SEISMOLOGY-ENGINEERING

Chained House Stands While Others Fall in Quake

Careful Study and Application of Knowledge to New Buildings Seen as Only Earthquake Damage Preventive

THOUGH earthquakes cannot be prevented, or even successfully predicted, full and careful study of their effects will help prevent damage when they do occur. This was the thought presented by Capt. N. H. Heck, chief of the division of terrestrial magnetism and seismology of the U. S. Coast and Geodetic Survey, in a radio talk under Science Service auspices through stations of the Columbia Broadcasting System.

"Last July there was a severe earthquake in southern Italy which caused much damage to property and loss of life," he stated. "Earthquakes and volcanoes have long been associated in the public mind, and it is, therefore, of special interest that Dr. Malladra, director of the Vesuvius Observatory, states that while his building was badly rocked by the earthquake and was saved from destruction only because the various parts were chained together, there was no volcanic activity at the time of the earthquake.

"The destruction caused by this earthquake has a possible lesson for us even though the conditions are quite different. The buildings have thick walls of field stones and poor mortar and thick roofs, the thickness being intended to keep out the heat. Timber is scarce and the roof supports are weak. There is, therefore, the combination of great weight and lack of strength, an ideal arrangement for producing maximum earthquake damage. Unfortunately, owing to poverty and other reasons, the destroyed houses are rebuilt in exactly the same way and will fall in the same manner in the next earthquake. . . .

"A broad gauge attack on the earthquake problem is now going on in this country, Japan, and other parts of the earth. It includes practically every field of interest from interpretation of seismograph records to design of dams and other structures. With all its comprehensiveness there is one serious gap—we do not know exactly what goes on in the central region of severe earthquake. . . ."

Captain Heck told how artificial earthquakes were helping to solve some of the problems.

"At best it will be some time before the desired information is in the hands of the structural engineer, and rightly, the engineer is not waiting for it," he said. "He is designing large buildings, bridges, and dams as best he can for earthquake stress. There has been going on at Stanford University for several years investigation by means of a shaking platform of stresses of structures under movements resembling earthquakes, and also studies of foundation materials subjected to similar vibrations. The platform, a heavy, steel structure, is set into vibration by suitable apparatus and, except in the vertical direction, is capable of closely imitating earthquake motions, provided it is known what these are. An immediate use of new information along this line is therefore indicated. Other engineering studies are being made and the elaborate work in Japan along these lines is being followed."

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PSYCHOLOGY

Psychology Helps Business Understand Human Element

THE importance of studying the psychological foundations of business and industry, as well as its economic and technical supports, was emphasized by Prof. Morris S. Viteles, of the University of Pennsylvania, in an address at the New York Academy of Medicine.

As examples of the practical ways by which psychology can aid executives to understand human element in their business, Prof. Viteles cited psychological tests used for the selection of workers, psychological methods of training workers, an exact knowledge of the effect of working conditions such as monotony on employees, reduction of fatigue, and the promotion of safety among workers.

The use of psychological tests in the employment of substation operators of the Philadelphia Electric Company resulted in the reduction of operation mistakes as much as 43 per cent., Prof. Viteles said.

"An example of the application of the clinical method in the re-adjustment of workers is to be found in the study of accident-prone street car and taxicab operators," he added. "An analysis of the conditions producing proneness to accidents has made it possible to reduce the number of accidents in the case of a number of transportation companies, and definitely to promote the happiness and welfare of the individual operator.

"There is another example of the same approach in the analysis of the factors differentiating the cab driver capable of earning high salaries on a commission basis and those who fail to earn satisfactory commissions. An analysis of these factors in a clinical study of individual drivers made it possible to produce real habilitation on the part of many drivers who without much study might have been thrown on the industrial scrap heap."

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SILVER FOR LEAD

This is a substitution now being made as brazing takes the place of soldering in the electrical industry. A brazed joint is preferred to a soldered connection, Samuel Martin, Jr., of the General Electric Company told the recent meeting of the American Institute of Electrical Engineers, because it is stronger and cheaper, has greater conductivity and higher heat resisting qualities, and takes less time to make.