

the artificial production of nitrogen compounds, are described in an interesting manner, and in an easy and popular style. The wisdom of the plan adopted in dealing with theoretical points is more questionable. The reader is presented, almost on every other page, with numbers intended to impress by their vastness. Such statements as that "in such an inconceivably short interval of time as the millionth part of the millionth part of a second there occur no less than 2,800,000,000,000,000 collisions between the little atomic worlds which make up a [candle] flame!" abound in every chapter, and the latest hypotheses concerning electrons and the æther are utilised freely to supply similar data. The exclamatory style of these portions, and the excessive attention given to the sensational and the marvellous, render much of the book fatiguing to the reader, and injure its value as a means of instruction, especially as no clear distinction is made between those wonders which are facts of experience and the most hazardous guesses as to the structure of the universe.

Some of the most interesting sections deal with natural marvels, such as the caverns of limestone districts, the diamond mines of Kimberley, and the sulphur deposits of Sicily and Japan, and the author's reading has enabled him to bring together a mass of curious information in which most readers will find something new or unfamiliar.

In spite of the defects on the scientific side, to which attention has been directed, it is evident that the author has a real enthusiasm for his subject, much poetic feeling, and considerable facility of expression, and that his book represents a genuine effort to communicate his enthusiasm to others.

*Plant-Life on Land, considered in Some of its Biological Aspects.* By Prof. F. O. Bower, F.R.S. Pp. ii+172. (Cambridge: University Press, 1911.) 1s. net.

THE first part of this book deals with the problem which the author has expounded more fully in his large work on the origin of a land flora. The life-histories of *Ulothrix* and *Pteris*, the flower of *Cycadeoidea*, and the motile sperms of *Zamia* are the central points in the earlier chapters. Then after discussing the limitations imposed upon plants by fixity of position, the author turns towards the golf links, noting by the way the incidents connected with plant increase and the biological features of sand-dunes. The golf links are introduced to serve as an object-lesson in plant colonisation. Finally, it is explained in the concluding chapter how the various themes treated as separate essays converge upon the all-important problem of descent. The facts and opinions set forth can scarcely fail to interest the general reader, who desires to become acquainted with modern views regarding the origin and development of the plant world, but he is likely to find the information somewhat disjointed and sketchy; thus he would certainly desire to learn more, if only hypothetical, of the transition from the fern to the flowering plant, and also of the evolution of the flower. Botanists are, of course, familiar with the subjects discussed, but to some the tale of the Culbin sands may be new, and all will appreciate Prof. Bower's "dicta" on golf links.

*Butterflies and How to identify them.* By the Rev. S. N. Sedgwick. Pp. 63. (London: Charles H. Kellv. n.d.). Price 1s. net.

THIS is an excellent little book for the beginner, and contains a quantity of useful information, for which we might often seek in vain in more pretentious works. There is a coloured frontispiece, representing three butterflies and two moths, and thirty-five photographic

illustrations (some of them including a whole page of figures), representing scales, eggs, larvæ, and pupæ, besides perfect insects. Some of these are natural size, and others reduced or (occasionally) enlarged, and those of perfect insects are generally good, but the figures in some of the plates representing the butterflies of each month are rather too small, and have scarcely come out very recognisably.

The first chapter deals with metamorphoses, collecting, &c., and the second includes a complete list of British butterflies, with Latin and English names, and a sketch of the contents of the five families. In chapter iii. we find a table giving the month of appearance, food-plant, name, and locality, &c., of each butterfly, then a series of plates, to which we have already referred, showing the butterflies of each month from April to September, then notes on typical larvæ and pupæ, of which a representative series is figured, and, lastly, another table, giving name, brief descriptions of image, larvæ and pupæ, food plants, and locality; and a few pages of ruled paper for notes.

A few doubtful species are included, such as *Argynnis dia* and *Erebin ligea*, but if this is an error, it is an error on the right side. Altogether the book should be specially useful to schoolboy entomologists.

*The Open Book of Nature: an Introduction to Nature-Study.* By the Rev. Chas. A. Hall. Pp. xi+268. (London: A. and C. Black, 1911.) Price 3s. 6d. net.

VARIOUS allusions and the general tenor of the book indicate that the author's early proclivities towards natural history were developed at a time when there were few inducements, either in the shape of popular books or general appreciation, to take up the study of the natural sciences. Having derived so much pleasure from his studies he desires to arouse in others the spirit of observation and a similar enthusiasm for a knowledge of nature.

The earlier geological chapters are devoted mainly to dissertations on rocks and fossils; identification of flowers is the chief botanical feature, and zoology is introduced with botany in the description of a ramble which occupies a third part of the book. The final chapter containing practical hints is by no means the least useful, although the manipulation of microscope and camera are better postponed to a more advanced stage. The purpose of the author is best served in those passages where he describes his own observations and experiences. There is overmuch introduction of information which, referring to natural objects not easily obtained, cannot be practically confirmed, and it is certainly inexpedient to give a string of morphological definitions (as on pp. 120 to 130), some of which are admittedly incorrect; it would be wiser in every respect to refer the student to a text-book for such details. Undoubtedly the author would be a delightful companion in the field, but conversations that are instructive on a ramble appear fragmentary when offered as a set piece.

*The Oxford Geographies.* Edited by A. J. Herbertson. Junior Geography. Questions. Pp. 28. By F. M. Kirk. Statistical Appendix. Pp. 36. By E. G. R. Taylor. (Oxford: Clarendon Press, 1911.) Price 1s.

If these questions and summaries—prepared to accompany Prof. Herbertson's "Junior Geography"—lead teachers to make boys and girls themselves take an active part in their geography lessons, and not merely listen to what the teacher has to say, they will serve a very useful purpose. The resourceful master should find no difficulty in basing practical work upon the material here provided.