

in America to the increasingly large number of chemical engineers who have received a college training. Now that the Imperial College of Science is starting a full undergraduate course in the subject leading to a degree at the University of London, chemical engineering may be expected to attract more students in Great Britain.

The new edition follows the old closely, with the new work incorporated; the principal changes are to be found in the chapters on flow of heat, evaporation, drying, distillation, gas absorption, extraction and filtration. Such technical works are necessarily full of symbols, the precise meaning of which it is difficult for the reader to retain: it is therefore convenient to find at the end of each chapter a list of all the symbols used therein. It is stated that, so far as possible, these correspond to the recommendations of a Committee of the American Institute of Chemical Engineers.

The book contains an introduction by Arthur D. Little, who has passed away in the interim: he was the gifted and inspired leader of the movement to make chemical engineering a science of its own.

**(1) Recent Advances in Physical Chemistry**

By Dr. Samuel Glasstone. Third edition. Pp. viii+477. (London: J. and A. Churchill, Ltd., 1936.) 15s.

**(2) Recent Advances in General Chemistry**

By Dr. Samuel Glasstone. Pp. ix+430. (London: J. and A. Churchill, Ltd., 1936.) 15s.

(1) DR. S. GLASSTONE has earned the gratitude of many chemists by writing his "Recent Advances in Physical Chemistry"; the appearance of a third edition within five years is sufficient testimony to the widespread recognition of the value of his reviews of modern work. The new matter in this edition is largely concerned with the application of wave mechanics to problems of molecular structure, and gives an account of the valency bond and the orbital methods as applied to a number of structural problems as well as a discussion of resonance phenomena in organic molecules.

(2) The new companion volume on "General Chemistry" opens with an account of atomic disintegration, and includes articles on deuterium, on electron diffraction and on free radicals. It also includes the discussions on solubility and on acid-base catalysis which had been omitted from later editions of the "Physical Chemistry" owing to lack of space. It is, however, the chapters on statistical methods and on the mechanism of reactions in solution which the reviewer has most admired. For entirely different reasons both subjects are difficult to deal with in a limited space, but Dr. Glasstone has succeeded in giving a clear and readable account of the fundamental theory of the former, whilst the discussion of reaction mechanism is an excellent survey of theory and experiment.

Chemists will find the new volume as helpful and as interesting as the earlier "Physical Chemistry"; it would be difficult to give it higher praise than this.

S. S.

**Physical Chemistry**

By Prof. F. H. MacDougall. Pp. ix+721. (New York: The Macmillan Co., 1936.) 17s. net.

THIS text-book follows more or less traditional lines in the order in which the subjects are presented, but it possesses some special features worthy of note. Thus the thermodynamical aspect of physical chemistry is given more emphasis than in most English text-books of a similar standard, and the exposition of the first and second laws and their application to chemical problems is admirably clear and concise. Electrode processes and the theory of the E.M.F. of cells are also dealt with thoroughly and without the ambiguities which often mar the treatment of these subjects. Much modern work is included and the sections on extranuclear atomic structure and on theories of strong electrolytes may be mentioned as clear and useful introductions to these topics.

S. S.

**Disperse Systems in Gases:**

Dust, Smoke and Fog: a General Discussion held by the Faraday Society, April 1936. Pp. 1041-1300. (London and Edinburgh: Gurney and Jackson, 1936.) 12s. 6d. net.

AN article on some points raised in the general discussion organized by the Faraday Society on "Disperse Systems in Gases" appeared in NATURE of May 2, 1936. The papers, which are now available, are considered under the general properties of such systems and their industrial aspects, the latter being quite a short section though of great importance in relation to the amenities of life. We are all plagued by dust, by fog and by the deposition of dirt from smoke; many of the ills of the flesh are a consequence of their preventable existence. Dust produced in industry is the subject of legislation where it causes occupational diseases, but dust produced in the streets or in our homes, which we breathe laden with bacteria, is no one's concern. Nor is there any serious effort to restrict the production of smoke except by factory chimneys, in spite of the fact that so many alternative smokeless fuels to raw coal are available.

The Faraday Society was more concerned with the theoretical aspects of the question, the size of particles, their movement and the cohesion between particles. Many very useful papers are collected under the sub-heading of mist, cloud, hygroscopic nuclei, town and country fogs.

The discussions were most valuable and it will prove useful to have them in book form for reference.

**A Text-Book of Inorganic Chemistry**

Edited by Dr. J. Newton Friend. (Griffin's Scientific Text-Books.) Vol. 6, Part 5: Antimony and Bismuth. By W. E. Thorneycroft. Pp. xxviii+249. (London: Charles Griffin and Co., Ltd., 1936.) 18s. net.

THE volume of Dr. Friend's well-known text-book dealing with antimony and bismuth maintains the high standard of the series. The chemistry of these two elements is particularly difficult, and the author has wisely adopted a rather conservative attitude,