

In all there are 18 chapters and this volume can fairly share the shelves with its great German progenitors. But whose shelves? It is understandable that publishers are not philanthropists and that book production of this standard is expensive. Yet it is hard to comprehend the economics of publishing such a generally useful book at over £30 a copy. If the answer be that libraries will buy it, the reply will soon be not all that many, at this price in the present waning economic circumstances of libraries. Perhaps *Nature's* readership could come up with some ideas for publishers for different costing, before more of us find the only way we can economically get a useful new book on our scholarly shelves is to review it briefly.

B. B. BOYCOTT

Neural Biochemistry

Neurotransmitters and Metabolic Regulation. Organized and edited by R. M. S. Smellie. Pp. ix+169. (The Biochemical Society: London, 1972.) £4; \$12.

THE organizers of the symposium upon which the present volume is based, and the editor, should be congratulated for having produced a well balanced and up to date collection of reviews on biochemical aspects of neurotransmission. The eight chapters cover all of the known neurotransmitter substances, and at the same time pinpoint many of the topics of greatest current research interest in the field as a whole. Thoenen gives an admirable review of the new area concerning the neurally mediated control of enzyme synthesis in adrenergic neurones. He discusses the effects of trans-synaptic influences and the protein nerve growth factor in controlling the activities of the biosynthetic enzymes tyrosine hydroxylase and dopamine- β -hydroxylase in adrenergic neurones. Watkins describes, mainly from a biochemical viewpoint, the metabolism of the amino-acid transmitters, glycine, gamma-aminobutyrate, aspartate and glutamate, and discusses the biochemical complexities resulting from the transmitter and metabolic functions of these substances, and how these functions may be related. McIlwain, and Greengard and McAfee, deal with the roles of adenine nucleotides, such as adenine, adenosine and cyclic AMP, in mediating the actions of neurotransmitters and in controlling neuronal excitability, a complex and fast-changing literature with a paucity of good reviews of this type. Whittaker and his colleagues, and Smith, discuss recent knowledge of the biochemical mechanisms involved in the uptake, storage and release of acetylcholine (in electric fish and in squid) and of noradrenaline in sympathetic nerves. For

these systems, and for other transmitters, remarkable similarities in the basic design of the biochemical mechanisms are emerging. In cholinergic and adrenergic nerves special uptake systems exist for choline and for noradrenaline respectively; the intraneuronal storage vesicles in both types of nerve contain not only high concentrations of the transmitter substances but also soluble proteins (chromogranins and vesiculins) so far with ill-defined but probable functions in transmitter storage. Banks and Mayor review an equally topical field, the axonal transport of macromolecules and cell organelles, illustrating by reference to their studies in adrenergic neurones. Carlsson and his colleagues review the regulation of the synthesis and degradation of 5-hydroxytryptamine by nerve activity in tryptaminergic neurones in mammalian central nervous system, and the various control mechanisms that may exist in such neurones.

Altogether the volume comprises a timely and useful collection of topical reviews of key areas, at a modest price. The volume is clearly illustrated and well produced, and should provide much valuable information to those involved in research or study in this rapidly growing field.

L. L. IVERSEN

Bacteriocins A-Z

The Bacteriocins. By P. Reeves. Pp. xi+242. (Chapman and Hall: London; Springer: Berlin and New York, March 1973.) £5.80.

BACTERIOCINS, the antibacterial agents produced by bacteria, have been of continuing interest to bacteriologists and biochemists since their discovery in 1925. Many early investigations concerned the identification of new types and their medical implications, such as the role of bacteriocins in recovery from infection and in control of normal flora. Currently, the mode of killing by colicins, the agents formed by *E. coli*, is of particular interest at the biochemical level, as is the phenomenon whereby a bacteriocinogenic bacterium is partly immune to its own bacteriocin. In many species, the genetic determinants of bacteriocin synthesis have turned out to be carried on autonomous extrachromosomal genetic elements—plasmids—many of which are related to other bacterial plasmids like the F factor or the drug-resistance factors of enterobacteria. Plasmid molecules have revealed new structures for replicating DNA and new forms of control of DNA replication.

This monograph has seven chapters dealing with bacteriocins in general and with colicins in particular; the

chemistry of bacteriocins; a shortish passage on the structure and behaviour of the genetic determinants; and much fuller sections on the adsorption of bacteriocins to bacteria and how they cause death. An appendix lists the known bacteriocins down to rarities like the "convexins" of *Eggerthella convexa*. The twenty-one-page bibliography includes titles as well as the last page number of each paper. Monographs can be all-embracing or written to a theme. This one is undoubtedly of the first sort, and will be very useful to everyone working in the field.

G. G. MEYNELL

Physics of the Sea

Marine Physics. By R. E. Craig. Pp. vii+83. (Academic: New York and London, February 1973.) £1.90.

THE difficulty in reviewing this little book is to know on what level to assess it. One of its aims, as given by the author, is to provide some background on physical aspects of the sea for engineers and biologists. He anticipates criticism of the unevenness of its treatment by stating that the different chapters do not depend greatly on each other: each is an essay on its own topic.

The term "density currents", in the first chapter, is taken to include large-scale geostrophic currents maintained by density differences in the ocean but the brief treatment, even when supplemented by later chapters, fails to indicate the importance of such flows. The most detailed chapter is that on wind currents in deep water, which gives a quantitative account of simple types of motion in the presence of Coriolis forces, leading on to atmospheric and oceanic flows involving viscous stresses. This is the classical Ekman spiral treatment with some original touches. It is taken for granted in this chapter that the reader is familiar with differential equations, but that on waves starts by assuming a cycloidal surface wave form in deep water with closed circular orbits and the phase velocity and attenuation with depth are derived on this basis. The equations of motion and continuity are not mentioned and there is no reference to the existence of a mass transport. The chapter on tides avoids almost entirely any quantitative treatment and gives a rather superficial descriptive account.

The last two chapters, on optics and acoustics, are elementary but soundly based and best meet the description of being brief, self-contained essays on their respective topics. The lack of consistency of treatment would make this book of limited value as a textbook, but taking it as a collection of essays on topics in marine physics the discriminating reader may find some items of interest.

K. F. BOWDEN