

bibliography and a set of problems at the end of each chapter.

The sections of the book describing magnetic resonance phenomena are particularly interesting and, taken together, give a comprehensive account of the way in which this comparatively recent technique has been used to investigate magnetic systems. The discussion of paramagnetic resonance in crystals containing transition metal ions is commendably concise, while the chapter on nuclear magnetic resonance contains all the essential physics of this phenomenon. In view of their applications in wave guide systems, a more detailed description of ferrimagnetic microwave devices could have been justified, while some of the theory in the rather lengthy discussion of resonance in strongly coupled dipole systems could have been condensed.

The chapters dealing with ferromagnetism are well written and merit special mention. A remarkably complete discussion of the theories of ferromagnetism is given, and this includes some of the more recent work that has been done on this difficult topic. The section on spin-waves is very informative. The domain structure of ferromagnetic materials receives ample coverage and a good description is given of the various mechanisms which participate in the magnetization process. There are short, but valuable, sections on permanent magnet materials and ferromagnetic alloys.

Although material published since about the beginning of 1964 is not included, this is a well-worth-while publication on magnetism which can be recommended as a text-book for the theoretician and a useful reference work for the experimentalist.

G. D. ADAM

BIOLOGY OF NEUROGLIA

Biology of Neuroglia

Edited by E. D. P. de Robertis and R. Carrea. (Progress in Brain Research, Vol. 15.) Pp. xi + 297. (Amsterdam, London and New York: Elsevier Publishing Company, 1965.) 95s.

IN Volume 15 of Elsevier's present series on the progress of brain research, Dr. E. D. P. de Robertis and Dr. R. Carrea edit the proceedings of the tenth Latin American Congress of Neurosurgery, which was held at Buenos Aires in 1963 and was devoted to an inter-disciplinary symposium on the "Biology of Neuroglia". The organizers of this symposium selected topics dealing mainly with the ultrastructure and function of neuroglia, particularly in relation to cerebral oedema. It is appropriate that the pioneer morphological studies of Hortega and Cajal are acknowledged in *Biology of Neuroglia* by the particularly elegant demonstration of neuroglial staining methods provided by Dr. M. Polak. Dr. de Robertis points out in his introductory chapter that these earlier morphological investigations of the Spanish school provided no information about the function of neuroglia in the nervous system, whereas this symposium is mainly concerned with those recent advances that have added to our knowledge of the ultrastructural organization and electrolyte-regulating functions of the neuroglia.

The enzyme histochemistry of normal and reactive astrocytes is authoritatively discussed by Dr. R. L. Friede, with particular reference to the role of these cells in pathological processes and their response to sodium ions. Dr. Igor Klatzo and his colleagues demonstrate the leakage of fluorescent-labelled protein from cerebral capillaries in cerebral oedema. Drs. J. Miquel and W. Haymaker discuss the significance of the glycogen accumulation seen in heavily irradiated astrocytes; they attribute this deposition to the effects of radiation-induced anaerobic metabolism. As a future problem they might consider it worthwhile to determine whether the astrocytic activities of uridine diphosphoglucose glycogen synthetase and phosphorylase are altered by irradiation.

Possible routes for the entry or transport of water and ions in the brain are presented by Drs. H. Davson and M. Bradbury, while Dr. A. Lazanky considers the same problem in the retina. Drs. H. M. Pappius and L. Bakay discuss—in their respective contributions—the intra- or extra-cellular distribution of water in various forms of experimentally induced cerebral oedema. Dr. J. A. Zadunaisky and his colleagues report their ultrastructural and electrolyte investigations on neuroglia in the incubated brain; they conclude that the neuroglial cells are particularly concerned with osmotic and ionic regulation within the brain. The changes in astroglial and oligodendroglial volume after exposure to anoxia or hypothermia are illustrated in an interesting presentation by Drs. H. Collewijn and J. P. Schadé. Amino-acid transport within the brain is discussed by Dr. E. Levin and his associates. The electrical responses of cultured neuroglial cells are described by Dr. I. Tasaki; such stimulation initiates a slow wave of contraction in these cells.

The functional and metabolic symbiosis of neuroglia and neurones is discussed by Dr. Svaetichin and his co-authors and by Dr. R. Galambos. The latter author briefly but comprehensively reviews the functions of neuroglial cells in response to injury, in myelination and demyelination, in synaptic transmission and in Hydén's neuronal-satellite metabolic system.

Clearly it is impossible to include every discipline in a symposium of this sort, but it is to be regretted that Dr. R. M. Torack and his co-workers could not present their recent electron-histochemical studies on neuroglia in this volume.

The production of *Biology of Neuroglia* and the profuse illustrations are in accord with the customary excellent standards of the Elsevier Publishing Company. I have only a minute personal axe to grind: I dislike edited discussions presented in an informal verbatim manner.

This book can be thoroughly recommended as an excellent guide to those interested in the progress of contemporary research on neuroglia. C. W. M. ADAMS

INTRODUCTION TO BIOLOGY

Molecular Biology of the Gene

By Dr. J. D. Watson. (Biology Teaching Monograph Series.) Pp. xxii + 494. (New York and Amsterdam: W. A. Benjamin, 1965.) 11 dollars, cloth; 6.50 dollars, paperback.

MOLECULAR *Biology of the Gene* offers more than the title promises. It is a modern introduction to the 'New Biology' and is, in fact, based on introductory lectures given to students of biology at Harvard. It dwells primarily on the analytical rather than the descriptive side of biology, emphasizing equally the genetic and the biochemical aspects. It begins with a description of the cell theory and cell division which leads on to the Mendelian laws and the concept of evolution. In the next chapter a summary of cell biochemistry is presented, with special reference to *E. coli*, the best understood organism at the molecular level. There follows an extensive discussion of the importance of chemical bonds (especially weak bonds) in the interaction of cell constituents, of biochemical thermodynamics and of the concept of template surfaces which operate in the synthesis of protein molecules.

The following chapters are concerned with the fundamentals of modern genetics, the arrangements of genes and chromosomes, gene structure and function, chromosome mapping, recombination, a description of the biochemistry of DNA, of the transcription of RNA on DNA templates and the role of RNA in protein synthesis. Further chapters deal with the replication of viruses, the genetic code, the regulation of protein synthesis, differentiation, the biochemistry of antibody formation, and the final chapter discusses cancer from the point of view of the geneticist.