

schools shows that there is a demand for this knowledge. We think, however, the author has included too much in the scope of the work. We read about magnetism, primary batteries, electric bells, and kinema sets. We also read about three-core cables, rotary converters, boosters, interpoles, etc. The book would have been more useful if the description and elementary theory of the more intricate apparatus had been excluded. It does not advance our technical knowledge of what is meant by "candle-power" to be told that "a source of light is said to possess candle-power." It is also not very instructive to be told that the back E.M.F. of a motor can be obtained by Fleming's right-hand rule. We failed to follow the theory given for the action of the balancers in a three-wire system of distribution (p. 246). The reader ought to be told why the difference of pressure between the two ends of a circuit is called the "potential difference." The introduction of the word "potential" must strike him as mysterious. In electrical science, more almost than in any other, it is impossible to be perfectly exact "at once," but a beginning at precision should be made early, even although the author should run the risk of being called "academic."

*The Nomenclature of Petrology: With References to Selected Literature.* By Dr. Arthur Holmes. Pp. v + 284. (London: Thomas Murby and Co., 1920.) Price 12s. 6d. net.

THERE is probably no department of science in which the nomenclature is in such a state of confusion as in petrology. The rocks that form the earth's crust include an innumerable variety of types which pass by imperceptible degrees into one another, so it is not surprising that rock names have been multiplied to an extraordinary degree, and that there has been considerable variation in their application. The student of petrological literature, therefore, frequently finds himself faced with unfamiliar terms or those which are used in a sense different from that with which he is acquainted, and he will owe a debt of gratitude to Dr. Holmes for the labour expended in compiling this invaluable work of reference. He will no longer be dismayed when he meets in the pages of geological publications with "lavalites," "ledmorites," "leuwfonteinities," and "leidleites," all of which are explained in a single page. The book deals not only with the names of rock types, but also with those indicating their structures and other characters, and we shall know now what is meant when a rock is referred to as being "lepidoblastic" or "glomeroplasmatic."

A useful feature is a list of the commoner prefixes and suffixes and the meanings usually attached to them by petrologists, and there is a glossary of French and German terms. A tabular classification of rocks, including ore deposits, follows, and presents many novel and interesting features. It is based partly on fundamental principles of rock genesis, and so far it is likely to hold its own in the future; and partly on arbitrary numerical criteria, and must to that extent be con-

sidered only a provisional stage in the evolution of a scientific classification. There is an instructive synopsis of processes of alteration due to igneous exudations, and of their products; and the classification of metamorphic rocks according to their structure into maculose, schistose, gneissose, and granulose appears to be distinctly useful.

J. W. E.

*Liquid Air and the Liquefaction of Gases.* By Dr. T. O'Connor Sloane. Third edition, revised and much enlarged. Pp. 394. (London: Constable and Co., Ltd., 1920.) Price 21s.

It must be confessed that the *raison d'être* of this book is not easy to discover. From its sub-title ("A Practical Work," etc.)—and, we may remark, from its price—one might expect an authoritative book of reference for the engineer. It is, however, intended as a popular exposition of the history of the liquefaction of gases.

An introduction to the elementary facts of physics is followed by a series of chapters on the personalities, methods, and apparatus of some leading experimenters, beginning with the work of Faraday, and culminating in the achievements of Mr. Charles E. Tripler. An outline is given of the Linde, Hampson, and Claude processes. Numerous experiments, such as that of pouring liquid air on the floor, or boiling it on a block of ice, are described and illustrated. Indications are given of some applications of liquid air.

The author has evidently read with care much of the historical literature, and his digests of some of the early work are well told. He would probably not lay claim to a first-hand acquaintance with the scientific and industrial cryogenic developments of the twenty years which have elapsed since the book was first written; and it may be doubted whether the information imparted is of a kind to satisfy any but the most superficially minded of readers.

*George Stephenson.* By Ruth Maxwell. (Heroes of All Time.) Pp. 192. (London: George G. Harrap and Co., Ltd., 1920.) Price 3s. 6d. net.

AN account is given in this book of the more important events which marked the career of George Stephenson. A few pages are devoted to a brief account of his childhood and early struggles. Then comes an account of the invention of the "Geordie" safety lamp for use in mines, which was brought out simultaneously with Sir Humphry Davy's famous lamp. The remainder of the book records in detail the more interesting points in the history of the great engineer from the time when he built the Stockton and Darlington Railway onward, and it is amusing to read of the struggles he had from time to time to secure the requisite Parliamentary authority for building railways on which traffic would travel at ten miles an hour! Nine excellent full-page illustrations showing some features of British railways in Stephenson's time make an agreeable addition to an interesting book.