Certainly anyone working with high temperatures will find much of interest to him in these two volumes. On the other hand, he will also find much that he will wish had been eliminated. It is interesting to have descriptions of various furnaces collected in one place, but some of those described here would probably be of more interest to a scientific museum than to a modern research worker. The reviewer believes that the subject matter could have been condensed at least 30 per cent without detracting from the usefulness of the book. Such a reduction should not be applied to all chapters indiscriminately. Thus Chapter 3, on solar radiation, could be eliminated completely without any great loss, whereas many might like to see the chapter on powder metallurgy amplified. Also, it is doubtful that Chapter 12, which discusses the chemical phenomena caused by an electric discharge in a gas, belongs in a book of this type. In spite of these faults the reviewer believes that the book is of such usefulness that it will be a desirable addition to the libraries of those interested in high-temperature work of any kind.

Mechanically the book is excellent. It is well printed on good paper and substantially bound.

G. K. ROLLEFSON

*Department of Chemistry*
*University of California at Berkeley*

***The Chordates.*** Herbert W. Rand. Philadelphia: Blakiston, 1950. 862 pp. $6.00.

To the field of comparative vertebrate morphology Professor Rand has contributed yet another textbook—a revised and fact-full version of his *Comparative Anatomy,* co-authored with Professor Neal. The present work emphasizes general structure and vertebrate types. In writing this treatise, Rand had in mind "to undertake a book which, to its content of anatomic fact, should add chapters (necessarily brief) giving the reader some knowledge of the history of anatomic science, the ideas and motives which have directed its progress through successive centuries, the theories and principles whereby it has worked, and, above all, an appreciation of its vital human import."

*The Chordates,* like Gaul, is divided into three parts, and almost as arbitrarily. Part I describes the "basic structure" of vertebrates, after which follow sections on organogenesis and histology. This portion minimizes the comparative viewpoint; it includes, however, much of the content and many of the illustrations of the earlier work by the same author. Part II considers briefly the history, aim, and methods of comparative anatomy. Part III, "Comparative Morphology of the Chordates," is a phylogenetic survey of chordate anatomy and relationships; it presents, by classes, discussions of animal structure, ancestry, phylogeny, and classification, the last relatively simplified. The feeling for comparative anatomy is developed slowly, and the reader has covered all the organ systems and half the book before an insight into comparative principles takes hold. The epilogue states a refreshing case for comparative morphology which, in essence, would have been welcome if proclaimed as an introductory point of view, perhaps in the prologue.

Only high praise can be offered for Rand's command of morphological detail and his erudite presentation of structural relationships. The attractive format, including bold-face type for new terms and many excellent illustrations (a total of 609, approximately half of which were previously published in *Comparative Anatomy*), emphasizes for the student the countless number of facts with which the anatomist must deal.

It would be presumptuous to find fault with a work of this magnitude. Only an occasional lack of emphasis in the presentation seems to mar the decisiveness with which the chordate patterns have manifested themselves. "What is a vertebrate?" is inquired of the reader immediately upon opening the book, and in part this question is answered promptly with discussions of such characteristics as symmetry, body divisions, locomotor appendages, integument, notochord, coelom, and tube-within-a-tube structure. Yet it is not until the succeeding chapter that the branchial clefts are thought worthy of mention, and five chapters later that the dorsal tubular nervous system becomes significant. The evidence pertaining to the origin of the vertebrates is weakly treated, neither the possibility of prechordate affinities with echinoderms or the relationship of vertebrate ancestors to fresh-water jawed placoderms being sufficiently weighed. Finally, some unusual definitions have crept into the context without adequate explanation or derivation: e.g., "molar" and "molecular" activity to designate somatic and visceral nervous functions, respectively.

*The Chordates* is more than a book on anatomy. It is a morphological treatise supplemented with histological, embryological, paleontological, and historical concepts gleaned from Professor Rand's personal storehouse of information and wide experience as a scholarly teacher. As a standard of reference and a survey of the field it is a worthy contribution and deserves a successful future.

DAVID W. BISHOP

*Department of Zoology*
*University of Massachusetts*

***Variation and Evolution in Plants.*** G. Ledyard Stebbins, Jr. New York: Columbia Univ. Press, 1950. 643 pp. $8.00.

Professor Stebbins' latest work is indeed a magnum opus—an exhaustive and critical review of data that bear on the evolution of plants. The facts and examples are lucidly presented, and the arguments of which they are the bulwark are cogently and logically developed. The book is clearly the product of acute observation, matured reflection, and a governed imagination. It is an appropriate companion to its distinguished predecessors issuing from the Jesup lectures.

The announced intention is "to discuss the principles and dynamics of evolution" (p. 7). The approach is frankly taxonomic. "The fund of information built up by systematic botanists and zoologists during the past 300 years is the first source of [the evolutionist's] factual data" (p. 4). Stress is placed on comparison of different patterns of evolution in various categories, particularly at the specific level, and an explanation is given in genetic, distributional, and historical terms.