

the authors point out, needs much further work before the distribution of charge with particles of different substances, and different methods of production, can be tolerably understood. A very sound beginning has, however, been made, and it is not the least merit of the book that, while what has been achieved is soberly set down, no attempt is made to gloss over the very grave difficulties still to be met in many parts of the subject.

E. N. DA C. A.

Short Reviews

Handbuch der Experimentalphysik. Herausgegeben von W. Wien und F. Harms. Unter Mitarbeit von H. Lenz. Band 25: *Geophysik.* Teil 2: *Physik des festen Erdkörpers und des Meeres.* Unter der Redaktion von G. Angenheister. Pp. xiv + 823. (Leipzig: Akademische Verlagsgesellschaft m.b.H., 1931.) 74 gold marks.

THIS book is good in places. Prof. Tammann discusses geochemistry. His article contains a needed warning against the too ready acceptance of the hypothesis of a sulphide shell of considerable thickness. On the other hand, he asserts that there is a critical pressure, above which the melting point decreases with pressure, and makes no mention of Bridgman's criticism of this hypothesis. G. Kirsch deals with radioactivity, age determinations, and heat supply, on the whole well, but gives on p. 51 a misleadingly incomplete statement of the nature of Jeffreys's objections to the theory of periodic melting. Kossmat's article on tectonics is useful and critical, though too short for the subject, and there is a shortage of quantitative data on the topics discussed.

The figure of the earth is treated by Schmehl; this article is notable for a correct statement of Stokes's formula, which has been misquoted in several recent German works. This section and that of K. Jung on the interpretation of gravity variation are uniformly good. E. Tams gives a good account of the distribution of earthquakes in place and time, and O. Meisser of the theory of elastic waves. Krumbach's article on seismology, however, shows some serious omissions. There is no mention of the Milne-Shaw seismograph, with which so many observatories are now equipped. In dealing with dispersion of surface waves, there is no mention of the distinction between wave-velocity and group-velocity, or of the important work of Stoneley and Tillotson. On p. 520 the author makes the surprising statement that Jeffreys agrees with S. Mohorovičić and Gutenberg that the thickness of the upper layer is 40 km., though there is a correct, but incomplete, reference to one of the papers in which Jeffreys estimated it as about 12 km.

The articles on oceanography, by Defant, and on tides, by Hopfner, are excellent summaries of existing knowledge, including recent British and American work.

The index shows lack of care. Three references to J. C. Adams should be to L. H. Adams, and

"R. L. Lawson" covers the identities of A. C. Lawson and R. W. Lawson. Some reluctance to believe that a Christian name can begin with the letter I has affected the references to Newton, Bromwich, Taylor, and Lehmann; and H.M.S. *Challenger* seems to be thought to be a person. Several other authors have their names misspelt or wrong initials given.

H. J.

Vital Records in the Tropics. By P. Granville Edge. Pp. xi + 167. (London: George Routledge and Sons, Ltd., 1932.) 7s. 6d. net.

THIS little book may be recommended with confidence to the consideration of medical officers, administrators, and officials in tropical countries whose duties bring them in contact with a backward indigenous population. The case for the record of vital statistics is argued convincingly but temperately, and, as appears, with a full appreciation of the difficulties involved.

When dealing with methods of obtaining and recording statistical material, the author warns his readers that the trials of the recording officer go far beyond the suspicion, indifference, or stupidity which hamper, for example, the census among the civilised illiterate. These elements are indeed present, but to them must be added the effects of exaggerated rumour, taboos, social regulations, and an unlimited number of magical and religious concepts and prohibitions. It is made abundantly clear that the census officer and vital statistician must know something more than a smattering of anthropology and the bearing of anthropological data on his work, if his duties are not to lead him into trouble. At the same time he must be an acute judge of native character in the individual, in order that he may keep a check on the idiosyncrasies of his native assistants.

It is in view of these difficulties that the author, wisely it would seem, favours, at least in the initial stages, "small scale inquiries", that is, the intensive investigation and detailed record of single units (in native social organisation), of which the results can afterwards be combined in larger and larger unities until the frontiers are ultimately reached. The difficulties due to migratory habits of the native, whether normal or in an emergency, such as illness, are noted, and certain remedial measures suggested; but the author deals with a village population only, and does not indicate a method of approach when a population is nomadic, as, for example, the Masai.

Handbuch der Geophysik. Herausgegeben von Prof. Dr. B. Gutenberg. Band 1, Lieferung 1. Pp. vii + 308. 54 gold marks. Band 2, Lieferung 1. Pp. viii + 564. 102 gold marks. Band 3, Lieferung 1. Pp. ix + 570. 64 gold marks. Band 6, Lieferung 1. Pp. v + 312. 63 gold marks. (Berlin: Gebrüder Borntraeger, 1930-1931.)

FOUR more sections of this learned work by numerous authors are now available. It would be easy to find defects in it, but it would be very difficult to do it better. What strikes the reviewer