to imply analyses or procedures which have unusual characteristics. Terms such as cybernetic logic, cybernetic models, and cybernetic methodology do not help to clarify what cybernetics as a discipline can contribute to biomedical research, to the maintenance of health, and to the treatment of disease. I wish the author had not used these phrases but had described in more detail the physiological control systems and probabilistic mechanisms with which the experiments were concerned.

The book presents in four chapters a selection of examples which the author uses to illustrate cybernetic principles applied to biology and to ten medical specialties. The reference material is rather limited and is taken mainly from papers presented at the Congresses of Cybernetic Medicine and at the 2nd International Conference on Medical Electronics. This is the first book that I have seen with the title *Cybernetic Medicine*. I had hoped to find in it a more complete introduction to the subject material of the field.

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Attitudes: Yesterday and Today

One of the most distressing of paradoxes has been the concern shown by men of education and good will, during and since the days of the great revolutions of freedom and equality, with the bases—indeed, the "causes"—of human inequality. Because, almost by dogma, they could not find it within the society they had created, nor within themselves, they were forced to look elsewhere for it. In the days before Darwin, one of the favorite "causes" of human differences was assigned to climate; geography was the queen science, and also the determinant of human variation. Nobody had to do anything. With respect to many of these problems, we are still looking for explanations that will keep us from having to do anything.

This book, **An Essay on the Causes of the Variety of Complexion and Figure in the Human Species** (Harvard University Press, Cambridge, Mass., 1965. 345 pp., $5.95) edited by Winthrop D. Jordan, with its 18th-century title, is actually a reprint of the second and enlarged edition (1810) of a work originally published in 1787. Its author, Samuel Stanhope Smith, was the Presbyterian minister who succeeded John Witherspoon as president of Princeton University, and who retired from that job under something of a cloud. In fact, Samuel Stanhope Smith suffered a predicament familiar to us today: he was a college president whose students were up in arms because they could not get an education that would prepare them for modern life, whose Board of Trustees distrusted him because he had already deviated too much from the purposes for which his school had ostensibly been established, and whose book was attacked by conservatives who did not like his particular elucidation of one of the knottiest issues of his day—race.

Smith was faced with a theological monstrosity: he had, as his editor notes, either to espouse a theory of the unity of mankind or else face the fact that Holy Scripture applied only to Caucasians. He was not completely comfortable with the unity theory, because he did not like African or Negro culture. His position was that the differences in human physiognomy are created by climate in the first place, and stages of culture (which he calls "the state of society") in the second; therefore he could have the unity of the species and still dislike "savagery." The approach seems quaint today—and it would be so, were it not for the fact that most of the stereotypes that bug the "Negro Revolution" today are here set forth, but are proved or disproved (in this field it is six to half a dozen) by a completely outmoded "science": "As the intensity of the sun's rays falling on the superior parts of the head has a tendency to contract the forehead and eyes, will not this effect, in consequence of the natural relations between different parts of the system . . . contribute to the dilation of the parts below, whence may be occasioned, in a degree, the unsightly protrusion of the mouth?"

It tells us a great deal about our own time that so sumptuous a reprint of so tenuous a piece of American scholarship could appear, with a fine introduction by Winthrop D. Jordan. Obviously the introduction is a working paper of Jordan's forthcoming book on the development of attitudes toward the Negro from 1550 to 1812, a book that I await with real interest.

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Chronic Diseases and Disability

One must carefully assess the intent of the editor, Julian S. Myers, and the intended readership before commenting on **An Orientation to Chronic Disease and Disability** (Macmillan, New York, 1965. 496 pp., $8.95), because much of the material presented in the volume can be found in a variety of medical textbooks designed for non-physicians. The editor has successfully achieved his stated goal in that he has drawn together and arranged a meaningful body of medical information (an especially difficult task in this age of burgeoning knowledge) that will enlighten nonmedical specialists who deal with the chronically ill in their daily work. Designed most specifically for vocational counselors, the volume can be of value to other professionals—nurses, therapists, and social workers, for example. The book would also serve as a good review for general practitioners who have been away from the groves of Academe, and the excellent chapter on respiratory disorders could well be studied by physician trainees in physical medicine and rehabilitation.

All major categories of disease and organ systems are covered. However, the attempt is so inclusive that one wonders if the designation "chronic" disease and disability in the title is entirely accurate.

In general, the choice of material in each chapter reflects careful attention to essentials and a well-balanced presentation of the various elements involved in understanding, diagnosing, and treating human disease. The writing is generally lucid and interesting, and although some of the material may require additional study and further research on the part of the non-physician, much of it is suitable for use by professionals.

A few criticisms seem to be indicated. No reference is made to the audiologist and his technology in the chapter on disorders of hearing. In this age of ever-increasing sophistication with respect to diagnostic instrumentation, this aspect should have been mentioned. Similarly, the problems of language impairment receives very scant treatment (in the chapter on disorders of the brain). In fairness to the editor, I should say that my frequent preoccupation with these problems may give them a greater importance, in my view, than that which the editor of such a text

would assign them. One wishes that the editor had included some information on psychological testing procedures in the chapter on emotional disorders. Reports from psychologists frequently make reference to such procedures, and some knowledge of what the tests entail adds meaning to the findings reported.

The chapters on diseases of the kidney and on neoplasms are especially noteworthy because of the brief discussion at the end of each chapter of some of the broader implications of the disease entities presented.

In this regard, the ideal textbook is yet to be written owing to the welter of unsolved social problems created by the ravages of disease. Awareness of the concept of rehabilitation has not yet filtered into the general medical consciousness, where it belongs as properly as it does within the minds of those who work in the specific specialty. When this has occurred and we have accumulated more knowledge in the never-never land between disease and restoration to the community, many of our current textbooks will need to be rewritten.

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Organoboron Chemistry

Organoboron chemistry has become a popular field in recent years, and one of the areas that has attracted most attention has been concerned with compounds containing boron-nitrogen bonds. A large variety of novel heterocyclic systems of this kind have been prepared, many of which show unusual and interesting properties.

The present book, **Boron-Nitrogen Compounds** (Springer, Berlin; Academic Press, New York, 1965. 184 pp., $6.75), by Kurt Niedenzu and John W. Dawson, provides a concise but comprehensive review of this field. After a brief introduction dealing with the history and nomenclature of organoboron chemistry, there are chapters discussing amineboranes and other analogous coordination compounds, aminoboranes (that is, amides of boric, boronic, and borinic acids), the borazines, other heterocyclics containing rings composed entirely of boron and nitrogen, and heterocyclic compounds containing rings with carbon, boron, and nitrogen. The last chapter discusses the structure of boron nitride, and there is an appendix dealing with the B^{11}-nuclear magnetic resonance spectra of boron compounds.

This is an excellent book. It gives a clear, well-documented, and timely account of the subject, covering both the experimental facts and their theoretical implications; it is also pleasantly free from errors and irrelevant details and is very well produced. The authors obviously have a real enthusiasm for their subject, and they have done a service to the field and to their fellow chemists by producing such a good and readable account. This book should be in every library, and on the bookshelves of all chemists who are in any way interested in boron chemistry.

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Natural History

This volume, small enough to be taken easily into the field, is designed primarily for the nonbotanist with an interest in the identification and natural history of the 56 species of cone-bearing trees that are indigenous to the Pacific Coast states. The fact that **Cone-Bearing Trees of the Pacific Coast** (Pacific Books, Palo Alto, Calif., 1965. 231 pp., $4.95) is now in its seventh printing (it was first published in 1942) is testimony to its continued popularity.

The body of the text is prefaced by more than 50 pages of introductory material, with sections devoted to tree ring analysis, "inspirational trees," and tree ring studies of bristlecone pines, which have been added, in the order listed, with the fifth, sixth, and seventh printings. In the main portion of the book, a full page of illustrations and a page of descriptive information are devoted to almost every species. A "Needle Key," an "Elevation Key," and a "Geographical Key" are included to provide short-cuts in the identification process. Technical vocabulary is held to a minimum throughout the book.

The descriptive material is conveniently arranged, concise, and generally accurate. The direct comparisons of closely similar species, sometimes given in tabular form, are particularly helpful. The illustrations are highly appropriate and include both habit photographs and detailed drawings. On the other hand, the "keys" to identification are less satisfactory. Both the needle key and the elevation key provide only limited simplification and contain a number of minor errors. There are serious inaccuracies in portions of the geographical key—for example, at least six of the 26 species listed for the district that includes most of Southern California do not in fact occur there, while one species that does occur is not listed.

The supplementary material on tree ring analysis and age determination of bristlecone pines, while highly interesting, is incidental to the primary purpose of the book, and perhaps should be made the subject of a separate volume. The section on "inspirational trees" is a mixture of anthropomorphic biology and personal philosophy, which some readers will probably appreciate and others will find distasteful.

Despite these shortcomings, the very apt species descriptions, the helpful comparisons, and the fine illustrations combine to make this little volume a valuable addition to the amateur naturalist's library.

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New Books

Biological and Medical Sciences

Advances in Acarology. vol. 2l John A. Naegele, Ed. Cornell Univ. Press, Ithaca, N.Y., 1965. 184 pp. Illus. $9.75. Six papers: "Acarology in the U.S.S.R." by Nina G. Bregetova; "Principles of chemical control of phytophagous mites" by L. R. Jeppson; "Resistance in the Acarina: Ticks" by G. B. Whitehead; "Resistance in the Acarina: Mites" by W. Helle; "A review of the genera of the family Tydeidae (Acarina)" by Edward W. Baker; and "A review of the family Rhyncoptidae Lawrence, parasitic on porcupines and monkeys" by A. Fain.

Advances in Applied Microbiology. vol. 7. Wayne W. Umbreit, Ed. Academic Press, New York, 1965. 415 pp. Illus. $14. Ten papers: "Microbial carotenogenesis" by Alex Ciegler; "Biodegradation: Problems of molecular recalcitrance and microbial fallibility" by M. Alexander; "Cold sterilization techniques" by John B. Opfell and Curtis E. Miller; "Microbial production of metal-organic compounds and complexes" by D. Perlman; "Development of coding schemes for microbial taxonomy" by S. T. Cowan; "Effects of microbes on germfree animals" by Thomas D. Luckey; "Uses and products of yeasts and yeast-like fungi" by Walter J. Nickerson and

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