inaccurate estimated values that its results will be considerably (though less) in error—and to use this first result as a basis for a second least-squares solution, and so on until this iterative process converges to the true value. Most other workers (including the reviewer) believe that it is more profitable to make these preliminary adjustments by graphical methods, and test them by plotting the light curves derived from them against the points representing the observations. Both agree that a definitive adjustment should be made by least-squares *after* the "perturbations" due to the deviations of the figure of the components from the ellipsoidal form (and many others) have been calculated and applied.

It should be emphasized that this question is not one of truth versus error; it involves one of Mark Twain's "differences of opinion that make horse races."

A detailed description of the methods of the other school is already partly published, and the observer and computer may then bet on either side.

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A Source Book in Animal Biology. Thomas S. Hall, Ed. New York–London: McGraw-Hill, 1951. 716 pp. $10.00.

Biologists of every variety stand indebted to the editor, the publisher, and the American Philosophical Association for their respective parts in preparing and publishing this volume, the sixth in a notable series. The book has two primary purposes. The first is to increase the general availability of the classics in zoology. The second is to enable students to trace the development of thought and knowledge in the major fields of biological investigation. Both purposes are well carried out.

The 120-odd selections are organized under 8 main headings: "Cellular Biology," "The Origin and Development of the Individual," "Physiology," "Pathology," "The Basis of Animal Behavior," "Evolution and Heredity," "Zoögeography" (three selections only), and a catchall category, "The Organization of Animal Life." The value of the compilation is greatly augmented for students by the introductions provided for each selection. These are masterpieces of deft condensation, clear, informative, and to the point.

Obviously this is not a book to be read from cover to cover and returned to the library, but rather one to live with. It will provide a continuing source of profit, and enjoyment as well, for years to come. One is tempted to paraphrase a remark which the great English mathematician Cayley made about his field.

> It is difficult to give an idea of the vast extent of modern mathematics. The word ''extent'' is not the right one. . . . I mean a tract of beautiful country seen at first in the distance, but which will bear to be rambled through and studied in every detail.

Beginning with da Vinci, Hall has assembled the pith and substance of the work of all the leading and many of the lesser biologists whose work lay primarily with animals, a truly immense undertaking. Here are key passages from Bonnet and Claude Bernard, Descartes and Darwin, Hooke and Huxley, Malthus and Metschnikoff, Vesalius, Verworn, and dozens of others. Some selections were especially translated.

The only real problem arises from the necessary limitations in size for a single volume, coupled with the immense wealth of biological literature. A companion volume seems the only answer for those who would like Ross as well as Manson and Smith, Dzierzon as well as Fabre, Owen and Gegenbaur as well as Oken and Haeckel, or de Maupertuis as well as La Mettrie. The editor must have been faced with many difficult choices. The present reviewer believes he has maintained a representative balance with only one or two exceptions. When mystics like Bergson and Driesch receive 8 pages each, it seems a pity to have excluded Jacques Loeb completely.

In an age when the value of firsthand knowledge of sources and even of laboratory experience is being challenged by the lovers of dogma, this volume is doubly welcome. Biological knowledge presented on a single flat plane without any historical depth tends to be brittle no matter how brilliantly illuminated. This book will make for wisdom.

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The Topology of Fibre Bundles. Norman Steenrod. Princeton, N. J.: Princeton Univ. Press, 1951. 224 pp. $5.00.

This book is an excellent technical exposition of the subject of fiber bundles—a subject which has been developed over the past 15 years with no previous attempt at a systematic organization. It is primarily of interest to the specialist in topology, although Part I presupposes only a modest knowledge of point set theory. Parts II and III require more extensive preparation of the reader.

The concept of a fiber bundle developed from the study of differential geometry, where it has its most important applications. It is a generalization of the notion of product space allowing twisting "in the large." In analogy to the graphs in the product space there are the cross sections in the fiber bundle. This has proved to be an adequate concept for the study of certain subjects, such as tensor fields on manifolds, for which the simpler concept of product space was quite inadequate.

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