REVIEWS

Pathology of the Cell. By G. R. Cameron. (Pp. xvi+840; 64 illustrations and 41 text figures. £4 4s.) London: Oliver and Boyd. 1952.

Progress in such biological sciences as pathology depends upon their constant fertilization with ideas and methods from physics and chemistry. In the early part of the last century developments in optics made possible the "cellular pathology" of Virchow and the recognition of the role of microbial parasites in the causation of disease. In our day great strides in physical chemistry and biophysics—especially those related to radioactive isotopes and electron microscopy—are opening out vistas in pathology that are quite as extensive as those of 100 years ago. The purpose of the present book is to encourage pathologists to seek acquaintance with these new ideas, and to apply them to their task of unravelling the complexities of disease processes. As a guide to such ideas and as a source book for research workers, the present volume has no equal in pathology; its bibliography alone contains nearly 10,000 references.

No cursory review can do justice to a work such as this which is at once wide in scope and full in treatment. It starts with a broad survey of cytology, traces it from its beginnings with the gradual emergence of the "cell theory" from its early mainly botanical origins, and thence passes to the modern analysis of the structure and function of the individual cell components, the nucleus at rest and in division, the cytoplasm with mitochondria, Golgi apparatus and other organelles, and the external membrane with the agents that affect its permeability. All this mass of information is considered with great thoroughness and with a wealth of detail that will render it of great value to normal cytologists as well as to pathologists.

An interesting interpolation in this portion of the book is a short essay on teleology. Since first minted, this counter has passed through so many hands that most of its original impress has been lost. Yet in spite of its chequered history, the idea still has a place in post-Darwinian biology, as can be seen from the attention that it has received from Adami, T. H. Morgan, Welch, Sherrington, and Boycott. It is a pity that this chapter ends before the possibilities latent in a teleological approach to modern pathological problems has been fully explored.

Although their contents are for the most part furthest divorced from the main cytological theme of the book, the chapters that deal with the "tissue cell"—the various forms of degeneration, necrobiosis, and different potentialities for regeneration—will probably afford the greatest interest to clinical pathologists. The manifold problems of repair in various organs and tissues are considered very fully, and since many problems in current medicine

and surgery are intimately concerned with efforts to stimulate various organs and cells to undergo regeneration after injury, the contents of this large section of the book (chapters 23 to 27) are of much practical as well as scientific interest. Many of the principles that have emerged, mainly from laboratory research, are now ripe for trial in human medicine; of all members of the profession, clinical pathologists are probably in the best position to bring such knowledge to practical fruition. The sections on normal and pathological calcification, on liver necrosis and repair, and on the survival of specialized structures after grafting, to all of which the author has made important contributions, are especially notable.

The book ends with a discussion on the possible applications of new biophysical and physico-chemical ideas and techniques to pathology. It seems likely that methods of investigation in which physical procedures are employed will, during the next half-century, revolutionize many of our present biological concepts. In contrast with most biochemical techniques, physical modes of examination can often be employed on living systems with little or no interference with the normal activities of the cells examined. Moreover, they may afford information not only on the nature of the metabolic activities taking place in a tissue but also on their localization in the actual cell organelles concerned. By drawing attention to the possibilities for future biological research that lie in x-ray crystallography, polarization optics, surface chemistry, and modern developments in microscopy, the author will encourage a more lively interest amongst pathologists in such procedures as instruments in research.

There can be no doubt that Professor Cameron has added a valuable book to British medical literature. It shows persuasively how closely modern medicine, even in its practical aspect of therapeutics, is integrated with and ultimately dependent upon fundamental biological concepts and methods, and how important it is to maintain the current of research both in physiology and pathology irrespective of its immediately apparent value. At a time when the achievements of applied sciences are so prominently in evidence, it is more than ever important to realize that their roots go down and draw nourishment from a vast matrix of seemingly academic discovery. It is desirable, too, when efforts are being made to force many young medical men into conventional forms of postgraduate training, that some at least of the present generation should remain sympathetic to attempts to build the fabric of knowledge at all its levels. The present volume demonstrates very convincingly how profoundly modern medicine is indebted to a tolerant attitude in the past.

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