

SEISMOLOGY

Scientists, Not Surprised By Earthquakes, Expect Others

Though a Major Shock, Disturbance Probably Did Not Relieve Strain Elsewhere in Southern California

THE EARTHQUAKE which shook southern California March 10 was not much larger than the one that eight years ago (June 29, 1925) damaged Santa Barbara, and the great 1906 San Francisco earthquake was much larger. It will rank, however, as one of California's major earthquakes.

The probable origin of the quake, as determined from records at the Seismological Laboratory, Pasadena, was in the San Pedro Channel within the triangle formed by Point Firmin, Avalon on Catalina Island and Laguna Beach on the mainland.

Probably the worst is over in California so far as this earthquake is concerned. It is expected that shocks will continue for weeks, but it is usually the first shock that is strongest.

Drs. H. O. Wood and Charles O. Richter, seismologists in charge of the cooperatively maintained earthquake laboratory which is set in solid rock back of Pasadena, explained to Science Service.

"At just twenty second past 5:54 p. m. (March 10) our instruments began recording a moderately strong local shock which was sharply felt in the laboratory and which was evidently sufficient to cause damage near its source. The source appears to be sixty to seventy miles southeast of this laboratory, but because of peculiarities in the geological structure a precise distance cannot yet be given. A large number of aftershocks have been recorded with very brief interruptions. Three or four of these have been stronger than the rest and have been barely felt at the laboratory. One or two hundred shocks have been recorded on the less sensitive instruments and it is probable that the more sensitive instruments will record a great many more."

Six auxiliary seismologic stations placed at strategic points in California recorded the earth movements and Drs. Wood and Richter explained that a more precise location will be made after those stations report.

Seismographs from the width of the continent away from the stricken

California region confirmed the accuracy of the determination of the center of the earthquake made by the scientists at Pasadena. Data wired to Science Service from a number of observatories, interpreted by the U. S. Coast and Geodetic Survey, indicated that the epicenter was located in latitude 33.7 degrees north, longitude 118.9 west, and that the quake began at 5:54.2 p. m., Pacific Standard Time. The epicenter location determined by the Coast and Geodetic Survey is in the San Pedro Channel, about 25 miles west of San Pedro Point. The epicenter determined by the Jesuit Seismological Association with headquarters at St. Louis University, using Science Service data, was latitude 32.8 degrees north, longitude 118.5 degrees west.

Reporting to Science Service

Seismological observatories reporting to Science Service were those of the Dominion Observatory, Ottawa; the Dominion Meteorological Service, Victoria, B. C.; the Jesuit Seismological Association stations at Canisius College, Buffalo, N. Y.; Fordham University, New York City; Georgetown University, Washington, D. C., and Mt. St. Michaels, Spokane, Wash.; the stations of the U. S. Coast and Geodetic Survey at Tucson, Ariz., Chicago, and Honolulu, T. H.; and the University of Michigan.

This earthquake had been expected

by seismologists for over a decade, although few definite public predictions had been issued in consideration of public fears. Geologists studying the crust of the earth and earthquake specialists operating sensitive recording instruments and listing the past history of southern California earth movements felt that conditions were ripe for a serious earth disturbance in that region.

While residents of southern California had not in general recognized the existing earthquake danger, leading citizens and scientists cooperated to study the conditions.

Not for 78 years has the Los Angeles region suffered a large earthquake, although on July 8, 1929, a moderately severe shock was felt in the region surrounding Los Angeles and centering at Whittier. On June 21, 1920, the Inglewood earthquake occurred near Los Angeles and par- (Turn to Page 172)

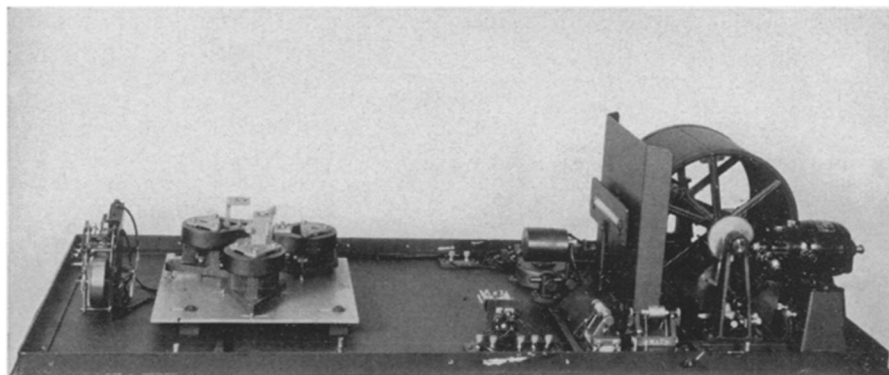
SEISMOLOGY

Earthquake Trapped By Watchful Recorders

THE EARTHQUAKE in the Southern California region was "trapped" by new, inexpensively constructed and automatic seismographs installed about a year ago as the result of cooperative research between the U. S. Coast and Geodetic Survey and California scientific institutions. (*SNL, Aug. 6, '32, p. 81*).

The new seismographs were intended to register only local quakes and they begin making a record when an earth shock rocks the spot where they are placed.

Although earthquakes have engaged the attention of scientific men for many years and delicate instruments have been devised to detect them at a distance and tell how far away and how violent they are, strangely enough there



EARTHQUAKE WATCHMAN

Automatic seismograph designed to wait years for opportunity to make a record of an earthquake beneath it.

has not been until recently any instrument that could make a record of an earthquake occurring in the immediate neighborhood. The usual instruments are so delicately built that a strong earthquake directly under them would wreck them. The new instruments are more ruggedly built, record only relatively large earth movements near by, and turn themselves on automatically when a quake begins.

The distribution of these instruments was undertaken by the Federal Government largely as a practical aid to engineers and architects in designing and placing buildings so as to avoid earthquake damage as far as possible.

Science News Letter, March 18, 1933

PHYSICS

Cooperative Phenomena New Term in Physics

"COOPERATIVE phenomena" is a new term introduced into physics by Dr. F. Zwicky, of the California Institute of Technology, to designate what happens when a great number of elementary particles, such as electrons and atoms, interact.

Cooperative phenomena would explain the existence of crystals, Dr. Zwicky believes.

Four groups of problems in modern physics are listed by Dr. Zwicky in the *Physical Review*:

"(1) The problem of the nuclei of atoms and the existence of elementary particles such as the proton, the electron and the photon; (2) the problem of the interaction of the electromagnetic and the gravitational fields with matter and the problem of unifying the fields; (3) the problem of the universe as a whole; (4) the problem of cooperative actions of a great number of elementary particles, and, in particular, the problem of the solid state.

"The first three problems will probably necessitate radical changes of our current notions about time, space, causality, fields, etc.," he writes. "The fourth problem is of an entirely different nature inasmuch as it seems that no fundamentally new laws must be invented for its solution. The difficulty rather lies in our present inability to visualize the simultaneous cooperation of a great number of particles and the lack of mathematical methods to obtain exact solutions for sufficiently general cases of interactions between many elementary particles."

Science News Letter, March 18, 1933

DACTYLOGRAPHY

Fingerprints May Be Used to Protect Checks From Forgery

FINGERPRINTS to protect checks against forgery and theft.

This is seen as a possible outgrowth of the present banking situation if the proposal to expand the United States Postal Savings System to provide for checking accounts becomes a reality.

Fingerprints are required of all depositors and those withdrawing money from postal-savings depositories in the larger post offices today.

When you open your account and make your first deposit, your fingerprint is taken and filed with a description of you and other identifying material in that post office. To withdraw your money, you must go in person to that same post office and again have your fingerprint taken. If the fingerprints are identical, you get your money. But the forger or thief, if he should have the boldness to submit to the fingerprinting process, would betray his false identity.

If fingerprints were required on all checks, this would serve as practically a positive guaranty against forgery. For your fingerprint is your own personal property, and unlike that of any other individual in the world. Even the fin-

gerprints of identical twins differ sufficiently so that they can be distinguished.

Expanding the Postal Savings System to allow depositors to draw negotiable or transferable checks on their accounts, might make it necessary to establish at a clearing house, a fingerprint file of the depositors in that locality with which all checks could be compared before payment. Such comparisons could be handled very quickly; the U. S. Bureau of Identification checks daily over 2,000 fingerprints against their file of over 3,000,000 prints, and in addition the criminal record of each individual is looked up and reports sent to all police systems interested. For the purpose of clearing checks it would only be necessary to look up the name in a card file and verify the print. It would not even be necessary to classify the print.

Fingerprints can be made easily without special equipment or any particular muss or bother. Just press the finger on a clean rubber stamp pad or other inked surface, then roll the finger firmly on the check.

Science News Letter, March 18, 1933

ZOOLOGY-PUBLIC HEALTH

Rat-Catching Cats Are Bred To Protect France From Plague

SELECTIVE breeding of rat-catching cats is the best way to keep down rats in the opinion of Dr. Adrien Loir, medical officer of the port of Le Havre, France.

Dr. Loir's interest in the subject of rats and cats arises from the fact that rats may spread horrible bubonic plague. France, like other countries, keeps hourly guard on her ports lest plague-stricken rats, with infected fleas ready to pass on this scourge to human beings, gain entrance.

Dr. Loir recently reported the success of his cat breeding to the French Academy of Medicine, the most important forum of medical science in France.

He discoursed before this gathering of learned men on such an apparently frivolous topic as his cat, Poupette, and another rejoicing in the name of Lico.

Lico is a champion and is first holder for 1930 of the cup of the Rat-Catching Cat Club of Normandy. The Rat-Catching Cat Club, which sounds like a tongue-twister, was founded by Dr. Loir, with its chief object the breeding of cats with a constant and intense craving for catching rats. Not all cats chase rats. Some establish a tacit neutrality pact with rats, with whom they may be seen in some streets at night, the one ignoring the other studiously. Such is not the case with Dr. Loir's cats.