this, apart from chapters by Penner-Hahn on the non-haem, manganese-containing catalases, and by Stern and Groves on synthetic manganese-porphyrin complexes, most of the book is devoted to one system, undoubtedly the most important: the oxygen-evolving complex (OEC) of plant-type photosynthesis. As such it is a useful summary of the present state of our knowledge of this complex, written by experts (mainly American) in the field.

It has been known, since the trace-element studies by Pirson in the 1930's, that manganese is required for the production of oxygen by plants. Then in elegant studies around 1970, Joliot, Kok and co-workers used flashes of light, to extract electrons one at a time from the OEC. There was a periodic response: after each four flashes, an oxygen molecule was released. This led to the discovery of the five spectroscopically distinct 'S-states' (S_0–S_4) of the OEC. Another landmark discovery was the 'multiline' electron-paramagnetic-resonance (EPR) signal from the S_2 state by Dismukes and co-workers, the first evidence that at least two manganese ions are involved in the complex.

The OEC can now be isolated in relatively pure form from Photosystem II. It contains probably four manganese ions, plus chloride and calcium. The cluster is being probed by spectroscopic methods, notably X-ray absorption and EPR. A great many complexes of two or four manganese ions have been synthesized. Some of them are good models for the manganese catalase, but none so far exactly parallels the spectroscopic and catalytic properties of the OEC.

The next landmark must surely by the determination of the structure of the complex. Perhaps, as with the recent determination of the structure of the iron–molybdenum complex of nitrogenase, this can only be achieved by the determination of the structure of the whole machinery of Photosystem II. When that happens, as this book shows, our knowledge of the relevant chemistry will be ready.

Richard Cammack

Brain Biochemistry and Brain Disorders; by Philip G. Strange, Oxford University Press; Oxford, New York, 1992; xi + 342 pages. £19.50, $31.20. ISBN 0-19-854775-7.

Brain biochemistry or neurochemistry is a relatively young science that aims to understand how the brain works at the cellular level, and thereby helps to explain the nature of brain disorders. A large percentage of the population suffer from brain disorders. For example, Alzheimer's disease affects 1 in 20 people over 65 and 1 in 4 over 80. It is estimated that in the US alone more than 2 million people have this disease. As the over 65 population grows disproportionately during the coming years there will be an increasing demand for both short and long-term therapies. 'Brain Biochemistry and Brain Disorders' presents a lucid account of these subject areas.

The text is divided, as the title suggests, in two parts The first deals with neurochemistry, covering brain anatomy, neuronal structure and signalling, and receptors. Although these chapters are somewhat basic in content they help in setting the stage for the second part on brain disorders, which forms the major thrust of the book. The disease states, Parkinson's, Huntington's, Alzheimer's and schizophrenia, are each discussed in individual chapters, as are, depression and mania and anxiety. A multidisciplinary approach is taken to try and understand the basis of these disorders. Starting with a clinical description, moving on to neuropathological and neurochemical observations, possible treatments, and ending with the relationship to brain function. A bridging chapter entitled 'mind-body problem' succeeds in interfacing the two parts of the book and incorporates philosophical viewpoints to studying the brain.

A number of books, including 'Basic Neurochemistry' (edited by Siegel et al.) and 'An Introduction to Molecular Neurobiology' (edited by Hall), cover some of the topics just described, and in some instances in more depth (e.g. the contribution of recombinant DNA approaches to study the brain). The uniqueness of this text is its multidisciplinary approach to brain disorders, coherence and ease of reading. The organisation of the book and quality of diagrams is of a high standard. My only criticism would be that the references are split between the end of individual chapters (recommended reading) and the end of the book (bibliography). I would have preferred referencing to be at the end of each chapter so that the chapters are complete on their own

This book is essential reading for students of biochemistry, medicine, psychology and pharmacology, pursuing courses in the neurosciences, and for anyone interested in brain disorders and their underlying causes.

Sohail Ahmed

Cell Biology LABFAX; edited by G.B. Dealtry and D. Rickwood, Bios. Scientific Publ./Academic Press; Oxford, 1992. xvi + 254 pages. $49.95. ISBN 0-12-207890-X in North America; £24.95 ISBN 1-87-274860-0 in rest of the world.

This book is a fairly extensive compendium of the laboratory information you may need to carry out experiments in cell biology. It is, of course, a book for those who fear the water but are deeply attracted by it. You want to dip into its shallows frequently but it is too inviting an ocean for it to be safe for the scientist to dive into it deeply. Normally you would not read it from end to end but this reviewer jumped in, sank to the task and read it from start to finish and found many things which he was vaguely aware of,