

SEISMOLOGY

Helena Quake Caused by Mountains' Growing Pains

Scientific Shock Recorders Now Installed in Helena Federal Building to Record Tremors

GROWING pains of the comparatively young mountains around Helena, Mont., are responsible for the scores of earthquakes that have shaken and damaged the region in central Montana where the Missouri River begins to gather water.

Earthquakes are the price paid by the crust of the earth for its evolution and progress. And in that sense the Rocky Mountain region and the Pacific Coast, because they are younger geologically, are more progressive and likely to give man and his buildings jolts from time to time.

Scientists have put their scientific finger upon the spot where the major shock of Saturday, October 19, occurred. It is 70 miles north of Helena in the Little Belt Mountains, the range northeast of that city. Not particularly unusual are the scores of minor shocks that are reminding inhabitants unpleasantly of the big shake. More unusual was the previous Saturday's foreshock, the physical premonition of the major tremor to come, for earthquakes do not always "call their shots" in this way.

Scientific shock troops are on the scene of the disaster and have taken up a position in the basement of Helena's federal building. Rushing from California by fast motor truck, Franklin P. Ulrich, U. S. Coast and Geodetic Survey seismologist, brought two instruments and set them up to catch the dying tremors of the quake. Late on Monday night, October 21, an accelerograph and a vibration meter began writing their wavy records in order that the scientists may learn more about how the tremors occur. Passing through a snow-storm in the dash to Helena from the coast, Ulrich's truck had a minor skidding accident and U. S. Forest Service officials gave aid in getting the seismological instruments to Helena.

Many permanent seismographs miles away from Montana wrote with their pen and photographic fingers the story of the quake as telegraphed by vibrations of the earth itself. At Ottawa, Pasadena, St. Louis, Washington, Chicago, Tucson, Ukiah and elsewhere, as well

as at Bozeman, Mont., closest seismograph to the quake, scientists read the records, turned them into code and then telegraphed them to Science Service, where the information was relayed to the U. S. Coast and Geodetic Survey, Uncle Sam's agency for watching and reporting earthquakes. In this way the exact location of the center of the quake was more accurately determined in Washington than it could be in Montana. Its latitude was 47.1 degrees north, longitude, 111.8 degrees west. The exact time of origin was 11:48.1 p. m., Mountain Time, just a few minutes before Friday night passed into Saturday morning.

The fault or rock cleavage in the mountains that slipped and thus set up the vibration may not be found. The actual slippage of the rocks probably occurred deep in the earth and in this quake probably did not come to the surface of the ground as it sometimes does.

Montana's other important quake of recent years occurred in 1925 and was centered in the region of Lombard, south of Helena and nearer the head of the same valley. At that time geological investigations caused the issuance in government reports of warnings that other fractures in the mountains were probably carrying unrelieved strains that would probably cause future earthquakes.

Earliest record of an earthquake in the region was brought back by the famous Lewis and Clark expedition, one of the white man's first penetrations into Montana. One day in 1805, an earthquake was felt and sounds like distant artillery fire or thunder were heard. In 1883, the Gallatin valley region had strong shocks, but no damage was done because there were few inhabitants.

U. S. Coast and Geodetic Survey seismologists over the week-end sent 500 questionnaires to postmasters and leading citizens in a wide area around Helena, asking them to give the government the benefit of their earthquake experiences. This is expected to supplement the record of instruments. The government seismologists guess that

the shock of October 19 was not really as strong as the 1925 Montana quake, but that it was more localized. They rate it 8 or 9 on the earthquake intensity scale, with 10 a really bad quake.

Builders and architects of the region should take a lesson from the earthquake, seismologists warn. Buildings, for a very few dollars extra construction cost, can be made to withstand severe earthquakes. The difficulty has been in the past that few took earthquake risks seriously until the earth began to shake.

Science News Letter, November 2, 1935

PALEONTOLOGY

Wing-Bone of Pteranodon Found in Central Texas

FAR SOUTH of any previously known occurrence, the broken wing-bone of an ancient flying reptile has been found in Texas. It was sent to the U. S. National Museum in Washington by Tom H. Wells, of Austin, and identified as probably belonging to the genus *Pteranodon*, by Dr. C. W. Gilmore, Museum paleontologist. *Pteranodon* remains have not previously been reported south of western Kansas.

The discovery and identification of this hundred-million-year-old fragmentary fossil is reported in *Science* (Oct. 19.)

Science News Letter, November 2, 1935



IMPORTANT SHOT

Dr. Frank H. H. Roberts, Jr., points to the hand-made dart point of stone which he found fixed in the vertebra of an extinct kind of American bison. This means that human hunters must have been already in the New World when big game animals like this roved the wilderness.