Visibility in Meteorology

The Theory and Practice of the Measurement of the Visual Range. By W. E. Knowles Middleton. Second edition, completely revised and enlarged. Pp. x+165. (Toronto: University of Toronto Press; London: Oxford University Press, 1941.) 15s. 6d. net.

A SECOND edition of this book has been undertaken because of the large amount of work, both practical and theoretical, that has been done in the six years that have elapsed since the first edition appeared. This subject gains increasing importance as the rapidity of transport by sea, land and air continues to increase. The further developments of the subject in these six years appear to have induced a pessimistic outlook about it in the author, whose enthusiasm for the use of the visual range as a synoptic element, which in his opinion has been shared by no one else, appears to have evaporated at the same time that he has "abandoned the search for a rational scale of visual ranges". One of the aims of the researches that are reviewed in this book is, as is pointed out in the introduction, to quote again the author's words, "to separate the subjective from the objective aspects of the problem, the psychological from the physical, the accidents of what there is to look at from the meteorologically significant properties of the portion of the atmosphere through which we look". This aim the author keeps constantly before him in this book, as only in this way does there appear to be any chance of getting the subject simplified and clarified and set on a firm scientific basis, after which the development of standard instruments and the co-ordination of observational methods should soon follow.

E. V. NEWNHAM.

Spectra of Long-Period Variable Stars

(Astrophysical Monographs sponsored by the *Astrophysical Journal*.) By Paul W. Merrill. Pp. ix+107+7 plates. (Chicago: University of Chicago Press; Cambridge: At the University Press, 1940.) 15s. net.

OUR knowledge of long-period stellar variability is still so fragmentary that much of the available information is widely scattered throughout various periodicals, and many of the proposed hypotheses are without doubt destined to eventual rejection. At this stage such a monograph as this is doubly welcome, since the author presents and co-ordinates a wealth of observed facts regarding the spectra of these stars while carefully avoiding a too close identification of these facts with current theory. Valuable as photometric and spectrophotometric studies of these stars are, the most fruitful line of attack on the many problems they present is that of detailed spectrum analysis. Accordingly Dr. Merrill gives a general account of the lines and bands in characteristic spectra at maximum light, and goes on to trace their variation with phase. Afterwards he devotes a chapter to individual variables which have been made the subject of specially detailed investigation. Finally, he gives an admirable summary of the various hypotheses which

have been advanced to account for the behaviour of these objects, and suggests the most fruitful lines of future research. Not the least valuable feature of the book is the series of seven plates in which the characteristics of the spectra are illustrated by excellently reproduced high-dispersion spectrograms.

Cine-Biology

By J. V. Durden, Mary Field and F. Percy Smith. (Pelican Books, A85.) Pp. 128+32 plates. (Harmondsworth, Middx.; New York: Penguin Books, Ltd., 1941.) 6d. net.

THIS little book is extraordinarily good value although written in popular rather than truly scientific vein. The trinity of authors of various training and callings have collaborated most successfully in producing a vivid and usually accurate account of the structure and life-histories of selected animals from *Amœba* up to and including the *Insecta*, and this account is well illustrated by numerous drawings and photographs. In spite of the title the last are, perhaps, less of a feature of the book than the 'photographic' clarity of most of the descriptions, which may accordingly be recommended to the youthful or would-be zoologist as well as to any intelligent layman. The whole is attractively and indeed charmingly written, with a minimum of technicalities and a useful glossary at the end; but the title is misleading in that only one prong from the fork of life is dealt with, and that is the one the very existence of which depends upon plants.

N. P.

This Physical World

A College Course in Science. By Prof. C. C. Clark, C. A. Johnson and Lt.-Comdr. L. M. Cockaday. Pp. x+528. (New York and London: McGraw-Hill Book Co., Inc., 1941.) 22s. 6d.

AMERICA seems ahead of Great Britain in realizing the necessity of inculcating a nodding acquaintance of scientific method in those whose later activities in life are to be other than scientific or technical. The present volume is a re-written cultural course for those not pursuing science as a major subject. The result is a very attractive review of present-day scientific background, bringing home the benefits, and otherwise, of applied science and the fundamentals whence it springs. The first chapter properly outlines the scientific method, noting its historical growth and force in ascertaining the material truth of things, its demand for precision in measurement and integrity in interpretation. The review of basic knowledge and its consequences then ranges from contemplation of the heavens, the structure of matter, reactions among chemical elements, heat and heat-engines, waves, electrons, and modern electrical communications. The authors are out to impress the reader, with an easy, but accurate, style with the best possible illustrations, that science and its applications are mighty forces in our present civilization, and why not?

L. E. C. H.