Book Reviews

An introduction to the theory of seismology. K. E. Bullen. Cambridge, Engl.: at the Univ. Press; New York: Macmillan, 1947. Pp. xiv + 276. (Illustrated.) $4.00.

Addressed to any who are interested in seismology as a branch of applied mathematics, as well as to observatory seismologists, this splendid volume presents an introduction to seismological theory in compact, well-organized form. Most of the material in the first 8 chapters is of general interest in mathematical physics.

The author, professor of applied mathematics in the University of Sydney, is an outstanding authority on this subject. He starts with two chapters on mathematical theories of elasticity and of vibrations and waves. The treatment is, of necessity, brief. Use is made of Cartesian tensors and the summation convention, though previous knowledge of tensors is not required since very little actual tensor theory is used beyond what is needed for an understanding of the stress and strain tensors. In the next five chapters, wave theory is applied to problems of wave motion in an elastic body. The following chapters are more directly devoted to results special to seismology. To an observatory seismologist, the discussions of seismic rays and construction of travel-time tables are particularly important, coming as they do from the co-author of the standard Jeffreys-Bullen Seismological Tables.

Every seismological observatory should have one or more copies of this book, and it is recommended to students of applied mathematics, whether they have an interest in seismology or not.

L. Don Leet

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A laboratory manual of comparative vertebrate embryology. Allyn J. Waterman. New York: Henry Holt, 1948. Pp. viii + 248. (Illustrated.) $3.50.

This manual is handled in such a way that it replaces partly class material and partly textbook. The exercises are so numerous, exhaustive, and well illustrated that the student will be able to work independently with a minimum of aid from the instructor. As background, the undergraduate should have, in addition to the elementary first course in biology, a class in comparative vertebrate anatomy. The manual contains so much material that the lecturer or the student may use it for several courses with a lot of variety. Each exercise is organized in the following sequence: an introductory part summarizing and reviewing some of the standard knowledge of the topic under consideration, exercises for laboratory study, list of references and suggestions for collateral reading, and, at the end of each chapter, a list of questions for review.

For the most part, the material chosen is readily available or can be easily prepared by student or instructor. Methods of obtaining certain materials are explained as well as the ways and means for cultivating living chick embryos, constructing models, obtaining young stages of rabbit, making vaginal smears for the study of estrous cycles, preparing embryo sections, etc. Throughout the book the use of living material is emphasized, the number of stained preparations being consequently reduced.

Waterman also describes the value of accuracy in the case of drawings. These should be made directly from the object and completed in the laboratory in order to avoid diagrammatic, unscientific, and faulty work. He recommends that drawings be made of the selected structure at each stage examined, that each be labeled fully, and that the age of the embryo be recorded, careful note being made of any change in shape, size, and degree of differentiation.

In the last chapter, entitled "Illustrations," are included more than 300 photomicrographs accompanied by explanatory legends for finding and interpreting the desired material. Some are unlabeled for student diagnosis.

Both text print and reproduction are excellent, and the methods set forth in this manual will be highly appreciated.

Albert Reissner

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Statistical methods in research and production, with special reference to the chemical industry. Owen L. Davies. (Ed.) London-Edinburgh: Oliver & Boyd, 1947. Pp. xi + 292. 28/–.

This book was prepared jointly by seven authors, including Davies, the editor. The object of the book, referred to as a "Handbook," is "to bring together under one cover those statistical methods which are most likely to be of use in the Chemical Industry." It is to be followed by a second volume on the "planning of experiments."

Many chemists who, through the particular nature of their work, have felt, at one time or another, the advisability of becoming acquainted with statistical methods may have been repulsed by the inadequacy, from their viewpoint, of the available books in this field. This certainly is regrettable, inasmuch as statistical thinking and the use of statistical methods should contribute materially to rendering more objective and efficient the experiments of those engaged in chemical research and production. The present book, at last, is a readable presentation, from the chemist's point of view, of the fundamental principles and methods required for the successful application of statistics to the chemical field. In fact, any person with a background in any quantitative phase of science and with only high school mathematics is likely to have his interest in statistics aroused by the reading of this book. Unlike many books on statistics, it does not contain a series of antiquated, erroneous, or useless concepts and introduces only such definitions and explanations as are used and illustrated in later chapters.