REVIEWS

A World-Wide Survey of Microseismic Disturbances Recorded during January, 1930. By A. W. Lee. Meteorological Office, Geophysical Memoirs, No. 62 (Fifth number, Volume VII). London, 1934.

The paper contains the results of a survey of microseisms throughout the world during January, 1930, based on readings of records at sixty-seven observatories. The mean amplitudes of the microseisms recorded simultaneously on two horizontal components at the same observatory are approximately equal. Discrepancies are either due to errors introduced in using incorrect data concerning the instruments or to the influence of the geological formations at the stations. The ratio between the horizontal and vertical amplitudes varies from 0.6 to 3, depending, according to the author, upon the underlying structure.

The diurnal variation of microseisms is small. In some regions no variation is observed, in others there are minima in the night and maxima by day. It is not impossible that this effect is spurious and, according to Whipple, due to periodic changes in the properties of the instruments.

In order to compare the amplitudes of the microseisms at different stations the author defines a "standard amplitude" as the amplitude at the surface for Rayleigh waves in granite with energy equal to that of the microseisms. The standard amplitudes are equal to the recorded amplitudes divided by a factor which represents the "sedimentary magnification." For some stations the author has published these factors in a previous paper, for others provisional factors were assumed. The "sedimentary magnification" is one at the most stations, but runs as high as four at Strasbourg and four and one-fourth at De Bilt.

The author uses the "standard amplitudes" to investigate the geographical distribution of the microseisms for a number of occasions during January, 1930. For America as well as for Europe, the author confirms the result obtained by Gutenberg that the amplitudes near the coasts are greater than those inland. The microseisms were usually much larger in Iceland and the British Isles than in the regions east of the North Sea and they diminish with increasing distance from the region of maximum amplitudes.

The author, finally, discusses the causes which may produce microseisms. Certain correlation coefficients between the microseismic amplitudes and a function of the sea disturbance support the conclusion that the microseisms in a certain region are connected with storm over adjacent seas, but the author does not find a proof that they are caused by the action of sea waves. In some cases large microseisms in Europe were associated with storms northwest of the British Isles, but there is nothing to show by what process the microseisms were generated. On the other hand, during some storms the microseisms were relatively small, which would indicate that the microseisms are not caused solely by storms near the coasts. The author, who does not find any theory to give a satisfactory explanation concerning the cause of the microseisms, at the end of the paper quotes the views of Whipple that waves at the surface of the ocean may produce compressional waves in the water which are propagated to the bottom of the ocean, forming thus the origin of the microseisms. But nobody has been able so far to show that by this process enough energy can be transferred to the ground.

B. GUTENBERG