Book Reviews

Progress in Biophysics and Biophysical Chemistry. vol. 4. J. A. V. Butler and J. T. Randall, Eds. Academic Press, New York; Pergamon Press, London, 1954. viii + 339 pp. Illus. + plates. $9.50.

This volume will be a welcome addition to the libraries of many workers in the biological sciences. I was greatly impressed by the catholic selection of topics, not only in this volume but also in the preceding ones. The editors, in not limiting themselves to topics that require an advanced knowledge of physics or physical chemistry, have been able to satisfy the needs of a large group of biologists. For example, in the chapter on chromosome breakage, the emphasis is on the biological aspects rather than on the use of x-irradiation as a tool. This approach was used particularly by J. C. Kendrew in his review of the elucidation of the structure of crystalline proteins. He has attempted, with a certain amount of success, to avoid the use of the jargon common to the crystallographer in explaining the techniques and results of x-ray diffraction studies.

Throughout this volume, the authors have presented critical reviews, occasionally taking part in the current controversies, but more often presenting many views without committing themselves to a particular theory. The latter approach, unusual in the field of muscle physiology and chemistry, is evident in the two chapters on muscle physiology, one by Weber and Portzehl, and the other by Wilkie.

The remaining articles include a review of the advances made in the study of nucleoprotein of the cell nucleus by Davison, Conway, and Butler; a discussion of polyelectrolyte gels by Katchalsky; and a chapter on the elucidation of the structure of nerve fibers by Fernandez-Moran.

I look forward to the continuation of this fine series.

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Chemistry of Lichen Substances. Yasuhiko Asahina and Shoji Shibata. Japan Society for the Promotion of Science, Tokyo, 1954 (Order from Maruzen, Nihonbashi, Tokyo). v + 240 pp. Illus. $2.50.

This is an English translation, *in toto,* of the authors' book that was published in Japanese in 1949. It has been made to conform to the date of publication only by the inclusion of some references that appeared as recently as 1953. The translation permitted the correction of errors that were in the Japanese edition.

The book is divided into three parts. Part I includes a very brief historical account of the study of lichen substances; a classification of these substances into 10 groups on the basis of chemical structure; a short chapter on their extraction, isolation, and purification; and a description of microchemical methods, including paper chromatography, for the detection and separation of lichen substances. Part II is devoted to a description of the occurrence and properties, including methods of isolation, of the lichen substances, and also to a discussion of their structure; this accounts for 185 of the 240 pages. Part III contains a discussion of biogenetic relationships and an account of the antibiotic properties of lichen substances. Each chapter includes a list of references that adds value to the work.

The authors have brought together the data found in the literature and have supplemented it with their own experience and knowledge. This book is a ready and authentic reference and should be of value to those who are especially interested in the plant sciences, particularly in plant chemistry.

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Introduction to Theoretical Mechanics. Robert A. Becker. *International Series in Pure and Applied Physics.* Leonard I. Schiff, Ed. McGraw-Hill, New York–London, 1954. xiii + 420 pp. Illus. $8.

This book, designed to meet the needs of undergraduate juniors and seniors majoring in engineering physics at the University of Illinois, clearly reflects an engineering emphasis and consequently does not have the structure usually associated with the term *theoretical mechanics* as it is used by a physicist. In his preface, the author states that the topics are arranged in "order of increasing difficulty as to both mathematical maturity and physical insight required," and there is a heavy emphasis on the solution of problems. The 400-odd problems in the book, as well as the text itself, display a rather amazing range of difficulty and intellectual challenge. Thus, for example, at the end of the first chapter one finds problems that could be expected in high-school courses in physics, whereas toward the end of the book the problems take on the stature of graduate courses.

After a first chapter devoted largely to the elements of vector analysis, which is used consistently throughout the text, and an elementary statement of Newton's laws of motion, the statics of a particle, statics of rigid bodies, and statics of the suspended string or cable are developed in considerable detail. Then a chapter on work and the stability of equilibrium and an elementary chapter on the motion of a particle in a uniform field follow. The text then develops into what one usually expects to find in a textbook on theoretical mechanics.

There are several curious consequences as a result of the order in which the author has developed the material. For example, the first mention of kinetic