

THURSDAY, NOVEMBER 22, 1917.

## CLASS-BOOKS ON ELEMENTARY CHEMISTRY.

- (1) *A Class-book of Organic Chemistry*. By Prof. J. B. Cohen. Pp. viii+344. (London: Macmillan and Co., Ltd., 1917.) Price 4s. 6d. net.
- (2) *Practical Chemistry for Medical Students*. By Dr. A. C. Cumming. With preface by Prof. J. Walker. Second edition. Pp. 8+165. (Edinburgh: James Thin, 1917.)

(1) **D**ESPITE the systematic basis of organic chemistry, it is always difficult to initiate students in the study of the subject, and especially to get them to grasp the general principles of the science as a precedent to further study. The majority of elementary text-books are burdened with far too much preliminary detail of an abstract character, so far as the beginner is concerned, before he is brought into touch with the materials and methods of the science, with the result that he finds his studies lacking in interest and objective. This defect is very successfully avoided in Prof. Cohen's book. It bears, in every respect, the mark of the experienced teacher, and is most suitably adapted to the requirements of first-year medical students and of senior science students in schools, for whom it is designed.

The volume is divided into three parts, in the first of which the principles of the subject are illustrated by a detailed elementary study of ethyl and methyl alcohols. By means of these examples typical methods of experiment and investigation employed in the examination of organic compounds and in the determination of their structure are described. A more systematic account of the chief aliphatic compounds forms the second portion of the book, which is concluded with a brief description of the more important cyclic compounds. A series of practical exercises is included in each section, and a set of questions appended to each chapter. These exercises are well chosen, and do much to keep the theoretical work within the scope of experimental knowledge. A few fuller explanations of some reactions and structural relations might be usefully added—for instance, in regard to the acidity of aniline hydrochloride, the relation of azo-colours to their mother-substance, azobenzene, the diazonium formula, and the proof of the presence of the two hydroxyl groups in alizarin. Also, in view of the book being designed for the use of medical students, their interest would have been stimulated by a little more specific detail of the therapeutic properties of such substances as salicylic acid, salol, antifebrin, and phenacetin.

(2) Although a course of practical chemistry for medical students need not differ in character from the instruction required for other students in the more elementary stages of the subject, it is advantageous if the material selected is restricted to such methods of experiment and to descriptions of the properties of such substances as will serve

as a helpful introduction to subsequent medical study. From this point of view the experiments described in Dr. Cumming's book are very suitably selected and their sequence is well arranged. The first exercises deal with the manipulation of apparatus, solubility, crystallisation and its value in the purification of compounds. These are followed by an account of the properties of the commoner acids and alkalis, of the preparation and properties of the more important gases, and of the properties of sulphur, iodine, and carbon. These descriptions are accompanied by a series of instructions for qualitative experiments, to which a few simple quantitative exercises—for instance, in the case of carbon dioxide and of hydrogen—might have been added with advantage.

The succeeding sections deal with the preparation of salts, elementary volumetric analysis, and the qualitative reactions of inorganic and of the commoner organic compounds, including the more important alkaloids. In this new edition the subject-matter of the previous issue has been carefully revised and a few additional experiments with bread, potatoes, and fats, the fermentation of glucose, and the action of saliva on starch have been introduced. The descriptions of the experiments and of the associated details of manipulation are throughout direct and concise, so that the course should form a really practical help to the study of the general principles of chemistry.

C. A. K.

## AMERICAN GUNNERY.

*Stresses in Wire-wrapped Guns and in Gun-carriages*. By Lt.-Col. Colden L'H. Ruggles. Pp. xi+259. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1916.) Price 13s. 6d. net.

**T**HE preface to this the second edition explains that the text was originally prepared for the cadets of the U.S. Military Academy. The title does not fully indicate the contents. The elastic stresses in wire-wrapped guns are the subject only of chap. i., pp. 1-36. Chaps ii. and iii., pp. 37-105, deal with the forces which the firing of the gun occasions in the principal parts of the carriage, the 3-in. field carriage, the 5-in. barbette carriage, and the 6-in. disappearing carriage being taken as examples. The problems are dealt with in these two chapters as problems in ordinary statics and dynamics. Chap. iv., pp. 106-73, treats of the elastic stresses in parts of gun-carriages. Chap. v., pp. 174-227, if not very obviously connected with the professed subject of the book, gives a clear descriptive account of "toothed gearing." The subject of the last chapter, vi., counter recoil springs, has more connection with guns than might appear at first sight.

The numerous illustrations, which form a great feature of the book, are generally very clear. Some, especially those relating to toothed gearing—for instance, Figs. 78, 80, 89, and 93—are quite works of art. If scarcely necessary for the

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