

was a critical thrust, but it was short of traversing the energy barrier between the imaginative concepts of one light reaction and two. In overzealous homage the authors have claimed more for him than he, a scientist's scientist, would have accepted.

The authors will not be surprised at the criticisms they receive, and they may well rejoin that if others can do better they should have at it. It is not likely that, for purposes of serving the general reader, a better job will be done soon.

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Sites of Protein Synthesis

The Ribosome. A. S. SPIRIN and L. P. GAVRILOVA. Springer-Verlag, New York, 1969. x, 164 pp., illus. \$14.90. *Molecular Biology, Biochemistry, and Biophysics*, vol. 4.

If one picks up a text or monograph that covers the topic of protein synthesis and looks up the role of the ribosome, one will almost invariably find a representation that has stood for a number of years: that of two truncated spheroids of unequal size, upon whose surfaces are depicted the reaction sequence involved in peptide bond formation. Perhaps most of the enzymatic activities now known to be required for protein synthesis are due to nonribosomal components. Thus we have today a model of protein synthesis written in classic enzymological terms, according to which most of the synthesis takes place rather mysteriously in a "black box," the ribosome. There is no satisfying explanation as yet of the need for this large and very complicated organelle, and we are far from the desired correlation of its structure and function. It is somewhat ironic that this should be the situation, for it has been almost 30 years since the ribosome was first identified from cytological observations, being the first component of the synthetic machinery to be discovered and also the first to suggest the involvement of RNA.

This short monograph is the fourth in a contemplated series of some 60 volumes. Both authors have been active investigators of the ribosome and its role in protein synthesis. The vintage is early 1968, and the book is almost equally divided into two parts: the first half devoted to a consideration of the

composition and structure of ribosomes and their components, and the second to the functioning of the ribosome in peptide bond formation. It is indicative of the present state of the art mentioned above that each half of this book could practically stand alone as an independent entity.

The book being a short one, the coverage has been carefully circumscribed. This is not a complete compendium of all the various studies that have been reported on composition, structure, and properties, but rather a selective and limited summary view, with a strong and much needed interpretative flavor to it. Perhaps the major defect in the first half of the book is a very notable omission in a chapter on structural transformations. One of the highlights of recent years, the total reconstitution of one of the ribosomal subunits so elegantly demonstrated by Nomura and co-workers, is not mentioned. Although the full details of this feat were unfolded about the middle of 1968, the authors must surely have been aware of it at the time of the writing, and its omission is to be regretted. The account of reconstitution presented rests heavily on the work of one of the authors and is not a balanced view of this subject. In regard to ribosome function, the latter half of the book is a reasonably succinct account of the enzymological picture, which is about all that can be done at present. There are many facets of protein synthesis that are omitted, such as amino acid activation, polysome structure and function, messenger-RNA turnover and regulatory questions, and the coding problem. Similarly, a chapter at the end devoted to a consideration of antibiotics that interfere with ribosome function leaves a good deal to be desired. Toward the end of the second half of the volume the authors propose a theory for ribosome function, which to this reviewer appears to be not much more than a restatement of the present enzymic picture. The theory still regards the functioning ribosome as a rigid entity, a view which recent evidence suggests may be incorrect, and it cannot account for the great structural complexity. It is probably still too early for a satisfactory theory here.

The chief value of this volume would be as a classroom reference that goes beyond the usual textbook coverage yet presents a reasonably succinct view. It does this admirably. But for a fuller view it will need supplementation as

noted above. It will probably have a short half-life of usefulness, being a limited coverage of a field that is experiencing considerable transition at present.

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Materials and Properties

II-VI Compounds. BRIAN RAY. Pergamon, New York, 1969. xvi, 272 pp., illus. \$10.50. *International Series of Monographs in the Science of the Solid State*, vol. 2.

The luminescence and electrical properties of a wide-band-gap material are determined primarily by the defects present in the crystal. II-VI compounds are midway between ionic solids, in which properties are determined by native defects (vacancies and interstitials), and covalent solids, in which these properties are determined by foreign impurities. These compounds will not be well understood until the energy levels and solubilities of the more common native defects and foreign impurities have been determined. At present, many of these properties are unknown, but progress is being made at a linear rate.

The author has attempted to write a concise text on II-VI compounds, to provide the reader with a general idea of how II-VI compounds behave and to serve as a quick reference to the vast literature on these materials. The book is restricted to the tetrahedrally coordinated crystals ZnO, ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgSe, and HgTe. The book is crammed with many useful tables and figures, and the author cites a long list of references in each chapter. There are seven chapters, covering bonding and band structure, crystal growth, fundamental optical properties, luminescence, photoconductivity, transport properties, and applications of II-VI compounds.

All of these subjects, except the applications, have been reviewed previously in a much lengthier and much more complete treatise, edited by Aven and Prener, published in 1967. It is unfortunate that the author chose to write his book so soon after the book edited by Aven and Prener. Many developments which shed considerable light on II-VI compounds are too recent to have been covered in either of