

advising as to water supply or in carrying out works for storage and distribution for domestic use or for power purposes. The subjects dealt with are the storage and flow of underground water in porous soils, and the chemical properties of this water, but nothing is said as to how this underground water can be made serviceable.

The chapters into which the book is divided relate to:—the source and flow of underground water; springs and wells; the chemical, bacteriological, and microscopical examination of underground water, together with rules and tables relating to water, and a bibliography of books bearing on the subjects dealt with.

The author does not attach much importance to the quality of water so far as what is generally termed "hardness" is concerned, due to the presence of lime, on the ground that the quantity contained in the water is so small "that it would be necessary to drink gallons of such water at a time in order to get enough to have any effect upon the system." Whatever may be the case in America, the country where the author's experience has been obtained, here it is generally recognised that water containing lime is very injurious to any constitutions subject to complaints such as gout or rheumatism. Such water when boiled leaves a solid deposit on the bottom of the vessel in which it is contained. The effect on domestic boilers is very deleterious, and necessitates frequent scaling to remove the encrustation that takes place on the surface in contact with the water. The encrustation also of boilers used for producing steam for power purposes is a very serious objection to the use of hard water when it can be avoided.

*Outlines of Mineralogy for Geological Students.*

By Prof. G. A. J. Cole. Pp. viii+339. (London: Longmans, Green and Co., 1913.) Price 5s. net.

As its name implies, this book is "primarily intended for those who are interested in geology, and find themselves in need of an introduction to the classificatory details of the larger works of reference." Within the limits of 330 pages of fairly large type Prof. Cole has produced a textbook which, so far as it goes, is trustworthy, interestingly expressed, and based upon the now firmly consolidated modern ideas of crystal structure and symmetry. It has the further recommendation that it indicates, by footnote references, those larger works or original memoirs from which further detailed information may be obtained as regards both theoretical elaborations and experimental processes and measurements. Moreover, the greater number of these references are to works of very recent date, and it is obvious that the author has followed the rapid recent developments of the crystallographical part of his subject with care and keenness. Hence this book will form a safe and inspiring guide to students embarking on the study of mineralogy for the purpose of eventually utilising their knowledge in the field; and although such an object

is not specifically indicated by the author, the use of the book can scarcely fail to produce the good effect of interesting the would-be mining engineer in the pure science of the subject, and possibly of inspiring some original work.

As regards the half of the book devoted to descriptive mineralogy, a point of special excellence is the manner in which the phenomena of isomorphism and of the periodicity and family resemblance in the relations of the chemical elements are maintained prominently in view throughout. Also the especially able treatment of the silicates, so important to the geologist, which one would naturally expect from Prof. Cole, is a commendable feature of the book. While the letterpress is thus of general excellence so far as its very limited outlook is concerned, it is to be regretted that such illustrations as are new (many of the figures being older ones borrowed from H. Bauerman's "Systematic Mineralogy" issued by the same publishers) could not have been of a higher character; while perhaps adequate for their purpose, they are by no means worthy of so well written a book.

*The Elements of Descriptive Astronomy.* By E. O. Tancock. Pp. 110+xv plates. (Oxford: Clarendon Press, 1913.) Price 2s. 6d. net.

THIS little book may profitably be placed in the hands of boys beginning to take an intelligent interest in the heavens. Facts are given mostly with accuracy, and stated clearly in simple phrasing. There are many half-tone reproductions of interesting celestial photographs, and the text is helped by numerous instructive line diagrams. We may mention No. 13, which excellently explains the different noonday altitudes of the sun at summer and winter solstices. Efforts are made throughout to lead the reader to observe and think. A feature of the book consists in a small collection of quotations of an astronomical character for the reader to explain. There are some blemishes which may perhaps be remedied in another edition. Thus the bulk of Saturn is incorrectly "deduced," and its apatissement is much greater than that of Jupiter; also, eight significant figures are misleading when employed in expressing the distance from the earth to the nearest fixed star; and Praesepe might be mentioned as suitable for observation with a small telescope.

H. E. G.

*A National System of Education.* By J. H. Whitehouse, M.P. Pp. 92. (Cambridge University Press, 1913.) Price 2s. 6d. net.

THIS book is welcome as an indication that our legislators are becoming not only more interested in national education, but also better informed as to English educational needs and shortcomings. These brief chapters on all grades of education, and on many problems which demand an early solution, will serve admirably to instruct ordinary citizens as to the duty of the State towards education.