

multifarious aspects of his subject, whether he is considering the neuromuscular control of stomach movements or the physiology of cellulolytic bacteria. The book is well illustrated and the proof reading has been assiduous. The only detraction would appear to be its very high price.

ALAN T. BULL

MUTUAL BENEFIT

Symbiosis

Vol. 1: Associations of Micro-organisms, Plants, and Marine Organisms. Edited by Henry S. Mark. Pp. xviii + 478. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1966.) 132s.

THE original definition proposed by De Bary in 1879 states that symbiosis is a constant and intimate association between dissimilar organisms. Such a definition covers all forms of parasitism as well as mutualism and commensalism. Many modern workers prefer to restrict to symbiosis only those associations in which mutual benefit is involved. In electing to review the subject of symbiosis in the wide sense of the word, leaving out only the less relevant aspects of parasitism, Mark has taken on a very difficult task. The result is, however, in Volume 1, an excellent comprehensive review of a very wide range of associations involving micro-organisms, plants and marine animals.

Chapter 1, which deals with symbioses involving only micro-organisms, is particularly valuable, because this aspect of the subject is not well documented in review form in the literature. The next four chapters deal respectively with lichens, bacterial symbioses with plants, mycorrhizas and endozoic algae. Chapters 6 and 7 deal with symbioses involving marine animals, and Chapter 8 is concerned with methods for the experimental analysis of behaviour in symbiosis.

This volume will prove very valuable in highlighting similarities between apparently very different associations. Perhaps more important, it will indicate similar methods for experimental investigation of these associations. The review will be welcomed by all biologists working on problems of symbiosis.

B. W. FERRY

NEUROSCIENCE IN JAPAN

Correlative Neurosciences

Part B: Clinical Studies. Edited by T. Tokizaire and J. P. Schadé. (Progress in Brain Research, Vol. 21B.) Pp. xi + 437. (Amsterdam, London and New York: Elsevier Publishing Company, 1966.) 145s.

THE books in this series are always beautifully produced and often contain work of major importance. This is the second part of a work dealing with clinical neurological studies and the relationship of neuro-anatomy, neuro-physiology and neuro-chemistry to the clinical sciences. This is work entirely from Japan and for this reason alone it is of considerable interest. Of the sixteen papers only eight have any direct relationship to clinical subjects. There is a detailed description of the effects of hemispherectomy in ten patients which is beautifully illustrated and makes an important contribution to neurological science. The conclusions about thalamic participation in sensation in these cases are of considerable interest and illustrate how such clinical investigations can enrich the basic sciences.

There is a paper on an extensive epidemiological and clinico-pathological study of cerebral haemorrhage and cerebral-arterial disease in a small Japanese town. It could well serve as a model for similar investigations in this country. Another well documented and interesting survey is on multiple sclerosis in Japan.

One of the most important papers in the volume has already been published elsewhere. This is "Sedative Stereoccephalotomy", which marks one of the first incursions into the human hypothalamus. A number of the papers appear to have little connexion with any practical clinical work, but there are three interesting and important papers on sleep.

It would have been interesting to see an account of Forel *H*-tomy in the treatment of epilepsy or, indeed, any of the significant contributions made by Japanese workers in the surgical treatment of dysrhythmia. Instead there is a scholarly account of the human triangular tract of Helweg.

This volume is representative of the considerable neuro-scientific work proceeding in Japan, and makes available material normally inaccessible in Britain.

EDWARD HITCHCOCK

DOWN'S ANOMALY

Down's Anomaly

By L. S. Penrose and G. F. Smith. Pp. vii + 218. (London: J. and A. Churchill, Ltd., 1966.) 42s.

THIS book about Down's anomaly (mongolism) covers a field of wide importance and implications to human biology, which transcends what could be considered the rather narrow boundaries of the study of mental deficiency. It makes its timely appearance on the hundredth anniversary of Langdon Down's celebrated description of "mongolian idiocy" and seven years after the recognition of the autosomal trisomy that is the cause of the clinical syndrome. The authors are clearly at home with the subject, and the fact that the senior author has for years given a great deal of original and stimulating thought and research energy to the subject of this book is amply revealed in its outstanding excellence and clarity and thought-provoking quality. After a sweeping historical introduction, which outlines the stages of the characterization of the disorder, the authors review physical signs, devoting special attention to the facial characteristics, including those of ears and eyes, and to those of hands and feet. Various aspects of the intellectual development of the affected person are given prominence, while the limitations of the formal I.Q. studies are critically examined, and the more modern but as yet scanty studies done with methods devised to test specific neural faculties are stressed. Social maturity, which is advanced in these patients, and their personality traits and developmental patterns are given due consideration in the light of their importance to adaptation of the patient and his integration into the community. A chapter is devoted to the distinctive dermatoglyphics found in Down's syndrome and a section of this considers the effects of somatic chromosome mosaicism on the sensitive dermal patterns.

There is a chapter on the haematological changes, in which the increased incidence of acute childhood leukaemia is emphasized, and one on the biochemistry of Down's anomaly which reviews the older work and stresses the more recent descriptions of serum and cell-enzyme changes and of metabolic alterations and their relationship to the trisomic state. The clinical diagnosis of Down's syndrome, the discriminative value of single traits, both metrical and qualitative, and of combinations of characters are given prominence, also because these elements are essential to a proper interpretation of the chromosomal findings in the light of the phenotype, particularly in doubtful cases with mosaicism or with so-called partial trisomy. Thirty pages are devoted to the description of the cytological findings. Standard (or primary) trisomy and the identity of the specific autosome, usually defined as number 21, are considered. Next the centric-fusion type of interchange involving a number 21 and a member of the 13-15 or 21-22 groups, or long-arm isochromosome