such a seemingly limited manner, I feel that, in this instance, the approach is acceptable and perhaps required owing to the systematic and original research conducted by Stamm during the many years of his first career.

Division of the material into 27 chapters, in a 500-page book, makes for a great proliferation of subject matter. I question the merit of such extreme subdivision since it may tend to obscure, in the mind of students, the continuities and similarities between closely related subjects. Two of the four chapters on adsorption, "Phenomenon of adsorption" and "Thermodynamics of adsorption," could easily and logically have been consolidated into one chapter, and with great gain in clarity. The underlying causes of the processes treated in two other chapters—"Shrinking and swelling of wood" and "Shrinking and swelling of cellulose"—are sufficiently similar for profitable combined discussion.

These minor criticisms should not overshadow the fact that the book is a rich source of scientific and technological information about wood. Stamm has been a prominent contributor to wood science, and one welcomes a book that includes his evaluation of some of its important areas.

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Biologically Active Steroids

Steroid Drugs. vol. 2, *Index of Biologically Active Steroids*. Norman Applezweig. Holden-Day, San Francisco, Calif., 1964. x + 449 pp. Illus. $10.50.

This book continues the task begun by Applezweig in volume 1 (1962)—the task of coding and classifying all known biologically active steroids. Volume 2 lists 1594 new compounds, not included in the first volume, that have appeared in the literature and in United States Patent files during 1961 and 1962. The book is divided into two major sections. In the first Applezweig tabulates biologically active compounds according to their reported activities, both qualitative and quantitative, as the information given in the literature allows. However, in most cases information is minimal, and, furthermore, the author urges caution in accepting the validity of claims for biological activity, especially where these claims have been derived from patents. Five major categories of biologically active substances—androgens, estrogens, progestagens, corticoids, and mineralocorticoids—and eight minor categories—antihormonal, diuretic (antimineralocorticoid), anticancer, active on circulatory system, lipodiactic, active on central nervous system, anabolic, and miscellaneous—are provided.

The second major section comprises a catalog of steroids arranged according to "structural profile." This coding system is the same as that described at length in the first volume. With it the steroid nucleus is numbered in the recommended way and spatial designation of hydrogen atoms and angular methyl groups follows the usual convention. However, in naming the steroid drugs, the author chooses to deviate severely from the rules of nomenclature of the International Union of Pure and Applied Chemistry. It is his view that generally recognized trivial names should be used as a basis for naming their derivatives or stereoisomers, a procedure which tends to eliminate possible ambiguities and to make names more easily interpreted by the medically oriented reader. The structural profile of a derivative combines the trivial name of the parent steroid with numbers of the carbon atoms on which group substitutions have been made. Thus, closely related compounds such as 6-methyl, 6-hydroxy, and 6-halogen derivatives of any particular steroid are grouped together by the system, an aid in determining the effects of group substitution on the biological activity of a given steroid. In the second section, in addition to its structural profile, each steroid is provided with a catalog number by which it can be found in the tables of biological activity, a structural formula and name, its reported biological activity, and a reference either to the literature or to patent files. The third section, which is of minor importance, lists by name and principal producer the commercially available steroid drugs and those under investigation. The book provides a valuable service for those concerned with steroid drugs and the correlation of biological activity with chemical structure.

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Mathematical Physics

Differential Equations of Mathematical Physics. N. S. Koshlyakov, M. M. Smirnov, and E. B. Gliner. Translated from the Russian edition (Moscow, 1951) by Scripta Technica. Herbert J. Eagle, Translation Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1964. xvi + 701 pp. Illus. $21.

This excellent book is directed to the student of applied mathematics or classical physics rather than to the student of modern physics. It gives a thorough exposition of second-order partial differential equations which is sufficiently elementary to fit into the advanced undergraduate curriculum of American colleges of engineering. The bulk of the book is divided into three parts, dealing with the theory and applications of equations of the hyperbolic, elliptic, and parabolic type, respectively. The fourth part deals with integral transforms and with electromagnetic theory.

The authors make the following statement in the preface: "Among the applications studied are the vibrations of strings, membranes, and shafts; electric oscillations in lines; the electrostatic problem; the basic gravimetric problem; the emission of electromagnetic waves and their distribution along wave guides and in horns; the emission and dispersion of sound; gravity waves on the surface of a liquid; heat flow in a solid body, and so forth. Solutions are given to both very simple and more complicated problems, making it possible for the reader to master the methods considered in the book and also the physics of the phenomena in question. In almost every chapter, there are problems whose basic purpose is to develop the reader's technical skill.

"Approximate methods for solving problems in mathematical physics are not discussed, since their exposition would require a considerable increase in the size of the book. Also excluded are certain specialized problems (for example, those associated with the physics of atomic reactors) that have arisen only in the last few years."

I did not notice any errors or misprints, except in the last chapter which treats generalized functions (or, as we would say here, the theory of distributions). On page 669, the statement $|g(x) - \phi(x)| < \epsilon$, for $g(x)$ bounded and continuous and for $\phi(x)$ a funda-

mental function, is true only if x is restricted to a finite region. Minor unimportant errors of this kind are easily spotted and corrected by an attentive reader. However, there is one serious error of omission. The student of this book has no way of knowing that the theory of distributions was created as a systematic mathematical discipline by Лоран Шварц, that without the contributions of this important mathematician chapter 39 of *Differential Equations of Mathematical Physics* would never have been written.

Scripta Technica and H. J. Eagle, the translation editor, are to be congratulated for providing a competent, readable translation.

One final remark. The price of $21, for a book that undergraduate and beginning graduate students should own, is sinful. I feel strongly that, if necessary, the governments of the Western nations should translate and publish such books so that students can purchase them at a reasonable price. Perhaps then the American student could buy this translation for the same price that his Russian colleague pays for the Russian original.

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British Rocky Shores

The Ecology of Rocky Shores. J. R. Lewis. English Universities Press, London, 1964. xii + 323 pp. Illus. 42s.

Popularized by the Prince Regent and romanticized by Gosse, the seashore is now the accepted place for summer recreation. It is also an area of great scientific interest, challenging to the ecologist and instructive to the student. Unfortunately, so far as these narrow margins between sea and land are concerned, the pursuit of pleasure and the pursuit of knowledge are not entirely compatible. In these overpopulated islands those parts of the coast that are still free of pollution are now in danger of being ruined for the naturalist by urbanization and the unintentional but constant interference that takes place during the summer months. Lewis's excellent work on British rocky shores is therefore most timely. It affords a detailed description of the marine life of the unspoiled rocky shore, dealing mainly with the northwest of Scotland and the west of Ireland, areas that are not fully accessible by the popular motor car.

Lewis, though himself a zoologist, follows the good tradition of marine biology in treating both animals and plants as equally important and interesting members of the intertidal communities. The introductory section describes two contrasting British shores, one sheltered from, and the other exposed to, wave action. He thus emphasizes not only the well-known pattern of vertical zonation but also the equally important influence of the force of the waves. It is regrettable that he introduces yet another system of names for the major littoral zones but, since his system is no more than a renaming of the widely applicable system of the late T. A. Stevenson, it need not cause confusion. There follows a discussion of the factors influencing zonation—namely tidal rise and fall, wave action, topography, and climate—and a consideration of the factors influencing geographical distribution.

In the main descriptive sections, Lewis classifies the shores of the open coast under three headings: those of moderate exposure dominated by barnacles; those of greater exposure dominated by mussels; and sheltered shores dominated by brown algae. Further chapters deal with specialized habitats such as rock pools, crevices, very sheltered lochs, and rapids. In the final section the author attempts to analyze the causes and foundations of the patterns of distribution of intertidal organisms; a stimulating feature of this section is his presentation of unsolved problems.

The book is beautifully illustrated throughout with original diagrams and photographs, and it contains much new information in addition to the valuable bibliographies at the end of each section. Both the author and the publisher are to be congratulated for bringing such a full and delightful book within the range of the students' means. Yet Lewis's enthusiasm and single-mindedness have led to the one major criticism that might be leveled against the work: the subject matter is treated in such minute detail, and in places with some unnecessary repetition, that the nonspecialist should be advised to dip into it, and not to attempt to read it from cover to cover. Had there been a little more discussion of zonation in terms of behavior, physiology, and life cycles, the book would have been more generally useful and certainly more readable. For the specialist, it provides a full and well documented account of the present knowledge of the biology of British shores, and deserves a place in the libraries of all universities and schools that encourage the study of ecology.

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Hormone Action

The Biochemical Aspects of Hormone Action. A symposium held at St. Louis, Missouri, in 1962. Albert B. Eisenstein, Ed. Little, Brown, Boston, Mass., 1964. xvi + 240 pp. Illus. $8.50.

This volume contains ten essays that were read at a symposium held at the Jewish Hospital, St. Louis, Missouri, late in 1962. Each essay is substantively a review of some phase of the essayists own work with enough interweaving of ideas and hypotheses, provided in part by comments of the audience, to make the volume as a whole pleasurable and stimulating to read. Since the essayists include H. Rasmussen, C. R. Park, C. H. Li, I. L. Schwartz, A. Leaf, E. W. Sutherland, P. Talalay, G. M. Tomkins, and O. Hechter, the sampling of thought in the area of hormone action is wide for so small a volume.

Vasopressin is particularly well covered by Schwartz, Rasmussen, Marc-Aurele, and Christman, who describe in detail experiments on the sulfhydryl-disulfide interchange reaction with rat kidney and toad bladder, and by Leaf, who reviews the effects of vasopressin on sodium transport and membrane permeability. Also of special value is the essay in which Park and his colleagues review a substantial part of the work of the Nashville group on the effects of insulin on transport in heart muscle and include a description of techniques as well as a clear exposition of their views.

Hechter, Emberland, and Yoshinaga provide a useful compilation and discussion of the various effects of insulin on isolated, rat diaphragm muscle, a description of their attempts to demonstrate insulin modification of spatial relationships of the proteins of dia-