

chlorosulfonylphenyl)-isoxazole in 2/1 ratio], alkylation of the resulting mixed sulfonyl chlorides in methylene chloride by triethyloxonium fluoroborate,<sup>5</sup> ready separation, by crystallization from acetone/ether, of pure N-ethyl-5-(3'-chlorosulfonylphenyl)-isoxazolium fluoroborate [n.p. 161-162°. Found: C, 36.97; H, 3.22; N, 3.79; S,

(5) H. Meerwein, E. Battenberg, H. Gold, E. Pfeil and G. Willfang, *J. prakt. Chem.*, **154**, 83 (1939).

9.02], and hydrolysis of the latter by 2 *N* aqueous-alcoholic hydrochloric acid at room temperature.

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## BOOK REVIEWS

**Graphite and its Crystal Compounds.** By A. R. UBBELOHDE, Professor of Thermodynamics, Imperial College of Science and Technology, London, and F. A. LEWIS, Lecturer in Inorganic Chemistry, Queen's University, Belfast. Oxford University Press, 417 Fifth Avenue, New York 16, N. Y. 1960. xii + 217 pp. 16 × 24 cm. Price, \$5.60.

The authors state that "this book aims to give descriptive access to current lines of research without attempting definitive treatments where these are considered to be premature." Such a statement disarms criticism since in fact no aspect of the subject can be considered to have reached definitive maturity. The book therefore provides a selective, classified and cautiously annotated bibliography, which surveys the literature to about the middle of 1959. Little effort has been made to select significant papers for especially detailed discussion or to provide theoretical background to help interpret the topics mentioned. The book is primarily designed not to provide scientific information but to provide references to sources of information.

The general level of the treatment can best be conveyed by quoting a typical paragraph.

A treatment has been proposed alternative to the tight binding theory originally introduced by Wallace (*cf.* also Yamazaki, 1957). In this approach (Slonczewski & Weiss, 1955) a detailed group theory study of the crystal is made, in order to obtain the 'topology' of the bands. In view of the large spacing between the layers the inter-layer interaction is treated by perturbation theory; this leads to a model of the energy bands which involves only a small number of parameters to be obtained by experiment. No satisfactory correlation has been found between this model and the value of the absolute magnetic susceptibility found experimentally (McClure, 1959). In application of this model to explain the results of cyclotron resonance in graphite (Nozieres, 1958) much experimental information is reviewed.

The contents are divided as follows: crystallography, physical properties, thermal properties, electron properties and band structure, crystal compounds of graphite, magnetic and electrical properties of the crystal compounds, graphite oxide, and chemical transformation of graphite to volatile products.

The treatment of the crystal compounds of graphite is exceptionally good. In general, the chemistry in this book is more adequate than the physics.

Since the book is not expensive, we can safely say that it provides good value. It may easily save many hours of time for anyone in need of a ready reference to the properties of graphite and its crystal compounds. On any particular topic, however, the original papers will need to be consulted. In order to make sure that nothing important has been missed, recourse to "Chemical Abstracts" will also be required. (This book contains about 600 references, and in 1958 alone "Chemical Abstracts" contained more than 400 references to graphite.) The system of placing the references in the text between parentheses makes the book difficult to read for any length of time.

A student wishing to obtain a good idea of the current status of this field would not be advised to turn to this book. He would do better to read some of the papers in the Proceedings of the Third Conference on Carbon, held in 1957

and published in 1959. In these papers the subject immediately becomes alive and meaningful.

The book has been beautifully printed by Vivian Ridler of the Oxford University Press. The editing has been somewhat careless, particularly in the failure to provide sufficiently descriptive captions for some of the figures, tables and illustrations. In the review copy, the paper varied in color. A slight lowering of the standards of the Oxford Press is therefore evident. In any case, one must question the value of such a monumental production for a book whose useful life can hardly be more than five years.

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**Radiation Pyrometry and its Underlying Principles of Radiant Heat Transfer.** By THOMAS R. HARRISON, Technical Advisor, Minneapolis-Honeywell Regulator Co., Brown Instruments Div.; formerly Director of Research, The Brown Instrument Co.; Physicist, Champion Porcelain Co.; Associate Physicist, National Bureau of Standards. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1960. xii + 234 pp. 16 × 23.5 cm. Price, \$12.00.

The title is admirably descriptive of this admirable book. The author, an authority on the technique of radiation pyrometry, states his prime purpose is to present the information needed to enable engineers to arrive at definite answers to questions arising in connection with the use of radiation pyrometers in industry. This he has done notably, but his accomplishment is much greater. To give the theoretical and practical explication of radiation pyrometers and pyrometry that he does, the author (a) presents and develops concisely and accurately the chief principles and ramifications of energy transfer by thermal radiation; (b) adopts a single, sound and acceptable terminology on the subject, which has been rather needed; (c) distinguishes clearly the multifarious concepts of spectral, total and band, and normal, angular and hemispherical, emittances, absorbances and reflectances of bodies, and their interrelationships; and (d) gives tabulated values of Planck's radiant intensity functions, in a convenient and condensed form. This compendium, although here focused on pyrometer practice, is directly applicable, and sufficient in principle, for the broader universe of radiative heat transfer problems.

The mathematics of the subject, and the equations required in pyrometer applications, are concisely and (with appendices) very completely developed. About a half of the text is devoted to particulars on different types of pyrometers and optical systems, including "light-guide" pyrometers, and the equations and factors on which their calibrations are based. Six tables give data on the emittances of materials, and optical properties of pyrometer lens and window materials; twelve tables give calibration data for particular pyrometers, and relative responses resulting with combinations of different lenses and windows; corrections for the emittance of objects sighted upon are presented in

the text and by means of four charts. Few errors have been found; all are unimportant or self-evident.

Apart from its sure value and utility for pyrometer users, the book warrants the attention of all seriously concerned with thermal radiation. Although the book does not contain class problems, its clarity and thoroughness are such that it could well serve for instruction of students.

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**Biochimie Comparée des Acides Aminés Basiques.** Colloques Internationaux du Centre National de la Recherche Scientifique. Concarneau, 1-5 Juillet, 1959. XCII. By Centre National de la Recherche Scientifique. Centre National de la Recherche Scientifique, 15 Quai Anatole France, Paris 7, France. 1960. 436 pp. 16.5 X 24 cm. Price, 45 NF.

This volume contains the proceedings of a small international conference limited to twenty-seven participants and held at Concarneau, France, in July, 1959.

Following two general contributions (amino acid oxidases (A. Meister) and enzymatic transamination (A. Braunstein)), the contents proceed with a varied group of discussions of the metabolism and enzymology of lysine, histidine, arginine, and their metabolic relatives. The presentations are for the most part brief reviews, sometimes comprehensive (*e.g.*, degradation of ornithine, lysine and hydroxylysine (P. Boulanger), histidine metabolism (A. Mehler), biological role of guanido compounds (N. V. Thoai) and sometimes considerably more restricted (*e.g.*, octopine metabolism (N. V. Thoai and Y. Robin), metabolic products of arginine in plant tissue culture (H. Duranton),  $\gamma$ -guanidobutyrate degradation in fish liver (R. Baret, M. Mourgue, A. Broc)). Two sections of technical interest summarize methods for electrophoretic and chromatographic separation and measurement of basic amino acids (G. Biserte and R. Osteux), and methods for the analysis and preparation of guanido compounds (Y. Robin, N. V. Thoai, J. Roche and L. Pradel). There is no systematic or unifying emphasis on comparative biochemistry, as the title might suggest, but the mass of material reviewed inevitably includes biochemical studies based on higher plants, bacteria, invertebrates and mammals.

The book contains little if any information that has not by this time appeared in print elsewhere. Its chief value would appear to be the convenient provision of a variety of compact and authoritative reviews emphasizing material of current interest over a broad range of topics under the general title. Extensive literature references and many figures and tables (particularly in the methods sections) assist this service; a general index would also have been useful.

The proceedings are chiefly in French (reflecting the predominance of French participants), only six of the twenty-two contributions—comprising about one-fifth of the volume—being in English; brief English summaries, however, precede each presentation. An attractive feature is the inclusion of discussion which followed many of the talks.

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**Style Guide for Chemists.** By LOUIS F. FIESER, Sheldon Emery Professor of Organic Chemistry, Harvard University, and MARY FIESER, Research Fellow in Chemistry, Harvard University. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1960. vi + 116 pp. 16 X 23.5 cm. Price, \$2.95.

Late in 1959 Louis F. Fieser received the James F. Norris Award of the Northeastern Section of the American Chemical Society for his distinguished services to the teaching of chemistry, and this little book is an excellent example of one phase of his wide contribution to teaching. In his acceptance address on that occasion, his reminiscences on the Fiesers' experiences in writing and editing gave ample background support for their decision to write a book on helping the chemist to write. It is common knowledge to all chemistry teachers that "Johnny and Janey" cannot compose

good English; this literary deficiency has its roots in the first grade of school and they continue to be stunted by the malnutrition of insufficient experience, practice and drill in reading, chirography, spelling and composition from elementary level to the end of high school. At college age the science instructor can do little to improve the situation other than by helpful advice and detailed criticism of the student's essays and examinations; for this the Fiesers have provided extremely valuable assistance in their "Style Guide for Chemists."

The wish to do good writing comes from within, and the ability only from doing, re-doing and doing some more, but the thoughtful and observant would-be writer can help himself by noting the countless large and small examples to be found in this book and others. "Style Guide for Chemists" is organized in thirteen chapters: some are very short and bluntly instructive (Chapter 6, for example), while others require more space for their broader range of details and applications. Reviewing a textbook often is easy but not so a laboratory manual. This book somewhat resembles the latter, but its preparative descriptions are more easily reviewable. "Concise Writing" (Ch. 1) with its do's and don'ts leads along into "Coherence," which means "connectedness of thought." Every chemist writer should read his own scribbles aloud into a tape recorder, play it back into his own ears, and then apply the Fiesers' Principles of Coherence. "Verbs" come next, transitive, intransitive, active, passive, verbs of action, infinitives, participles and other forms and usages. "Singular and Plural Form" receives attention, also the "Possessive Singular," and the production and loss of "Emphasis." A relatively long chapter is given to "Choice of Words," with many examples (even to Latin borrowings and manufactured verbs), and one almost as long to "Punctuation" (a good addition here would have been a paragraph showing writer and typist how punctuation marks should appear in a manuscript). "Style," a broad and somewhat indefinable quality of composition, is considered briefly, with varied advice to the writer, and contrasts sharply in theme with "Style Sheet," the next chapter. A writer has his literary "Style," a journal or publisher its "Style Sheet," the latter meaning that large and varied collection of seemingly picayune details in which consistency of usage is considered a publishing virtue. Some style details are of general application in good writing and printing and others are fairly specific to the various fields of learning; the Fiesers have collected and classified in twelve pages a host of style details. The topic and content of Chapter 11 on "Proof" does not appear in many style manuals, but it is the rare writer who does not have to read and check his own proofs, and most writers need adult education in the art and science of proof-reading. Skill and sureness in this field come only by long experience, but the four pages here are a good general introduction. "Pronunciation," and "Speaking," too, might be considered to be outside the bounds of a style manual, but oral reading (almost a lost art nowadays) is a wonderful adjunct to fluent composition, and wrong pronunciation renders both reading and speaking painful to audience and lecturer (six pages of text, fifteen of words, then five of text are given to these two topics).

There are available many Manuals of Style, written for various publishing organizations or fields of composition, all of them serving a useful purpose. "Style Guide for Chemists" is "a book written by chemists for chemists." A single reading of it will not convert a semi-literate chemist into a polished writer, but repeated reading of it, as well as consultation and application of its solid and instructive ninety-seven pages, certainly cannot fail to improve the literary work of the members of our profession. May its influence extend through many editions.

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**Gmelins Handbuch der Anorganischen Chemie. Achte Völlig Neu Bearbeitete Auflage. Sauerstoff. Lieferung 4. System Nummer 3.** Edited by E. H. ERICH PIETSCH. Verlag Chemie, G.m.b.H., Pappelallee 3, Weinheim/Bergstr., Germany. 1960. xv + 366 pp. 17.5 X 25.5 cm. Price, Kart. DM. 223.—.

This volume on oxygen deals with air, active oxygen and ozone. The literature has been thoroughly surveyed through 1949.