

## SEISMOLOGY

# Along Bear Mountain Fault

**Epicenter of great California earthquake now located a few miles west of Tehachapi. Was second strongest in California history.**

► **EPICENTER OF** the great California earthquake was along the Bear Mountain fault near Arvin, Calif., a few miles west of Tehachapi, which suffered the most damage. This was determined by preliminary geological and instrumental evidence gathered by field crews from the Seismological Laboratory of the California Institute of Technology.

Previous estimates had the epicenter located on the infamous San Andreas fault, or on the Garlock fault. However, it is located about 20 to 25 miles north and slightly east of the San Andreas fault and about the same distance northwest of the Garlock fault, Caltech seismologists said.

The quake, with a strength of  $7\frac{1}{2}$  on a scale which gave a reading of  $8\frac{1}{4}$  for the 1906 San Francisco earthquake, was the second strongest in California history.

Dr. Beno Gutenberg, director of the Caltech seismology laboratory, predicted that aftershock activity would continue for another year. Several hundred aftershocks have already been recorded on Caltech and U. S. Coast and Geodetic Survey instruments, one at least reaching a strength of 6.

Pierre St. Amand, a Caltech graduate student in geophysics, who was sent into the field to search for the epicenter, traced a  $12\frac{1}{2}$  mile series of surface cracks in rock along the Bear Mountain fault, starting about four miles east of Arvin. At this point, he said, the rock was displaced three or four feet along a sloping line. This indicated that the western end of Bear Mountain moved some three feet upward and northward relative to the earth on the other side of the fault.

Dr. John Buwalka, Caltech professor of geology, who also surveyed the area, reported that in a railroad tunnel near Bealville, Calif., he saw that the tracks had been shortened some ten feet by being twisted in an S-shape. Mr. St. Amand and another Cal Tech graduate student in the field, George Shor, both reported seeing intermittent earth cracks south of Arvin which would extend the surface evidence of the Bear Mountain faulting for another  $12\frac{1}{2}$  miles southwestward.

There is a possibility that one or more of the aftershocks which are expected might approach the magnitude of the original shock. It is more likely, however, that only a few of them will be strong enough to be felt by residents of the area, the rest will be known only because seismographs pick them up.

A strong aftershock followed the Helena, Mont., earthquake of Oct. 18, 1935. It occurred on Oct. 31, followed by minor shocks

until Nov. 28. On Aug. 4, 1946, the Dominican Republic suffered an earthquake with a strength of  $8\frac{1}{2}$ . Four days after the Dominican quake, an aftershock with a force of  $7\frac{3}{4}$  was felt. And again on Oct. 11 another aftershock with a strength of a little over 7 occurred.

Two seismological teams under Prof. Charles F. Richter and Mr. Shor have already returned from the field with quake records made with portable instruments. Other scientists are returning to the region to map the fault carefully and to try to determine the nature of the movement along it. A new portable station will be set up in the region by Mr. Shor and Ralph Gilman, laboratory technician, and also a semi-permanent station will be planned. Coast and Geodetic Survey scientists are also in the field.

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## INVENTION

## Hammer's Handle Is Shock-Absorbing

► **A HAMMER** with a shock-absorbing handle has been invented by Axel E. Floren, Klamath Falls, Oreg. It received patent number 2,603,260. His hammer has an integral steel shank to which is attached a tubular grip at a point spaced substantially from the butt end so the hammer has a flail-like action. Between the grip and the shank is a tube of rubber.

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## PUBLIC SAFETY

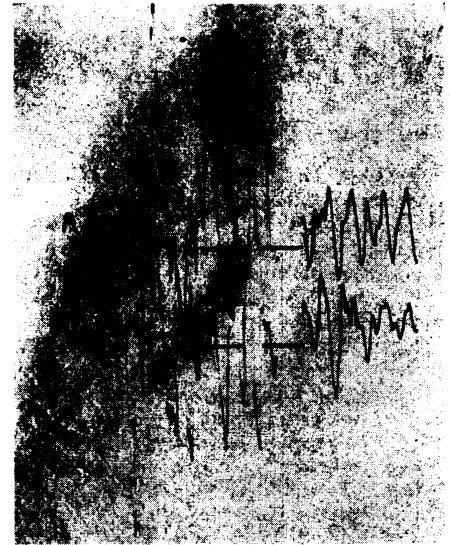
## New First Aid For Drowning Victims

► **FIRST AIDERS** this summer will be using a new and better method for giving artificial respiration to save drowning victims.

It is called the back pressure-arm lift method and is officially recommended by the American Red Cross, U. S. Department of Defense, National Research Council and U. S. Public Health Service. Here is how you do it:

1. Place the subject in the face down, prone position. Bend his elbows and place the hands one upon the other. Turn his face to one side, placing the cheek upon his hand.

2. Kneel on either the right or left knee, at the head of the subject, facing him. Place the knee at the side of the subject's head close to the forearm. Place the opposite foot near the elbow. If it is more comfort-



**EARTHQUAKE RECORD**—This is the way the intense California quake wrote its own story on the seismographs at the California Institute of Technology. The jagged up and down strokes represent vibrations of the earth's crust. The earth movement was so great at Pasadena that it broke two other seismographs and went beyond the capacity of 12 others. Magnitude of this quake was  $7\frac{1}{2}$ , greatest since the 1906 shock in San Francisco.

able, kneel on both knees, one on either side of the subject's head. Place your hands upon the flat of the subject's back in such a way that the heels of the hands lie just below a line running between the arm pits. With the tips of the thumbs just touching, spread the fingers downward and outward.

3. Rock forward until the arms are approximately vertical and allow the weight of the upper part of your body to exert slow, steady, even pressure downward upon the hands. This forces air out of the lungs. Your elbows should be kept straight and the pressure exerted almost directly downward on the back.

4. Release the pressure, avoiding a final thrust, and commence to rock slowly backward. Place your hands upon the subject's arms just above his elbows, and draw his arms upward and toward you. Apply just enough lift to feel resistance and tension at the subject's shoulders. Do not bend your elbows, and as you rock backward the subject's arms will be drawn towards you. Then drop the arms gently to the ground. This completes the full cycle. The arm-lift expands the chest by pulling on the chest muscles, arching the back, and relieving the weight on the chest.

The cycle should be repeated 12 times per minute at a steady, uniform rate. The compression and expansion phases should occupy about equal time, the release periods being of minimum duration.

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