

Immunobiology of reproduction

The Immunobiology of Mammalian Reproduction. By A. E. Beer and R. E. Billingham. Pp. xvi+240. (Prentice-Hall: Englewood Cliffs, New Jersey, 1976.)

In their preface to this volume, Beer and Billingham point out the absence of any previous concise, but comprehensive, account of the principles of the immunobiology of reproduction. There is of course good reason for this deficiency. A problem which requires considerable knowledge and understanding of subjects as diverse as immunology, oncology, reproductive and developmental biology, genetics and endocrinology makes discussion hazardous if the authors are not to be caught in the crossfire of experts. That this demanding combination of talent and expertise is required is testimony to the fundamental importance to biology of the problems under consideration. If we are to judge this ambitious work by the authors' professed aim to make good the existing deficiency, we can consider the volume as at least a qualified success.

Not surprisingly, the authors cover comprehensively that data on immunological aspects of foeto-maternal relations available up to mid-1975. This area, in which the authors have both made a major experimental contribution themselves and stimulated new theoretical approaches, is considered critically and with a balanced combination of clinical and experimental evidence. Wide and important issues are covered, such as the possible reasons for a highly polymorphic system of tissue antigens and the resistance to rejection of the foetus or its malignant derivatives. Although a great deal of data is presented, it is, however, often in a form not conducive to logical exploration of the problem. For example, discussion of the question of trophoblast antigenicity was dispersed to several points in the text for no obvious reason, and at times this led to an impression of repetitiveness even when new information was imparted. At the end of this series of chapters, one was left with an element of intellectual indigestion, as though the authors had not had sufficient time to complete their synthesis of the data and analysis of the problem. We certainly do not gain a clear impression of either current opinion or the authors' opinion on the mechanism by which the mammalian foetus survives *in utero*.

Elsewhere in the volume there are some important omissions for a book

on immunoreproduction—for example, immunity to the hormones of reproduction and to ovarian tissue are not considered at all, and immunity to products of the male genital tract are discussed rather briefly. It is also evident, understandably, that the authors are ill at ease in discussing some aspects of the subject. For example, in the chapter on reproductive biology, the impression is given that uteri of all species secrete blastokinin, that the function of this protein is agreed and that 'gastrulation' occurs in the oviduct.

In spite of its deficiencies this book will be a useful source of reference for those workers actively engaged in the investigation of this problem. For others with a more peripheral interest in the subject of immunoreproduction, the volume may prove rather hard work, but will acquaint them with the varied, rather confused, but immensely exciting problems of such central importance to biology.

Martin H. Johnson

Dr Johnson is a Lecturer in Anatomy at the University of Cambridge, UK.

Conversations in culture

Neurophysiologic Studies in Tissue Culture. By Stanley M. Crain. Pp. xii+280. (Raven: New York, 1976.) \$25.50.

It is indeed a pleasure to rely on the insight of someone with almost 15 years of experience 'listening' to the conversations which nerve cells carry on in culture. Crain has put together a strong concoction of his own data as well as several others' in the field. He has added spice through description of his role as a kind of ambulance driver to transport the live cultures through hectic New York City traffic.

The monograph begins with an orientation which relates his approach to that of others in the study of brain electrical function, and includes a brief historical note on the progress through which recording from cultured cells has grown. The second chapter deals briefly with methods of growth of cells and techniques for recording action potentials with either extracellular or intracellular electrodes. The author then details the synaptic potentials which have been obtained from dorsal root and sympathetic ganglia.

The major portion of the book is then concerned with recording from explants of central nervous system tissues. In each case the recordings amply demonstrate both the prolonged slow wave effects of stimuli, the oscillatory after-discharges and the excitatory and

inhibitory post-synaptic potentials. The electrical tracings are well salted with both light and electron microscopic correlates.

The technique of dissociating brain into single cells and then studying their electrical activities in culture is only a few years old, relative to explants, but the dissociated cells have revealed that their behaviour is quite similar to that of the traditional explants. Once again, Crain discusses the peripheral nervous system as distinct from the central nervous system.

The next chapter deals with responses to various pharmacological agents, including curare, strychnine and bicuculine, as antagonists to the major transmitters, acetylcholine, glycine and GABA, respectively. There is a useful discussion of the results of serum from patients with multiple sclerosis and animals with experimental allergic encephalomyelitis. These sera have complex effects on both neurones and myelin. He then deals with the possible relationship of spontaneous fluctuations in electrical activity to the electroencephalogram. This is followed by a discussion of the important question of longer term 'trophic' interactions of neurones and the cells with which they synapse. Unfortunately, the consideration of the important 'supportive' role of glia is examined in an earlier chapter; one is therefore obliged to shuffle back to obtain the best synthesis. However, Crain certainly appreciates the relevant functional as well as developmental significance of the "neuro-glia" unit. These findings also touch the wider context of nerve-myelin trophism, as in the classical studies of M. Abercrombie and J. Z. Young.

The final chapter, and other sections throughout the book, contain the lessons of many years: beware simple morphological analysis, the need for standardised ingredients in cultures, attention to the state of the media as related to its last change and the importance of cell-cell contacts (that is, cell number). He ends on a positive note when confronted with the exceptional rise in both the number of interested workers and the collateral spin-off to other disciplines. The only obvious 'omission' is the study of the nerve cell lines, but as Crain certainly appreciates, this could be a monograph in itself. This is a masterful synthesis of not only his own extensive experience, but also the best of others, by an acknowledged founder-father of the art.

E. J. Thompson

Dr Thompson is Senior Lecturer in Neurochemistry at the Institute of Neurology, and Honorary Consultant to the National Hospital for Nervous Diseases, London, UK.