Book Reviews

Surface active agents: their chemistry and technology. Anthony M. Schwartz and James W. Perry. New York: Interscience, 1949. Pp. xi + 579. (Illustrated.) $10.00.

This is a book that has long been needed. It deals with a modern field of chemistry that has become big business, with applications in many branches of technology. Not only so, but there has developed a whole field of theoretical relations and interesting phenomena that has greatly extended our knowledge of colloids and surface behavior.

The book, after a brief introduction which classifies the materials to be discussed, consists of three parts: Part I devotes 216 pages to processes for synthesizing and manufacturing surface active agents, such as the carboxy acids, the sulfonic esters, the alkane sulfonates, the alkyl aromatic sulfonates, and other hydrophilic compounds, as well as cationic surface active agents of various kinds, and nonionic and ampholytic agents, with brief reference to nonaqueous systems, builders, and mixtures.

This very substantial, comprehensive, and clearly written account consists almost entirely of information published in connection with patents. It is surprising how much of modern organic chemistry has been patented. On every page of this part of the book there are numerous references to relevant patents, amongst which the journal references are completely submerged. The reviewer had not realized what a large proportion of chemical advances have been described in patents rather than in the usual chemical periodicals.

Part II of this very useful book devotes 150 pages to the physical chemistry of surface active agents in theory and practice. It is the most complete discussion of this subject so far available. Not only does it discuss surface and interfacial properties and their relations to chemical constitution, but it gives a careful though somewhat brief review of the properties of solutions of these colloidal electrolytes.

This is followed by a discussion of the "gross effects and technical evaluation of surface active agents," which includes such manifestations as wetting, rewetting, dispersion, foaming, emulsification, and various factors of detergency. Here, as in all parts of the book, the authors have made an attempt to include a complete enumeration of all the significant effects, together with references to the best accounts of specific phenomena.

Lastly, Part III, in another 128 pages, describes the chief practical applications of these important materials throughout the textile industries, in cosmetics and detergents, in pharmaceutical, germicidal, fungicidal, and disinfectant use, in metal technology, in paints and lacquers, inks and pigments, in leather technology, in petroleum and lubricants, in flotation, and in many other branches of industry, such as foods, rubber, and resins. This is a remarkably complete review.

It is evident from the mere enumeration of all these topics, which are presented in well-integrated form, that this book should find a place in every chemistry library. It will be a stimulus to students to look through its pages and see how chemical and physical chemical properties can be applied. It is also an invaluable reference book for those having anything to do with colloidal electrolytes and surface active agents. The authors have rendered a distinct service to chemistry and have added to the value of the mass of information with which they deal by supplying a detailed subject index in addition to a complete author index.

JAMES W. MCBAIN

Stanford University

Temperature and human life. C.-E. A. Winslow and L. P. Herrington. Princeton, N. J.: Princeton Univ. Press, 1949. Pp. xiv + 272. (Illustrated.) $3.50.

This small, well-put-together volume constitutes an excellent handbook for the air conditioning engineer, covering as it does man's *immediate* thermal adjustment to his environment. As a monographic presentation of the authors' fifteen years of work in this field, it is a contribution of value to those engaged in the problems of air conditioning and the physics of body heat loss. By no means, however, does it live up to the broad connotations of its title.

The most important contributions of this Yale group (here presented *in toto*) have been concerned with "partitional calorimetry"—a term they coined to cover their studies on the partitioning of body heat loss between radiational, conductional, and evaporational channels under diverse environmental conditions. They stressed the importance of wall temperature in air conditioning calculations and in other ways provided added refinements for the engineers' activities in this field. However, they consistently refused to accept anything more than a short term relationship between man's thermal environmental and his heat production or general biology. For them, man's slower hormonal response to changes in thermal environment simply does not exist, in spite of adequately documented evidence on the subject.

Your reviewer greatly appreciated being asked to prepare a review of *Temperature and human life*—this field had held his major interest for the past two decades. The book proved rather disappointing, however, in that it has only one chapter dealing—very inadequately—with the more general relationship of climate and the seasons to human biology. The inclusion of only one scientific work published since 1938, among some 39 listed references, clearly dates the authors' thinking in this final chapter. None of the illustrations was prepared later than 1926!

CLARENCE A. MILLS

Laboratory for Experimental Medicine,
University of Cincinnati