beginning with Mendel's laws and the physical basis of evolution. Problems relating to population genetics are discussed clearly, and the role of polymorphism in evolution forms a special chapter. This section could perhaps have been profitably expanded. As the author points out, the relationship of falciparum malaria to the sickle cell gene is the best example of single gene heterosis, and it is a pity that the subject is dismissed in summary fashion. The clarity of the series of chapters on the mechanism of evolution is noteworthy, and these chapters provide a solid foundation for the section on evolution and man.

Unfortunately the chapters on human evolution are rather less satisfying. There is, for example, no real discussion of the problem of whether human evolution has come to a halt now that childhood mortality and birth rate have decreased. Thus we find no mention of Crow's useful index, Opportunity for Selection, with its initially surprising conclusion that the lower the birth rate the higher the index becomes. Although the phenomenon, unique to man, of cultural evolution is mentioned, it does not receive the treatment it deserves. The important but often neglected point that biological and cultural evolution are part and parcel of the same unified process could have been made more strongly. The book is, in general, well illustrated, but the inclusion of jejeune drawings in a serious text strikes a harshly discordant note. Despite these minor criticisms *Evolution and Genetics* is a sound treatise that can be expected to have a limited appeal. However, it seems unlikely that it will substitute for, let alone replace, the standard texts in the field.

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Enzymatic Mechanisms

Molecular Biochemistry. Edward M. Kosower. McGraw-Hill, New York, 1962. xii + 304 pp. Illus. $12.50.

As I predicted in an earlier review [*Science* 136, 1113 (1962)], the time is ripe for a profusion of books discussing the new and active field of biochemical or enzymatic mechanisms, or, as Kosower described it, molecular biochemistry.

The present book, a scholarly work aimed at the second-year graduate student, is organized in three sections. In one, on biochemical patterns, the author presents "a survey and classification of many of the reactions of intermediary metabolism" (63 pages), in which he attempts to initiate the nonbiochemist into some of the more important reactions and reaction sequences in metabolic reactions and the biochemist into a classification of biochemical reactions from an organic mechanistic point of view.

With this background, it is then possible to discuss in detail "the mechanisms of many of these reactions, with the relationship of the enzymatic reaction shown where possible." In this section, which is the heart of the book, the mechanisms of the following reactions are discussed: carboxylation and decarboxylation, enolization and aldol condensation, nucleophilic displacements, hydration and dehydration, imines, hydrolysis of esters and amides, principles of oxidation-reduction reactions, one-electron, two-electron, and atom or group transfer, pyridine nucleotides, flavins, and phosphates. It would have been desirable in certain of the discussions if the enzymatic counterparts of these reactions had been presented in more detail. As the author himself points out, his special interests are reflected in his treatment of pyridine nucleotides, a very complete and incisive treatment occupying 54 of the 208 pages of the second section. But this emphasis can certainly be justified on the basis of the author's experience in the field and also because a considerable amount of material is available on this topic. Other topics are not amenable to such treatment because the information needed to treat them within the context of this book simply does not exist. Consequently the book cannot be considered to be a balanced treatment of all topics in molecular biochemistry; it is rather a selection of some of the topics that have been amenable to experimental investigation. Particularly noteworthy are the discussions of the mechanisms of oxidation-reduction reactions and phosphate reactions, both of which are of great importance in biochemical systems and both of which have hitherto received little attention. Kosower's discussion has admirably corrected this deficiency.

The third, miniscule section deals with "one of the central problems of biochemistry, the 'active site'." It is an unfortunate reflection of the present state of our knowledge that this section is not the major part of this book, because it is obviously to this end that the book was written.

The book in general is well written and contains many ideas that will stimulate further research. The author has performed a heroic job of keeping the book up-to-date with many citations to 1962 articles; activity in this area can be measured by the fact that, even with such an accomplishment, the book is already out of date. Graduate students—of biochemistry and, in particular, chemistry—and others interested in this area will find this a valuable book.

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Botanical Classification

Plant Taxonomy. Methods and principles. Lyman Benson. Ronald, New York, 1962. ix + 494 pp. Illus. $11.50.

According to the author's preface, this book is "primarily written as a textbook for students who have already acquired some familiarity with plant classification." Its "orientation . . . is toward research," and it places "primary emphasis upon the dynamic application of taxonomic methods and principles. . . ." However, the book reflects too heavily Benson's own taxonomic views and research; because of this imbalance it may prove unsuccessful as a textbook. One finds, for instance, over a page of index references to *Quercus* and *Ranunculus* collectively, whereas such genera as *Achillea, Crepis, Layia, Oenothera, Potentilla, Rubus, Solidago*, and *Tragopogon* are scantily represented, or not listed. Similarly, such terms as *biotype, cline, cytotaxonomy, deme*, and *karyotype* are discussed briefly or not at all. At least a passing knowledge of the important research on these genera and of the meaning and significance of biosystematic terminology should be a part of the background of every plant taxonomist, even of those who believe that the study of evolution and the practice of taxonomy are disparate fields with little or no overlap in their objectives.