

cheques signed by such members of the Executive Committee as may be authorised by the Committee to do so.

Legal Proceedings.

Any legal proceedings with regard to the affairs of the Institution, which it may become necessary to institute or defend, shall be instituted or defended by the Solicitors of the Royal Society, in the name and on behalf of the Royal Society upon the instructions of the Executive Committee, but no such proceedings shall be instituted or defended without the order of the President and Council of the Royal Society.

The Kew Observatory Committee of the Royal Society.

"The Kew Observatory Committee of the Royal Society," incorporated under the Companies Act, 1867, shall be wound up; and the property thereof shall be held by the Royal Society for the purposes of the Institution.

CHEMICAL TECHNOLOGY.

Outlines of Industrial Chemistry. A Text-book for Students. By Frank Hall Thorp, Ph.D., Instructor in Industrial Chemistry in the Massachusetts Institute of Technology. Pp. xx + 541. (New York: The Macmillan Co. London: Macmillan and Co., Ltd., 1898.)

IN writing a book such as the present, the author's main difficulty must be in deciding what to omit. The number of industries in which chemistry plays a more or less important part is so large, and their nature so varied, that it would appear to be almost impossible to give even a moderately satisfactory account of them within the limits of one volume. By omitting metallurgy altogether, and condensing the preparation of the artificial organic dye-stuffs into a little over eight pages, the author succeeds in finding space for the essentials of the majority of the remaining chemical industries. The omission of metallurgy is justified by the facts that this subject is usually taught independently, and that several good short text-books dealing with it already exist. The chemistry of the artificial organic colouring matters is generally included in courses of lectures on organic chemistry, and, presumably for similar reasons, no mention is made of the majority of the pharmaceutical and photographic chemicals.

An introductory section contains a general account of the apparatus employed in performing such common operations as evaporation, filtration, distillation, calcining, and so on, on the large scale. The diagrammatic sketches employed in this section, and throughout the book, are very clear and are calculated to be of much more service to a student than elaborate illustrations of the outside of the apparatus or even complicated working drawings would be. The two cuts on pp. 12 and 13, representing filter-presses, might with advantage have been replaced by diagrams.

After a brief account of the main facts about fuels and water, the different chemical industries are considered, about equal space being devoted to those dealing with inorganic and those dealing with organic substances. The accounts of the origin and properties of the raw materials, and of the different operations and transformations through which they pass on their way to the finished products, are clear and concise; in most cases the author has succeeded admirably in subordinating

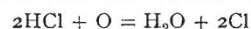
mere detail whilst bringing out clearly the essential factors on which the success of the process depends.

The treatment of some of the more recent developments of technical chemistry is not quite so satisfactory as that accorded to the older industries; the account of the electrolytic processes for the preparation of alkalis and chlorine being perhaps the least satisfactory chapter in the book. The author of a work on industrial chemistry is, of course, hampered to some extent by the natural and inevitable reticence of the inventors of new processes; but, even allowing for this, the chapter might have been improved by a wider acquaintance with the recent literature of the subject. This, in passing, is true, though to a less extent, of the chapter dealing with the cyanide industry in which so much progress has been made of late years.

In speaking of the Deacon chlorine process, on p. 99, the author remarks that since the reaction between hydrochloric acid and oxygen evolves heat, the temperature of the tower in which the reaction occurs should "theoretically" be maintained without further heating, but that this is not the case. In reality, of course, the whole thing depends on the relation between the amount of heat evolved by the chemical change and that lost by radiation, convection, and conduction. He goes on to say:—

"Theoretically, too, all the chlorine of the hydrochloric acid should be recovered, but practically the reaction is far from complete."

Since it is well known that the reaction



is reversible, an equilibrium must tend to be established; this equilibrium will not be displaced by the presence of a catalytic agent (which merely accelerates the velocity with which the equilibrium is approached), so that the practical result is only in disaccord with the incorrect theory.

These are, however, but minor blemishes in a book which attains a very high average of excellence. We are not acquainted with any other book in English which covers the same ground, and there is no doubt that it will prove to be of great service to all persons interested in technical chemistry, and more especially to the students and teachers to whom it most directly appeals. T. E.

VOLCANOES.

Volcanoes: their Structure and Significance. By T. G. Bonney, D.Sc., LL.D., F.R.S., Professor of Geology at University College, London. Pp. 337. With 12 Plates, a Map, and 21 Illustrations in the Text. "The Progressive Science Series." (London: John Murray. New York: G. P. Putnam's Sons, 1899.)

IN this work the author has succeeded in giving, within convenient limits, a clear and very readable account of the present state of vulcanological science. The work is not burdened with scientific details nor made unattractive by a too technical terminology; but it nevertheless contains a trustworthy discussion of the most recent researches of geologists, and their latest views upon questions connected with these very interesting natural phenomena.

The first chapter, entitled "The life-history of vol-