Cells in animals . . .

Differentiation and Growth of Cells in Vertebrate Tissues. Edited by G. Goldspink. xi+323 (Chapman and Hall: London; distributed in the USA by Halsted Press; December 1974.) £10.30.

As with most multi-author works, this book is largely a heterogeneous collection of the interests of the contributors. The dustcover states that the aim of the book is to "bring to the fore a relatively neglected part of developmental biology . . . namely the development of the cells in different tissues of the body". This the book achieves for seven selected tissues, but only at the expense of continuity and by becoming repetitious. The first and last articles are, however, exceptions in that they are not restricted to any type of cell.

The book is divided into nine chapters, seven of which deal separately with the growth and development of nerve cells, muscle, bone and connective tissue, skin, gonads, blood cells and lymphoid tissue, in that order. It opens with an excellent account by Jane E. Brown and K. W. Jones of the current concepts of differentiation, which effectively explains well established phenomena of differentiative processes in terms of molecular biology. There is an up-to-date discussion of topics like gene activation, transcriptional control and biogenesis of messenger RNA, but one cannot help wondering how long it will be before some of the ideas become outdated, considering the rapid changes taking place in this field.

The second chapter is a very brief account by M. Jacobson of how nerve cells grow and differentiate, much of it dealing with positional specificity of connections in the visual system. The editor's contribution is a well balanced blend on the morphology of developing muscle cells and the control of biosynthesis of muscle proteins. J. J. Pritchard's description of bone and connective tissue is largely at the histological level and so is that of skin by F. J. Ebling, except that the latter takes an evolutionary or comparative approach to development which makes his chapter particularly interesting. Descriptive morphology (at the ultrastructural level) is also the theme of B. Gondos' article on gonads. P. F. Harris gives a comprehensive survey of the origin and maturation of all the major classes of red and white blood cells, with a good selection of electron micrographs. Margaret Manning and J. D. Horton lay more emphasis on function than on morphogenesis in discussing the role of lymphoid cells in immunological defence.

The book ends rather abruptly with D. Bellamy's cursory account of the different theories on ageing and cell death. A discussion of senescence and death in a book on developmental biology is undoubtedly most desirable and it is indeed a pity that in this case it is so superficial. Some of the theories of ageing are complicated or outdated and the brevity makes it especially difficult to sort out firm experimental evidence from vague hypotheses.

This book will be particularly valuable for the postgraduate or postdoctoral research worker who is not yet a specialist in any of the fields covered in the book. It is well presented with a summary and useful bibliography at the end of each chapter. The pleasant print and good photographic reproduction are marred by the fact that about 30 pages of one chapter are upside down—perhaps my copy was an odd one.

J. R. Tata

. . . and plants

The Physical Biology of Plant Cell Walls. By R. D. Preston. Pp. xiv+491. (Chapman and Hall: London; distributed in the USA by Halsted Press; September 1974.) £12.00.

THE plant cell wall has been examined using numerous physical, chemical and biochemical techniques. This book concentrates on the results produced by physicochemical analyses. These methods, such as X-ray diffraction, electron microscopy, and the measurement of mechanical properties, show clearly the properties and structure of the microfibrils in the wall but do not indicate much about the matrix materials. Thus, this text is mainly about cellulose and represents a comprehensive and authoritative account of the deposition, organisation, structure and possible mechanisms of the biosynthesis of that important structural polysacharide.

As some of the physical methods used may not be familiar to botanists the author develops very clearly the elementary theory of the techniques and the practical difficulties of their application. Each method is discussed, so that the limitations and the pitfalls in the interpretations of the data obtained from the technique can be clearly appreciated. The results are presented as a logical sequence and are critically appraised to show how the ideas and concepts of microfibrillar structure and organisation have developed.

Although the author discusses various conflicting viewpoints and describes the importance and the significance of the different theories, it is usually very clear to which theory the author himself subscribes. But he takes no stand without giving a thorough and detailed argument in its favour.

The book is well illustrated with clear diagrams and numerous electron micrographs. It is well indexed and easy to read. Altogether it represents a very useful and even essential addition to any library connected with a laboratory dealing with plant material and tissues.

D. H. Northcote