

BOOK REVIEWS

N. G. GAYLORD, Editor

Surface Activity: The Physical Chemistry, Technical Applications and Chemical Constitution of Synthetic Surface-Active Agents, 2nd ed., J. L. Moilliet, B. Collie, and W. Black. D. Van Nostrand Co., Inc., London, 1961, xvi + 518 pp. \$15.00.

This book undoubtedly will prove as useful in many industrial laboratories dealing with detergents as was the first edition, now ten years old. The description of the chemistry of surface-active agents occupies over 140 pages and contains references to many hundreds of patents. The part outlining the uses of these materials is about as long; it contains a chapter on "the dispersion of solids in liquid media" (describing ball mills, etc.), a few pages on the emulsifying machinery, and so on, but only a surprisingly brief account of foamers.

The largest part of the book is devoted to fundamentals, particularly to formation and structure of the micelles in the aqueous solutions of surface-active compounds, adsorption of these compounds at solution-air and solution-solid interfaces, wetting, emulsification and foaming. Some of the topics included are treated very summarily; e.g., less than two pages are granted to the protective action of colloids. The explanation of this brevity apparently lies with the authors' approach to literature. A textbook writer can extract whatever he needs from a published paper without commenting on the paper itself, but the authors often discuss papers rather than experimental data, and this takes up much more space than the alternative treatment. For example on page 316, the reader is warned for thirteen lines not to misunderstand a phrase in a magazine article although this phrase was not at all required in the context.

The tendency to impartial recording of contradictory opinions sometimes results in a rather blurred picture. For instance, we are told on page 126 that "there has never been any doubt of the inadequacy of any theory based on simple diffusion" for slow aging effects in surface tension, while on page 130 is stated that "the view that slow surface-aging effects are due to the diffusion . . . is . . . supported . . ."

The reviewer has serious reservations in respect to the thermodynamic treatment given by the authors to adsorption and wetting but, obviously, cannot elaborate in this short review.

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Infrared Spectroscopy. Its Use as an Analytical Tool in the Field of Paints and Coatings. Infrared Spectroscopy Committee of the Chicago Society for Paint Technology, 1350 South Kostner Avenue, Chicago 23, Illinois. Federation of Societies for Paint Technology, Philadelphia 7, Pa. 160 pp.

The use of infrared spectroscopy as a valuable tool in both research and the solution of everyday analytical problems has increased manyfold in recent years, especially with the availability of low-cost infrared spectrophotometers.

The paper-bound pamphlet under review is reprinted from the March 1961 issue of *Official Digest* and was prepared as a laboratory manual for the paint chemist. The objective was "to lead the paint chemist over the initial hurdles of spectroscopy to help overcome the reluctance of the paint industry to enter into infrared methods of analysis."

The Committee has attempted to fulfill its objective by setting forth principles and techniques on a level that introduces the subject to the uninitiated. A brief discussion of the theory is followed by descriptions of the sample and cell-handling techniques. A qualitative analysis section, including the analysis of an "unknown" spectrum, and a quantitative analysis section are followed by an appendix giving 195 reference spectra of binders, pigments, and solvents most often encountered in paints and coatings.

This manual is recommended to anyone interested in an introduction to the use of infrared spectroscopy as an analytical tool even beyond the area of paints and coatings.

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Introduction to Petroleum Chemicals, H. Steiner, Ed. Pergamon Press, New York, 1961, x + 200 pp. \$8.00.

A series of lectures given at the Manchester College of Science and Technology in 1960 is the basis of this introduction to petrochemicals. The lecturers were chemists and chemical engineers from British industry. They express the European viewpoint concerning the rapidly expanding field of petrochemicals. In less than 200 pages, the intermeshing of processes and products is portrayed: cracking and separation processes for olefins, products and polymers from ethylene and propylene, production and use of isobutylene and butadiene, aromatics from petroleum, styrene, and

polystyrene, acetylene, and finally, carbon black. Each chapter presents its subject broadly but not deeply. Such a point of view, like a picture taken with a wide-angle lens, submerges even the brighter highlights into a dull, undistinguished plane.

The information specifically on polymers included brief descriptions of three polyethylene processes, I.C.I., Ziegler, and Phillips, with emphasis on the problems in Ziegler polymerization. The section on polypropylene is scanty; preparation of the polymer is described as being similar to that of Ziegler polyethylene. The relationships of the physical properties of polyethylene and polypropylene, such as density, structure, flow, and tensile strength, are given cursory treatment. Isobutylene polymerization and synthetic rubber production from butadiene are briefly described in a good chapter on production and use of all of the C₄ hydrocarbons. There is also a discussion of the methods of preparing styrene, its uses, and the kinds of polystyrenes produced.

This book provides little for the expert in any particular area of petrochemicals. However, the teacher or student can use it as a guide for further reading, study, or research. The executive, chemist, or engineer in petrochemicals can use it to find out how his area of interest meshes with the rest of the industry.

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Review of Textile Progress, Vol. 11, 1959. Joint Committee, Textile Institute and Society of Dyers and Colourists, England. Textile Book Publishers, Inc., New York and Butterworth & Co. (Publishers) Ltd., London, 1960. 448 pp. \$8.00.

Volume 11 of the *Review*, an annual compilation and interpretation of the results of international textile progress, has now been published.

The *Review* has become over the last years (it has appeared every year since 1949) an important source of information on the basic and technological developments in the textile field. This is due in part to the excellent work done by its contributors and editors and in part to the careful indexing by name and subject of all items reported, which enables the

researcher as well as the practical textile man to inform himself quickly of recent developments in his field.

The new volume is a somewhat different grouping of the reported material from that of previous editions; obviously, there will be readers who welcome this change, others who would have preferred the older method. Each arrangement has its relative merits. However, the statement is made in the introduction that certain fields will be restricted to one review every two, three, or even four years because there are not enough developments in a given year to "make feasible an annual critical review of the entire field." This procedure would seriously endanger, in the reviewer's opinion, one of the purposes of the *Review*: it would mean an intentional aging of information and a delay in obtaining a prompt interpretation of interesting developments. The *Review* is too important a source to delay, voluntarily, information for several years . . .

Another point, equally a hidden compliment, consists in the observation that the *Review* has been shrinking over the last four years. A comparison of the number of pages of the volumes shows: for 1956, 611 pages; 1957, 545 pages; 1958, 494 pages; 1959, 448 pages. At a time when the number of basic, technological, and patent publications is steadily increasing, the number and length of items reported and interpreted is shrinking. This trend, unless halted in time, will considerably reduce the value of this very important book, and there is a real danger that it might die of progressive consumption . . . In other words, if the *Review* continues to shrink, it will reach a point at which the material reported and interpreted will be so incomplete and its contents so compressed that its value will be problematical.

The 1959 edition contains eight main chapters ranging in subject from the production and the properties of fibers, over mechanical and chemical processing of fibers, yarns and fabrics, to analytical and testing methods. The last two chapters cover laundering and dry-cleaning methods and building and engineering. Most of the chapters are subdivided and all are well written by experts known for their achievements in their particular fields. All of them and the Joint Committee of the Textile Institute and the Society of Dyers and Colourists should be thanked for their labors by which they have added to the international textile literature a most important tool in study, research, and reference.

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