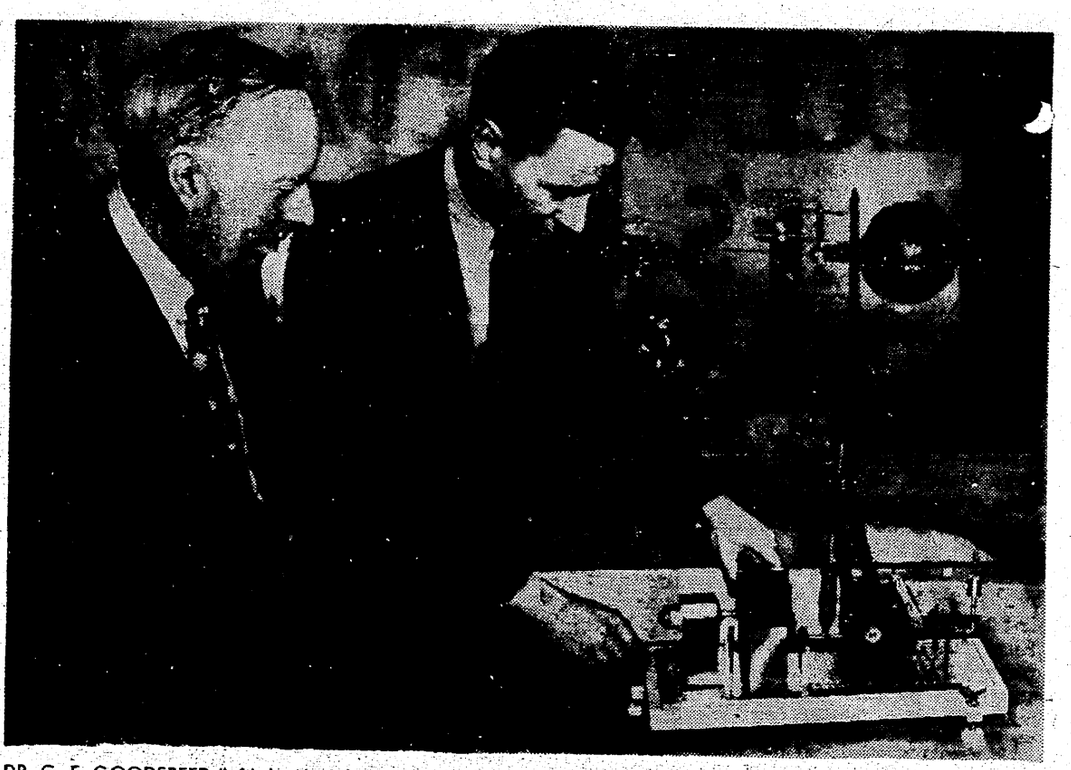
By VICKY DRAHAM

EARTHQUAKE HISTORIANS AT U. OF W.

In Nero's Time, Runners Were Sent Out to Gather Information on Quakes; the University Geology Department Uses Postcards and Seismographs for This Purpose Today.



DR. G. E. GOODSPEED (left), head of the University of Washington Geology Department, and Prof. Eijo Vesanen examine one of three new seismograph units to be installed in Washington State. Vesanen, a seismologist from Helsinki, will be in charge of the stations. In the background is the old-model seismograph in use at the University since 1906.

"GEOLOGY Department? This is Mrs. Jones. I felt an earthquake this morning! Did a building fall down in Tacoma? Someone said it did, and my son is working over there."

This is typical of the hubbub beginning after one of our larger earthquakes has been felt. Telephone wires sizzle with questions and rumors; neighbors who have not spoken to each other for years rush into the street to compare notes, and the important news of the day concerns water tanks falling over, cornices toppling from structures and other unusual happenings.

"The first we know of an earthquake," said Prof. Howard A. Coombs, who has handled the seismological station at the University of Washington Geology Department eight years, "is usually when someone calls in to ask about it. Then one of us rushes to the basement to see if the seismograph has recorded any earth tremors.

"For several hours," Coombs related, "the phones jangle continuously. Several hundred persons call if the quake is at all bad and want to know when, where and why, as well as to tell us the effect it had on their chickens and chandeliers."

In the course of the excitement, the geologists locate the quake by plotting their seismograph recordings with those from other localities where the earthquake also registered on seismographs.

PERHAPS because earthquakes have been with us as long as the earth has existed, scientists developed methods for recording and measuring them at an early time. The fundamental methods used then still are used today, though in greatly improved form.

The seismograph itself is simple in principle. It consists of a heavy weight suspended in the air, including some sort of marking device which goes into operation when motion in the earth moves the weight from side to side, or, in modern seismographs, up and down as well. This records the exact time of the quake and helps determine the type of motion and location of it. The University of Washington has had a seismograph since 1906, when the San Francisco earthquake heightened local interest in the earth's activity.

The early-day seismograph consisted of a weight suspended over sand, the marker being a sharp stick which drew a pattern in the sand as the weight moved.

One of the most interesting aspects of the earthquake is the method of measuring its intensity. In Nero's time, around 60 A. D., Lucius Seneca sent out a group of runners to ask persons what a particular earthquake did in various localities and thereby obtain information to measure the force of it.

THE modern version is the use of cards, about 2,000 or 3,000 of them mailed throughout the territory where the earthquake may have been felt. These cards have questions such as "Were there any dishes broken?" and "Did cracks appear in plaster and walls?"

When the cards are returned to the Geology Department, they are rated on the Wood-Neumann Modified Mercalli Scale and the quake is plotted on a map, with ratings in various localities according to how much damage it did there. Ratings are from 1 to 12, including extremes of "not felt except by very few under especially favorable circumstances" and "damage total—objects thrown upward into the air." Various degrees of breakage and alarm are included. When this information is compiled and plotted, seismologists give the quake a rating and can establish the center of it fairly accurately.

"NO ONE can predict a future earthquake accurately," says Prof. Howard A. Coombs, in charge of the seismological station at the University.

Earthquake history in Western Washington has been recorded since 1833. A total of 103 quakes is part of our history. The first one noted was a light tremor at Fort Nisqually on June 29, 1833. The largest one of early times took place in 1872 in the Puget Sound area, and considerable glass was broken. Records of these early quakes are from newspaper accounts.

SINCE 1932, when intensity rates of earthquakes have been recorded by the scale, there have been three quakes rating 7, the highest rating merited by earthquakes in this region. When a 7 occurs, according to the Modified Mercalli Intensity Scale, everyone runs outdoors, damage is considerable in poorly built structures and some chimneys are broken. The first of these quakes was in 1932 and the others in 1946.

"Although the Pacific Northwest virtually is omitted from maps showing the earthquake territory along the Pacific Rim, enough earthquakes have occurred here to make it interesting but not bring real danger," Coombs said. "I wouldn't like them to get any worse!"

Approximately 1,000,000 earthquakes occur in the world annually, according to Coombs, but only a small percentage of these is felt.

"The first question most persons ask geologists and seismologists about quakes," Coombs said, "is when and where future disturbances will happen. We can tell you where they're going to take place, because of past experience, but never when.

"No one can predict a future earthquake accurately, although there are persons who work out calculations by the stars, and so forth, and write and tell us when an earthquake will be felt. Anyone who figures them out has better than an even chance of being right," he explained, "but that's not enough for a scientist.

"Of course," he added with a chuckle, "I read in a Pravda translation that three Russian scientists could predict them!"

ANOTHER earthquake specialist in the Geology Department, Prof. Julian D. Barksdale, criticized the prevailing misconception about the st[illegible] being cushioned from earthq[illegible] effects.

"Everyone seems to think that because we are on a 'cushion of glacial drift,' quakes won't hurt us," he said. "The truth is that we are on glacial drift, but that's the worst place to be resting when the earth starts to move. If the earth under us were hard rock, the shock would go right through and do little damage, but with glacial drift or other soft underpinnings, the movement makes this material shift, causing much more damage on the surface.

"In case of earthquake," Barksdale said, "a well-built, carefully nailed wooden structure is comparatively safe, for it will give with the motion of the earth. The bad ones are brick or concrete buildings not reinforced by steel. When the swaying starts, a wall pulls loose and falls into the street. Then the roof, usually put together strongly, stays in one piece and falls down in the middle of the building."

Barksdale said the safest building when the earth starts quaking is one of concrete, reinforced with steel.

Work now is under way at the University on installation of a new seismograph, many times smaller than the one now in use and more exact. This will be one of three new seismographs in the state, the others being placed at the northwest corner of the state and in the central part. This arrangement will make possible an integrated system of recording quakes and will enable geologists to obtain more information on local disturbances in the earth.

Prof. Eijo Vesanen, a seismologist from Helsinki, Finland, will be in charge of the three stations, which should be in operation in about a year.