THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

ISSUED BY
SCIENCE SERVICE
B and 21st Streets
WASHINGTON, D. C.

EDWIN E. SLOSSON, Director
WATSON DAVIS, Managing Editor

SUBSCRIPTION: $5 A YEAR, POSTPAID

Vol. VIII, No. 269

Saturday, June 5, 1926

MICROSCOPIC EARTHQUAKE STUDY TO HELP PREVENT DISASTERS

Studying earthquakes in California as with a microscope to learn their whims and so to help prevent such damage as that in San Francisco in 1906 and in Santa Barbara in 1925, is the program inaugurated in the region of Los Angeles by the Carnegie Institution of Washington and now being introduced by local business interests around San Francisco, according to Dr. Bailey Willis, professor emeritus of geology at Leland Stanford University, and president of the Seismological Society of America.

"Earthquake centers are located in belts," Prof. Willis told a representative of Science Service, "one belt surrounding the Pacific Ocean, and another extending across Southern Asia and the Mediterranean. Still another belt crosses the West Indies. The belts are related to zones of growing mountains, where there are marked differences in elevation, sometimes between mountainous regions and lowlands, and sometimes between the land and the bottom of the sea. These differences in level, however, are the effect, and not the cause, of earthquakes, because the forces which produce the quakes are those engaged in pushing up live mountain ranges.

"As a result of a world-wide earthquake survey, we now have maps of earthquake regions which for accuracy and completeness may be compared with the maps of the continents in the time of Queen Elizabeth, but we need much better maps, and to get them we must have closer surveys. For that purpose we have need of a new type of instrument of seismometer.

"In designing this new type, the experts of the Carnegie Institution have resorted to a pendulum which scarcely weighs an ounce and is attached to a tungsten steel wire as fine as a spider's web. It carries a small mirror which reflects a pencil of light and the latter draws the record on a moving photographic film. In size and weight the instrument is exceedingly strong, and yet it offers no large mass by which an earthquake could destroy it, as is the case with older designs.

"It has thus been made possible to record a microscopic earthquake, and we might well call the operation the study of earthquakes with a microscope. These microscopic earthquakes are called microtremors. They occur constantly in earthquake regions and frequently in other places, as on the Atlantic coast. Their frequency and intensity is a gauge of earthquake activity.

"When we know more about them, we shall be able to follow these minute elastic vibrations very much in the same way as the Weather Bureau now follows fluctuations of the barometer. We expect that in time we shall be able to tell from them the

approach of an earthquake 'storm', and thus may come nearer to forecasting quakes - something which is now impossible.

"With a view to making a local survey, the Carnegie Institution is establishing four stations in Southern California, located at Pasadena, Riverside, La Jolla and, probably, Catalina Island. The range of each station for microtremors is about 50 miles, and of course longer for heavier shocks. The four stations will therefore cover the whole of the coastal region of Southern California, and from their records we shall obtain a good knowledge of the distribution of arthquake activity. One of the instruments at Pasadena recorded 200 microtremors in its first twelve months of experimental operation.

"The example of the Carnegie Institution led to an active campaign for the installation of modern seismometers around San Francisco Bay, and funds have been raised by business men and corporations of the cities on the bay for that purpose. The central station will be located at Berkeley, at the University of California, which will also run a subsidiary station at the Lick Observatory on Mt. Hamilton. Stanford University will take care of a third, and the California Academy of Science in Golden Gate Park, of a fourth. The cost of these instruments, including the necessary earthquake-proof shelter, full equipment of seismometers and time recording apparatus, amounts to $22,000. Their maintenance and the study of their records is assumed by the three institutions named.

"It is anticipated that we shall thus learn what the present earthquake activity is, and that we shall be able to locate it and to follow its variation as it increases toward the next severe shock.

"The installation of similar groups of instruments, not only in other parts of California, but around Boston, New York, St. Louis, New Orleans, and other great centers of population and property, is one of the things to which business men should give serious consideration, and toward which their contributions would constitute an investment in security."

WHO OWNS AMERICA'S PREHISTORIC REMAINS?

The Indians who roamed about prehistoric North America, carelessly crossing the boundary of one "state" of the future United States and going on into another "state" were making trouble for antiquarians of today, according to Neil M. Judd, curator of American archeology, of the National Museum.

Speaking at a meeting of anthropologists of the National Research Council, Mr. Judd reported that as a result of the wanderings of aboriginal tribes an archeologist who is studying the ruins of Indian settlements and the relics of pre-columbian Indian civilizations often has to follow the trail from one locality to another. But crossing state borders is harder for the archeologist of today than it was for the Indian of prehistoric times, because of a growing disposition in some sections of the country to restrict archeological research to resident tax payers.

"There is one state which prohibits investigation of archeological sites by non-residents and forbids sale of local antiquities outside of that state," said Mr. Judd.