

The Charleston Earthquake.

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Outline:

Place of Occurrence

Charleston.

Situation.

Preliminary tremors.

Time.

Result of.

Great Shock.

Time of occurrence

Its approach

Condition of Atmosphere.

previous to disturbance

Duration of.

Accompanying disturbances.

Time of greatest intensity.

Second Shock.

Destruction of

Occurrence of fire.

Following Shocks.

Effect

Destruction

Direction of Vibration

Situation of Center of Disturbance
Suburban Effects
Extent of.
Probable Cause.

This the greatest of recent American geologic disasters, occurred in the vicinity of Charleston, South Carolina, August 31st, 1886.

The City of Charleston is situated near the coast, and on a narrow strip of land between the two rivers Ashley and Cooper. It is very low in some places and intersected by numerous streams. This makes it necessary that much of the city be built on "made" land, a fact which seemed to have something to do with the destructive effects of the earthquake.

The great shock of August 31st was preceded for some months by smaller preliminary ones. Early in the summer of 1886, several slight tremors were felt, but did not attract much attention at the time. During the sitting of the United States Court, in Charleston, in the month of June, we are told that there was a decided rattling

of the window sashes, which attracted attention and which was thought by a few to be caused by something other than the passing of heavy loads or boiler explosions.

The first decided shock was felt at Summerville, a village twenty miles from Charleston on the morning of August 27th; but this was noticed at Charleston.

The next day, the 28th, another shock was felt at Summerville at 4.45 A.M. which was distinctly felt at Charleston at the same time.

During the same day, there were several other shocks. The result of these minor shocks was not serious, being only a slight shaking of the houses and rattling of the windows. These last shocks created no little uneasiness in Charleston, but they in no way prepared the people for the great shock which was to come so soon.

On the afternoon of August 31st, the air was very sultry and quiet. There was no breeze from the ocean, and a hazy light was thrown over the landscape by the setting sun.

At 9.30 P.M., there was a suddenly heard a rattling roaring sound, which at first was thought to be by some to be caused by the rapid movement of cars or heavy loads, while others attributed it to the escape of steam from a boiler. A tremor accompanying this sound was felt, but was not more violent than that which is produced by the causes to which it was attributed. There was a short time of quietness, two or three seconds, perhaps, when this rumbling sound gave place to an awful roar. Then it seemed that the whole earth had been grasped by the mighty hand of Power, intent upon destruction. The troubled earth

trembled, and seemed inclined to give way under its burden.

The tremor was now a rapid quiver and the strong walls of the massive buildings rocked and swayed to and fro as the sapling bends before a strong wind. All nature seemed in a state of agitation. Furniture in the houses were displaced. Many movable pieces were thrown to the floor and we are told that pictures were swung out from the walls, and in some cases turned completely around.

Everything was thrown into confusion. It was found that during this time there were about fourteen thousand chimneys broken off at their junction with the roof. The duration of this shock was thought to have been about thirty or forty seconds.

Some say that there was no intermission between the vibrations

that it was a continuous jar, and that force was added with every moment until a point was reached where it seemed that no work of human hands could stand; while with others distinct movements were thought to have been perceived.

The time of the greatest intensity was during the first half of the shock.

The people first thought of escaping from the rocking buildings into open spaces but to do this was only to meet death by the falling porches and chimneys. Thus amid the swaying walls and the falling masonry, they stood dazed and holding their breath in dreadful anticipation of a sudden and awful death.

For a moment, it seemed that the worst had passed, when it began again, and the moment was almost as violent as before. The walls of the buildings now

rendered less stable by the previous shocks, many of them gave way. It is said that not a single house in the city escaped injury, and the large mapoity were so badly shattered that they had to be torn down. The air was filled with a white, dry dust which came from the dry mortar from the walls.

Presently, this second noise with the accompanying tremor died away, leaving the earth still once more. Now the sounds as they greeted every one as they rushed into the street were of a different kind but no less horrible. Cries of pain were to be heard from those who had been injured by the falling timbers and masonry while trying to escape during the shock. shrieks and cries of fear were heard from women and children, mingled with the

hoarse shouts of the excited men. Every one was in the highest state of excitement. They were to be seen running in every direction in search of safety.

And now to add more terror to the scene if such a thing were possible, through the cloud of stifling dust is seen the flash of a sudden light. It is fire! Every body who is able rushes to the spot, but lo! another of those low, rumbling, and by this time familiar sounds, is heard, and as it grows louder and louder, nearer and nearer every thing is forgotten save that of life. Every one makes a mad rush for the open spaces where there alone is hope of safety. Without doing much damage, this shock passes away to be followed by prayers of thankfulness from every heart.

Fires break out in several

parts of the City, but they are allowed for the most part to spend their fury unmolested by the excited throng.

Four severe shocks occurred before midnight.

Many small fissures were found to have been made in the ground. From these, were thrown in some places, mud and water, while from others was thrown sand and water. These craterlets are thought to have been caused by the pressing of a saturated sandy layer between two less pervious layers forcing the sand, mud and water up through these crevices. These cracks were to be found mostly in the low places.

Immediately after the shock of Tuesday night, a strong odor of sulphur was noticed; and in Charleston and other places where the shocks were very severe, a sense of nausea was felt by

the people.

The time between midnight and day is described by those who experienced it as a "long, anxious watch, and not less trying than the shock itself." The dreadful suspense was relieved only by the approach of remembered danger. The people knew nothing of the disaster, except that which they had experienced and there was no reason for them to believe that the danger had all passed. So the time wore away, minutes seeming whole hours to them. They were shut out from the rest of the world.

Telegraph wires were shaken from their supports, and the railroads were rendered unfit for use. The whole track was raised in some places, lowered in others and shoved out of line in still other places. Rails were also displaced laterally.

After mid-night, there were

three distinct shocks. The atmosphere during this time was very still.

Early in the morning some people were bold enough to enter their houses with the view of repairing; but they were driven away by a shock occurred about 5.30 A.M. This caused increased excitement, because of the weakened condition of the buildings.

Other shocks are said to have occurred at one, five and eight A.M. of the same day.

The inhabitants were shut up in Charleston all day Wednesday. They knew nothing of the extent of the earthquake.

Wednesday night was spent out of doors by the entire population. Rude tents were put up of whatever material was to be found, and pallets were spread on the ground and used as beds. The

people were constantly watching for other and more terrible shocks.

It is told that the sudden peal of an alarm clock in one of the camps brought out every one within hearing distance.

All reports of the disaster show that the destruction caused by it was very great, and that it varied in different parts of the city. This was attributed to the difference in the ground. As a rule, the destruction was greater on "made" land than it was on the natural high land.

The number of overthrown walls facing north and south were found to be greater than those facing east and west.

The direction of the street seemed also to have had something to do with the injury of the buildings. The direction of vibration was found to have been the cause of these dif-

ferent effects.

By a careful examination of the grounds, it was found that there were two tracts. The larger and the most important one was nearly a circular area, the center of which, was about sixteen miles north and thirty degrees west of Charleston. The smaller was situated about thirteen miles due west of Charleston. The two centers were about thirteen miles apart.

At Mt. Pleasant and at Moultrieville on Sullivan Island, the disturbance was felt about the same time as at Charleston. Summerville and Lincolnville were the only villages situated upon the epicentral tract. At Summerville the shocks were felt at about the same time as at Charleston, but they occurred with more vigor. At

This place, during the most severe shocks, people were unable to stand erect, Houses were violently shaken, being described by some to have seemingly been galloping madly down hill. Here as in Charleston the remainder of the night was spent out of doors. Wails and prayers of the superstitious blacks were to be heard during the intervals between shocks.

Several minor tremors were felt throughout the night, and next day, always accompanied by that deep solemn roar.

Lincolnton, a small village southeast of Summerville, experienced even more violent shocks than were felt elsewhere.

The damages were of about the same nature.

The extent throughout the country to which this earthquake was felt was very

great. The limit to which it is said to have been severe was from two hundred to two hundred and fifty miles. Difficulty in standing was experienced within eighty miles.

The vigor of the shocks was very marked throughout the state of South Carolina, but there was a noticeable difference between the eastern part and the western part of the state. The shocks being more marked in the west than in the east. There was found to be a great difference between the shocks as felt at Savannah and at Columbia, both being situated about the same distance from the center of disturbance. This difference is attributed to the fact that there is a marked change in the geological formation between these places. The change of

force took place at a line running northeast and south-west where the later coastal formation meets the more ancient metamorphic crystalline rocks.

The most distinct point on the Atlantic Coast at which the shock was perceived, was at Boston. It was thought to have been felt at some points in southern Vermont, also in parts of Ontario. It was very perceptible in Wisconsin, and the most distant locality which furnished detailed reports was that of La Crosse, which is about nine hundred and sixty miles from the center. From this the shock can be traced along a line running down through Iowa, western Missouri, eastern Arkansas and Louisiana close to the mouth of the Mississippi river. It is said to have been felt at Bermuda Island

which is one thousand miles from the place of greatest disturbance.

It is roughly estimated that the sensible shaking included an area of one half million square miles.

The velocity with which the wave travelled was found to have been seventeen thousand feet per second. And the approximate depth of the principal focus was twelve miles.

This phenomenon in nature is understood probably less than any other, due partly to the fact that the origin is hidden from observation, and partly to the fact that it occurs with such suddenness that it renders the mind unfit for scientific investigation.

This part of the country seems subject to this disturbance for we have left to us an account of an earthquake which

occurred as early as 1812.

It is now known by geologists that there is a fault which extends the whole length of the Appalachian mountain system and that the giving away of this with an accompanying explosion caused by the heating of water by various agencies, was the probable cause of this disturbance. There are several other theories as to the real cause of this earthquake but it is a question which will, in all probabilities, be left for future generations to answer.