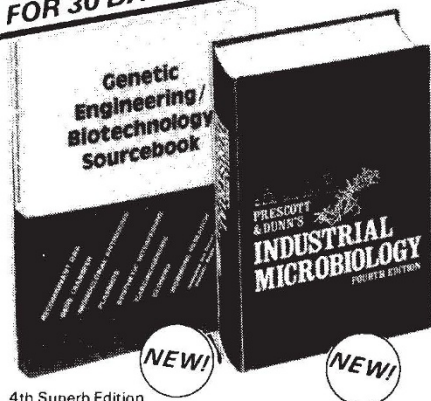


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A few fruits from a large orchard

John B. Furness

Biology of Serotonergic Transmission.
Edited by Neville N. Osborne. Pp.522.
ISBN 0-471-10032-3. (Wiley: 1982.) £30, \$69.

IN MAN, serotonin (5-hydroxytryptamine) nerves have been implicated in the control of various functions, including sleep, temperature regulation, pain and the secretion of pituitary hormones. At the other extreme, serotonin nerves in annelids and molluscs have been extensively studied because their prominent cell bodies can be identified by size and position in any individual animal. Serotonin is also found in other invertebrates, and, in the various vertebrate classes, is present in both the CNS and peripheral (intestinal) nerves.

The declared purpose of this book is to provide an up-to-date report of the state of serotonin research in the 1980s and, to a large extent, the various authors have done well by the topics covered in their individual chapters. However, in that the book only partly covers the field, Dr Osborne might well have referred his readers to other books and reviews — for example to the massive five-part work *Serotonin in Health and Disease*, edited by W. B. Essman and published by Spectrum Publications in 1978–1979.

Broadly, the articles in the present volume can be placed in one of two groups — those dealing with the (mainly biochemical) properties of serotonin neurones and those dealing with serotonin neurones in particular organs, species or life stages.

In the first group there is excellent coverage of the biosynthesis of serotonin, its storage and release, axonal transport, turnover, and uptake into axons and storage vesicles. Except for the chapter on axonal transport, which also deals with molluscs and makes occasional comparisons with platelets, these contributions are concerned with the properties of serotonin neurones in the CNS of mammals, principally the rat. This imbalance is only partly redressed in the final chapter of the book where some of the biochemical characteristics of serotonin neurones in gastropods are described.

Included in the second group is a succinct but commendably clear summary of the arrangement within the mammalian CNS of serotonin nerve cells and their processes. Another chapter documents the use of radioactive ligand-binding studies to distinguish between 5-HT₁ and 5-HT₂ receptor types in the CNS. These studies

may eventually provide a basis for interpreting differences in the behavioural effects of drugs acting at serotonin receptors. Possible roles of 5-HT in the mammalian central nervous system are dealt within a group of three further contributions; this is one of the weak parts of the book because so much is left out. The first summarizes the putative roles of serotonin but is disappointingly brief. And only two aspects of serotonin's central roles are dealt with at length in the other two chapters, namely serotonin and learning, and serotonin involvement in dyskinesias (the latter subject also appears at the end of a separate article on serotonin neurotoxins).

Serotonin nerves of the mammalian gastrointestinal tract (with some reference to other classes of animal) are reviewed next. As the existence of serotonin nerves in the gastrointestinal tract has been difficult to establish, the author gives proper emphasis to evaluation of the evidence for their presence. Another subject of some controversy, namely the proposed presence of serotonin neurones in the vertebrate retina, is covered in the following contribution. Finally, two chapters give lucid accounts of current research on serotonin neurones in leeches and gastropods.

Perhaps more than anything else in this field, a comprehensive and critical review of the pharmacology of serotonin receptors is needed. Yet in the only chapter explicitly dealing with drugs acting on serotonergic neuronal systems, a mere two pages and a table are given to a disjointed discussion of the subject. Not only is there a failure to do justice to receptor classification, but the very real problems of the additional actions of serotonin antagonists are overlooked; for example, the agonist actions of methysergide and LSD are not mentioned, nor is the anti-histaminic action of cyproheptadine. Most of the "non-specific" actions of other drugs acting on serotonin systems are also ignored.

Patchy coverage and lack of cohesiveness are common in edited works of this sort. But here they have reached such a pitch — inhibitors of the synthesis of serotonin are dealt with in four separate articles without cross-referencing, for example — that most of the contributions might just as well be in review journals. In mitigation there are some excellent chapters which are valuable works of reference in their own right. However for only a part of its potential audience will these chapters justify purchase of the entire book. □

Paper Fuller

Macmillan, New York/Collier Macmillan have issued a paperback edition of R. Buckminster Fuller's *Synergetics: Explorations in the Geometry of Thinking*, first published in 1975. The new edition incorporates revised illustrations, and costs \$12.95, £9.95.

John Furness is Associate Professor in the Centre for Neuroscience and the Department of Human Morphology at Flinders University, South Australia.