

BOOK REVIEWS

Oxygenases: edited by OSAMU HAYAISHI. Academic Press, New York, 1962, 588 pp., \$17.50.

MASON's review article in *Advances in Enzymology* in 1957 classified the reactions of molecular oxygen with enzymes in a way which has led to subsequent modification of nomenclature but little change in the proposed mechanisms. This classification took into account the finding of direct incorporation of $^{18}\text{O}_2$ in enzyme reactions which cleave and hydroxylate aromatic compounds, and emphasized the differences in mechanism between these reactions and the electron-transferring oxidases. The collection of review articles published under the title "Oxygenases" is a similarly oriented but extensively expanded contemporary treatment of the problem. To the investigator, this book presents detailed speculative mechanisms as well as methodology and will have great value. To the student interested in the metabolism of aromatic amino acids and amines, the articles by Mehler and Kaufman will prove extraordinarily useful. However, a cohesive account of the oxygenases in enzymology, such as Mason presented, is not easily gleaned from this book. Perhaps this is just as well because it is clear from the discussions of mechanism in the chapters by Nichols (Peroxidase as an Oxygenase), Kertesz and Zito (Phenolase), and Vercauteren and Massari (Model Oxygenases) that such deceptively simple statements as "The enzymatic activation of molecular oxygen" cover a bewildering array of speculations and elegant but inconclusive experimental data. For instance, the role of metal ions in most of the hydroxylation reactions cannot be delineated.

The scope of enzyme reactions in the class of oxygenases is surprisingly broad. In an admirable chapter Hiyano discusses the hydroxylation reactions which occur in steroid metabolism. Bacterial oxidation of hydrocarbons is reviewed by Foster in an assessment of the role of oxygenases and hydroxylases in the metabolism of alkanes. A detailed chapter on cytochrome oxidase by Okunuki and a discussion of the physical chemistry of hemoglobin and myoglobin by Wang, although not accommodated in the title of the book, provide a frame of reference in which interaction of oxygen and metal-proteins may be considered. The enzymatic reactions which accomplish hydroxylation and dealkylation of drugs are not reviewed, probably because of scant evidence of mechanism. It is remarkable how pertinent this book is to many areas of current interest in the field of biochemical pharmacology.

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The Molecular Control of Cellular Activity: edited by J. M. ALLEN. McGraw-Hill, London, 1962, 328 pp. 81s. 6d.

SINCE this book arose from a series of lectures given at the University of Michigan (in Spring 1960), one might expect a non-specialised survey of the difficult field indicated by the title. By this criterion the thirteen chapters vary greatly in value. Moreover, the price seems excessive, particularly since the printing is by an off-set process. A little of the blame for the high price lies with P. Weiss, whose "lecture" ("From Cell to Molecule") occupies almost one quarter of the book and includes numerous illustrations, of which one (Fig. 2) is an insult to the reader's intelligence and several can be faulted in other respects such as lack of a scale. However, a persevering reader will find in this prolix article some useful warnings and stimulating concepts—for example, the need for "viewing morphologic patterns, such as microscopic or ultramicroscopic structures, as mainly indices and residues of the patterns of processes by which they have been formed", this viewpoint being an aspect of "molecular ecology". The article seeks to show that "the distinction between molecular control of cellular