

Austrian methods of explaining the associated variations in the upper air in terms of its northern or southern origin.

Those who know Sir Napier Shaw's other writings will find fulfilment of their expectations of wealth of imagination, crispness of style, love of paradox and freshness of outlook. He has played a big part in the creation of the international organisations on which meteorology largely depends for its practical efficiency, and he has always been a fighter, with much disinclination to sit on the fence; so that he takes pleasure in

vigorous strokes rather than in delicate expression of slight differences.

The advance of science is in some respects like that of a vessel in misty weather. The landmarks are hard to make out until somebody has picked them up, and after this they are obvious: accordingly there is great value in a book which stimulates thought. Although the present work will be intelligible as well as attractive to the layman with some slight knowledge of physics, its suggestiveness and its style alike recommend it to the specialist as worthy of careful perusal. G. T. W.

### Short Reviews

*Handbuch der Geophysik.* Herausgegeben von Prof. Dr. B. Gutenberg. Band 2, Lief. 3: *Die Erdoberfläche*, von Erwin Kossinna; *Petrographischer Aufbau der Erdkruste*, von Dr. S. Rösch; *Chemie der Meteoriten*, von Prof. G. von Hevesy. Pp. 869-1119+xv. 42 gold marks. Band 4, Lief. 4: *Die zeitliche Folge der Erdbeben und bebenauslösende Ursachen*. Von Prof. Dr. V. Conrad. Pp. 1007-1202+xii. 39 gold marks. Band 7, Lief. 1: *Das Eis der Erde*, von Prof. Dr. H. Hess; *Seen*, von Prof. Dr. W. Halbfass; *Das unterirdische Wasser*, von Prof. Dr. W. Koehne. Pp. v+252. 42 gold marks. (Berlin: Gebrüder Borntraeger, 1932.)

Few readers, and even few authors, of papers on periodicities in the occurrence of earthquakes have taken the trouble to compare the amplitudes they obtain with those that would be expected to arise from the harmonic analysis of a purely random set of observations. Prof. Conrad has done a great service in collecting the results and testing them in all cases by means of the Schuster criterion. Most of the suggested periodicities turn out to be probably not significant, on the ground that they would be just as striking if the observations were arranged in any other order in time instead of the actual one; Turner's 21-minute period is among these. The possible survivors are the diurnal and annual periods, and perhaps a 14-monthly one. The curious thing about the first two is that they are conspicuous in felt shocks, but not in instrumental ones. This suggests that they may be the result of differences between the conditions of observing by day and by night; but then why should the phase vary conspicuously from place to place? Why should it be opposite in some parts of Japan from others?

There is a regularity in the frequency of after-shocks from a great earthquake, the number per unit time falling off according to a hyperbolic law. This suggests a relation with the mechanism of elastic afterworking.

The price of 42 gold marks for an unbound part of 252 pages is a poor service both for the authors and the reader.

H. J.

*British Wild Flowers.* By Louis Johnstone. First Series. 16 plates+16 diagrams. Second Series. 16 plates+16 diagrams. *British Trees.* By Barbara Briggs. Second Series. 16 plates+16 diagrams. (London: The Lutterworth Press, 1933.) 3s. 6d. net each set.

THE biologist always looks askance at "beautiful coloured plates" of biological material, for, unlike the hand paintings of flowers housed at Kew, scientific accuracy is almost invariably either disregarded or masked in the striving for artistic effect. None of these series of coloured plates, however, should be placed in the usual category of coloured diagrams of plant and animal subjects. In general, they are very accurate, and though they show little but the identity and general structure of the plants they portray, they are to be highly commended, since all the plants are pictured on a background representing their normal habitat. There is little fault to find with accuracy in this connexion, except that few botanists would agree that the usual habitat of the white deadnettle is "ruins and rocks".

In each of the two series of wild flowers, 135 species are represented. In the series of trees, each tree occupies one plate. The usefulness of all three series is enhanced by a collection of line diagrams accompanying each plate, where details of such diagnostic features as flower, fruit, leaf, winter bud, etc., are given.

The plates can be highly recommended, for reference purposes, to teachers of elementary nature study and botany; also, they are so attractively done that they would decorate the classroom, laboratory or museum wall.

*Mathematical Facts and Formulæ.* By A. S. Percival. Pp. v+125. (London, Glasgow and Bombay: Blackie and Son, Ltd., 1933.) 4s. 6d. net.

To fill a notebook with the formulæ that happen to have been of most use to himself and the comments that he has found most illuminating is a pleasant and profitable task to anyone who performs it, but the result cannot have value of a