

As regards transcription, he can find no evidence to support the circuitry required by the genetic operator model or the high degree of repressor specificity it requires. His own remarkable work on hybrid cells supports the view that cytoplasmic signals might have a low order of specificity. For example, a chick erythrocyte nucleus in HeLa cell cytoplasm will resume synthesis of both RNA and DNA. Nevertheless such signals could provide for genetic regulation by altering the physiological state of the nucleus. There is evidence for changes in nuclear volume being associated with the turning on and off of DNA and RNA synthesis; and if the chromatin were not homogeneous in its response to volume changes, and different portions became unravelled at different stages, it is possible to imagine this providing a mechanism for the control of transcription. This view, which is consistent with some of the studies on chromosome puffing of dipteran polytene chromosomes, must bring about very significant alteration in how we think about cell differentiation. While this book ought to stem the flood of uncritical applications of Jacob-Monod circuitry to higher cells, its real value is in the clarity of the analysis of the problems and in its original and stimulating ideas. Not least is its lack of compromise; few authors make their own position as plain, or make so little use of camouflage. This book is essential and pleasurable reading for all cell biologists, biochemists and geneticists.

LEWIS WOLPERT

EXFOLIATIVE CYTOLOGY

Gynäkologische Cytologie

By P. Stoll, J. Jaeger and G. Dallenbach-Hellweg. Pp. xii + 307. (Springer-Verlag: Berlin and New York, 1968.) 88 DM; \$22.

THE rapid evolution of exfoliative cytology demands new textbooks to cover the modern achievements of this diagnostic approach. Unfortunately, textbooks of clinical cytology do not always correspond to the contemporary results of general basic cytology. The textbook by Stoll, Jaeger and Dallenbach-Hellweg tries to bridge the gap between basic cytology and exfoliative cytology. This is especially true in the first chapters of the book, where general cytology of the normal and carcinomatous cell is described. The description is enriched by data gained using electron microscopy and cytochemistry. The later chapters include material on cytochemical evaluation so as to illustrate the described cellular characteristics more deeply.

The modern and progressive approach of the authors is emphasized in all chapters of this excellent book. The division of the described and discussed material is completely new: cytologic changes are described separately in the single cell; general cytologic patterns as far as the biology of the vagina and functional cellular patterns, and, finally, the local cellular patterns are considered. In the chapter about single cells, the reader finds the cellular characteristics of the normal cell changed and the carcinomatous cell deriving from the squamous epithelium, both endocervical and endometrial. The description of the biology of the vagina deals with normal and abnormal vaginal microbiology as well as with that caused by infection. The chapter discussing the functional cellular patterns is an extensive one. It describes in detail the cytologic findings in various hormonal conditions. The comparative study of vaginal cytology with endometrial biopsy is very interesting. A survey of cytologic findings in particular age categories accompanies this chapter. The local cellular pattern deals with all cells deriving from the local proliferative or degenerative processes. This description covers the benign and malignant cellular changes of the vaginal and cervical epithelia and of the endometrium as well.

In further chapters the secondary changes in exfoliated

cells and irradiation changes are described. The possibility of stating the prognosis from irradiation cellular response is critically evaluated. Also the chapter on the proof of free cancer cells (in blood, puncture fluids and urine) is very instructive.

Special attention is given to the organization of cytology work and to the *modus operandi* of the cytology laboratory. Statistical data and results of mass screening programmes of several laboratories are given and compared.

The textbook is written in a lucid and excellent manner. The division of chapters is well organized. At the end of every chapter the reader finds conclusive remarks which summarize the described topic. Eighty figures (most of them photomicrographs) and several tables illustrate the discussed material very well. The textbook is accompanied by an extensive reference list.

The translation of this textbook into other languages is strongly suggested. MOJMR SONEK

PROTEINS AND RELATED SUBJECTS

Protides of the Biological Fluids

Proceedings of the Fifteenth Colloquium, Bruges, 1967. Edited by H. Peeters. (Proteins and Related Subjects, Vol. 15.) Pp. xii + 626. (Elsevier: Amsterdam, London and New York, 1968.) 240s.

THE Bruges Colloquia are indeed built on a deserved reputation and the published reports provide a series of valuable surveys of this field. From the subjects discussed at the 1967 colloquium the coverage appears to be expanding so that the published volume is now very large and the price correspondingly great.

About 160 authors contributed to the papers presented in three main sections. Section *A* on membranes was divided into molecular structure and function—proteins, glycoproteins, enzymes, lipids, permeability, transport, bacterial membranes, liver membranes, red cell membranes. Section *B* was on complement. Section *C* was on techniques and was divided into electrophoretic methods, ion exchange chromatography, gel filtration and determination of plasma components.

It would be impossible to review adequately all the different contributions, so I propose to confine myself to those articles which I found particularly rewarding. The Academic Lecture was presented by Dr T. Freeman. He tried to relate the metabolism of individual proteins to their function in the body. His main conclusion was that our present information was scanty and that there were at least 20 plasma proteins for which no function had yet been shown. He made a strong case for further studies in this field.

Section *A* on membranes was opened by F. S. Sjöstrand, who covered present concepts of the structure of cellular membranes. He later described techniques which he believes will make possible the direct visualization and identification of individual protein molecules associated with the membranes. One of these techniques is to fix the proteins with glutaraldehyde before dehydration with ethylene glycol. Under these conditions the mitochondria membranes show a globular substructure which he believes is a result of the close packing in a two-dimensional array of protein and lipoprotein molecules. Criddle described the functional role of mitochondrial structural protein. The idea that membranes contain such a protein which combines with various enzymes is not universally accepted, so that the experimental results presented in this paper are of particular interest. A major problem in our understanding of membrane structure involves the technique whereby the components of the membrane are rendered soluble. Two papers on this subject were presented by Zahler *et al.* and by Poulik and Lauf. In the first paper the use of organic solvents was reviewed and in the second