

1921 Elsinore, Utah Earthquakes

**September 29, 1921;
7:12 a.m.; Magnitude 6**

**September 29, 1921
7:30 p.m.; Magnitude 5.7**

**October 1, 1921
8:32 a.m.; Magnitude 6**

Newspaper Articles

**This publication is an archive of newspaper articles
relating to the**

1921 ELSINORE, UTAH EARTHQUAKES

Thursday, September 29, 1921

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Newspaper articles were collected as the basic step of an earthquake education project funded by the U.S. Geological Survey under the National Earthquake Hazards Reduction Program (NEHRP). The project, entitled *Personalizing the Earthquake Threat in the Intermountain West*, involves researching and archiving newspaper articles, individual accounts, photographs, and additional sources of information for 48 earthquakes that have occurred in Utah, Idaho, Wyoming, and Montana since settlement. This information forms the basis for several earthquake education products: World Wide Web site publication of information collected, travelling photographic exhibit, scripted slide sets, manuscript for short book, and classroom activity packets.

Edith (Deedee) O'Brien and Susan J. Nava
Earthquake Education Services
University of Utah Seismograph Stations
705 Browning Bldg.
Salt Lake City, Utah 84112

phone: 801-581-6201
fax: 801-585-5585
email: obrien@seis.utah.ed

Information Categories

The content of each newspaper article has been classified by the categories of information it contains. The first letters of the information categories assigned each article are listed by the headlines in the Table of Contents that follows. Listed below is an explanation of the types of information that can be expected within each category.

A — Aid:

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

B— Building Damage:

damage to structure itself plus windows, chimneys, facade
(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 and politicians; cost in dollars

L — Lifelines:

effects on transportation—roads, bridges, railroads, airports, vehicles
effect 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:

emotional and physical effects on people, responses during and after;
includes deaths, injuries, near misses

R — Recovery:

clean up, rebuild, returning to normal routine

S — Scientific Explanation of the day

1921 Elsinore, Utah earthquake - listing of newspaper articles

NEWSPAPER: Beaver City Press

Date	Headline	Page	Information Categories	Utah Towns Mentioned
09/30/1921	Bad Quake Rocks Elsinore	1	B, N	Elsinore - Sevier Co.
10/28/1921	Last date searched			

NEWSPAPER: Deseret Evening News

Date	Headline	Page	Information Categories	Utah Towns Mentioned
09/29/1921	Quake Wrecks Utah Buildings	1	B, E, I, P	Elsinore - Sevier Co.
09/29/1921	Richfield Reports Quake But No Damage There	1	E, N	Richfield, Monroe - Sevier Co.
09/30/1921	Quake Does Slight Damage At Monroe	2	B, G, L, N	Monroe - Sevier Co.
10/01/1921	Woman Injured By Utah Quakes	3	B, E, G, I, N, P	Elsinore, Monroe - Sevier Co.
10/03/1921	Temblors In Sevier County Are Discussed	4	A, B, E, N, P, S	Elsinore - Sevier Co.
10/10/1921	Steps Taken To Assist Victims Of Quakes	5	A, I	Elsinore, Monroe - Sevier Co.
10/18/1921	Last date searched			

1921 Elsinore, Utah earthquake - listing of newspaper articles

NEWSPAPER: Richfield Reaper

Date	Headline	Page	Information Categories	Utah Towns Mentioned
10/06/1921	Earthquakes Destroy Much Property In Sevier Towns And Create Great Panic	6	B, E, G, I, P, R, S	Elsinore, Monroe, Richfield, Central, Salina, Sigurd, Joseph - Sevier Co.
10/06/1921	The Earth Tremors In Monroe	9	B, E, I, N, P, S	Monroe - Sevier Co.
10/06/1910	Earthquake Damage To School Buildings	10	B, R	Elsinore, Monroe - Sevier Co.
10/13/1921	Relief Promised To The Suffers From The Earthquake	10	A	Elsinore, Monroe - Sevier Co.
10/20/1921	School Board Put To More Expense	11	B, I	Elsinore, Monroe - Sevier Co.
10/27/1921	Report of Sevier Earthquake In Scientific Journal	11	S	Salt Lake City - Salt Lake Co.
11/18/1921	Last date searched			

NEWSPAPER: Salt Lake Telegram

Date	Headline	Page	Information Categories	Utah Towns Mentioned
09/29/1921	Utah Shaken By Earthquakes	12	B, E, G, N, P	Elsinore, Monroe - Sevier Co. Marysvale - Piute Co.
09/29/1921	Drug Store At Monroe Damaged	13	B, E, N	Monroe - Sevier Co.
09/30/1921	Sevier Valley Again Shaken By Earthquake	14	B, E, G, I, N	Elsinore, Monroe - Sevier Co.
10/01/1921	Repeated Quakes Terrorize People	15	A, B, E, G, I, P, S	Elsinore, Monroe, Richfield - Sevier Co.
10/02/1921	Quakes Subside After Fifty Hours	16	B, E, I, P	Elsinore, Monroe, Richfield - Sevier Co.
10/03/1921	Quakes Cause Great Landslides; Residents Returning To Homes	17	A, G, I, P, S	Elsinore, Monroe, Richfield - Sevier Co.
10/07/1921	Last date searched			

1921 Elsinore, Utah earthquake - listing of newspaper articles

NEWSPAPER: Salt Lake Tribune

Date	Headline	Page	Information Categories	Utah Towns Mentioned
09/30/1921	Earth Shocks Cause Damage In Utah Towns	18	B, E, G, I, L, N	Elsinore, Monroe, Richfield - Sevier Co.
10/01/1921	Elsinore Feels Another Quake	19	B, E, G, N, P	Elsinore, Monroe, Salina, Joseph - Sevier Co. Marysvale - Piute Co.
10/02/1921	Tremors Recur With Violence In Utah Towns	20	B, E, G, I, L, N, P, S	Elsinore, Monroe, Richfield, Central - Sevier Co.
10/03/1921	Quake District Back To Normal	21	A, E, I, P, R	Elsinore, Monroe - Sevier Co.
10/10/1921	Last date searched			

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BEAVER CITY PRESS
DESERET NEWS

BAD QUAKE ROCKS ELSINORE

Mrs. John Nowers received a phone message from her daughter Lorhee, who is teaching at Elsinore, that a severe earthquake shook the town at 7 a.m. Thursday and did considerable property damage. The front of an old arlo building was shaken out and the plaster shook loose from the walls

of the school building.

Fortunately, however, no one was injured. This is the second quake felt at Elsinore in the past few weeks.

[Beaver City Press; September 30, 1921]

QUAKE WRECKS UTAH BUILDINGS

SCHOOLHOUSE AT ELSINORE IS NEAR COLLAPSE

Residences In Sevier County Towns Are Damaged

By Severe Seismic Disturbances—Large Loss

ELSINORE, Sept. 29—Three houses in this city and the new public school building were wrecked by an earthquake this morning and every residence and business house was more or less damaged. The loss will be close to \$100,000 according to this morning's first estimate.

The most severe shock occurred at 7:30 a.m. and was followed by 13 or more in quick succession, the last about 8 a.m.

The houses which were so damaged as to be uninhabitable are those of Ernest Crosland, a four room brick, W. M. Forney, modern brick five room bungalow, and the five room brick house of C. K. Christensen.

Other residences which were most severely damaged were those of Mrs. Hannah Jensen and C.

W. Snyder. In both cases the gables were shaken out.

The foundation of the new school building, which contains the gymnasium, has sunk a foot in places, leaving a gaping space between the wall and the roof. All of the walls are cracked and local builders report this morning that it practically will have to be rebuilt.

Sessions of school are being held in the old building which is one of the few local structures which escaped with little or no damage.

No one was injured during the tremors although many close escapes of those who rushed from their homes while chimneys were falling and other parts of houses were being shaken loose were reported.

[Deseret News; September 29, 1921]

RICHFIELD REPORTS QUAKE BUT NO DAMAGE THERE

RICHFIELD, Sept. 29—Richfield was visited by two distinct earth tremors this morning which caused considerable excitement. Houses shook, dishes were knocked from the shelves, pictures fell from the walls and furniture was shaken about by the shocks which occurred at 7:15 and 7:20 a.m. Both tremors were from east to west and lasted approximately a second and a half each.

Reports from Monroe are to the effect that five distinct earthquake shocks occurred there between 7:20 and 8:15 this morning. Other surrounding towns are believed to have felt the tremors but no reports have been received as yet.

On Monday Sept. 11 at 2 a.m., a shock was felt by towns in this section but no damage was reported.
[Deseret News; September 29, 1921]

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BEAVER CITY PRESS
DESERET NEWS

QUAKE DOES SLIGHT DAMAGE AT MONROE

MONROE, Sept. 30—The earthquake in this section, which kept up intermittently until afternoon, the last being one of the most severe, did some damage in this city and community.

The walls of the grade school and of two store buildings were cracked in a number of places and goods on the shelves of the stores were tumbled onto the floors. The trench for the pipe line being laid into the town was caved in in many places and in other places was filled with dirt and debris.

In the mountains southeast of the town unusual disturbance was in evidence throughout the day. Clouds of dust arose high above the mountains, and in Monroe canyon sections of cliffs were shaken loose and could be seen tumbling to the bottom of the canyon. The cliffs near the thermal springs were sundered and great masses of rock were plunged to the bottom.

[Deseret News; September 30, 1921]

WOMAN INJURED BY UTAH QUAKE

TEMBLOR AGAIN EXCITES TOWNS THROUGH SOUTH

Shock At 8:40 A.M. Wrecks Elsinore Houses— Store Front Crashes To Sidewalk, Terror Rules

ELSINORE, Oct. 1—One of the most severe earth tremors since Wednesday's big shock occurred at 8:40 this morning. Mrs. Theodore Christensen was injured by falling plaster when a chimney fell, wrecking the inside of the house.

The front of Anton Nielson's paint shop fell out on the sidewalk. The shop, which is one story built of rock, is in the business section of town.

Ten more residences were so wrecked by this morning's shock as to be uninhabitable. The four room brick house of John Anderson was shattered, bricks falling out of the walls so the interior of the house was visible.

The walls of the three room rock house of Roy Marx were cracked and the building rendered unsafe. The ceilings in the two room brick house of Ed Farnsworth fell in.

Mrs. Theodore Christensen was the only person injured according to first reports. She was at work in the kitchen when the shock came. The chimney fell, crashing through the ceiling and ruining the interior of the house. Mrs. Christensen was struck on the head and shoulders by falling plaster but was not seriously injured.

Three other rock residences suffered cracked walls which caused their being vacated; eight room home of Arnold Lorensen, seven room residence of Thomas Nielson and the Walter Jensen four room house. The partition walls in the four room brick house of Lucell Hanson were damaged to such an extent the family moved out.

The walls of the three room log house of Erastus Madsen withstood the shock but the interior was wrecked causing them to vacate. The upstairs of the Chris Gregerson house is uninhabitable through the front gables being shaken off but the family is living in the down stairs rooms.

Tremors Continued

The tremors continued after the severe shocks but were slight while the report of the damage was being received, 10:10 a.m., another slight motion was reported. All during the night slight disturbances were noted. Disturbances were also noted all day

yesterday with the heaviest in the morning.

The citizens of this section are so terrorized that practically all residents of brick houses are sleeping in hay stacks, and in many cases owners of frame houses have taken to the same practice, although most of them slept in their houses, and in some instances entertained for the night neighbors owning brick homes.

The water of the Monroe hot springs have turned red, as they did a number of years ago following earth tremors. Prof. Fred J. Pack of the University of Utah who is here studying earthquake conditions says the iron oxide in the hills causes it.

Hills are Seamed

The surrounding hills carry great white seams where the earth has cracked. The damage to the school houses proved to be greater than at first supposed. The ceilings and walls of the new building are cracked in every room and collapsed in the upstairs of the old building.

Property damages in Monroe was extensive. The city hall, built of rock, was badly shattered. The homes of Hans E. Tuft, E. Hall and Milton Magleby were badly damaged and the front of the Monroe drug store building was cracked away from the main structure.

On practically every house chimneys are either wrecked or so cracked as to require rebuilding. The two upstairs north rooms of the Monroe school house were damaged, but the building generally is regarded as safe for occupancy. School will be resumed Monday. Mrs. Hans Tuft suffered a nervous collapse as a result of the tremors and required the attendance of a physician for several hours.

School Buildings Unsafe

Supt. A. J. Ashman of the school district visited Elsinore this morning and inspected the damaged school buildings, the falling walls of which would have caught many children had the shock occurred an hour or so later than it did. The school board will hold a special meeting to determine upon accommodations for the Elsinore school children. The present buildings fit for use are deemed unsafe if

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more tremors occur.

The shocks, most severe in this immediate vicinity, have been reported to have extended as far north as Salina and south to Marysville, but without

property damage. At Joseph eight miles south of Elsinore, the shocks were severe, but not sufficiently so to result in property damage.

[Deseret News; October 1, 1921]

TEMBLORS IN SEVIER COUNTY ARE DISCUSSED University Professor Who Was In Elsinore During Saturday's Earthquake Predicts Shocks Are Over

An account of the effects of the earthquake disturbances which shook Sevier county last Thursday, Friday and Saturday, was given this morning by Dr. Frederick J. Pack, head of the department of geology of the University of Utah, who returned from Elsinore last night, where he had gone to make a scientific study of the conditions and to reassure the frightened inhabitants of the town, many of whom had thought of leaving the district.

"I found the people greatly disturbed because of their experiences," he said. "Up to the time of my arrival they had been affected by two severe disturbances, one on the morning of Sept. 29, and the other on the evening of the same day. They had also been affected by as many as 20 to 30 minor disturbances. Up to that time three or four houses had been rendered uninhabitable, scores of houses had been partially wrecked, with falling plaster on the floor of nearly every room of every house.

"Like a thunderbolt from a clear sky and with the rapidity of the firing of a cannon at exactly 8:32 a.m. Saturday a very intense shock struck the town. It was of very short duration, but unusually severe. It was more like a shock due to a giant explosion than the ordinary rumbling earthquake. Its effect upon the town was one of causing as much dust as an ordinary windstorm. In certain sections it was so dense that one could see only a few rods away. The trees shook as if struck by a giant blow. The walls of even the more substantial buildings swayed back and forth in such a manner as to topple or otherwise destroy practically every chimney in the city. Most of these chimneys fell onto the roofs and then to the ground; but some few of them which broke off under the roof were precipitated through the ceiling and into the rooms. Fortunately no one was seriously hurt.

"The actual damage done in this district was probably greater than that of the other two shocks combined. This condition, however, was made possible only by the fact that the former disturbances had loosened the material in such a manner as to be readily thrown down. It is not unlikely that the first disturbance was even actually harder than this one.

"The buildings which suffered most were those constructed of angular blocks of stone; next were the brick and adobe houses of light construction; then the substantial brick buildings, and lastly the frame houses. During my stay there about a dozen minor disturbances were experienced."

Dr. Pack addressed the population of Elsinore Saturday night from the steps of the ward meetinghouse. Because of the fear of the people they refused to enter the chapel, he said. In addressing the citizens, Dr. Pack mentioned a few of the historical earthquakes and gave attention to the general causes of earthquakes. He laid special stress, however, on the matter of the local earthquake and its causes.

Assurance was given the people of the town by Dr. Pack that the indications were that the force of the earthquake had been largely dissipated and that any subsequent ones that might arise would likely be very much less intense than those already suffered. He dwelt with the matter of constructing houses so as to be most effective in withstanding earthquakes, and encouraged the people to go back to their homes.

Dr. Pack explained that the Great Sevier Fault, the largest fault in the known world, stretches from Kanab to Fountain Green in Sanpete county, appearing at Panguitch, being lost in the Gold mountain region and reappearing at Redmond in Sevier county, in the heart of the Sevier valley.

[Deseret News; October 3, 1921]

STEPS TAKEN TO ASSIST VICTIMS OF QUAKE

TREMOR TORN SEVIER TOWNS TO GET RELIEF

Governor Directs That Steps Be Taken To Abate Taxes Of Those Affected In Elsinore And Monroe

With earth tremors still occurring at irregular intervals in the cities of Elsinore and Monroe, relief measures were today launched by the state designed to aid the citizens through abatement of their taxes. The state board of equalization, after consultation with Gov. Charles R. Mabey, ordered the Sevier county commission reconvened as a county board of equalization to abate and adjust the taxes in the cities where homes have been destroyed.

The decision was reached as a result of a visit to the state capitol today by George Peterson, Alma Frandsen and Joseph T. Peterson, composing the Sevier county commission, at which the stringent need for relief measures was stressed. The board met with Gov. Mabey and William Bailey, chairman of the state board of equalization, at which the county commission told of the tremors occurring at irregular intervals for the past four weeks. The last quake reported was on the evening of their departure for Salt Lake Friday night.

It was not the first quake which injured the two towns, George Peterson, chairman of the commission, told the governor and Mr. Bailey, but the frequent recurrences, which shook the tottering homes from their moorings and left the people homeless is so far as shelter was concerned. He told of the poor being without homes and with but little funds with which to obtain shelter, while the taxes becoming due would wipe out any surplus which might be held by some to tide them over the period until they could rebuild their homes and get back on their feet. Mr. Frandsen told of the people living in garages and the neighboring frame houses which had been spared by the quake save for felled chimneys. The commissioners insisted, however, that none were suffering from injuries and that the people were not in danger of starvation since there appeared to be plenty of food.

Governor Mabey told the county commissioners

that they had been unfair in not advising him of the seriousness of the situation before, so that he might have taken immediate relief steps. He told the commission that he did not have the remotest idea that the damage was so great or he would have sent a personal representative into the field to undertake relief.

Upon the request of the county commissioners Governor Mabey instructed Mr. Bailey to visit the stricken cities and confer with the county commissioners and the city councils to see what steps should be taken.

The county commission told of the plan launched by the cities to issue notes for several thousand dollars to make up that which could not be collected from the residents whose homes had been wrecked. They asked the governor if he would be in favor of recommending that the next state legislature reimburse the cities for those loans. Providing the conditions are as bad as explained, the state executive told them he would.

By the county board acting as a board of equalization rebating the tax levies on the destroyed homes, the revenues of the two cities would be cut to such a point that but little would be left on which to operate until next year. For this reason the issuance of the notes was held to be the best available remedy for the situation.

The county board met with the state board of equalization after their conference with the governor, at which it was decided to reconvene the county commission as a board of equalization for rebating the taxes on the property in these two cities.

Mr. Bailey announced that he would leave for Elsinore and Monroe the fore part of the week or as soon as the county should advise him that a meeting date had been arranged with the city councils.

[Deseret News; October 10, 1921]

EARTHQUAKES DESTROY MUCH PROPERTY IN SEVIER TOWNS AND CREATE GREAT PANIC

It has been said from time to time by theologists and pulpit orators of the latter days, and the prophecies of old have been repeated and repeated, that "in the last days will be earthquakes in divers [?]

[?] praying was forcibly brought [?] last Thursday morning to [?] citizens when at 7:15 a quaking and quivering occurred that struck terror to the [?] of hundreds. Buildings, trees [?] everything movable was set in [?] houses swayed and trembled, it seemed as if the city would be [?] from its foundations. It [?] minutes before the shock [?]; in reality it lasted but three seconds.

In Monroe and Elsinore

Investigation proved that very little damage was done, here, but in a short time messages from Elsinore and Monroe brought disturbing news of the shattering of buildings in all parts of these towns. The seismic disturbance struck these towns with terrific force, and people rushed from their homes panic-stricken.

Shock followed shock in those towns during the forenoon, each adding a little to the destruction and increasing the panic among the people. In all fifteen shocks were felt during the day.

A number of citizens started an investigation of the havoc wrought and discovered that practically every house in town had received more or less damage. More than 90 percent of the chimneys were cracked and broken, although most of them remained in position.

The greatest damage appeared to be done to the new schoolhouse. Here the firewalls extending around the building and rising above the roof to a height of four or five feet, topped by a heavy concrete coping, were torn and scattered over the ground along the entire east side, and along the west side of the west wing of the building. Tons of brick, cement and mortar were thrown to the ground, and had the quake occurred at a recess time many children would have been caught by the falling walls. The roof structure was exposed, and a gap was created along the east side of the gymnasium.

Inside the building the walls were cracked in the angles where walls and ceiling met, and also the angles of the walls, but no serious damage was done

to the rooms.

In the old school building no particular damage was done to the lower rooms, but the partition walls upstairs, dividing the halls from the class rooms, were shaken loose from their anchorage to the ceiling timbers and joists, and great quantities of plaster were thrown to the floors. It looked as though the whole roof structure had rocked from east to west, freeing itself from the walls. No serious damage was done to the rooms, but the partition walls will need stay bolts or other anchors to hold them to the ceiling joists.

On Main street the house occupied by Principal Anderson of the public school was shattered and shaken. An east gable collapsed and three chimneys were loosened.

Further down the street the two houses south of the opera house, one of which was occupied by Station Agent Forney of the D. & R. G., were totally wrecked, although the walls did not collapse. These will have to be torn down and rebuilt.

Across the street the Nielson rock building, recently used as a paint shop, was damaged so that the entire front threatened to collapse. This was later propped up with timbers. The home of Theodore Christensen, two blocks further south, was also practically ruined. The walls were seamed and cracked, and threatened to fall at any moment.

All over the town walls of houses were cracked, chimneys broken, and twisted, and people moved their furniture and effects into the yards for safety.

The L.D.S. Chapel seemed to withstand the shock, but a few cracks were visible on the walls.

Monroe Hot Springs Vomit Red Water

At Monroe the hot springs east of town threw up water almost blood red, made so by the disturbance of the iron oxide through which the hot water passes. Here, too, chimneys were wrecked, houses torn and twisted, and great damage done. The home of Hans Tuft was badly shaken, two chimneys loosened and the west wall swung outward.

The front of the Monroe Drug store was torn from its fastenings to the roof and a gap of several inches created.

The public school was badly shaken and particularly the two north upstairs rooms. The plaster

was torn from the partition walls and also the ceiling, and several bad cracks appeared in the corners where these rooms were joined to the original school edifice.

Along the mountains east of Monroe cliffs were rent and great boulders crashed down, sending up clouds of dust which continued to rise long after the oscillations ceased.

The old rock building used as a city hall, across the street south from the school house, was shaken to its foundations, and cracks appeared in all four walls.

Thursday passed with the people greatly upset by the experience of the morning and the succeeding lesser shocks, and evening found them settling down to calm consideration of the phenomena, when, about 7:20, came a shock much more severe than the morning, but much shorter in duration. Again panic reigned. Houses that had withstood the morning attacks were rent and twisted. Doors that had swung easily on their hinges were jammed and twisted. Had this shock lasted as long as the one in the early morning scarcely a building would have been left standing. As it was, people left their homes, carrying bedding into the yards and slept out-of-doors.

Friday passed with recurrences of slight shocks, but no damage resulted from these, and people settled down again in all parts of the disturbed area. Friday night slight shocks were felt at varying intervals but these impulses did not travel far, and were not noticeable in Richfield or south as far as Joseph. Elsinore people sleeping in the open reported five slight shocks during the night.

Heavy Shock on Saturday

At 8:32 Saturday morning occurred a violent shock that completed some of the destruction in Elsinore and Monroe that was started Thursday. Several gables collapsed, one store front in Elsinore was thrown into the street; other houses were torn and rent, and great excitement ensued.

Only Slight Damage in Richfield

At Richfield the chimney on the W. P. Payne home at the head of Main street was thrown down. Several business buildings developed cracks in walls and chimneys. Men, women and children poured forth from homes, stores and offices, and great excitement prevailed. Investigation showed that the damage here was slight.

Again Elsinore and Monroe were the greatest sufferers. Houses that had suffered Thursday were shaken again and threatened to collapse. Other

buildings developed great damage. At Elsinore the gable of the Chris Gregerson home north of the school house toppled into the yard; the chimney on the Theodore Christensen home on Main St. came tumbling down, and brought ceiling, lath and plaster with it. One falling brick struck Mrs. Christensen, causing slight injuries; the front of the paint shop on Main street toppled over; the Farnsworth and Anderton homes in the northwest part of town were rendered uninhabitable, and altogether twenty or more homes were put out of commission, the people forced to move furniture and fixtures into the yards, and to camp outdoors.

At Monroe the tower of the South ward chapel developed some new cracks; Richard Wideen's house had the gable end thrown out; the huge chimney on the south side of the big Collings building crashed down; the cliffs east of town again sent up clouds of dust, great boulders rolled down the hillsides, and the hot springs again vomited blood-red water.

Rock Slides in Monroe Canyon

Jack Thornton of peach orchard fame, who owns a place in the mouth of Monroe canyon, reports that the cliffs on the south side of the canyon opposite his place sent great boulders crashing down the hillside, carrying loose rock and everything movable with them to the bottom. No rock slides occurred on the side where his house is situated.

All forenoon on Saturday slight shocks were felt, and one unusually severe one at 10:30 made many people seek safety in flight.

Oluf Michelsen had a peculiar experience while traveling from Monroe to Richfield. He had reached the sugar factory when the car he was riding in suddenly swerved, nearly turning the vehicle. There was no obstruction in the road and the sudden lurch of the car was a mystery. When he reached Central he found the people out of doors, and greatly excited. He then realized that the quake was the cause of the swerving of the car.

At Central, and at the sugar factory, chimneys were shaken and cracks appeared in many buildings, but no serious damage was done.

The shocks traveled north as far as Salina, but were very slight at this point, only a few people experiencing them. At Sigurd they were felt distinctly, but no damage was done.

Traveling south, Joseph suffered some in chimneys being shaken, and walls cracked, but nothing serious occurred. As far south as Marysvale

the shocks were noticeable. Many huge rocks are reported to have been hurled down the mountain sides in Sevier canyon, and the noted "balanced rock," a point of interest to tourists, is demolished, and scenery is changed considerably because of the seismic disturbances.

Hunters along the river on Saturday beheld some curious phenomena because of the earthquake shocks. The floor of the valley was violently shaken, and the waters of pond and river appeared in great commotion as though a myriad fish or denizens of the deep were violently active. Hunting was disturbed by the quakes, and hunters did not enjoy themselves as they did in past seasons.

Geologist Investigates Tremor

Dr. Fred J. Pack of the University of Utah arrived at Elsinore Friday night to look over the scene of the seismic disturbances. He was present too Saturday morning when the severe shock came, and declared that it lasted but a single second. Others in Elsinore and Richfield declared it lasted at least five seconds.

In an interview he told a Reaper representative that the cause of the disturbance was the slipping of the earth's crust on the great Sevier "fault," which extends from Kanab to Fountain Green, a distance of more than 200 miles. This is said to be the greatest "fault" known to geology. Dr. Pack is not sure as to what causes the slipping, but he asserts very positively that geology knows the effect of this slipping process. He said that a slip of one-sixteenth of an inch would wreck the chimneys, and the slip during the most severe shock felt the past week was not greater than a quarter of an inch at any one time.

As a means of comparison he stated that the great San Francisco earthquake had a total slip of thirty inches. He did not expect that any great disaster would occur here.

Dr. Pack visited Monroe Saturday and there observed the results of the quakes. In addition to the homes and buildings shaken he saw some of the work of the giant forces on the nearby cliffs. Returning to Elsinore in the evening he addressed a large crowd of citizens from the steps of the chapel, explaining the phenomena of earthquakes in general, and with particular reference to the great Sevier "fault" and the slipping process of the earth's crust, which he declares to be in constant motion of rising or falling at some particular locality. He assured the people that the crisis had passed for the present and that no

great cataclysm would occur. He explained that in past ages this great area of over 200 miles along which the Sevier "fault" extends was an area of hot springs. The forces which cause the heating of the water undoubtedly has something to do with the movement of the earth's crust. The line of the "fault" passes through Panguitch, and is lost in the Gold mountain region, although it is known to exist there. It appears at the red mounds at Redmond in this valley, and is very distinctly outlined at that point. Here again former hot springs existed, and commotions in past ages were frequent.

Referring to the great Wasatch "fault" near Salt Lake, Dr. Pack declared that there were geological data, easily read signs to the geologist, of a giant upheaval that occurred in the Salt Lake valley possibly 2000 years ago when there was a slip of the earth crust of more than 100 feet. The shock of such a gigantic movement was terrific, and had the valley then been inhabited not a vestige of buildings would have been left, so great would the oscillations have been.

Dr. Pack did much to restore the people of Elsinore to a state of calmness when he assured them that no great movement of the earth crust could take place at present, and urged the people to begin the work of repairing the ravages of the shocks.

School Board Investigates

Superintendent A. J. Ashman of the school system was at Salina on Thursday and did not hear of the damage to school buildings until his return that evening. He visited the Elsinore schoolhouses Friday morning, noted the damage, and reported to board members his findings. President N. J. Bates, Vice-President Lewis Jones and other members of the school board visited the damaged school buildings on Friday evening, both at Elsinore and Monroe. They decided on repairs, and these were to begin at Monroe on Saturday morning, but the violent shock Saturday delayed the work. Men were put to work on Monday making repairs at Monroe and school opened there Monday morning.

Dr. Pack examined the Elsinore schools on Saturday, and declared that the walls were sound enough to permit repairs. Material was put on the ground at Elsinore on Monday, and the builders declare that with bolts, rods and other binding material the building will be in readiness for school work within a few days.

Some criticism is made of the publicity given

Elsinore through the papers in exaggerated reports from the town's own citizens, and some have declared that much injury to the town's progress has been done by these reports. This is rather far-fetched, according to other citizens, as an event of such importance could scarcely be kept out of the papers. One report that \$100,000 of damage had been done is no doubt stretched, but if the houses severely damaged have to be torn down and rebuilt there has been upwards of \$50,000 worth of damage

done in Elsinore and Monroe.

No further shocks have been felt since Saturday and the farms of Elsinore and Monroe are settling back to their wonted quiet, and repairing of chimneys, walls and other damaged spots has begun.

It will be many days, however, before the shaking up of Thursday, Friday, and Saturday of September 29 and 30, and October 1, 1921, are forgotten.

[Richfield Reaper; October 6, 1921]

THE EARTH TREMORS IN MONROE

(By our Monroe Correspondent)

The most severe earthquakes felt in this region in the past twenty years were experienced on Thursday and Saturday. Thursday, at 7:15 a.m., the earth shook, arousing the sleepers from their slumbers, and people in general were precipitated into a state of panic. The quake lasted several seconds, followed by continuous tremors throughout the day. At 7:30 p.m. the second forceful shock occurred, which with the event of the morning brought down chimneys, loosened the most solid and beautiful homes of the valley. People left their houses and spent the night in barns, haystacks, granaries, etc.

Saturday morning at 8:30 the third occurred, which is conceded in Elsinore to have done more damage than the preceding ones, but as the shock was not of as severe nature, the buildings already loosened and needed only such a shock as that of Saturday morning to complete the damage already done.

Several theories are advanced as to the causes, but none completely satisfies the general mind of the populace. One is, that the trouble issues from Mt. Baldy, either of a volcanic nature or of a settling of the mountain. Why, we ask, if it be Mt. Baldy, does

not the country round about the mount experience more severely the disturbance, instead districts farther away.

Others put forth the idea that the Monroe hot spring is the seat of the trouble, inasmuch as the towns nearest the springs received the most severe shocks. How, again we ask, could a little insignificant hill be the cause of anything of as severe a nature?

Rumors are out to the effect that the Monroe hot springs had run dry as a result of the earthquakes, but the management of the springs state the flow of water is as plentiful as ever, and except for the water being red for a day or two, everything there was as before.

Considerable damage is done to the homes in Monroe, in many cases repairing is almost impossible without tearing down and rebuilding. Among those most damaged are the homes of Hans Tuft, Mr. Hall, Milton Magleby, Alma Magleby, Saral Bates, Andrew Yergensen, Minnie Simonson, Monroe Drug store, Mary Christensen, Joseph Swindle, and many others. More minor damages are fallen chimneys, broken plaster, etc.

[Richfield Reaper; October 6, 1921]

EARTHQUAKE DAMAGE TO SCHOOL BUILDINGS

Necessary Repairs Ordered By Board Are Under Way— Damage Heavy But Not Excessive

The board of education convened for a special meeting to inspect the damage wrought by the earthquake to the school buildings and to order the necessary repairs. According to a statement made by President N. J. Bates, the damage done will cause quite a bit of expense to the board, but luckily is not as bad as had been expected after the first reports of the tremors and the destruction in connection therewith had come in. The worst defects are visible on the two buildings in Elsinore and on the Monroe grade building. The fire wall of the new building at Elsinore has toppled over and has to be rebuilt. The partitions in the old Elsinore building and in the

Monroe grade school have not been properly built originally, and are shaken loose. Proper bracing will protect partitions and ceilings. Three or four of the rooms in the buildings have become unsafe and they will have to be repaired. The reconstruction work is under way and by next Monday all three buildings will be in such a shape that school work can be taken up again. This week school is not being held in some classes.

The school board members were accompanied by mechanics and engineers who assisted them in the inspection and in laying plans for the repairs.
[Richfield Reaper; October 6, 1921]

RELIEF PROMISED TO THE SUFFERS FROM EARTHQUAKE

County Commissioners Bring Good News From Conference With Governor And State Officials

Geo. Peterson, chairman, and Joseph F. Peterson and Alma Frandsen, members of the board of county commissioners, returned Monday night from Salt Lake City, where they had been for several days in conferences with Governor Mabey, the state board of equalization, and the state road commission. They discussed road and tax matters and met with success all along the line.

Foremost in their discussions was the recent earthquake and the damage done by it in Monroe and Elsinore. A plan for relieving those in distress was devised to the effect that Chairman Bailey of the state board of equalization will come to Sevier county to ascertain whether the damage is as bad as described by the commissioners, and if so, will give the commissioners authority to reconvene as county board of equalization to abate taxes for the sufferers.

By the county board acting as a board of equalization rebating the tax levies on the destroyed homes, the revenues of the two cities would be cut to such a point that but little would be left [?] until next year. For this reason the issuance of notes was held to be the best available remedy for the situation, these notes to make up that which would not be

collected from the residents whose homes had been wrecked. The commissioners asked the governor if he would be in favor of recommending that the next state legislature reimburse the cities for these loans. Providing the conditions are as bad as explained, the state executive told them he would.

In their conference with the state road commission the Sevier county dads were assured that our county will get its share of the funds which will be available if the federal government appropriates the much talked of 500 million dollars to aid the states in building roads. In this case Sevier county will be able to pave the road between Richfield and Salina and to resurvey and change the stretch between Aurora and Salina, where conditions are pretty bad. The state road commission expects final word as to the availability of the money inside of sixty days, and Chairman N. C. Poulson personally promised to let the Sevier county commissioners know immediately, so steps can be taken to raise the money to be contributed by the county by a bond issue. The ratio of county money to federal money will be one to three or four.

For immediate repairs of roads where they are at

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the worst, the state road commission donated to the county a brand new Pierce Arrow truck which is ready for immediate delivery, and the commissioners

also put in an application for a caterpillar tractor.
[Richfield Reaper; October 13, 1921]

SCHOOL BOARD PUT TO MORE EXPENSE

Earthquake Damage On Elsinore School Building Is Worse Than Anticipated

The damage done to the school buildings of Monroe and Elsinore by the recent earth tremors will cause more expense to the board of education than at first anticipated. The old buildings in both places are repaired already and in use, but in repairing the new building in Elsinore it was found that the walls had been split deeper than it was expected and more of the walls will have to be taken down and rebuilt before the building can be occupied again. The case was discussed in a special meeting of the board of education held Saturday.

The teachers who were on an involuntary vacation on account of the schoolhouses having been made unsafe by the earthquake, were allowed full

pay for the period.

The selection of a driver for the new truck that will be put into service in the southern part of the district was left with member Staples of Elsinore.

An appropriation of \$175 was made for the purchase of tools to be used in the mechanic art department of the Salina high school.

The board ordered that a truck go over the district and bring broken desks to nearest high school work shops for repairs and to take desks from schools where they are not needed to schools where they have not enough desks.

[Richfield Reaper; October 20, 1921]

REPORT OF SEVIER EARTHQUAKE IN SCIENTIFIC JOURNAL

SALT LAKE CITY, Oct. 26—A request has been received by Professor F. J. Pack of the University of Utah from the president of the Seismological Society of America to write an account of the earthquake at Elsinore for publication in the journal of the society.

The article by Professor Pack will contain a

detailed description of the earthquake with its results. He will also send photographs from the region affected and a geological explanation of the causes of the disturbance.

[Richfield Reaper; October 27, 1921]

UTAH SHAKEN BY EARTHQUAKES

HEAVY SHOCKS TEAR HOLE IN SCHOOLHOUSE

Elsinore Receives Brunt Of Quakes In Early Morning; People Rush Into Streets Garbed In Night Clothing

RICHFIELD, Sept. 29—Earthquake shocks, the most severe ever felt in this region, awoke the citizens of several towns near here early this morning. The disturbance centered at Elsinore, seven miles south of here, where the school building was so badly damaged that it could not be used. A series of minor shocks were recorded locally at Elsinore and Monroe, but the shake-up was principally confined to two distinct quakes, occurring within a few minutes of each other and each lasting over a period of several seconds.

The first shock occurred at 7:15 a.m. and lasted for more than two seconds. Five minutes later the heaviest of the two quakes shook the valley for fully six seconds, tumbling sleepers from their beds and damaging property to an extent not yet estimated. Buildings rocked on their foundations and the startled residents, garbed in their night clothes, rushed into the streets.

Chimneys Tumble

It was with difficulty that they maintained their feet, as the disturbance caused by the faulting earth rocked them backward and forward. Chimneys crashed to the ground. Buildings of fragile construction collapsed. In the Hotel Johnston lobby the rocking chairs rolled over backward from the motion and in the dining room those at early breakfast had their meals precipitated into their laps.

This was the second time in three weeks that earthquakes have been felt here. The first occasion, early this month, startled the residents for several miles either way from Richfield. But that was a very slight disturbance compared to the visitation this morning.

School Building Damaged

Telephonic reports from nearby towns indicate that quakes centered near Elsinore seven miles south of here. There a considerable damage was done to the schoolhouse and to other buildings. So far reports indicate that no one has been injured in the hundreds of small crashes occasioned by the major

disturbance. But it is known that as far south as Marysvale the effect of the shock was felt in damaged property, destroyed chimneys and frightened populace.

The quakes took a north-south line for a known distance of more than fifty miles, and from the severity of the disturbance at these extreme points, it is believed that a much greater area was affected by the shocks. At the center of disturbance, the Elsinore schoolhouse had one wall partially crushed in, while the remaining structure was so badly damaged that the building was made unsafe for use, it is said. The line of fault seemed to lie directly along one foundation of this building allowing that side to settle until a space of more than one foot remained between top wall and roof. At Elsinore, it is said six distinct shocks were felt; but aside from the heavier movements felt throughout this district, no damage was done, it is said.

Rush From Homes

Panic stricken at the seeming eternity of the six-second shaking caused by the second shock, the residents throughout this area rushed from their homes in fright, seeking refuge in the open. Farmers in the outlying districts were no less frightened and it is possible that investigation will reveal much damage in the rural neighborhood. Although the shocks were distinct, the earth trembled over a period of several minutes after each quake intensifying the fearful suspense with possibilities of further and more severe crashes.

The disturbances subsided about 8:10 a.m. and no further shocks had been felt at noon. But it was some time later before the frightened populace would trust themselves inside the city's buildings. Immediate communication with all communities in this district believed to have been within the faulting zone was attempted with reports of incidental damage at Marysvale and Monroe.

[Salt Lake Telegram; September 29, 1921]

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DRUG STORE AT MONROE DAMAGED

MONROE, Sept. 29—Considerable damage was done the drug store here this morning when a series of earthquake shocks accompanied by tremors and slighter disturbances shook this district over a period of two hours. Two walls of the drug store were cracked and the interior of the store was wrecked, with stock and cases scattered about the floor. Minor damage to chimneys and outbuildings has also been reported.

The first shock struck here at 7 a.m. It was followed twenty minutes later by the most violent quaking of the day. Again at 8 o'clock and at 8:50

shocks were registered locally. Between the heavier disturbances there were a succession of light shocks and shakings.

Information obtained here is that the shock at 7:20 followed a north-south line from Salina to Marysvale, striking every settlement over a more than fifty-mile line of fracture. The fault seems to have centered at this point and at Elsinore, a few miles west of here. Damage at other points appears to have been confined to chimneys and minor buildings.

[Salt Lake Telegram; September 29, 1921]

SEVIER VALLEY AGAIN SHAKEN BY EARTHQUAKE

Residents Huddle In Frame Buildings To Escape Injury; Property Damage Believed To Be \$50,000

RICHFIELD, Sept. 30—Panic stricken by the severity of earthquake shocks which shook this district for more than two hours Thursday morning and continued at intervals throughout the day, residents living in brick or stone houses at Elsinore last night took refuge with friends in frame houses for protection in case of further quaking. Shortly after midnight the Elsinore area was again severely shaken and telephonic reports announced the latest tremor at 7:30 o'clock this morning. Following the first fright yesterday, citizens in the affected area began computing their losses and figures received to date place the known property damage in excess of \$50,000, with probably \$30,000 of this amount in Elsinore and \$15,000 at Monroe.

Not a single brick or stone structure in Elsinore remains intact as a result of the twenty-four-hour shaking. Every chimney in that town has crumbled. Walls are cracked, foundations shattered, and the residents practically are homeless. When the tremors had not ceased at bedtime, the people of Elsinore huddled together in the frame houses there and spent a sleepless night awaiting anxiously any further disturbance. About 12:30 a.m. the tremors took on a more terrific swaying which lasted over a period of several seconds. Again at 7:30 this morning the Elsinore people, taking hope from several hours' quiet, were disturbed by a quaking of almost the severity of yesterday's shocks.

Every Building Damaged

In the hysteria and excitement brought on by the earth tremors, property damage reports were at first exaggerated. But with the subsidence of the more violent shakings, those outside the center of disturbance were able to approximate closely the actual damage done. To replace the damage at Elsinore will require at least \$30,000. Every building in the town is damaged. To rebuild the ruined portion of the \$15,000 schoolhouse will take at least \$5,000, it is said, and the cracked foundations, damaged walls and shattered windows of other buildings will run the total up.

Reports from Monroe place the damage there at

\$15,000 with greatest injury done the homes of Parley Magelby, Hans Tuft and Walter Halls, and the local drug store. Minor damages were noted in other residences and many of the people here followed the general panic at Elsinore by refusing to occupy stone or brick houses. The Magelby residence is one of the most expensive homes in Sevier county and its damaged walls and foundations will cost several thousand dollars to repair.

Monroe and Elsinore form with this city a triangle about seven miles to each leg. Monroe lies east and south against the mountains, and Elsinore almost due south of here. The line of fracture which caused the disturbance seems to have cut through the mountains east of Monroe, tumbling down great sections of rock from the cliff sides. This faulting of the formation is no doubt the cause of the quaking felt throughout this area. Monroe and Elsinore lying in direct line of the slipping surface, suffered the most severe results.

Among the most damaged of Elsinore residences are those of Ernest Crosland, W. M. Fournier and C. K. Christensen. The local damage is confined to shattered chimneys and broken windows aggregating a few hundred dollars.

Hourly Shocks Felt

Cessation of the tremors here had composed the people generally, although a few maintained they had felt slight shocks at intervals of one hour. These claims were verified this morning when reports from Elsinore confirmed the hourly slipping there with the heaviest later shakings at midnight and this morning. So far no bodily injuries have been reported as due to the shocks.

Twelve years ago this district experienced a series of unusually severe earthquakes, at which time both Monroe and Elsinore suffered heavy losses. The present convulsion, is, however, far heavier and more persistent and many residents of the two towns are preparing for flight in case the shaking continue, it is said.

[Salt Lake Telegram; September 30, 1921]

REPEATED QUAKEs TERRORIZE PEOPLE

ELSINORE RESIDENTS PREPARE TO FLEE AS TREMORS ROCK HOMES

Fifth severe shock in three days does additional damage in earthquake zone at 8:45 o'clock this morning.

RICHFIELD, Oct. 1—Terrorized by the continuation of severe earthquake shocks which commenced here Thursday morning, citizens of Elsinore and Monroe have completely abandoned all stone and brick dwellings and many are preparing to leave town on the first indication of further disturbances. Three distinct shocks were felt throughout the more than fifty-mile range of the shock area today and for the first time serious damage was done to Richfield property, when at 8:27 o'clock this morning, the residence of W. P. Payne received cracked walls as a result of the tremors.

Today's shocks, so far recorded, came at 8:27, 8:45 and 8:57 o'clock with almost continued trembling and shaking for several minutes following the last sharp movement. Damages commenced by the quakes of Thursday were consummated by this morning's visitations. As usual the disturbance centered at Elsinore and Monroe, situated about seven miles from here. The front wall of the Crosland garage at Elsinore was hurled into the street by the first of today's movements and several persons narrowly escaped injury from the flying brick. So far no injuries have been reported, but the population, frightened by the continued severity of the quakes, is rapidly approaching hysteria.

Prof. Pack Visits Scene

Professor Fred J. Pack of the University of Utah arrived here yesterday to investigate and study the earthquake action and conditions. In a statement this morning he explained the reasons for the present seismic disturbances and declared that no prediction was possible as to probable recurrent shakings. Professor Pack said: "In this region there lies the largest fault plane in the world. It extends from Kanab, on the south, to Fountain Green on the north, over a distance of more than 200 miles. Both the Sevier and Sanpete valleys lie along this line of fracture and further faulting is apt to affect the entire south central portion of the state.

"This region is known geologically as a plateau slowly rising. There are numerous indications of past

movements much greater than those now being experienced. There is no way in which any prediction can be made as to future disturbances here. The present disturbance is a local movement caused by a rising of the plateau in this particular point. Should the rising area spread the disturbances will be greater. If the rising stops the earthquakes from this cause cannot occur. That is about all that anyone can say at this time on the future of this region in this regard."

New Damage Reported

The area of damage extended today when the Denver & Rio Grande station at Elsinore was included in the damage list. The station is about one-half mile from the town. It had escaped injury from the Thursday's shaking. But with the first trembling this morning its chimney broke away and one of the foundation walls has been damaged, it is said.

More serious damage has been done to residences, and the \$15,000 schoolhouse, cracked in the initial disturbance, on which repair work had already been commenced, was further wrecked by the shakings this morning. The gable ends of this building have crashed in, the walls have been warped and twisted and thrown out of plumb and the interior work has been severely damaged. Today's estimate places a total loss on this property.

Among the residences at Elsinore on which the work of demolition was completed by this morning's quaking are the homes of Theodore Christensen, Mrs. J. K. Jensen and Roy Marks. The Christensen home is a complete wreck; not a wall left standing, the roof caved in. Those who can have taken refuge in frame structures, and others have resorted to haymows for temporary residence. These seismic tremblings have been accompanied by cold, cloudy weather which threatens rain, and the fears of the people are accentuated by this inclemence. Serious damage has also been done the John B. Anderson and Crosland homes and, besides the Crosland garage, the Neilson paint shop is a shambles.

Store Threatened

On the two-story brick structure housing the J. G. Hill Mercantile company, both front and rear walls have been moved more than two inches out from the building. The interior has been but slightly

damaged and the place is open for business, although it is expected that the next slightest tremor will crash down both walls.

In this morning's movement the Monroe Drug company's store at that place received additional damages. This was among the first damaged buildings in the Thursday shocks. Then two walls were cracked. Today the front wall was lifted out from the building for a distance of one-half foot.

Damages as estimated following Thursday's quaking must be increased 100 per cent because of the subsequent shocks, it is said, mounting the property damage in excess of \$100,000. School has been suspended and business and farming has practically stopped in both Elsinore and Monroe. Many residences at the latter place are reported damaged and at the thermal springs in Monroe canyon the water runs blood red from the introduction of iron oxide shaken from the fissures

by the earthquakes. The mountains behind Monroe show great white scars and seams left by the fractured segments torn away in the shocks and flung in heavy landslides to the canyon bottom.

Discussion of the relative severity of today's shocks as compared to those of Thursday seem to place the heaviest disturbance to the earlier occasion. But the first convulsion this morning was very close to the Thursday shakings in extent of area affected and damage done, it is admitted. With the possibility of further movement along the fault plane, residents in the towns and nearby farmers are preparing for flight. Each successive shaking has augmented the damage and increased the fear of those within its influence, and those affected are ready to desert their holdings in order to be secure at some point without the danger zone.

[Salt Lake Telegram; October 1, 1921]

QUAKES SUBSIDE AFTER FIFTY HOURS

Total Damage In Earthquake Zone Now Estimated At \$100,000

RICHFIELD, Oct. 1—After more than fifty hours of recurrent earthquake shocks and almost continuous trembling, the seismic disturbances in this region subsided shortly after 9 o'clock this morning. The final severe shaking occurred at 8:27 a.m., the movement at that time increasing the property damage at Elsinore and Monroe to more than \$100,000, it is estimated.

For the first time since the disturbances began, early Thursday morning, a material property damage was reported here following this morning's convulsion, where the walls of the W. P. Payne residence were badly cracked. The exodus of residents from the two towns south of here, near the center of the disturbance, continued throughout the day. Those who have not left Elsinore and Monroe have taken refuge in frame buildings and haymows, abandoning every brick and stone structure in the towns because of fear of injury in case of additional shaking. School sessions were to resume at Elsinore Monday, the \$15,000 school building there being deemed safe for tenancy despite the several thousand damage occasioned by the first shock. But the quake this morning shook down the gable ends and

practically wrecked the structure.

With the elapse of twelve hours with no recurrence of the shocks, the fearful suspense which had gripped the people in this region was noticeably disappearing; and those who had taken refuge here were talking last night of returning to their homes in Monroe and Elsinore tomorrow.

The shakings this morning were only slightly less severe than the Thursday morning shocks and the original damage was considerably augmented. Not a brick or stone structure remains intact in either Elsinore or Monroe, it is said, and several residences and business houses are total wrecks.

For the first time, damage was done to the Denver and Rio Grande station, one-half mile from Elsinore, by the last of the violent movements. The chimney on this building was demolished and the foundation walls were cracked.

No personal injuries have been reported as a result of the two days' shaking, and continued quiet this morning has given rise to the belief that the faulting earth has settled.

[Salt Lake Telegram; October 2, 1921]

QUAKES CAUSE GREAT LANDSLIDES RESIDENTS RETURNING TO HOMES Prof. Pack Says Recurrence Of Severe Tremors Not Likely

No immediate recurrence of the earthquake shocks which shook Sevier valley over a period of fifty hours commencing Thursday morning, is anticipated by Professor Fred J. Pack, who returned from the disturbed area yesterday. "This is not one of those disastrous things apt to recur at any time, and the residents in the damaged district should emulate the spirit shown by San Francisco, rebuild their towns and resume their occupations," said Professor Pack this morning.

Other Salt Lake people who have returned from the shock area are A. L. Heppler of the Co-Op Furniture company and A. Z. Richards of the firm of Caldwell & Richards, civil engineers. Mr. Heppler was in Richfield shortly after the first shock. "I felt the shaking very plainly," Mr. Heppler said this morning. "Following the Friday morning shock, the rumbling of landslides in Monroe canyon, ten miles distant, could be heard at Richfield, and the tumbling earth caused a dust cloud that lifted above the intervening hills. From the Wilford Anderson ranch near the mouth of Monroe canyon sparks caused through friction of the fracturing rocks were seen."

Mr. Richards was in Monroe to inspect the pipeline being laid up Monroe canyon. "At the present working, about two miles from Monroe, more than 100 tons of hillside were precipitated across the trail," said Mr. Richards. "Luckily, the shaking occurred before any of the men had reached the spot. At the narrows, one-half mile nearer town, probably twenty tons of rock were sundered from the cliffside. The canyon here is only a few yards wide and the passage was pretty well blocked up with debris."

Guests Flee Hotel

Mr. Richards was in his room at the Monroe hotel when the first crash came. With the balance of the inmates he left the building before the second shock, when the structure was severely damaged, it is said.

According to Mr. Heppler, the residents of both Elsinore and Monroe, who fled those towns when the shaking persisted, had commenced to return after twenty-four hours of quiet. Reports from Richfield this morning were that after forty-eight hours without any indication of recurrent shocks and upon the

opinion of Professor Pack that further shocks at this time were very unlikely, residents throughout the shaken area have lost their panic and returned to their normal conditions.

In speaking of recent shakings this morning, Professor Pack said: "The Sevier valley and its northern continuation, the Sanpete valley, are the result of crustal depressions brought about by means of faulting. The Sevier fault, which traverses this valley and gives rise to it, has its origin in the platform of the Colorado. It takes a northerly direction west of Kanab, passes near Panguitch, directly under Marysville and cuts Sevier valley about one mile east of Elsinore and Richfield. It continues north through the Red Mounds at Redmond, passes about 200 yards west of the Gunnison reservoir and along the west side of Sanpete valley, where its northern extremity terminates near Fountain Green. The formation is between 225 and 250 miles in length.

Earthquakes Formerly Heavier

"Indications are that in past geological time there has been a great many earth movements and earthquakes on a much larger scale and of greater intensity than those recently noted. In fact, these movements have practically ceased and when we are living in a period when only the tail end of this movement is affecting us.

"Of course what would appear from a geological viewpoint to be a series of rapid and successive movements would seem to us but slight movements over great intervals of time. Geological periods are so far apart that human lifetime is a scarcely noticeable incident; so that while from a scientific standpoint there will probably be further movements in this area, those faultings may not be recorded for even several centuries. I feel assured that the present movement is finished and that any immediate recurrence is highly improbable. In fact, while there is no reason geologically today to deny further minor movements, judging from our general knowledge of earthquakes the inference is that the present disturbance is over with.

"Experience shows that the major movement is always preceded and succeeded with a series of

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minor disturbances. While it would not at all be out of harmony with experience for some additional slight tremors to occur, the history of last week's shocks seem to mark them as regular and I do not believe there will be any further disturbances noted."

Damage estimates in the stricken area place the

total property loss at \$100,000, with every brick and stone structure in both Elsinore and Monroe partially wrecked through the quakes, which terminated with a final violent shaking Saturday morning.

[Salt Lake Telegram; October 3, 1921]

EARTH SHOCKS CAUSE DAMAGE IN UTAH TOWNS

Elsinore Suffers \$100,000 Loss; Three Homes And School Houses Wrecked Monroe Is Severely Shaken; Walls Cracked; Cliffs Near Springs Sundered

ELSINORE, Sept. 29—Earthquake shocks beginning at 7:30 and continuing in rapid succession for half an hour caused more than \$100,000 property loss here this morning. Three houses and the new school building were practically wrecked and many other houses and store buildings were damaged. Near panic was created among residents, many of whom rushed from their homes only partly clad. There was no loss of life.

The first shock was the most severe and of longest duration. Thirteen other shocks came in rapid succession, and minor disturbances have occurred almost hourly throughout the day, but caused no damage of consequence. The homes most seriously damaged were those of Ernest Crosland, a four-room brick; W. M. Fournier, a five-room brick bungalow, and a five-room brick belonging to C. D. Christensen. Slightly damaged houses are numerous and window lights were shattered in many buildings.

Foundations Are Sunken

The foundations of the new school building were sunken. The cornices of the building were torn from the roof, and the walls were loosened from their beams. A stone building belonging to A. C. Wilson and occupied as a garage was badly damaged. Chimneys tumbled down in all parts of the city, and tonight many homes are almost uninhabitable.

According to reports received here, Elsinore was the center of a disturbed area extending for many miles in all directions. Many communities report shocks of varying intensity and minor damages to buildings.

RICHFIELD, Sept. 29—Earthquake shocks have occurred at intervals today. The first shock took place at 7:15 o'clock this morning and was the most severe. Houses swayed and trees and plants were

disturbed as though by the wind. The tremor began by rumbling and was succeeded by oscillation from east to west, which lasted several seconds. The shock was more severe than were the tremors of September 12.

Great alarm spread through the city. The building occupied by the Southern Utah Printing company at the head of Main street was cracked, but no other damage to buildings was reported. Another shock occurred at 7:20 o'clock tonight.

At Elsinore, seven miles south, practically every building in the town was damaged, chimneys were shattered, walls were cracked, plaster was crumbled and the new schoolhouse was damaged to such an extent that it is believed it will have to be torn down.

Many Shocks Follow

After the first tremor fifteen shocks followed during the day. The gymnasium attached to the schoolhouse was cracked so that daylight was admitted.

The walls of the home occupied by Agent Fournier of the Denver & Rio Grande Western on Main street were cracked open, and a paint shop on Main street was practically ruined. The front of the building was propped up to keep it from falling into the street. No school was held during the day.

At Monroe chimneys were thrown down, plaster in the northwest room of the schoolhouse was torn from the walls, and a rock slide over 100 yards wide occurred in Monroe canyon. No lives were lost.

The last earthquake shocks occurred here twelve years ago, when Elsinore and Monroe suffered severely. Buildings were greatly damaged and the Monroe thermal springs vomited blood-red water. Explanation of the disturbance at that time was that blocks of the earth's crust were slipping on the great

fault extending north from Gold mountain.

The tremors were similar to those of the present disturbances.

MONROE, Sept. 29—A violent earthquake occurred here this morning at 7:15. Ten to twelve lesser shocks followed within an hour and at 1:15 this afternoon a tremor of considerable severity was recorded.

Many Walls Cracked

Considerable damage was done to buildings, the walls of many being cracked and in some instances loosened from their foundations. Several chimneys collapsed and extensive repair work on residences will be necessary.

In the mountains a short distance southeast of the

town unusual disturbance was in evidence during the morning and at various times throughout the day. Clouds of dust arose high above the mountains and in Monroe canyon sections of cliffs were shaken loose and could be seen tumbling to the bottom of the canyon. The cliffs near the thermal springs were sundered and great masses of rock were plunged to the bottom.

The walls of the grade school and of two store buildings were cracked in a number of places and goods on the shelves of the stores were tumbled onto the floors. The trench for the pipe line being laid into the town was caved in in many places and in other places was filled with dirt and debris.

[Salt Lake Tribune; September 30, 1921]

ELSINORE FEELS ANOTHER QUAKE

Earth Shocks Cause Discoloration Of Water And Big Seams On Mountains School Building Damaged To Great Extent And Many Dwellings Are Disfigured

ELSINORE, Sept. 30—Yet another severe earthquake shock rocked Elsinore and vicinity at 8 o'clock this morning. Lesser tremors followed.

The seismic disturbances of the previous day, the last severe one at 7:30 Thursday night, had so affrighted residents of the town and of Monroe, a few miles distant, that many slept the night in haystacks. In some instances several families stayed in one house, deemed safe.

Professor Fred J. Pack of the University of Utah arrived here today to make a study of the earthquake conditions. The shocks have been accompanied by a discoloration of the water of the hot springs at Monroe, the color being caused evidently by the presence of red iron oxide that pervades the earth formations in this locality.

Much Damage Done

Other evidence of the disturbance is to be seen in great white seams or scars that have appeared along the hillsides. The damage to the school houses proved to be greater than at first supposed. The ceilings and walls of the new building are cracked in every room and collapsed in the upstairs of the old building.

Property damage in Monroe was extensive. The city hall, built of rock, was badly shattered. The homes of Hans E. Tuft, E. Hall, and Milton Magleby were badly damaged and the front of the Monroe

drug store building was cracked away from the main structure.

On practically every house chimneys are either wrecked or so cracked as to require rebuilding. The two upstairs north rooms of the Monroe school house were damaged, but the building generally is regarded as safe for occupancy. School will be resumed Monday. Mrs. Hans Tuft suffered a nervous collapse as a result of the tremors and required the attendance of a physician for several hours.

School Quarters Destroyed

Superintendent A. J. Ashman of the school district visited Elsinore this morning and inspected the damaged school buildings, the falling walls of which would have caught many children had the shock occurred at an hour or so later than it did. The school board will hold a special meeting tomorrow to determine upon accommodations for the Elsinore school children whose usual quarters have been rendered unfit for occupancy. The present buildings fit for use are deemed unsafe if more tremors occur.

The shocks, most severe in this immediate vicinity, have been reported to have extended as far north as Salina and south to Marysville, but without property damage. At Joseph, eight miles south of Elsinore, the shocks were severe, but not sufficiently so to result in property damage.

[Salt Lake Tribune; October 1, 1921]

TREMORS RECUR WITH VIOLENCE IN UTAH TOWNS

Additional Shocks Complete Destruction Of Several Dwelling Houses

Hotel At Elsinore Is Deserted; One Man Hurt; Cliffs Near Monroe Broken

RICHFIELD, Oct. 1—Earthquake shocks have continued at intervals during the last twenty-four hours at Elsinore. Last night shocks occurred at 9 o'clock and at 11 o'clock. Three other shocks were noted during the night. No particular damage resulted from these, but at 8:32 o'clock this morning a severe shock completed the work of disaster in the wrecking of buildings that were severely damaged on Thursday.

Gables toppled into the yards, chimneys rattled down and walls were shattered so that at least fifteen or twenty houses will have to be rebuilt. The public camping grounds were occupied last night by whole families, who were afraid to sleep in their homes, and today at least twenty families have moved their furniture out into the orchards for safety. The school houses do not seem to have suffered from this morning's quake, but the Jensen houses on Main street, one of which was occupied by Agent J. Farney of the Denver & Rio Grande Western railroad, are now shattered beyond repair.

One Man Injured

The Theodore Christensen home, two blocks south of the opera house, is badly wrecked. A chimney that had been loosened on Thursday was thrown down this morning and came through the ceiling, tearing it to shreds. William Christensen was struck by the falling brick and injured severely. The walls of this place are also beyond repair. The front of the Nielsen building on Main street, now occupied as a paint shop, collapsed into the street. The homes of Edward Farnsworth and John Anderton, hardware dealer, were also shattered so that they will have to be torn down, and the families are occupying quarters in the orchard. The hotel was deserted last night by all except Dr. Fred J. Pack of the University of Utah and Dr. B. Bjornson, local physician. The gable ends of a number of houses, including that of Chris Gregarson, were thrown outward. In all fifteen to twenty houses are so badly shattered as to be uninhabitable. Dozens of other houses suffered more or less damage. The L.D.S. ward chapel walls are also cracked by today's quake and new cracks appeared in many other buildings.

After Thursday's quake there was a perceptible

rise in the temperature of the water in the town water system, which has its source in the mountains southwest of town, but the temperature has fallen to normal at this time.

Today's shock damaged two chimneys at the Utah-Idaho sugar factory, a mile east of Elsinore, and did some damage to the office building and the warehouse corner. At Monroe the hot springs were again sending forth waters at almost blood red.

The gable of the Richard Wideen home was thrown down; a chimney on the William Loring home, said to contain upwards of 2000 brick, came crashing down today, while new rents appeared in the South ward chapel, the Relief hall and numerous other stores, homes and buildings. This morning's quake was not so severe at Monroe as that of Thursday night. The mountains to the east again were shattered and great rocks were rolled down.

Cliffs Are Shattered

Jack Thornton, who owns a fruit farm in Monroe canyon, reports that the cliffs on the south side of the canyon were shattered and boulders weighing hundreds of tons bounded down the steep sides, starting veritable landslides.

Former County Attorney Olif Michelsen, journeying from Monroe to Richfield at 8:30 o'clock this morning, reports that when he reached the sugar factory his car was nearly upset by the force of the quake. The rear end swung around and nearly overturned the car. Not till he reached Central, a little village midway between Richfield and Monroe, did he understand what caused the car to swerve. Here the people were all out of their houses in a panic. The shock wrecked chimneys and cracked the walls of the schoolhouse.

At Richfield a near panic ensued when the shock struck the city at 8:32 o'clock. People ran from homes, stores and offices. The houses, trees and everything movable swayed and rocked. The shock, while severe, did little material damage. The chimney on the W. P. Payne home was torn down, cracks appeared in the Winkel building and the Young block, corner of Main and Center. Clocks were stopped, windows broken and pictures on walls were thrown askew. People were greatly frightened.

Professor Pack spent today in Elsinore and Monroe. He gives as the cause the same explanation that appeared in Friday's Tribune, the slipping of the blocks of the earth's crust on the Great Sevier fault, the largest fault in the known world, stretching from Kanab on the south to Fountain Green, Sanpete county. The fault appears at Panguitch and is lost in the Gold Mountain region, then reappears at Redmond, in Sevier county, in the heart of the Sevier valley.

Phenomenon Explained

He explains that this section in ages past was a region of thermal springs and this heat may have something to do with the shifting of the crust on the great fault. In his opinion a shift of the crust on the fault of one-sixteenth of an inch would cause chimneys to tumble and that in the present case there has not been more than a quarter of an inch of movement at any one time. In comparison, he states that the shift during the San Francisco earthquake amounted to thirty inches. He has examined the damaged school building and does not think that the damage is extensive enough to warrant the tearing down of the structure. He believes steel rods and

stronger fire walls will make the building secure. Dr. Pack stood on the lawn at one of the houses that was badly shaken Thursday and experienced the shock at 8:32 o'clock this morning. He declares that to have lasted not more than one second. He observed the direction and swaying trees and is of the opinion that the shocks came from the southwest. He assures the panic-stricken people here that no great cataclysm threatens and is doing much to allay fear. He found one earth crack in the southeast portion of the town, but after investigation he believes this to have been caused by the roots of a giant tree near by.

Dr. Pack will lecture tonight to the Elsinore people on earthquakes in general with special reference to the present disturbance. Meantime Elsinore citizens are greatly excited and many families refuse to sleep indoors.

Along the Sevier river, hunters this morning reported the shocks of the forenoon to have been unusually severe at Half Moon pond, south of Richfield. Vernon Miller, seated on a high bank, was thrown to the edge of the water when the first quake arrived. He was uninjured, but was badly frightened. [Salt Lake Tribune; October 2, 1921]

QUAKE DISTRICT BACK TO NORMAL

Citizens Return To Homes They Left Following Recent Severe Temblors

RICHFIELD, Oct. 2—After fifty hours of fear caused by a series of earth shocks which began Thursday, this section of Utah today began to settle down, nearly all citizens of this town, of Elsinore and Monroe and smaller communities returning to the homes they had partly abandoned Friday night and Saturday morning. There have been no quakes now for thirty-six hours, and indications are, according to Professor Fred J. Pack of the University of Utah, that the tremors have quit for the time being.

Saturday morning's shake was the most severe and it helped to complete the damage of the temblors of Thursday and Friday. The total damage throughout this section may not be more than \$50,000 or \$60,000, it is estimated. Cracked walls, destroyed chimneys and similar damage are noticeable throughout this section. Several buildings

have been almost completely destroyed. The residents appear to have forgotten their terror of the last three days.

Building of fires in homes where the chimneys have been damaged has been forbidden by the authorities in the interest of fire prevention. There is no way of ascertaining how badly damaged some homes may be at this time. The schoolhouses do not appear to have been as badly damaged as at first supposed. According to Professor Pack, there is a possibility that other shocks may occur, observations being that a series of light shocks generally follows those of a heavy nature. Only one person was reported injured, and he only slightly, by falling bricks.

[Salt Lake Tribune; October 3, 1921]