REVIEWS

EXERCISES IN SECOND YEAR CHEMISTRY: A MANUAL OF THEORETICAL AND ANALYTICAL PROCEDURES. By W. H. Chapin. 3rd ed., revised and enlarged. Pp. xiii+255. New York: J. Wiley & Sons; London: Chapman & Hall, 1934. 15s. 6d.

The work outlined in this manual accompanies the text of the author's "Second Year College Chemistry," but this arrangement will be of little, if any, disadvantage to those teachers and students who are not in possession of the latter volume; in fact, this manual can be cordially recommended to all those who desire a clear presentation of practical exercises on the more elementary portions of the subject, particularly those portions dealing with the basic principles.

The present edition is divided into two main parts. Part I consists of "theoretical exercises" intended to verify and illustrate the subject matter in the "Second Year College Chemistry," and deals with the kinetic theory, the gas laws, laws governing change of state, molecular and atomic weight determinations, the laws of combination, valency, homogeneous and heterogeneous equilibria, solubility, the theory of ionization, indicators, colloids, and electrochemistry.

Part II deals exclusively with quantitative analysis, which is arranged in the following order: (1) Measurement of acids and bases, including the colorimetric determination of p_H and water-softening control; (2) gravimetric analysis, including the analysis of silicates; (3) volumetric precipitation, including the use of adsorption indicators; (4) volumetric oxidation-reduction processes; and (5) electroanalysis.

It is an admirable book, and is well illustrated, nicely printed, and strongly yet neatly bound.

W. H. B.

DAS SCHWERE WASSER. By Prof. D. H. Mark. Pp. 32. Leipzig and Vienna: F. Deuticke, 1934. 1.20 m.

This little brochure by the well-known Prof. H. Mark of Vienna University will be welcomed by many, since it comes at a time when interest in the more massive isotope of hydrogen and its various compounds (especially "heavy" water) is almost universal. The various topics—structure of the elements, methods for identifying and recognizing isotopes, the discovery of deuterium (diplogen), preparation and properties of "heavy" hydrogen and "heavy" water, and the various possible uses of these substances in physical and chemical science—are discussed in simple and clear language without mathematics. A very valuable feature is the list of references to the literature, which occupies 5 of the 32 pages.

When one reflects that, owing to the discovery of the H^2 isotope and the three "oxygen-constellation" isotopes, there exists the possibility of the preparation of *nine* varieties of "water," it is obvious that a vast extension of practical chemistry may, and indeed soon will, become possible. Not only will there be prepared an enormous number of new substances analogous to existing ones and possessing new and probably valuable properties, but it is already clear that the new isotopes will provide, as "indicator" atoms, powerful new weapons for investigating the mechanism of many chemical and physical processes. As we know now (or think we know), the nuclei of the atoms are built up from two sorts of "units," the protons and the neutrons, the (negative) electrons and the positrons being produced by the reciprocal transformations of these apparently fundamental nuclear constituents (we may, for the present, neglect the somewhat elusive and hypothetical "neutrino"). Since the nucleus of H^2 is built up from one proton and one neutron, it is clear that it must possess great importance in nuclear chemistry and physics.

It goes without saying that every chemist must make haste to become acquainted with these new discoveries. He will find Prof. Mark's little pamphlet extremely useful—it can be read in a night or on a railway journey, say from Manchester to London.

F. G. D.

LUMINESZENZ-ANALYSE IM FILTRIERTEN ULTRAVIOLETTEN LICHT: EIN HILFSBUCH BEIM ARBEITEN MIT DEN ANALYSEN-LAMPEN. By Prof. Dr. P. W. Danckwortt. 3rd ed. Pp. viii + 190. Leipzig: Akademische Verlagsges. m.b.H., 1934. 8.50 rm.

The first edition of this useful handbook appeared in 1928 when the number of figures was 39, and that of the pages 106, while the type being now smaller, the contents are considerably more than twice as great as they were formerly. Another sign of growth is the increase in the bibliographic references from 192 to 890, arranged under 16 main headings, further classified as required, which makes literary search an easy matter; for example, Section "VIII. Technik," embodying 123 references, is elaborated into: "(*a*) Gerberei und Papier-Industrie"; "(*b*) Textil-Industrie"; "(*c*) Lack- und Farben-Industrie"; "(*d*) Gummi-Industrie"; "(*e*) Silikat-Industrie"; "(*f*) Erdöl-, Teer-, und verwandte Industrien"; "(*g*) Zucker-Industrie"; "(*h*) Seidenraupenzucht."

The most remarkable development is that the two pages of general observations on quantitative work are now replaced by a special section, "Quantitative Messungen," by Dr. J. Eisenbrand, covering 34 pages. This is studied both theoretically and in practical applications; the details are substantiated by references to numerous original workers. The measurements may as yet lack absolute value, and seem too involved to become widely adopted; none the less, there is ample suggestion for any one interested in the subject to work out his own technique and to make it comparable with that of another worker with whom he may wish to collaborate. It all gives promise of a still wider field of utility for this comparatively new means of analytical procedure.

The work is throughout an improvement on the earlier edition, both in precision and in scope.

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