factors which govern their specificity. From the time of the discovery of the pneumococcal polysaccharides, the school of Avery was deeply concerned with the question of the relationship between specificity and the structure of carbohydrates. Some very pertinent and fundamental facts were disclosed in this regard during the ensuing decade, yet little or no mention is made of them here. Futhermore, the excellent and fundamental work of Kabat, dealing with the relationship between the specificity of dextrans and other polysaccharides and the size of the combining sites of anti-polysaccharide antibody, is not even mentioned. The few hundred words of discussion pertaining to the biological activity of bacterial polysaccharides, found at the end of the third chapter, are woefully inadequate.

In sum, it might be said that "Polysaccharides of Micro-organisms" is a book for chemists or for microbiologists who wish to learn something of the chemistry of the microbial agents with which they are working. It is a good summation of our more modern information regarding the chemistry of these agents, but it is a book written from a very restricted point of view. It offers but little insight into the great vistas which have been opened in the field of modern immuno-chemistry since the discovery of specific bacterial polysaccharides. Those who wish to know more of the immunological aspects of these important agents will have to read elsewhere.

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Transport Phenomena. By R. BYRON BIRD, WARREN E. STEWART and EDWIN N. LIGHTFOOT, Department of Chemical Engineering, University of Wisconsin, Madison, Wisconsin. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1960. xxi + 780 pp. 15.5 × 23.5 cm. Price, $13.75.

Over the last several years the undergraduate chemical engineering curriculum at many schools has undergone rather extensive revision, with additional courses in basic science and advanced mathematics replacing many of the more traditional courses in design and technology. This book dramatically reflects this trend and it is destined to have a far reaching effect on chemical engineering education.

The central feature of the book is the parallel development of the three transport processes, covering the subjects of momentum transport (viscous flow), energy transport (heat conduction, convection and radiation) and mass transport (diffusion). These topics have been organized in such a manner that the book is divided into three major parts, each of which covers a particular transport process. Within each part the material is further subdivided into chapters based on the type of transport, *e.g.*, transport by molecular motion, transport in an arbitrary continuum (the equations of change), transport in turbulent flow, interphase transport. The organization of the material very effectively emphasizes the analogies which exist among the various transport phenomena.

Several items are worthy of special mention. First, the method of presentation is more rigorous and mathematical than has been common in chemical engineering text-books. Second, much of the material, such as the treatment of non-Newtonian fluid dynamics and several of the topics covered in the section on mass transport, appears for the first time in text-book form. Third, the authors have given a systematic and thorough derivation of many of the equations used in chemical engineering analysis. Pertinent examples are the definitions of the interphase transfer coefficients and the development of the macroscopic momentum, energy and mass balances. Also, the book contains a wealth of illustrative examples and problems.

The authors have suggested that most of the topics in this book may be suitably covered in a three- or four-credit introductory course. It is the opinion of the reviewer that a course of at least twice the suggested length will be required for the average student to obtain a real grasp of the material. For example, the first section of the book, "Momentum Transport," contains material equivalent to an introductory course in fluid dynamics. Much of the book could be used very profitably in conjunction with the ordinary unit operations courses.

The book has been carefully planned and the writing is exemplary. The authors have successfully accomplished their purpose in presenting transport phenomena "as one of the key engineering sciences." Without question "Transport Phenomena" will become a standard in the chemical engineering field.

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Synthetic Inorganic Chemistry. By WILLIAM L. JOLLY, Associate Professor of Chemistry, University of California, Berkeley. Prentice-Hall, Inc., Englewood Cliffs, New Jersey. 1960. ix + 196 pp. 15.5 × 23.5 cm. Price: Trade Edition, $8.00; Text Edition for Classroom Adoption, $6.00.

In paragraph two of the preface to this book, Dr. Jolly states his philosophy and approach toward synthetic inorganic chemistry. "The main purpose of a course in inorganic preparations should be to awaken synthetic talents in students. The student should be taught both theoretical principles and laboratory technique. He should prepare unusual, "exotic" compounds that may spark his curiosity and make him wonder about non-existent compounds." It is most gratifying to see that the author was able to write just such a book. In the limited space of this rather small book, the author has been able to mention many of the recent and more exciting developments in synthetic inorganic chemistry. These are described in such a way as to point out the fundamental significance of synthetic chemistry and to stimulate the student in this direction.

The book is definitely not a "cook book" type of inorganic preparations. The first five chapters deal with the theoretical principles of synthesis which includes such things as the significance of considerations of thermodynamic, kinetic, and acid-base phenomena. Following this there are ten chapters on laboratory technique which include electrolytic synthesis, high-temperature processes, inert atmosphere box, vacuum line, electrical discharge tubes, non-aqueous solvents, ion-exchange columns, autoclave, and liquid-liquid extractions. Excellent illustrations and detailed discussions are given for these techniques. The final chapter gives specific directions for eighteen syntheses which vary in time required and degree of difficulty from copper(I) chloride, the easiest, to ferrocene, the most difficult. These syntheses were chosen to illustrate the special techniques discussed in the previous chapters.

This book is enthusiastically recommended for chemistry students and for teachers of inorganic chemistry. It provides a stimulus for the need for synthetic chemistry by citing specific examples (with references) from the current chemical literature. Thought-provoking questions and problems are asked at the end of several of the chapters. Finally, the reviewer is prompted to suggest that the book be required reading for the members of the Committee on Professional Training of the American Chemical Society. This should convince even the most skeptic of skeptics that general chemistry is *not* inorganic chemistry.

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Imperfections in Crystals. By H. G. VAN BUEREN, Philips Research Laboratories, Eindhoven. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1960. xviii + 676 pp. 16.5 × 23 cm. Price, $16.75.

Although a large fraction of the solids composing the earth's crust are crystalline in structure, many of these materials owe their peculiarities of mechanical or physical behavior to departures from uniform crystalline regularity. Therefore the science of solids is in an appreciable measure the study of what may be called imperfections of crystal structure.

The book under review is a comprehensive and thorough survey of the present status of theory and observation concerning the nature and effects of point and line structural imperfections in a restricted class of solids. It is concerned chiefly with the study of dislocations, vacancies, interstitial atoms, and the interaction of these defects in combination. The influence of these structures upon the