

INVESTIGATION OF THE MICROSEISMIC DISTURBANCE AND ITS VARIATIONS

by

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REVIEW.

The International Hydrographic Bureau has received volume XIX of the *Annales de l'Institut de Physique du Globe*, of the University of Paris and of the Central Bureau of Terrestrial Magnetism. (1)

From this work we wish to cite a very interesting investigation by Pierre BERNARD on the microseismic Disturbance and its Variations based on the comparative study of seismograms derived from a series of observations in Europe, Greenland and Syria.

The author has been able to ascertain that these very small short period waves in the earth's crust have their origin in the centres of cyclonic depressions and are doubtless due to the shock of the pyramidal waves which are formed there.

From detailed investigations of a microseismic tempest which suddenly appeared on 18 October, 1935, he was able to determine its coincidence with the sudden formation of a depression between Ireland and Iceland. The speed of propagation of the progressive waves which constitute the microseismic disturbance could be evaluated at about 1.9 km/sec., while the origin of this disturbance coincided almost exactly with the position occupied by the centre of the depression towards 19 hours, the moment at which the depression attained its maximum depth.

The observation of the ground swell off Morocco has revealed the relation between its amplitude and the presence of cyclonic depression in the Atlantic. Pierre BERNARD has compared this amplitude with that of the microseismic disturbance and has been able to ascertain that the lag between the arrival of the maximum microseismic disturbance at Strasbourg and the maximum strength of the ground-swell off the coast of Morocco was proportional to the distance of this coast from the centre of the cyclonic depression at the instant of maximum disturbance.

Extending the investigations of the microseismic disturbance to other stations scattered over the globe, the author found that this disturbance presents periodic annual and semi-annual variations, as well as an undecennial variation analogous to that of the sun-spots; the frequency and the intensity of the cyclones being therefore dependent on the variations in solar activity. The years in which the disturbance is most intense coincide exactly with the years of greatest diminution in solar activity. We find also for this disturbance a period of 27 days, encountered in numerous geo-physical elements, which is that of the mean synodic rotation of the sun, with a maximum at the same epochs, within a few days, in widely different regions of the globe.

The variations in the solar activity thus appear to exert an influence on the frequency and intensity of the atmospheric perturbations; the study of the microseismic disturbance furnishes an important contribution to this question, which may deepen our knowledge of it and may even permit its prediction.

In the *Bulletin de l'Institut Océanographique* N° 800, 20th June 1941, Pierre BERNARD published on the same subject a note with the following title: "Sur certaines propriétés de la houle étudiées à l'aide des enregistrements séismologiques".

P. V.



(1) *Note of I.H.B.* — See also: *Hydrographic Review*, Vol. XIV, N° 2, p. 271.