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SEISMOLOGIST TELLS OWN EARTHQUAKE EXPERIENCE

By Dr. Bailey Willis,
President of the Seismological Society of
America, and Professor Emeritus of Ge-
ology, Leland Stanford University.

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(Prof. Willis at the time of the earthquake was staying in the suburbs of Santa Barbara where he was engaged in geological research. This is therefore a first-person story by the man who is rated as America's foremost seismologist.)

The Santa Barbara earthquake was a movement on a fault that runs along the Santa Ynez range of mountains and passes through the Sheffield reservoir which held the city's reserve water supply. The general direction of the movement of the earth along this fault was apparently south to north, as shown by the scar made by the trail of the cannon mounted on the platform near the post office building. This showed that it moved sixteen inches south. The chimneys which were demolished on many houses otherwise uninjured were thrown in all directions according to the mechanical conditions surrounding them. In some cases they remained standing although twisted as much as thirty degrees at the line of fracture.

An inspection of the damage in Santa Barbara shows that the lessons of the San Francisco and Tokyo earthquakes could be applied here. I drove through the city within an hour after the shock and noted the buildings of various kinds -- wood frame, brick, reinforced concrete, etc. Those that remained undamaged were well constructed. Badly designed reinforced concrete, failed, as shown by the disastrous collapse of the San Marcos office building, an edifice of four stories in which one corner gave way. Brick veneers which were not tied to the frame fell out, as in the case of the California hotel, where the floors remain standing, although stripped of walls on three sides. In general good design and honest workmanship stood, while incompetency and bad workmanship were exposed in all their miserable nakedness.

The earthquake was not unexpected among seismologists. During the last seven years we have had the San Jacinto, Inglewood, Elinore and San Bernardino shocks, each one resulting from movement on one of the four great earthquake faults of southern California. The system of faults which outlines the San Gabriel range extends west through the Santa Paula valley and skirts the Santa

Ynez range had not up to this time shown any evidence of disturbance. It was well known, nevertheless, that a strong pressure exerted against the mountain range from the south has caused it to move gradually, so that Gaviota Peak, a triangulation point of the U.S. Coast and Geodetic Survey, has been pushed northward twenty-four feet in thirty years. As the last great earthquake shock in this region occurred sixty-eight years ago, in 1857, those who are familiar with the history of earthquakes in California expected a disturbance.

To a certain extent their expectations are now fulfilled, but fortunately the Santa Barbara earthquake is much less severe and much less general in effect than some seismologists have feared it might be. There is now little reason to anticipate any severe shock in the immediate future. We shall experience the usual crop of after tremors, but they will gradually die away as the rocks return to their normal condition of elastic strain.

The expectations of seismologists in regard to the coming of the Santa Barbara shock were of general nature only because we have not yet established the recording stations, which if set up throughout the coast region of California would enable us to foresee such occurrences. The Carnegie Institution of Washington is now engaged in establishing stations at Pasadena, Riverside, La Jolla and other points in southern California, where instruments designed to record local earth tremors will be set up.

All of the stations will operate in unison under the central control of the principal station at Pasadena and the records which they will yield will enable us to fix the focus of even the slightest tremors within fifty or sixty miles of the stations. As the records are continuous we shall know exactly where the earthquake strain is gathering and how it increases or diminishes from day to day or month to month.

In the course of time a chain of stations of this character will no doubt be established from San Diego to the Oregon line. But it will have to be done through the cooperation of the communities interested and will not be accomplished until public opinion is educated to an understanding of the advantage of knowing all that we can about earthquakes and the methods of protecting ourselves against their effects.

EARTHQUAKE A TEST OF BUILDINGS WORTH

by Watson Davis,
Managing Editor, Science Service,

Again Mother Nature has had growing pains and again it is demonstrated that man does not learn by experience.

For while the delightful Pacific coast town of Santa Barbara ^{was left} is in ruins, without water, gas or electricity, and the whole length of its principal State Street is practically wrecked, there are some buildings that are essentially undamaged. Those buildings that came through their serious shaking nearly unscathed were those that were built well.

The lesson that can be learned from the disaster here which I have just witnessed is that in areas subject to earthquakes, engineer, architect, contractor and owner must insist that the structures that they erect must be as nearly