always made understandable. The organization of many sections of the book is not obvious, and often they seem neither to hold together nor to lead in a definite direction. Kraus has missed his goal of writing a good description of the evolution of man.

As a geneticist, I was particularly annoyed by the abominable discussion of genetics. A large proportion of the errors in the diagram of a DNA molecule are in the sugar. The description of crossing over is based on what appears to be a set of errors unique to this author. The introduction to population genetics has been done so badly that it cannot possibly be understood by the uninitiated, or informative to the intermediate student. It would be tedious to detail these complaints, but they (and many others) occur on a number of adjacent pages that present an intelligent reader with difficulties in interpretation, mixed with misinformation. Omission of the sections on genetics would have been a definite improvement.

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Systematics Today

Taxonomic Biochemistry and Serology. Charles A. Leone, Ed. Ronald, New York, 1964. x + 728 pp. Illus. $16.50.

The systematic classification of organisms is perhaps the most ancient discipline in the life sciences, if not in all of natural philosophy. Indeed, its naive beginnings are probably lost in the dark of prehistory in the form of correlative communication among hunters and food gatherers. The discipline and the scope of the science have evolved, of course, along with man's cumulative knowledge and his successive philosophies concerning the structure and organization of nature; but the practical purposes have remained the same—to provide a means for accurate communication and to suggest natural correlations.

The International Conference on Taxonomic Biochemistry, Physiology, and Serology, the communications to which are collected in this volume, was held in 1962 at the University of Kansas. As in all publications of this nature, there are the more rewarding as well as the disappointing contributions. There are usually some that appear to belong in the proceedings of some other conference, and there are always those that simply puzzle.

Few single reviewers are likely to be so broadly expert that they can critically evaluate all the material collected and edited by Leone. Part 1, a symposium on the principles of systematics, and part 2, a survey of the several approaches to the use of molecular systems in taxonomy, are particularly interesting because of their general and introductory nature. Ernst Mayr's discussion of modern systematics stands out in this regard. Especially meaty and stimulating is a treatment of comparative biochemistry, by Marcel Florkin, in which phylogenetic and evolutionary relationships are emphasized. The subject matter in parts 3 through 8 ranges from structural studies of macromolecules to the distribution of plant pigments, from immunochemical analysis of lens proteins to biochemical genetics of bacteria.

Two of the more rewarding papers deserve special attention. William Boyd presents a lengthy, pertinent, well-documented, and copiously illustrated chapter on human genetics, evolutionary mechanisms, and modern ideas on race. He concludes that genetically analyzed metabolic and serological traits are far more useful than morphology in determining the relationships among the races of man. A. C. Wilson and N. O. Kaplan discuss enzyme structure and its relationship to taxonomy. This chapter should be among the most useful to students and investigators interested in the phylogeny or taxonomic relationships of proteins. Although it deals largely with lactic dehydrogenase, the alternative methods of approaching such problems are well illustrated with experiment results.

Comparative biochemistry and systematic serology are by no means new areas of endeavor. However, with the remarkable advances made in biochemistry and immunochemistry during the past 10 years, and with the demonstration of their relationships to genetic mechanisms, which in turn arbitrate the characteristics of organisms, this is a timely volume to add to the biology shelf. The fact that several symposia have been held since this conference attests to the growing interest in this field.

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Textbook

Elements of Ordinary Differential Equations. Wilfred Kaplan. Addison-Wesley, Reading, Mass., 1964. xii + 270 pp. Illus. $7.50.

This is a well-planned text for use in teaching a first course in differential equations in the classical tradition. Essentially it is Kaplan's earlier book, *Ordinary Differential Equations*, cut down to manageable proportions. Although more difficult proofs are omitted, existence theorems are stated and references given.

The general pattern of the book is similar to that of most elementary texts in the subject. Kaplan's treatment, however, emphasizes the development of understanding of the problems and methods, as well as the acquiring of manipulative skill. He points out that, in addition to the problem of "determining all the solutions of a given differential equation," there is a second more fundamental problem, that of determining "properties of the solution . . . from the differential equation itself." This point of view is evident, for example, in his treatment of the geometric interpretation of the first-order differential equation; in his discussion of the properties of solutions of linear first-order equations, which includes the case in which the input function is a step function; and in his discussion of stability and transients in relation to second-order equations, which is more thorough than that found in some texts of this type.

From the point of view of technique, the major emphasis is on linear equations. In chapter 5 operational methods are discussed systematically and in detail, and a comprehensive table of rules for inverse operators is given. Laplace transforms are mentioned briefly in this connection. Chapter 7 is devoted to systems of linear differential equations. Although matrix notation is not used here, characteristic roots are defined.

Throughout the text, the material is motivated by well-chosen examples related to the physical sciences. There is a good collection of exercises, although one might prefer that not all the answers to these had been included. This text should have a strong appeal, especially in institutions where applied mathematics and engineering are emphasized.

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