Book Reviews

The Extra Pharmacopoeia. vol. 2. Pharmaceutical Press, London, ed. 23, 1955. xxxi + 1501 pp. £2 17s. 6d.

Volume II of *The Extra Pharmacopoeia* supplements the information in the first volume published in 1952, and the two volumes form a comprehensive work of reference on materia medica and allied subjects. The first edition of this reference work, published by William Martindale in 1883, consisted of 313 pages. The advances in therapeutics may be gaged in part by the size of the present volumes: volume I, 1532 pages, and volume II, 1501 pages.

The Extra Pharmacopoeia is unique in its outlook among references on materia medica. It compiles in concise form information concerning medicinal substances of preparations and alterations in standards, existing substances that differ materially from British standards. It covers the latest developments in medicine and the allied sciences and incorporates relevant information in the form of brief monographs or abstracts. Volume I is largely limited to a product description under an alphabetical arrangement.

Volume II, arranged in 33 sections, has been compiled for the general practitioners in pharmacy and medicine, for experts engaged in associated activities, for research workers, and for students. For the general practitioner of medicine and pharmacy, the volume provides much information of use and interest. For analysts, clinical pathologists and biochemists, the sections dealing with chemical and physical methods for the analysis of drugs, food, and water and with clinical biochemistry and hematology provide detailed descriptions of selected methods. Sample section headings indicate the broad scope of this work, for example, polarographic analysis, indicators, graphic analysis, fluorometric analysis, microbiological assay of vitamins, food analysis, food law, water analysis, structure-action relationships, sterilization, radiotherapy, vitamins, clinical biochemistry, and proprietary medicines.

The new edition of *The Extra Pharmacopoeia,* prepared with the help of many experts, is a valuable reference work for scientists and technologists in the fields of pharmacy and medicine as well as related areas of work. The content of the book is made more valuable by thousands of abstracts of, and references to, scientific papers that serve as a guide to published work on the various subjects. The work is so broad in its scope that it deserves a place in every scientific library.

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Industrial and Manufacturing Chemistry. Part I, *Organic*; part II, *Inorganic,* vols. I and II. Geoffrey Martin. Philosophical Library, New York, 1955. Part I, xxi + 752 pp., ed. 7; part II, vol. I, xxiii + 600 pp., ed. 6; part II, vol. II, xxi + 491 pp., ed. 6. $50 per set.

An editor of a scientific or technical journal or journals possibly is more aware of the invaluable services of comprehensive and authoritative reference volumes than most others engaged, in one way or another, in highly specialized areas of the physical sciences.

With four journals serving a very broad spectrum of chemical science and technology to watch over, I find such greatly diversified reference works as the 15-volume Kirk and Othmer *Encyclopedia of Chemical Technology,* the four-volume Mattiello *Protective and Decorative Coatings,* the six-volume Guenther, *The Essential Oils,* and the six-volume Haynes, *The History of the American Chemical Industry,* highly informative and great time savers. Otherwise how would I check thousands of points a year that need checking in manuscripts? How could I answer the flood of calls for aid for generalized information from all parts of the world?

To the meager list just cited, and to a great many more reference works that could be mentioned if space permitted, must be added the three-volume *Industrial and Manufacturing Chemistry* published in England.

This very important source of information on many varied facets of industrial chemistry and chemical engineering is by no means a new venture. A continued demand for Martin's *Industrial Chemistry* for the past two decades has demonstrated the intrinsic value of these reference volumes.

Volumes I and II (inorganic) are now in a sixth edition, and a third volume, dealing with organic chemistry and more particularly standard chemical and chemical process manufacturing operations now in a seventh revision or edition.

Frankly, the task of describing (perhaps the word *identifying* is more correct) this reference series is unnecessarily complicated—at least I feel this to be the case. The inorganic field is covered in two volumes—labeled "Volumes I and II." The organic field, with stress on manufacturing, is covered in a separate book which, unfortunately, is labeled as "Part I," rather than as "Volume III." Obviously, there is a historical reason for this complexity, but need this condition continue indefinitely? Despite this criticism, the quality of the text material presented in the three books warrants high praise.

In the preface to the first edition of part I, the original editor, Geoffrey Martin, stated "The editor's aim has been to cover the whole range of subjects with which the industrial chemist and manufacturer are usually concerned, and the book will serve either as a textbook or as a work of reference; it is intended to meet the requirements of all business and practical men interested in chemical processes, of manufacturers, consulting chemists, chemical engineers, patent workers, inventors, technical lawyers. . . . ."

A careful perusal of the recently revised editions indicates that all three volumes have been subjected to a rigorous reevaluation of content, with the result that the information and data presented have been updated. It is then a fair statement to say that modern manufacturing operations and chemical technology as practiced both in Europe and the United States are given with reasonable accuracy. The editors readily admit (and wisely so) that intimate know-how is not provided.

Space does not permit a detailed report regarding what has been added in the most recent editions and what has been omitted. However, to one who can say, without stretching the bonds of modesty too greatly, that he is reasonably cognizant of the chemical and technologic changes of the postwar years, the new editors have done a commendable job of modernizing the latest editions.

It is my belief that these books will find their greatest appeal to technical librarians in the United States, com-

panies in the chemical and chemical process industries, and the librarians of colleges and universities offering degrees or even courses in industrial chemistry and/or chemical engineering.

The paper, printing, and binding are satisfactory for books that will be referred to with considerable frequency.

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The ISCC–NBS Method of Designating Colors and a Dictionary of Color Names. NBS Circular 553. National Bureau of Standards, Washington, 1955. v + 158 pp. $2. (Order from Supt. of Documents, Washington, 25.)

To both the Inter-Society Color Council and the National Bureau of Standards we are indebted for the development and publication of the *ISCC-NBS Method of Designating Colors*. It is an outcome of problem 2 brought to the Inter-Society Color Council in 1932 by its first chairman, the late E. N. Gathercoal, who represented in the council the *U.S. Pharmacopoeia*. Indeed, it was the problem of naming colors in the *U.S. Pharmacopoeia* and the *National Formulary* of the American Pharmaceutical Association that led Gathercoal, as a part of the 1930 decennial meeting of the USP Revision Committee, to prepare a 90-page printed report on the subject of color names and call for a special color exhibit and a meeting of color experts to decide whether something might be done to find "a means of designating colors in the *United States Pharmacopoeia*, in the *National Formulary*, and in the general pharmaceutical literature. . . . such designation to be sufficiently standardized as to be acceptable and usable by science, sufficiently broad to be appreciated and used by science, art, and industry, and sufficiently commonplace to be understood, at least in a general way, by the whole public."

One result of this exhibit and meeting was to lead to the formation of the Inter-Society Color Council, and the problem of color names, common to all its member bodies, was referred to a Committee on Measurement and Specification, under the chairmanship of the late I. H. Godlove. The 1933 report of this committee outlined a recommended system of color designations that was approved by the council and has been followed by subsequent committees, including the authors of the present report, in developing the system of color designations and in settling the color boundaries. In 1939 the ISCC formally approved and recommended to the N. F. Revision Committee and to the U.S.P. Convention, the method described in NBS research paper RP 1239, written by Deane B. Judd, physicist at the National Bureau of Standards, then chairman of the Committee on Color Problems of the ISCC, and Kenneth L. Kelly, then research associate at the National Bureau of Standards, representing the American Pharmaceutical Association.

Following this 1939 publication, a number of suggestions for revisions were received, particularly from textile groups in the Inter-Society Color Council, and a revision committee was formed in 1947 to study these suggestions and to make recommendations on the name and boundary changes that would make the method more generally applicable in all fields. (Incidentally, it may be of interest to mention that 30,000 copies of the RP 1239 report were sold. This is quite a record for a technical report and shows how real the interest is in this subject.) The changes embodied in the present publication were approved in 1949 by voting delegates of all 19 groups that were at that time member bodies of the ISCC.

The method adopted is simple in principle. The terms *light, medium,* and *dark* designate decreasing degrees of lightness, and the adverb *very* extends the lightness scale to "very light" and "very dark." The adjectives *grayish, moderate, strong,* and *vivid* designate increasing degrees of saturation. These and a series of hue names, used both as nouns and in adjective forms, are combined to form names for describing color in terms of its three perceptual attributes: hue, lightness, and saturation. Certain adjectives cover combinations of lightness and saturation, as *brilliant* for "light, strong," *pale* for "light, grayish," and *deep* for "dark, strong."

The relationship of the names can be explained most easily by reference to what is known as a color solid in which the three dimensions are hue, lightness and saturation; *hue* extends in a circular direction about the neutral axis, clockwise from red through the hues in spectrum order back to red; *lightness* extends in the vertical direction from black at the bottom through a series of grays to white at the top; and *saturation* extends in a radial direction horizontally from the central neutral axis at which the saturation is zero out to their strongest saturation, as far as they may extend from the central axis. There are 267 ISCC-NBS name blocks in the complete system, and each defines a block in the color solid. This number is sufficient for naming colors from memory, but since it is estimated that man can distinguish more than 10 million surface colors, it means that each name block contains a number of distinguishable colors.

The important thing about this method that distinguishes it from all others is that the boundaries of each name designation are fixed. In fact, it is a revision of some of the 1939 boundaries that made this present report necessary. The limits are defined in terms of the Munsell color notation, so that each color designation, consisting of a hue name and modifiers, defines a block in the color solid bounded by vertical planes of constant hue, horizontal planes of constant value, and cylindrical surfaces of constant chroma. Table 1 (p. 4) contains all the hue names and abbreviations used in the ISCC-NBS system, and Fig. 2 (p. 3) shows the scheme of hue modifiers, the "-ish" grays and the neutrals with their modifiers.

The method makes it possible to describe any color in a way that can be understood. It does not provide for pinpointing colors, either in fashion or colorimetry or for any other purpose; but for fashion color names it does provide an understandable descriptive term; and for colorimetry, when it is important to make close distinctions among the thousands of colors that in this system might bear identical designations, resort must be had to one of the several numerical specifications available today that are well standardized—for example, the internationally recognized CIE colorimetric coordinate system or the Munsell notation as smoothed and recommended by the Optical Society of America's 1943 report of the Subcommittee on Spacing of the Munsell Colors.

The report is a book consisting of 13 pages of text, 15 pages of color name charts (each for a given range of Munsell hue) to be used when one wishes to find the name of a color, and 4 pages showing the same color name boundaries in terms of constant Munsell value (used as the measure of lightness). In the sections that follow (pages 37–82) there is a listing of many thousands of synonymous and near-synonymous color names (together with the color name source) grouped under the 267 designations of the ISCC-NBS method. As the report says, the names Testaceous, Samurai, and Araby all refer to grayish reddish orange colors. In a similar way the meaning of all color names in the many vocabularies included (Ridgway, Maerz and Paul, Plochere, Textile Color Card Association names, and nine others) are defined so that, without reference to an actual color sample, one may have an understandable description of what color the name refers to. Under group 87, moderate yellow, for instance, we find such names as *amber, brass, corn, rattan, yellow smoke, chamois, buff, gold, wheat,* all of which are generally understandable, but we find also in the same group such names as *fustic, giallolino, latoun,*