Book Reviews

Advances in biological and medical physics. (Vol. I.) John H. Lawrence and J. G. Hamilton. (Eds.) New York: Academic Press, 1948. Pp. xi + 484. $8.60.

In a rapidly widening biological field the use of physics either directly or by implication is essential. Effective entry into this field can be made only by surmounting several difficulties, one of the worst being the scattered nature of the literature needed for study before work is begun. The advent of a series comparable to *Advances in enzymology* is therefore of great importance and undoubtedly will greatly further the development of the new field of biophysics.

The present volume contains a series of authoritative articles centered around radioactivity and isotopic tracers, both radioactive and stable. For the first time a collection of reviews of work on nitrogen, carbon, iron, phosphorus, and iodine metabolism, written by such authorities as Vennesland, Hahn, Chaikoff, Zilversmit, and Leblond, is available. In addition, a highly significant discussion of nucleic acid metabolism by Hevesy is included. These articles form the unique and essential part of the volume. Very valuable reviews on the general use of isotopes in medicine, the nature of artificial radioactivity, radioactive instrumentation, and health physics by Dougherty and Lawrence, Cohn, Evans, and Parker supplement the accounts of actual research advances. In addition, an interesting article by Howland and Stafford Warren on the effects of atom-bomb irradiation is included. There is no doubt at all of the great importance and value of the volume.

There arises the question as to the future of the series. Apparently it is to be primarily concerned with the application of nuclear physics to biology. While this is undoubtedly of high importance, it is to be hoped that other significant developments such as the use of X-rays in elucidating biomolecular structure, action potential measurement in nerve fibers, or ultraviolet and electron microscopy will be included. Finally, a word in favor of interpretative biophysics such as has been attempted by Lea should be added.

The editors and publishers are to be congratulated on initiating a series in a new field of such high interest.

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Limnological methods. Paul S. Welch. Philadelphia-Toronto: Blakiston, 1948. Pp. xviii + 381. (Illustrated.) $7.00.

The past 35 years have seen the rapid expansion of limnology, and although many field and laboratory procedures are peculiar to this science, some have been modified or borrowed from geographers, chemists, physicists, and oceanographers. It is a pleasure to see that these procedures, heretofore widely scattered throughout the literature, are now available in one volume. *Limnological methods* is not encyclopedic; it includes only those selected and standard methods considered necessary for (1) an introduction to the subject matter of limnology, (2) lake and stream surveys, and (3) the furtherance of more specialized research.

A large portion of the book deals with mapping procedures. Physical methods include turbidity and color measurements, various types of thermometers, determination of water movements and light penetration, and descriptions of bottom samplers. Selected chemical methods include dissolved oxygen, alkalinity, hydrogen-ion concentration, and specific conductance. A variety of plankton nets, traps, centrifuges, and filters are discussed and their comparative usefulness for quantitative work evaluated. Plankton counting methods are compared. Qualitative and quantitative apparatus for bottom fauna and rooted aquatic plants are also considered.

Each technique and piece of apparatus and its uses are described in logical order, so that even an inexperienced worker can, by following the itemized directions, do an effective piece of field or laboratory work. It is gratifying to note that both the advantages and disadvantages of the different procedures are stressed.

An Appendix contains useful tables, hints on the proper care of ropes, and short descriptions of accessory equipment. It is regrettable that the book does not contain a list of firms and supply houses from which specialized limnological equipment may be purchased.

Although its price is unusually high for a volume of this size, *Limnological methods* is an essential reference for limnology courses and all lake and stream biologists, both theoretical and applied.

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Modern operational calculus with applications in technical mathematics. N. W. McLachlan. Cambridge, Engl.: at the Univ. Press; New York: Macmillan, 1948. Pp. xiv + 218. (Illustrated.) $5.00.

Here is an advanced textbook on operational methods written primarily for postgraduate engineers and technologists. The author has a London doctorate in engineering and has written well-liked engineering textbooks on Bessel functions, Mathieu functions, complex variable, etc.

Like most writers on advanced operational methods, the author bases his methods solely on the Laplace transform. The transform is defined and operational rules are carefully derived, including four results announced as new. The methods are then applied to linear ordinary and partial differential equations with constant coefficients. The next portion of the book is devoted to the evaluation of integrals and the derivation of particular Laplace trans-