

where the symbol F_1 is used, in a single formula, to denote both the position of a point on the diagram, and the distance of that point from another point A. With a few such exceptions, however, Prof. Suter's book handsomely fulfils the purpose for which it was written.

The aim of Mr. Percival has been to supply the reader, within reasonable compass, with such a knowledge of optics as would be of use to an ophthalmic surgeon. The author further expresses a hope that mathematical students may find it useful as an introduction to more advanced works on geometrical optics. The subject is treated throughout, from a mathematical point of view, in a manner that leaves little to be desired. An ophthalmic surgeon might possibly prefer to have the subject presented less from the mathematical, and more from the physical point of view; whilst a student of physics would probably wish to see greater prominence given to experimental methods. Lord Rayleigh's investigation on the advantage of stopping out the middle of a lens, in preference to its peripheral region, is not mentioned. Further, the name of Helmholtz is not mentioned in connection with the ophthalmoscope. But the most serious blemish is the total absence of an index; this absence is particularly damaging to a book which, from its nature, should serve as a work of reference. The type and general structure of the book are otherwise admirable. A few sentences, such as the following, could be improved:—

"The *first principal focus* (F_1) is the point on the principal axis where the incident rays intersect, or would intersect if produced, which emerge from the system parallel to the axis" (p. 253, lines 6-9).

"The two nodal points are mutually the image of each other" (p. 253, lines 30-31).
E. E.

A Practical Introduction to the Study of Botany; Flowering Plants. By Prof. J. Bretland Farmer, M.A. (London: Longmans, Green and Co., 1899.)

PROF. FARMER'S work is that of an expert dealing with a science with the details of which he is thoroughly familiar, both as a student and as a teacher. Its pages show the firm grasp that enables him to make clear even abstruse parts of the science, and that gives confidence to those who use the book with the care and close attention that it deserves. The plants employed as examples are excellently selected, and the necessity of verifying each point described upon the plant itself is constantly enforced. The discipline and information gained by any one that works honestly through the course of study here planned out will be found most valuable as a sure base on which to build up a thorough knowledge of botany. The woodcuts are good, but might have been more numerous with advantage to those that use the book without the aid of a teacher. In the absence of figures a beginner may, if unaided, find it difficult to obtain some of the plants named, though the selection has been very largely made from species that ought to be known to most people of ordinary education. The use of technical terms is restricted within due limits, and their meanings can be gathered from the examination of the specimens in connection with which each is first employed. The procedure to be followed in the examination of the specimens and in the experiments in physiology is simply and clearly explained, though here and there one meets with evidences of haste or pressure.

Primeval Scenes; being some Comic Aspects of Life in Prehistoric Times. By Rev. H. N. Hutchinson, B.A. Illustrated by J. Hassall and F. V. Burridge. (London: Lamley and Co., 1899.)

THE drawings in this volume are similar in character to the amusing "Prehistoric Peeps" contributed to *Punch* by Mr. E. T. Reed a few years ago. In preparing his drawings, Mr. Reed worked to produce striking effects;

and as there is artistic as well as poetic licence, he was justified in introducing into his pictures any objects which would appeal to the sense of the ludicrous. But to the mind of the palæontologist, a picture containing prehistoric humans in company with such old forms of life as Pterodactylus and Stegosaurus, and creatures which had their origin in the artist's imagination, appears a trifle grotesque, though it may afford amusement to thousands of persons who do not understand the incongruity of the arrangement of characters depicted.

In the present volume an attempt is made to combine instruction and amusement by representing creatures in various comical aspects which were possibly all seen by some of our primeval ancestors. In other words, the drawings are in keeping with the discoveries of prehistoric archaeology and the facts of geology. Twenty scenes are depicted, and adjacent to each is a brief description of the chief characteristics. The pictures are, in the opinion of the writer, not to be compared as regards their diverting character with Mr. Reed's inimitable sketches, and the descriptions which accompany them are of too general a character to call for criticism. But the scientific accuracy of the drawings in so far as they represent animals which are known to have been contemporaries of man is certainly a merit; and for this reason the book is a suitable present for a boy with scientific predilections and a lively imagination.

A Treatise on Surveying. Compiled by R. E. Middleton, M.Inst.C.E., and O. Chadwick, M.Inst.C.E. Part i. Pp. xiii + 283. (London: E. and F. N. Spon, Ltd., 1899.)

THIS work seems to have had its origin partly out of consideration for the needs of surveyors whose home-training is too restricted to qualify them for colonial appointments, where a knowledge of geodetic work is required, and has in addition no less an object than the raising of the standard of qualification for English diplomas in surveying. We are told that the Council of the Surveyors' Institute was approached by the authors and others interested in these matters, and agreed to adopt this text-book if satisfied with it, but we are left in doubt as to whether it has received the approval of that body.

A general idea of the scope of the present volume may be gathered from the titles of the chapters, namely, "chain surveying; optics, magnetism, &c.; description and adjustment of instruments; traverse surveying; minor triangulation; the plane-table and methods of using it; levelling and contouring." Geodetical and astronomical determinations, as well as marine, route, and other special surveys are left for the companion volume, so that the form of publication is well suited to the requirements of the two chief classes of students. We find the explanations of the various instruments, processes, and principles sufficiently full and clear, while sound practical methods of making and entering observations and presenting the final results are given throughout. No particular originality is claimed, but the special merit of the book lies in the great care with which the compilation has been made, and the thoroughly practical spirit which pervades it. It certainly makes a good bid for a place among standard text-books.

The X-Ray Case Book, for Noting Apparatus, Methods and Results. By David Walsh, M.D. (London: Baillière, Tindall and Cox, 1899.)

FORMS are provided for recording the electrical and photographic conditions under which Röntgen photographs of medical and surgical cases are obtained, and for the entering of notes on the points brought out by an examination of the photographs, or by visual observations with a fluorescent screen. Full diagrams of the human body are given for convenience in recording observations.