I have pointed out above that Schmalhausen's discussion of paleontological data shows some lack of familiarity with the recent literature, and the lack of a consideration of anuran ontogeny and structure comparable to his treatment of the urodeles is to be regretted. But even so this volume is of extreme value, worthy of the thoughtful study of every student of vertebrate evolution, and remains a lasting monument to the memory of a great Russian morphologist.

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Cell Components

The Biogenesis of Mitochondria. D. B. RODYN and D. WILKIE. Methuen, London, 1968 (distributed in the U.S. by Barnes and Noble, New York). viii + 123 pp., illus. $4. Methuen's Monographs on Biological Subjects.

Although Ephrussi, the Mitchells, and others established over 15 years ago that fungi contain cytoplasmic determinants which possess hereditary information related to mitochondrial function, it was probably the finding of DNA within mitochondria, Luck's work on the mode of mitochondrial replication, that stimulated current research in this area. As a result of the intensive research of the last few years, ideas have crystallized and a central dogma has emerged. Mitochondria are semiautonomous and carry out some biosynthesis necessary for their own replication. Mitochondria have been now demonstrated to contain most of the components necessary for synthesis of DNA, RNA, and protein. Strangely enough, it appears as if chromosomal genes code for the large majority of mitochondrial proteins, whereas mitochondrial DNA appears to encode a limited number of their "structural" proteins and possibly some of their ribosomal components.

Although numerous symposia are devoted either completely or in part to these problems, it seems timely to attempt a summary statement in the form of a modern textbook. Roodyn and Wilkie fill this need with their lucid and unified monograph. This book is not an extensive review of the literature, but is devoted primarily to describing some of the major lines of investigation currently under way. In some cases an overall view was acquired by integrating some of the older, "classical" genetic studies with up-to-date material. The authors divide their treatment into two sections: the first concerns biochemical and cytological aspects and the second concerns genetic and regulatory aspects. There are sufficient cross references to help interconnect much of the material obtained with diverse techniques.

The book is intended for graduate and advanced undergraduate students in biology, and could be used as a supplement in advanced courses or as a basic text for a seminar course. Nonspecialists and those with a peripheral interest will find it an excellent introduction and inventory of the field.

The authors are so active in the field that they yielded to the temptation of giving considerable space to some minor problems from their laboratory. Apart from this, the balance of the book is good. Some statements may be oversimplified, such as the "lack of an inner membrane" and the "effective loss of mitochondrial DNA" from mitochondria of ρ^- yeast. Nevertheless, the book as a whole is critical, authoritative, and surprisingly up-to-date for a field which is rapidly changing. Readers may find the chapter on the effects of antibiotics on mitochondrial synthesis especially intriguing. The cytoplasmic inheritance of antibiotic resistance and its possible relationship to mitochondrial ribosomes may prove to be a major avenue of approach for future studies. The low price is an additional incentive for acquiring this book for your personal library.

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Metal Compounds

Interstitial Alloys. H. J. GOLDSCHMIDT. Plenum, New York; Butterworths, London, 1967. viii + 632 pp., illus. $40.

As would be expected from one who had devoted most of his work to the subject, Goldschmidt has produced a mine of information on interstitial compounds which is painstakingly stocked with data, diagrams, and references, the only serious omission being the convenience of a formula index. The inclusion of a chapter on silicides is useful for analogy with borides, although most silicides are not normally considered as interstitial compounds. The book can be highly recommended as a source of considered information and reference.

It is essentially a practical man's book and as such is beyond criticism, but in searching for ideas the reader might wish for recognition of and explicit theoretical discussion of various features in terms of known energy band forms and the like. For example, Goldschmidt regards it as a borderline case whether oxygen ever enters an array of metal atoms interstitially with its covalent size (radius 0.66 Å) or only with its ionic size (radius 1.3 to 1.4 Å), but definitely accepts oxygen as an interstitial atom in the lower oxides of the transition metals. He states, for instance, that O in TiO has a radius of about 0.7 Å (p. 350), but does not give the explicit justification of this contention that would seem to be called for in view of the known form of the band structure of TiO, its metallic conductivity by electrons in *d* bands, and the fact that the Ti^{2+} and O^{2-} ionic-radii sums also account for the observed interatomic distance. Or as a second example, there is considerable evidence that can be interpreted conveniently if it is assumed that C and N increase the electron number of Group IV to VI transition metals in their carbides and nitrides. However, the statement (p. 353 and elsewhere) that "the interstitial atom acts as an electron donor to the *d* orbital of the [transition] metal" is unconvincing in view of the high electronegativity of the N atom, and a justification of how this can occur in terms of plausible energy band structures would be more satisfying.

One of the things that one might have hoped to find in the book, in view of all the work recently done in Russia, is an assessment of the reliability of the electron diffraction method for determining the structures of carbides and nitrides. Although scattering factors are favorable, the method involves various difficulties; however, electron diffraction is not discussed as a method of investigation.

Overall this is a good book and we must thank the author for his efforts, for it will save us much time as a source of reference. It will join the other metals reference books such as those by Hansen and by Pearson.

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