for many years has been a guest at the Kenyon hotel when he pays his periodical visits to this city, knew that the quake occurred. He was rooming on the third floor of the Kenyon Sunday morning when his sound slumber was disturbed by the agitation of his bed. The captain, having had earthquake experiences in California, recognized the familiar rumbling sound and jumped from his bed, grabbed his clothes and made a hasty toilet. Captain Tibbetts left the hotel and went to the Commercial club and was enjoying a hearty breakfast when the second shock came, but the captain proceeded with his meal undisturbed.

Some members of the Commercial club say that if the lounging and billiard rooms had been filled to their capacity--say between 100 and 200 members--when the earthquake occurred, the oscillation of the building was such that the floor would have given way and a real catastrophe would have resulted.

DeWitt B. Lowe, the well known broker who is a resident at the Touraine hotel, was lying in bed awake at the time the earthquake occurred. Mr. Lowe says that his bed oscillated and as he lay in his disturbed waking moments he could see the Japanese light which hangs above his bed swinging to and fro.

There was a commercial traveler at one of the hotels who was a victim of the San Francisco disaster. When he heard that low murmuring he knew what to expect. He grabbed his clothes, got to the street and started to run. At last reports he was still running.

### **HOSPITAL INMATES ARE THOROUGHLY FRIGHTENED**

Inmates of the Dr. Groves L.D.S. hospital were thoroughly frightened when the first shock was felt. One of the nurses doing night duty was seated in a chair on the second floor when the first shock was felt. The chandeliers rattled, and the whole building appeared to shake from the ground up. Several nervous patients were so frightened that it was some time before they could be quieted. Other than a severe shaking up, no damage was done to the hospital.

Mrs. L. K. Demus, residing at 35 D street, reported that the shock was so severe that it was difficult for her to keep her feet. She said that while a resident of California she had experienced many slight tremors, but that the one Sunday morning was about the most severe she had ever felt. A few glasses were thrown from the table, the damage being slight. Residents of the northeastern part of the city were more or less frightened by the

unusual occurrences. In many homes it was reported that the quake was attributed to the comet.

In the eastern portion of the city, near Tenth East street, the shock was felt for several seconds, but there was no damage to speak of. About an old, dilapidated building on the hill a few panes of broken glass were noticed on the ground, but whether this was the result of the earthquake none was able to say.

A report which was current about the city early Sunday morning, to the effect that the roof of the Union foundry, at Sixth South and Fifth East streets, had toppled in, proved to be false. The foundry was visited by a representative of The Tribune, and it was learned that no apparent damage had been done.

#### **Center Street Shaken**

Mrs. S. A. Bitner, residing at 59 Center street, said Sunday afternoon that when the shock was first felt her home seemed to rock from side to side. A second later large squares of plaster and adobes came tumbling into the sitting room. Much of the furniture in the home was badly scratched, while the walls were marred. Mrs. Bitner said that the shock was quite severe, and that for a few seconds she thought she was about to be smothered beneath falling plaster. The house, which is constructed of adobes, was perhaps the only one in that section of the city which was damaged to any extent.

At the Kensington apartments the slumber of the guests was rudely awakened when the building began to roll and plunge. Many thought that the comet had at last gotten in its work, and that this mundane sphere was about to be engulfed in the fiery tail of the swiftly-moving ball of fire. No damage was done, however.

#### **Druggist Clark Shaken**

Druggist W. R. Clark of the Sugar House drug store was shaken out of bed by the earthquake and as this was the first time he had arisen so early the store was opened for business somewhat ahead of time. Barring the falling down of some bottles of perfume and other toilet articles on the show cases no damage was done. The shock was generally felt in the suburb, but no serious damage to buildings was reported.

The shock at the new station of the Oregon Short Line was felt by everyone. The plaster was badly cracked in the ticket office and some of it fell but investigation failed to find any damage to the interior of the handsome rotunda.

### **MANY COLORED PERSONS APPEAL FOR PROTECTION**

Fervently praying to the "Good Lawd above" to protect them and forgive them for past sins, many members of the negro colony of Salt Lake called upon the supreme powers when the city was rocked by an earthquake Sunday morning. On Edison street and Victoria alley the colored denizens fled from their houses and camped in the streets. The prevalent belief was the comet had struck the earth. Many believed that the end of the world was almost at hand.

"That comet ain't doin' no good 'round this place," explained a colored woman. "When them scientific scientists can't tell just where that tail went, you all want to look out. Ah dreamed Friday night that Ah was on ma way to glory. Pills ain't goin' to do no good. If that comet is goin' to get us we're gone. Ah'm glad Ah's a good Methodist."

The Chinese in Plum alley forgot all about fan tan, dominoes, hop, yen she and noodles when the city began to rock. There was a general exodus from the dives in the Oriental

quarter and very heavy supplication to the ruler of the joss houses. Only a few opium-dazed celestials and sallow-faced Caucasians remained in the vile-smelling resorts after the first shock. These were too much under the influence of the drug to realize what had happened.

In the Latin quarter on West Second South street there was considerable excitement. Greeks and Italians fled from the buildings and remained in the streets until long after the first shock had passed.

"Ugh!" was practically the only comment made by the Indians in Salt Lake who came here to testify in the case of Tom Rice, convicted of manslaughter. The redmen, in their usual stoical way, made no outward demonstration and did not appear to be especially alarmed.

### **BELL TELEPHONE COMPANY BESIEGED WITH CALLS**

"Business was good" in the operating room of the Rocky Mountain Bell Telephone company for some time after the first shock. The operating room is on the fifth floor of the building and the shake was very pronounced there. The first impression the operators received was that the switchboard was moving toward them, several of them left their chairs momentarily, but soon collected themselves and began to "pick up" the hundreds of calls that began to illuminate the switchboard almost instantly. The floor of the room seemed to move in an undulating, horizontal manner for some seconds. The operators did not have much time to give the subject thought or to reflect that they were in an "earthquake-proof" building, however, as the switchboard became an almost solid blaze of light as subscribers called up to find out about the trouble. Almost all the calls were for "information," and all the operators, on the regular switchboard as well as on the information desk, became information operators for the time. Under the direction of Miss Carrie Schettler, head supervisor, who had charge of the force at the time, the business was handled as rapidly as possible, although the limits of human and mechanical accomplishment made it impossible to give prompt answers to everybody.

### **An Amusing Incident**

Of course people are not "setting up 'o nights" waiting for an earthquake. When it comes it is sudden and unexpected. One of the residents at the Smith apartments, 224 South Third East street, evidently thought it was a fire, so he took the fire escape for terra firma. When the earth hereabouts began its oscillation the gentleman was suddenly awakened. He did not know what it was, but he made a dash for the fire escape in his pajamas. He reached the ground safely, then he struck for the middle of the street, and away he went flying to the westward "from the wrath to come." Where he landed report sayeth not.

### **Picture Was No Dream**

Among the many varied experiences reported as the result of the quake was that of a certain young man. He was awakened by the flapping of a large heavily framed picture against the wall. Upon examination after the shock, it was found that another vibration would undoubtedly have shaken the picture from its fastenings, and, as it hung above



and but a few inches removed from the bed, would have probably resulted in serious if not fatal injury to the sleeper.

A baker, having but a few moments before taken his last "batch" from the oven, was on his way home. When opposite the city and county building, he paused to regulate his watch according to the large clock. As he looked the big tower swayed perceptibly. Thinking that it was some physical weakness that produced the illusion, he brushed his hands across his eyes and looked again, and the swaying motion of the huge tower was still in progress. He then realized that an earthquake was in session. As near as he could judge, the hands of the big clock pointed to 7:28.

### **Chapel is Damaged**

The chapel of the American Sunday School union on Fifth North and Oakley avenue was badly shaken, judging by the appearance of the interior when the chapel was opened for service. All the plaster was badly cracked and much of it was strewn all over the floor. All the books of the library had been shaken from their shelves and were found upon the floor.

All along the east bench as far south as Sugar House the shock was most severe. Residents were rudely awakened from their beds and rushed into the halls, several instances being reported of parties running into the open air, fearing that the quake would continue and that the houses would fall.

One man sleeps in an old brass bed, whose many rods and ornaments have in the years that have flown, grown very loose, so that it rattles at the slightest movement. When the quake came he was suddenly aroused by a dream of the Swiss bell ringers of the Orpheum circuit for the old bed was rocking to and fro to the accompaniment of a regular anvil chorus.

The way he landed in the middle of the room was a picture.

### **Amusing Experiences**

The men "operators" had many amusing experiences with subscribers. Some of the inquirers, hearing a man's voice on the line, refused to believe they were talking to "Central," and caused delay in many instances. One man inquired facetiously: "Did the earthquake change the telephone girls into boys?" Another was heard to remark, evidently to a bystander: "They've got men operators at the Bell office."

The peculiar construction of the Bell Telephone building, which has a reinforced concrete frame, makes it about the safest building in the city in "earthquake seasons," but the height of the operating room from the ground resulted in producing strong vibration there. The first shock, at 7:28 o'clock, was noticed plainly and the time fixed accurately as one of the telephone men was looking directly at the clock when it came. A second shock was noted in the operating room about 8:32 o'clock and a third, although lighter shock, was noted at 11:26 o'clock.

### **Conditions at Independent**

Just as the night shift of telephone girls was being relieved by the day shift at the switchboards in the Independent Telephone company's building Sunday morning, the first shock came and threw consternation into the ranks of the operators. In spite of the fact that the girls were badly frightened, they remained nobly at their posts.

Within a few minutes after the shock, says Manager Fred A. Jones, calls began to pour in at the office from all parts of town, and the girls were kept busy as they were never before, for about two hours.

Many of the people who telephoned in thought that there had been a terrific explosion somewhere, but they were soon set to rights by the operators, who had all constituted themselves "information" during the strenuous period.

### **Abandon Their Home**

Frightened by the earthquake, a family residing on Third South street between First and Second West, fled from the house after carefully locking the doors and windows. Up to a late hour last night the tenants had not returned. Heavy posts and trunks of trees had been utilized to brace the structure against further shocks.

### **Quiet at State Prison**

Convicts at the penitentiary were not seriously alarmed by the earthquakes. Many of the prisoners did not feel the tremors. It was not until lunch time that the convicts learned of the repeated shocks. The buildings were not damaged.

### **EARTHQUAKE DID NOT DAMAGE GARFIELD PLANTS**

Although the shocks yesterday morning were said to have been especially severe out at Garfield, as far as could be learned there was no injury to the smelting or concentrating plants out on the lake. Charles W. Whitley, general manager of the American Smelting and Refining company, stated Sunday that the smelter was not damaged as far as he knew, and he would be about the first to hear of any interruption to operations.

### **TENANTS AT WOODRUFF APARTMENTS ARE UNEASY**

Tenants at the Woodruff apartments, especially those living on the fourth floor, were thrown almost into a panic when the first shock was experienced Sunday morning at 7:28 o'clock. Women and men rushed out of their rooms into the hallways in various stages of dishabille, not knowing but that the next minute the building would be thrown to the ground.

One of the tenants said that the disappearing bed in which he was sleeping kept moving back and forth in and out of the recess where it was installed in the daytime, and the sensation resulting was anything but pleasant and conducive to a sense of security. Residents of the city near the Buena Vista race track, about three miles west of the post office, say that they distinctly felt the three shocks recorded by the seismograph at the university. The shocks in this neighborhood were unusually severe and plaster in houses was shaken from the ceilings.

### **REPORTS FROM OTHER PORTIONS OF THE STATE**

Telephonic reports from various parts of the state are to the effect that the earthquake shocks which originated in the great earth block under Salt Lake City were distinctly felt at Nephi, Bingham and Tooele, while no shocks were felt at Richfield, Brigham, Park City, Ogden and Manti.

At Tooele the first shock, about 7:30 a.m., was quite severe. Plaster was shaken from the ceilings of a number of buildings, among which was the new hotel recently constructed.

The shock at Nephi was distinctly felt at about 7:30 a.m. The town is at the end of the great false escarpment that extends from Collinston on the north along the base of the Wasatch mountains southward to Juab county. Houses were rocked by the earth tremors, plaster was shaken from the ceilings and bric-a-brac was thrown about the rooms.

Richfield, Park City and Manti are out of the false escarpment zone and the inhabitants were not treated to even sympathetic tremors.

### **EVEN THE CHICKENS IN THE YARD WERE WISE**

At the Cullen hotel one of the guests was just preparing to take a bath when the earthquake occurred. The water in the bath tub began swaying to and fro; it suddenly splashed over the rim of the tub and the guest decided he would take his bath at some other time.

Down at the Moxum hotel one of the guest tells an interesting story. Just adjoining the hotel there is a two-story brick building and in the rear the occupants have some chickens. The birds evidently knew that there was something wrong with this old earth, for just as soon as the seismic disturbance occurred the birds began pecking into the soil and ostrich-like, were trying to hide their heads from the danger. They also got their wings close to the ground and the usual cackling ceased, they sent up a wail such as chickens do when the axe approacheth.

### **TALL BUILDINGS WERE SWAYED BY THE SHOCK**

A. H. Thiesson, chief in charge of the local United States weather bureau in the Boston block, stated last evening that one of his assistants, J. B. Snyder, who sleeps at the offices on the top floor of the big building, reported to him that he was awakened by the earthquake. The clock in the bureau stopped at 7:27 a.m., and the swaying of the building was easily felt while the quake lasted.

No instruments are kept at the weather bureau which would record the earthquake, so that no scientific explanation of the seismic disturbance can be given by the bureau.

A report was current Sunday that the Great Salt lake had receded some two feet on account of the subterranean convulsion. No confirmation of this report could be obtained Sunday. Mr. Thiesson stated that the weather bureau makes two measurements of the lake every month. Today (Monday) a measurement of the lake will be made, and then it will be determined whether there is any recession in that body of water. Of course, it is possible that there may have been a temporary recession of the waters of the lake during the earthquake and that after the oscillation subsided the inland sea returned to its normal condition.

### **Saw the Buildings Rock**

Samuel Kelsey, one of the janitors in The Tribune building, was on his way home when the quake occurred. He was just opposite the Wilson hotel when he observed the small

buildings east of the hotel rocking to and fro. The oscillation, he says, was perfectly visible to the naked eye, and wonder is expressed that the buildings did not collapse.

### **Bingham Given Shock**

BINGHAM, MAY 22--Bingham experienced quite a heavy earthquake shock at 7:30 o'clock this morning. The vibration continued for several seconds. In certain portions of the camp it occasioned much alarm, the people rushing to the doors of their homes. Tables, chairs and dishes rattled. In some instances dishes were thrown from the shelves. No great amount of damage has been reported. At the mines the buildings creaked and the machinery was badly shaken, but no shutdowns became necessary.

### **Tremors at Ogden**

OGDEN, May 22--Slight earth tremors were felt by several people in Ogden this morning about 7 o'clock. The shocks were most perceptible on the eastern bench where some of the residents report two distinct shocks, one immediately after the other.

### **Hospital Patients Nervous**

Except for a slight nervousness among the various patients at the hospitals, those in attendance reported nothing due to the quake. There was no damage done at any of the institutions, and after the second shock no more attention was paid to the quake. Firemen stationed at station No. 6, at Eighth South and the Jordan river, reported that the earthquake shock in that vicinity was slight, and was not felt at all by some of the inmates of the station.

### **Recorded in Kansas**

LAWRENCE, Kan., May 22--The seismograph at the University of Kansas recorded an earthquake shock this morning from 12:37 to 2:15 o'clock.

Prof. H. H. Cady, who observed the movement, said:

"The quake appeared to be about 2000 miles distant. It had all of the characteristics shown by the recent disturbances in Costa Rica."

### **Farnsworth Loses Coffee**

C. O. Farnsworth, a clerk in the city board of health office, had just started to take a drink of coffee in his room at 47 East First South street, when the city began to rock, but the drink never was taken. The building rocked so violently that the coffee was thrown out of the cup.

**[Salt Lake Tribune; May 23, 1910]**

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**QUAKES DISCUSSED FROM SCIENTIFIC STANDPOINTS**  
**Dr. Fred J. Pack, Of The University Of Utah, Gives His Opinion As To**  
**The Cause Of The Disturbances**  
**Center Of The Trouble Is Within Stone's Throw Of Big Institution**  
**Charles Johnson, Well-Known Photographer And Deep Student Of Seismic**  
**Phenomena, Also Gives Information**

Dr. Fred J. Pack, in charge of the seismograph at the University of Utah, stated Sunday afternoon that the three earthquake shocks traveled from the northwest to the southeast and were entirely local in their nature. "From the record of the seismograph it is evident that the center of the seismic disturbance was within a stone's throw of the university," declared Dr. Pack. "The record shows that there were no preliminary tremors such as characterize an earthquake which occurs at a distance. The recording point swung over fully three inches when the first shock struck, and was kept in that position for a number of seconds by repeated earth tremors from the northwest and was not permitted to swing back to the other side, as is usually the case when tremors come from a distance."

In discussing the cause and the origin of Sunday's earthquake shocks, Dr. Pack said that most of the earthquakes originate some distance from the surface, at a point known as the centrum. Directly above the centrum at the surface is the epicentrum. He declared that the tremors which traveled from the epicentrum along the surface were far more intense than those which came from the centrum to the surface at right angles. "We know that the centrum was directly beneath us," said he, "because of the violence of the first vibrations, without any preliminary tremors. Just at the epicentrum there is always violent vibration, but as the earth wave gets further away it becomes undulatory in character.

"Never in the history of the city, or at least since the seismograph was installed, has there been such a distinctly local shock, though such shocks have been experienced elsewhere.

**Cause of the Tremors**

"Of the two conditions, volcanic activity and land mass readjustment, which are generally responsible for earthquakes, the latter was responsible for the shocks of Sunday forenoon. The same condition was responsible for the San Francisco earthquake. This section of the west has the advantage, however, over that part of the earth on which San Francisco is located, in that it passed through the worst stages of land mass readjustment several thousand years ago. The coast line is subject at any time to serious crustal slips.

"Other shocks in this section will undoubtedly follow in the future, though I am not apprehensive of any extreme danger from the land mass readjustments.

"Oftentimes one of the two conditions I mentioned may be entirely responsible, but not infrequently disturbances may be traced back to a combination of the two. The terrible disaster of a little over a year ago, in Calabria and Sicily, appears to have been the result of a sudden readjustment of the earth block separating the two, which was undoubtedly influenced by the presence of Vesuvius, Aetna and the Laparian volcanoes, immediately to the northward. The almost complete destruction of Charleston several years ago seems to have been the result of tectonic activity alone.

The Japanese islands have suffered largely from earthquakes, generated largely by a combination of the two causes. The lesser Antilles are frequently disturbed by earthquakes originating solely through vulcanism.

"The Salt Lake valley was formed not by erosional activity, but by crustal movement, which brought the Wasatch mountains to the eastward to their present elevation."

#### **Clarence King's View**

"Clarence King, at one time director of the United States geological survey, has estimated that the great throw at the western face of the Wasatch mountains aggregated 40,000 feet. This displacement, it will be remembered, is not the result of a single slip, but in all probability the result of many, many smaller ones. And again erosional activity acted contemporaneously with the deformation and faulting processes; so that now many of the Basin range mountains have lost the true external evidence of their block nature. The city of Salt Lake is situated immediately west of this great plane and directly upon one of the down thrown blocks which is now covered by alluvium washed from the surrounding hills. The old escarpment, or face, left through faulting in many places, still stands out precipitously, such as, for instance, directly east of Provo, and east of Willard City, while at other places this great fault scarp has been much eroded and occasionally almost effaced. Movement along this great fracture has continued up to the present.

#### **Evidence of Slipping**

"Evidence of recent slipping along this old Wasatch fracture may be seen at almost every point from Collinston on the north to Nephi on the south. In point of intensity the disturbances caused by the slipping of the great Wasatch block has likely no parallel within the history of the human occupancy of America. The greatest throw shown in the San Francisco earthquake amounted in no case to more than two feet; a fact which, when compared to the local fault escarpment, may give some clue as to the intensity of the wave set up by the latter. From the standpoint of years, it is scarcely possible to arrive at the date of this recent occurrence, but it can be said, and that most emphatically, that it was very recent compared with other important geological phenomena of this valley, and from the standpoint of the geologist we are not prepared to state that this slipping is entirely a thing of the past.

"There is no occasion for alarm, however. In the disturbance of Sunday it is probable that the slipping of the crustal block was not more than an inch or so. So long as the readjustment of the crustal block goes on we are bound to have shocks."

#### **CHARLES JOHNSON GIVES HIS VIEWS ON MATTER**

Charles Johnson, the well-known photographer and deep student of seismic phenomena, believes that this region is due at any time to experience a violent shock, much more severe than that of Sunday morning. Speaking to The Tribune Mr. Johnson said:

"The great fault scarp at the mouth of Cottonwood canyon which I photographed seven years ago shows conclusively that in prehistoric times this valley was the scene of a very violent earth convulsion. The comparatively small shocks experienced during the last ten years and the more violent one of Sunday morning tend to show that the readjustment is not yet complete, and I believe that we will experience a very severe

shock before the crust of this portion of the earth will be in normal position.

"My view is that in the age when the great quake came here the old Lake Bonneville largely sank into the earth and, heated by subterranean fires, escaped in southern Utah.

"In Millard and Washington counties are countless evidences of volcanic activity. The craters and bubble holes yet remain as evidence.

"The long series of shocks that took place in this portion of southern Utah ten years ago show that the readjustment was then taking place.

"It is hard to estimate these things from the standpoint of time, but I believe that another readjustment of the crust in this valley will make us safe for a thousand years."

**[Salt Lake Tribune; May 23, 1910]**

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## IT WAS STRAIGHT BUSINESS

The earthquake in this city yesterday morning was straight business. It did its work rapidly, and then stopped. The first shock was the severest of any ever felt in this region. The second was comparatively mild. Fortunately, however, there was no serious damage done and no one was hurt.

This earthquake, unlike the comet, was not heralded. We wonder if there will ever come a time when earthquakes can be foretold with even the rather uncertain approach to accuracy that was experienced with regard to forecasts about the comet. As to the latter, the astronomers had everything figured down to a nicety and there was advance notice covering a long period of time. The advertising of the comet was world-wide, and everyone who kept up with the times was warned just what to expect. The fact that the comet did not perform precisely as expected, is only an evidence of human fallibility. As one of the astronomers said, the calculations were all right and according to rule, but in the face of adverse facts that developed, the reckonings were no good.

The earthquake of yesterday morning, unheralded, sudden, and startling, was its own advance agent. Nothing was known or even suspected until the shake came, and it was a shake that was right lively. The movement was from northwest to southeast, and the feeling was as if there was a slight undulating movement accompanied with a noise like the grating of rock upon rock; and that is exactly what it was. It startled the town, and a good many were badly frightened. Still, there was very little of running out of doors, and no one, so far as we have heard, appeared in the streets in bed costume.

But it was a lively experience all the same, and one that if emphasized a little more, might easily have been of the most terrifying character. The extent of the quake is described as merely local. Precisely what that means we shall probably all know later on, but the indications are that the field of the shake was by no means extensive, and any theory that the comet or that the comet's tail had anything to do with it must be abandoned even before formulated.

It was an old-fashioned shake of old Mother Earth such as we in this region are not in the least accustomed to; but in other regions of the earth such a shake as this would hardly be the subject even of neighborly comment.

The second shake was so mild by comparison that, while evident enough, many failed to notice it.

Professor Gilbert said many years ago that this was an earthquake region and that some day there would be an uplift of the Wasatch range that would tilt these valleys and make them slope far more towards the mountains than they do now. We can, however, easily pardon the professor if he should be mistaken about this, and at any rate no one is the least in haste about that coming uplift. It can be postponed indefinitely and no one will grumble. The foretaste we had yesterday morning was enough.

**[Salt Lake Tribune; May 23, 1910]**

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## **ANOTHER EARTHQUAKE SHOCK FELT MONDAY**

Dr. Fred J. Pack, geologist at the state university, stated Monday that the seismograph at the institution registered another earthquake shock at 8:45 o'clock Monday morning. The record was of exactly the same type as those of 11:24 and 8:38 a.m. Sunday. There were not many who felt the tremor, but there is no doubt that it occurred, as the evidence of the instrument at the university abundantly proves.

**[Salt Lake Tribune; May 24, 1910]**

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## NO DAMAGE DONE

Once in a thousand years, perhaps, there may be a little earth tremor in Salt Lake City. We gather from what Professor Pack of the University says, that this might be so. That fault escarpment of the Wasatch, away southeast of the city, appears to be the trouble. But it keeps steady and so quiet for so long that no one would suspect that it had any idea of lifting itself, even as much as an inch. But if it is any satisfaction to it to jog an inch or two every thousand years or so, why, let it jog.

A noteworthy thing about its little lift of Sunday was that it did no damage. It was only those who had vivid memories of the great San Francisco earthquake or lively imaginations as to what a real earthquake might be, that cared anything in particular about this little tremor of Sunday. In it all, nobody was hurt, and no property worth mentioning was destroyed. It was a passing experience, something to talk about, and that is all.

If it was, in fact, the little jog upward of the escarpment mentioned, then the movement necessarily must have come from the east or southeast. This corresponds with the feeling of those who were in bed and who noted the slight shaking as being an east-west movement. But the seismograph record, as interpreted, indicates that the movement came from the northwest, in which case it would hardly be a movement started by the shifting of the escarpment.

Nothing of this sort was ever experienced in Salt Lake before. It is not likely that anyone now living will feel another quake in this valley. And so there is no cause for uneasiness or disturbance of mind. Everyone can sleep well and in perfect security here, without bothering in the least about earthquakes or earth tremors.

**[Salt Lake Tribune; May 24, 1910]**

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## TRUMPET OF MORONI IS JARRED BY QUAKE

When the earthquake Sunday morning shook this city of the saints Moroni, who has so long stood guard with his trumpet on the center tower of the temple, was jarred--and jarred badly. The trumpet, which heretofore was held on a slant with the mouthpiece close to the lips of the statue, was shaken to almost a horizontal position and the mouthpiece switched several inches from Moroni's mouth. In view that it is 220 feet from the street to the chin of the statue the distance from the lips to the trumpet must be over a foot. Whether or no an attempt will be made to restore it to its original position has not been decided upon.

**[Salt Lake Tribune; May 25, 1910]**

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**THIS MAN KNOWS WASATCH FAULT**  
**Prof. Emmons, Noted Geologist, Is Expected Soon To Be In Salt Lake**  
**Last Sunday Quake Should Bring Him**  
**Has Studied Great Fault, And Traced It For Miles In The State**

There are many Salt Lake mining men personally acquainted with Prof. Emmons of the United States geological survey who expect to see him in this city at practically any time for the purpose of making observations in relation to the earthquake of last Sunday morning. Prof. Emmons some time ago made an examination of what is known as the Wasatch fault, at whose door all the blame for the recent earth disturbance is laid. Somewhere between the city east line and the Wasatch range of mountains extends this great Wasatch fault for an enormous distance, supposedly in a north and south line. One well-known geologist stated on Wednesday that the disturbance was scarcely felt at Fort Douglas, showing that the fault line itself was the seat of trouble extending to the westward. This geologist takes exception to the prediction of scientists that Salt Lake should prepare itself for frequent shocks in the future. He said to The Tribune yesterday: "You can predict that anything should or may happen, but what is the use in saying that another quake is likely to come when such a thing may not occur again for thousands of years? It merely alarms timid people, and does no good anyhow. I do not look for such a quake again for centuries, because it seems to me if the foundation of this valley is not capable of bearing up the load upon it, it would have given way to a much greater extent last Sunday. There must have been some weakness to this foundation of the earth to permit such a slipping as we had, and I figure that this foundation now is strong enough to bear up the burden resting upon it for such a long time that our children's children will never experience such a slight shock as we did the first of the week. "Prof. Emmons knows all about this Wasatch fault, and it would not surprise me if the government now gave this famous geological point a very careful examination to ascertain, if possible, just what was done to occasion the quake."

**[Salt Lake Tribune; May 26, 1910]**

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