Physical Chemistry for Colleges

A Course of Instruction based upon the Fundamental Laws of Chemistry. By Prof. E. B. Millard. (International Chemical Series.) Fifth edition. Pp. ix+600. (New York and London: McGraw-Hill Book Co., Inc., 1941.) 26*s*.

PROF. MILLARD'S book has now reached its fifth edition. Like many American text-books of science it is excellently printed and bound, but its price is notably greater than that of British books which are of a similar scope.

The treatment follows the usual lines so far as the older 'classical' physical chemistry is concerned, but is noteworthy for the care which has been taken to provide many tables of experimental data and accurate modern values of experimentally determined constants. These are used as the basis for an unusually large number of numerical exercises which are appended to each chapter. Discussions of the states of matter, of the properties of solutions and of thermochemistry and thermodynamics are clearly written and copiously illustrated. The discussion of kinetics is confined to the treatment of homogeneous reactions.

The least satisfactory chapters deal with more modern work, and the discussion of atomic structure does not seem to have been rewritten since the book was first published in 1921. It gives a brief account of the Lewis cubical atom and of the Bohr theory of the hydrogen atom, but does not include even a description of the general Bohr theory of extra-nuclear structure and the periodic law which is now so fundamental for chemistry. This omission should be rectified in any future editions. S. S.

Practical Physics

By the Physics Supervisory Staff, Engineering Science and Management Defense Training, under the direction of the Division of Arts and Science Extension, the Pennsylvania State College. (Foundations of Engineering.) Pp. viii+165. (State College, Pa.: Pennsylvania State College, 1941.) n.p.

THIS course is designed for a very specific purpose, namely, to furnish training in the fundamentals of physics for workers in the defence industries of the United States. The scope of the work includes the usual subjects, with the exception of sound and light, of a standard roughly equivalent to the School Certificate in England and Wales; in some cases the standard is slightly higher.

The first chapter deals quite adequately with fundamental units and their measurements, and this chapter is typical of the thorough manner in which the work of the whole book has been done; each chapter is practically a self-contained unit. The general plan throughout the book seems to be to deal with the theory first, follow this up with a useful summary and a comprehensive set of questions, and then deal with the experimental work. In the examples, emphasis is placed on the practical and ndustrial applications of the principles studied. Many diagrams are given, but several of these are in lighter vein and could easily be omitted.

Much has been attempted in the book, and much accomplished, and one feels that the students for whom the book is intended should derive great benefit from its use. The authors are to be congratulated on their enterprising and sound piece of work.

Elementary General Science

Edited by J. M. Harrison. Book 3. Pp. vii+247. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1941.) 5*s*.

THIS rather high-priced book completes a course in elementary science from which it is suggested that schools select subject-matter to suit their own particular needs. The earlier chapters are arranged so as to interlink the various sciences so far as possible, while the remaining chapters deal with work necessary to meet the requirements of students taking the general science paper in the School Certificate Examination. One distinct asset of the book is the good sectional diagrams which are made as simple as possible so that students can very easily follow them; the diagrams of microscopes and telescopes are particularly good. It must be distracting to students, however, not to find diagrams on the same page as the corresponding descriptive matter; examples of this occur on pages 167 and 169.

Certain omissions, which one feels ought to be remedied, are noticeable. For example, in dealing with the mechanical equivalent of heat, Joule's pioneer work is quite rightly stressed, but a more modern method of determining this important relationship would have been welcome. There is a good selection of questions at the end of the book, though no answers are given to the numerical problems.

Experimental Physical Chemistry

By Dr. W. G. Palmer. Pp. xii+322. (Cambridge: At the University Press, 1941.) 12*s*. 6*d*. net.

DR. PALMER'S new volume is noteworthy for the simplicity of the apparatus used to demonstrate fundamental laws and for the very detailed instructions which are given for carrying out the experiments. Each chapter is prefaced by a condensed account of the relevant theory; this is done so that (to quote from the preface) "the student can readily refer to principles while at work on a problem".

This is a very desirable aim but it is doubtful whether the highly compressed and sometimes inadequate notes on the theory will really help the more earnest student. Dr. Palmer's book will chiefly be valued for the many practical dodges which are described for the construction of home-made apparatus. S. S.

Practical Physical Chemistry

By Prof. Alexander Findlay. Seventh edition, revised and enlarged. Pp. x+335. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1941.) 12*s*. 6*d*. net.

PROF. FINDLAY'S book has now reached its seventh edition; it was first published in 1906 and the last impression of the sixth edition appeared in 1938. The new edition is enlarged by the inclusion of descriptions of modern equipment for thermostats and, *inter alia*, some additions to the sections on surface tension, electromotive force, and binary and ternary equilibria.

The author has wisely resisted the temptation to enlarge the book considerably by the inclusion of many new and specialized topics. After more than three decades of useful life it remains an excellent and inexpensive guide to practical work in physical chemistry. S. S.