pigmentation leave no doubt of extensive homology among pigment genes of all mammalian species. The closing synthesis suggests that more extensive study of genetic variations such as these would increase understanding of evolutionary processes.

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Cellular Structures

Cell Walls and Membranes. H. J. ROGERS and H. R. PERKINS. Spon, London, 1968 (distributed in the U.S. by Barnes and Noble, New York). xii + 436 pp., illus. $12. Spon's Biochemical Monographs.

The scope of this book is not as wide as its title would suggest. Perhaps "The Chemistry and Structure of Cell Walls" would have been more appropriate, since, with the exception of two brief chapters, functional properties are ignored. And, with 18 of its 25 chapters dealing with wall constituents in diverse organisms, the treatment of the cell membrane is limited. But the chemistry of the cell walls of higher plants, algae, fungi, and especially bacteria (eight chapters) is well covered, and discussions are included of the architecture of these walls and of the growth patterns involved. There is no mention of the ciliated or flagellated protozoa, and only a 4½-page chapter on amoebas.

The general pattern is to discuss the occurrence, chemistry, and synthesis of each chemical component of the wall for each major group of organisms. There is little attempt to relate chemistry to wall function, although some discussion of the relationships between chemistry and structure is presented.

This book had a remarkable ability to hold this reader's interest through what might have been a very dull recital of the natural chemistry of cell walls. I confess to some tedium toward the end of the book, brought on, in part, by the large quantity of tabular data. Although it is these data that will be of great use for reference, one wishes that some of the material might have been presented in graphic form (there are only seven graphs in the entire book, as opposed to 78 tables).

The very large number of diagrams, chiefly structural formulas, are useful to those readers who are not carbohydrate chemists. With this aid, it is not too difficult to follow the macromolecular twists and turns of this subject. The references (listed chapter by chapter) seem sufficient, and the book should provide a good start for an interested student.

There are the seemingly inevitable lapses of style: some jargon, some undefined terms and methods, some relatively common techniques described in what seems unnecessary detail. And I suppose every reader feels, when a general work touches on his own field, that more should have been made of this important subject! Thus the omission of so much of membrane physiology is a disappointment, brought on chiefly by the overly ambitious title. Within its true scope, the chemistry and structure of cell walls, this book is well worth having.

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Vacancies and Interstitials

Défauts Ponctuels dans les Métaux. Y. QUÉRÉ. Masson, Paris, 1967. 236 pp., illus. Paper, 80 F. Collection de Monographies de Physique, No. 5.

This timely book by Quéré should fill a wide need among those metallurgists and solid state physicists who strive to keep informed on development in understanding the defects of metals. This is a broad and by no means static field and merits periodic review. It has now been about five years since the book by Damask and Dienes appeared with the English equivalent of this title but with a somewhat different point of view, so that the present publication is well timed. Although it is not a big volume (217 pages of main text) it surveys a large field with a sure and even touch. Restricted by his title to point defects (namely vacancies and interstitials), the author has nevertheless considered all the usual interactions of these with other lattice imperfections and so touched on nearly every aspect of the defect state for metals.

The book is clearly written with a strong emphasis on the underlying physical concepts. The style is simple and direct. It reads rapidly. The analytical sections are succinct and clear, for the most part accurate and fundamental. The presentation is particularly well organized and careful.

The first five chapters are primarily concerned with the conceptual background. The first two deal with the elastic model for a center of pressure and its application to the point defects. The next chapter considers the ramifications which develop when the atomistic nature of the lattice is considered, usually in terms of two-body forces. The fourth chapter introduces consideration of electronic forces and shielded potentials. The importance of the Friedel oscillations to many problems involving point defects is emphasized. Chapter 5 gives the application of thermodynamic principles to the field. Chapters 6 and 7 are individually longer than the preceding five and aim to give a survey of significant revealing experiments in this area. For this, a considerable degree of selection was necessary and of course an arbitrary cutoff date for recent developments. Chapter 5 deals with investigations of defects in equilibrium at high temperatures and chapter 7 with metastable concentrations of defects as induced by quenching, irradiation, or cold working. All these are treated deftly and concisely. The great controversy still raging between the adherents of the one- or two-interstitial mechanisms for radiation anneal is presented with an even fairness and a good selection of the essential arguments for each side. Throughout, the parts are carefully interwoven by cross reference in an excellent workmanlike manner that is characteristic of Quéré's scholarly approach.

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Studies of Water Sources

Isotopes in Hydrology. Proceedings of a conference, Vienna, Nov. 1966. International Atomic Energy Agency, Vienna, 1967. x + 740 pp., illus. Paper, $15.

Increasingly sophisticated evaluation and exploitation of the resource potential of environmental hydrologic systems have led to ever closer scrutiny of the characteristics of these systems. Hydrologists consequently are faced with the necessity of arriving at accurate answers to a bewildering variety of questions, including ones about external input-output characteristics of systems and internal characteristics of