Book reviews

frequently that many pathologists now accept it as fact. The diagram showing cleaved cells progressing to non-cleaved cells reappears again in this issue. There is little factual evidence to support this sequence, and critical immunohistochemical studies on germinal follicles that show cytoplasmic immunoglobulin in cleaved but not in non-cleaved cells would argue against it.

This book is clearly not intended for diagnostic histopathologists except for those with a special interest in the lymphoreticular system. Clinical and laboratory workers in the field of lymphoreticular disease, who do not have ready access to an *Index Medicus*, will certainly find this book useful. Those who have good library facilities available will need to judge for themselves whether they consider it worthwhile paying £16.50 for having a literature survey covering the lymphoreticular system and neoplasms of that system. The apparent continued popularity of this series indicates that most workers consider this money well spent. For their sakes one hopes that Dr Taylor and his colleagues will continue to find the energy and time to undertake this formidable annual task but that they might be a little more critical of the material reviewed.

DH WRIGHT

Limiting Dilution Analysis of Cells in the Immune System. I Lefkovits and H Waldmann (Pp xiv + 262; illustrated; £15.) Cambridge University Press. 1979.

This is a bold attempt to put across a methodology and an outlook on experimentation in cellular immunology, which breaks away from the traditional approaches of experimental biologists who have analysed immunological mechanisms in 'whole' systems, be they living animals, organ cultures, or cell suspensions. The authors' approach in attempting to understand the organisation of cellular events in the immune response is to adopt a mathematically biochemical viewpoint of cell suspensions in tissue culture, regarding them as interacting molecular systems (ie, cell types) whose chance interactions in a positive or negative manner occur randomly, depending on the density of each cell type, and whose outcome can be predicted by a mathematical formula based on the Poisson distribution. The correctness of

this approach is validated when, on diluting a mixed cell suspension in which the concentration of one cell type is limited into a large number of microcultures, the number of 'positive' microcultures (ie, those in which all the necessary cell types are present to produce an antibody response) is related to the concentration of the limiting cells. A similar approach has been successful over the past 30 years in the *in vitro* analysis of the various reaction stages of the complement sequence, based on the one-hit theory of complement lysis.

After a brief outline of current ideas as to the nature of cellular events in immunology, the authors present two clear chapters on the methodology of the system which is both simple in approach and sophisticated in its analytical precision. The middle four chapters deal with the mathematical and statistical validation of the method and the means of analysing the responses, and I predict that these will prove hard going for most biologists. The last three chapters give examples of the ways in which the method can be used to answer questions on the nature of cellular reactions in the production of antibodies.

This is clearly a book for research immunologists. The method depends on being able to provide an excess of non-limiting cell types and deals almost entirely in mouse cell systems, which can be supplemented with 'pure' B or T or 'indifferent' cell types from syngeneic strains. This approach undoubtedly adds to the understanding of cellular interactions where it is not yet possible to isolate and manipulate antigen specific clones of cells. However, its application to problems of immunopathology is still a long way off, and while this book should be essential for those immunology departments involved in teaching and research, it is likely to have little appeal to immunologists or pathologists in the clinical field.

RA THOMPSON

Clinical Chemistry in Diagnosis and Treatment. Joan F Zilva and PR Pannall. (Pp xix + 492; illustrated; £7 paperback.) Lloyd-Luke (Medical Books) Ltd. 1979.

The third edition of this popular book has several major modifications including a new chapter on gonadal function and marked changes in the descriptions of hy-

drogen ion homeostasis and carbohydrate metabolism. A useful addition is the introduction of sections at the end of most chapters in which clinical indications for investigations are discussed. This complements the titles for further reading. For the sake of completeness a more comprehensive account of the biochemistry of pregnancy is required but, as with all textbooks aimed principally at the undergraduate, it is often difficult to draw a line between too much and too little.

The book is worthy of a place in every chemical pathology laboratory in addition to the knapsack of all undergraduates attempting to absorb the essentials of the subject. Already translated into Italian, Turkish, Spanish, and Serbocroat, the present edition is a worthy successor to its forerunners.

GW PENNINGTON

Functional Histology. A Text and Colour Atlas. PR Wheater, HG Burkitt, VG Daniels. (Pp 278; illustrated; £12 paperback, £18 hardback.) Churchill Livingstone. 1979.

The authors accept that 'histology has bored generations of students' and, having identified the fault as a divorce of structure and function, aim to present histology in relation to the principles of physiology, biochemistry, and molecular biology. They have succeeded in producing a high-quality atlas based almost entirely on human material and with photographs which reproduce the appearances of a good H & E stain section, supplemented where necessary by special stains. Line diagrams, electron micrographs, and a lucid text make this book a valuable teaching aid. This atlas is at least as good as any of the other atlases produced by Churchill Livingstone and it can be confidently recommended for undergraduates and particularly for trainees just beginning histopathology.

G SLAVIN

Flow Cytometry and Sorting. Ed MR Melamed, PF Mullaney, ML Mendelsohn. (Pp xv + 716; illustrated; £39.50.) John Wiley & Sons. 1979.

Since the introduction of the familiar Coulter Counters in most haematology laboratories, pathologists have become aware of the principles and advantages of

flow cytometry (high speed cell counting and analysis in aqueous solutions). This technology has now developed into a sophisticated science with a range of commercially available instruments (Ortho Cytofluorograf, Fluorescence Activated Cell Sorter, Coulter Two-Parameter Sorter, Pulse Cytophotometer, Technicon Hemalog D, Block Engineering Cytomat-R System: all individually discussed at the end of this book). These instruments considerably expand the technical facilities for experimental and clinical work alike. It would be difficult to follow the latest developments from the literature published by clinical journals. It is therefore most fortunate that the first major summarising book in this area can be regarded as an unqualified success (and may turn out to be a classic). The secret of this book lies in its three assets: the remarkable collaboration between pathologists and engineers during its preparation, the strict editorial discipline, and the excellent illustrations. All these are needed to promote clear presentation of a primarily technical subject to a medical readership. The editors (who are medically and scientifically qualified) first give an historical review followed by an introduction and résumé of 41 individual chapters. These chapters, written by the undisputed leaders of each field, deal with cytophysical methods (principles of cell measurements, physical basis for cell sorting), sample preparation (tissue disaggregation, selective cell enrichment, cell electrophoresis), cytochemical methods (principles of cytochemistry, quantitative DNA staining for flow cytometry, fluorescence probes for nucleic acid analysis, enzyme analysis of single cells), standards and data processing, and a series of chapters on the application of flow cytometry in cell biology (cell cycle analysis, study of viral effects, flow cytogenetics, study of cell differentiation), in immunology (analysis and sorting of lymphoid cells after labelling with fluoresceinated antisera), in haematology (enzyme analysis and differential leucocyte counts) and in oncology (analysis of cytology specimens for cancer detection, leukaemia analysis and drug effects). The details given in the book may help to plan your laboratory for the next decade but also indicate that none of these instruments will fully substitute for a good bench microscope and a careful investigator. A reasonably priced book with page size larger than usual and extensive reference lists at the end of each

chapter, this is strongly recommended for all pathology departments and medical libraries.

G JANOSSY

Diagnostic Parasitology. Clinical Laboratory Manual. 2nd ed. Ed LS Garcia and L Ash. (Pp viii + 174; illustrated; £9.) YB Medical Publishers. 1979.

Although there are many books on medical parasitology, this ring-back bench manual is one of the few that is concerned first and foremost with laboratory diagnosis. The subject presents the problem that there is no practicable routine that can be relied on to uncover all parasitic infections. Even in the UK there must be few, if any, diagnostic laboratories with the staff to perform in full the procedure followed here, except for special cases and projects. However it is valuable to have this lucid account in simple language of the methods which the authors have found most useful. Apart from everyday techniques there are sections on animal inoculation, the rôle of egg counts and serodiagnosis, and much emphasis on stained permanent preparations, all supported by references. Succinct descriptions of parasites in the phases used for diagnosis, with good illustrations and a glossary, do all that a book can do to help with identification.

Whether for routine use or reference this book will be most helpful to anyone who has to find and diagnose parasites.

DS RIDLEY

UICC Technical Report Series. 'Screening in Cancer'. Ed AB Miller. (Pp 338; illustrated; 20 Sw Fr.) UICC. 1978.

This volume records the workshop held in Toronto in April 1978 where some 23 experts, many of them epidemiologists, reported results and reviewed policies of a number of the major and significant screening programmes on cancers of the cervix uteri, breast, lung, stomach, and colon.

There are papers on basic epidemiological issues, on identification of the target population and its responses, the sensitivity and specificity of tests, of length-biased sampling, lead time, the detectable clinical phase, and the predictive value of a programme. Methods of assessment of results are discussed, and each cancer is separately considered with

a summary of the State of the Art and concise recommendations for policy and research.

The cervix appears to gain greatest acceptance with consideration of a number of major surveys and a review of the Walton Report of two years earlier. There are still some doubts as to whether disease cycles, cytological screening, or the excess of hysterectomies are the cause of alteration in mortality rates, but the age of commencement and frequency of screening comes in for much discussion in achieving cost-effectiveness.

The breast is still requiring further clarification of the feasibility of screening of ages below 50, though it is admitted that physical examination and mammography have produced a sizable effect on women between 50 and 60 years. Technical improvement in mammography, trials of self-palpation, and the screening by ancillary staff are also discussed.

The effectiveness of the four-monthly chest x-rays and sputum cytology schedules in the three American trials, especially that of the Mayo Clinic, is featured. Photofluorography in stomach cancer screening appears to be almost cost-effective in high-rate countries but not elsewhere.

With the colon, interest concentrates more around an effective occult blood test and less on carcinoembryonic antigens or cytology.

The report is informative, stimulating, and critical and a useful publication for those pathologists interested in this field of preventive medicine.

OGAN HUSAIN

Environmental Health Criteria. 14. Ultraviolet Radiation. (Pp 110; illustrated; 10 Sw Fr.) WHO. 1979.

Amidst all the agitation over radiation hazards, the effects for good and ill of ultraviolet radiation tend to be overlooked. Most of the ultraviolet hazard, of course, is natural so there is no antinuclear or antitobacco lobby to march in protest against the serious increase in skin cancer and melanoma that is now occurring. A slim monograph in the WHO Environmental Health series is a good reminder of the subject. It covers all aspects of photobiology concisely but with enough references to allow for detailed study. Recommended for photopathologists.

HEM KAY