

*Radio Receiver Measurements.* By Roy M. Barnard. Pp. xii+116. (London: Iliffe and Sons, Ltd., n.d.) 4s. 6d. net.

THIS "concise handbook for the radio service engineer" is a happy augury for the day when radio service will be done by engineers and not by 'black-coat' plumbers. The author is chief inspector of broadcast receivers to a large manufacturing concern, and the quality of the book, within the limits which the author imposes on himself, is sufficiently guaranteed by this fact. The limits are much narrower than the title suggests; tests made on the 1931 schedule, on which the work is based, will fail to give a really adequate representation of receiver performance. The book would, from this point of view, be disappointing and dangerous were it addressed to the testing staff of the manufacturer. But since it is, in fact, addressed to the men who must deal with the set after it has left the factory, the book may be very cordially commended. An urgently needed rise in the standard of radio service work would result from its general circulation, but it is doubtful whether any very large proportion of those now offering themselves as radio service engineers are fitted to benefit by the author's guidance.

It is gratifying to learn that the manufacturing side of the industry is taking steps to improve the situation in this respect. When they have done this, the manufacturers will perhaps find time to turn their eyes back to their own test and inspection departments, which are, in many cases, quite unworthy of their producing departments. Too frequently the inspection department allows the set to reach the customer with faults of a much simpler, but no less annoying, nature than those discussed by Mr. Barnard.

*Tiefseebuch: ein Querschnitt durch die neuere Tiefseeforschung.* In Beiträgen von C. W. Correns, A. Defant, F. Geszner, W. Stahlberg, O. v. Schubert, H. Wattenberg, G. Wüst. (Das Meer in volkstümlichen Darstellungen, Band 3.) Herausgegeben vom Institut für Meereskunde zu Berlin unter Schriftleitung von Georg Wüst. Pp. vi+144+16 plates. (Berlin: E. S. Mittler und Sohn, 1934.) 4.80 gold marks.

THIS is a compilation showing the present position of research particularly in respect to the deeper waters of the ocean. It is excellently put together, well illustrated and commendably brief. It is divided into as many sections as there are authors, and it advertises the very honourable part that Germany has taken in marine exploration. Route sheets of eight German expeditions are reproduced. Of these expeditions, that of the *Meteor* of 1925-27 will be of most interest to readers, since its scientific results are not as yet generally known, and the present work is largely written by its scientific staff. The *Meteor's* topographical work and that of the *John Murray* expedition, both based on sonic sounding, give a completely new conception of the bottom topography of the oceans. Furthermore, there were new methods and aims, here summarised, in all

parts of the work of this expedition, chemical, physical and biological. Many selected sections and charts are given and those of the South Atlantic merit most careful study. We require to settle many problems now by intensive work, especially topographical, physical and chemical, in the Pacific, where questions of circulation, temperature, salinity, etc., are simplified by its open character and great size. This will be clear to all who are interested enough to study this excellent little book.

*The Structure of Spectral Terms.* By Prof. W. M. Hicks. Pp. xi+209. (London: Methuen and Co., Ltd., 1935.) 10s. 6d. net.

THE present volume, intended as a supplement to the author's "Analysis of Spectra" which appeared in 1922, sets out at length the results of his investigations during the last twenty-five years. The object of the work—in which Hicks stood alone—is to obtain empirical relations between spectroscopic data and various physical properties of the elements.

As the title suggests, the writer was concerned only with the term values derived from analysis of the observational data, so the first chapter is appropriately devoted to the different formulæ that may be used to represent term series. Useful numerical examples indicate the methods used in practice to adjust the values of the constants in the formula and to evaluate the Rydberg constant.

The next seven chapters present a detailed account of the author's attempts to deduce atomic constants from his own interpretation of line spectra. Satelloids, the 'oun', high order emission, linkages, summation lines, *s*-, *p*-, *d*- and *f*-terms are successively treated, the text being supplemented by numerical tables to illustrate the points under discussion. Finally, the theory of atomic structure is reviewed in relation to the whole of the foregoing results.

Rydberg's term symbols are retained, although they seem to offer no advantages over the usual modern notation, and the text is marred by excessive use of abbreviations. E. G. J.

*The Testing of Bituminous Mixtures: a Laboratory Handbook concerning Road and Building Materials.* By Donald C. Broome; with a Chapter on Roofing Felts, by R. O. Child. (The Roadmakers' Library, Vol. 2.) Pp. vii+194. (London: Edward Arnold and Co., 1934.) 15s. net.

THE art of road-making is rapidly becoming transformed into a science, which possesses a "Roadmakers' Library" of its own. The bituminous binding materials are now used after study of their chemical and physical characteristics instead of being applied haphazard; a number of the tests have been standardised. The English literature on the subject is scanty, and there is need for a book which brings the existing knowledge together. The two sections deal respectively with the testing of the constituent materials and of the finished mixture, and there are the usual appendixes containing tables. The work is written primarily for those actually engaged in this class of work and should prove of value.