Solid State Physics: Fluctuation Phenomena

Fluctuation Phenomena in Solids. R. E. Burgess, Ed. Academic Press, New York, 1965. xii + 389 pp. Illus. $14.

The subject of fluctuation phenomena has exhibited, especially in recent years, multifaceted development not only in theoretical techniques but also through increasingly specialized attention to specific physical systems and materials. This book, in eight chapters written by different authors, treats a variety of topics. The approach exemplified by the series *Solid State Physics*, edited by Seitz and Turnbull and also published by the Academic Press, appears, in a sense, to have been employed again to good advantage.

The respective chapters are in the nature of comprehensive review articles which have been written especially for the book and which include hitherto unpublished material. Chapter 1, by James Brophy, deals with polarization fluctuations in magnetic and dielectric solids, with emphasis on the experimental background. Chapter 2, by William Fuller Brown, Jr., is on fluctuations from thermal agitation and from inhomogeneities in ferromagnetic solids. Chapter 3, by L. Dale Favro, is on rotational Brownian motion. Chapter 4, by Setsuo Ichimaru, is on instabilities and fluctuations in solid-state plasmas. Chapter 5, by N. G. van Kampen, is on fluctuations in nonlinear systems. Chapter 6, by A. Münster, is on critical fluctuations, including critical opalescence. Chapter 7, by K. M. van Vliet and J. R. Fassett, is on fluctuations in semiconductors, associated with electronic transitions and with transport. Chapter 8, by P. J. Price, is on fluctuations of hot electrons in semiconductors.

Although the treatment is mainly theoretical, the book contains discussions of experimental aspects. To some degree, chapters are mutually supplementary. In chapter 1 there is a section on ferroelectric and ferromagnetic critical fluctuations. Recent developments are well covered—for example, in sections in chapter 5 on quantum theory of fluctuations in nonlinear systems and in a section in chapter 6 on the Ornstein-Zernike theory of critical fluctuations. Chapter 7 includes a discussion of the Wiener-Khintchine theorem for the case of multivariate stochastic processes. The references provided at the end of each chapter seem very adequate and will facilitate additional study of the topics treated.

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History of the Exploration of the Solar System

Wanderers in the Sky: The Motions of Planets and Space Probes. Thornton Page and Lou Williams Page, Eds. Macmillan, New York, 1965. xiv + 338 pp. Illus. $7.95.

This book, a history of the exploration of the solar system from the earliest recorded concepts of the system up to the sending of instrumented probes to and around the moon and the preparation for landing men on our nearest neighbor, is a collection of articles from *Sky and Telescope* and its predecessors *The Sky* and *The Telescope*. *Sky and Telescope* is fairly unique among the periodicals of the many branches of science in appealing to an audience that ranges from high school amateurs up to the most expert professionals.

Wanderers in the Sky has been well organized by its editors by their arrangement and choice of the articles and by the linking, and where necessary explanatory, text that they have inserted. They have also added a glossary to help the reader who may not be acquainted with all of the diverse fields that are touched on in the articles.

I noted a few misunderstandings with which the reader may be left and which were caused by omissions in, or by statements in, the linking text. Neried, the second satellite of Neptune and one of the most recently discovered bodies of the solar system other than comets and minor planets, is asserted to have an orbital period of two years in an original article by its discoverer G. P. Kuiper. However, a year later it was found that owing to an ambiguous situation that may occur in orbit determination its correct period was 1 year and that it had an unexpectedly high eccentricity, but this fact is not mentioned.

The editors state that radio astronomy studies made from the far side of the moon will be shielded from amateur radio broadcasting. Although this may be so, the moon will not shield from lunar military radio and certain other lunar-based communications. Their earth-based counterparts are often permitted to use several orders of magnitude more power than are the amateurs, and according to my information cause most man-made radio astronomy interference.

But these errors are few and the book is an interesting history of space exploration, especially of recent happenings because of its "on the spot" style of writing.

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Note

The West European Symposium on Clinical Chemistry, held in Ghent in 1964, comprises the content of volume 4, **Enzymes in Clinical Chemistry** (Elsevier, New York, 1965. 160 pp. $9), edited by R. Ruyssen and L. Vandendriessche. Recently devoloped techniques in clinical enzymology are highlighted and assessed. These include fluorometric assay of peptidase, standardization of proteinase, enzymology of fibrinolytic systems, and enzyme histochemistry. A second group of reports deals with some of the clinical aspects of multimolecular forms of enzymes or isoenzymes—such as phosphatase and lactic dehydrogenase isoenzymes—as they contribute to the patterns in organs, plasma, and tissue, which allow more precise localization of cytolysis and pathologic cellular derangement. A group of reports on some congenital enzymatic disorders emphasizes new biochemical interpretations of inbred defects, with emphasis on enzymatic deficiencies in carbohydrate metabolism.

This collection of papers, in addition to compiling the material presented in Ghent in 1964, assesses the recent progress in the field of enzymology in clinical chemistry.

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