'Hemic cells *in vitro*' is the proceedings of a symposium held by the Tissue Culture Association in June 1968 together with abstracts of 160 papers on other subjects from the same meeting.

Of all the tissues of the body the haemopoietic tissues have been most refractory to study *in vitro* but some limited progress has been made and is conveniently put together in this volume. Three sections, devoted to 'Haemopoietic precursors', 'Differentiation controls', and 'Immunoactive hemic cells', comprise 10 papers, the majority of which deal with short-term culture techniques. For example, by organ culture of embryonic bone rudiments the old question of whether the stem cells rise from bone tissue or migrate there from elsewhere might be answered. The authors incline to the latter but readers will probably not be convinced by the photographic evidence.

The growth of granulocytic colonies in agar has now been achieved in several laboratories but the technique remains precarious and is dependent on elusive factors from other cells. Perhaps the chief obstacle is the formation of inhibitors or chalones by mature granulocytes, this being part of an essential feedback control mechanism *in vivo*. Erythropoietic colonies have never been claimed but valuable biochemical data can be gained from studying the final stages of erythropoietic maturation *in vitro*. Lymphocyte transformation or blastogenesis naturally gets a mention as does the more far-reaching topic of immune activity of lymphocytes in culture.

Finally there are two papers on long-term culture of leucocytes from blood, marrow, and elsewhere. These prolonged cultures of leucocyte lines have nothing to do with haemopoiesis of course. One of the main questions posed here is whether the indefinite capacity for growth is induced by EB herpes virus infection. The answer seems to be 'probably yes' but the evidence is conflicting and it is here that the absence of published discussion or of a chairman's summing up is felt. In a symposium of this sort comments, questions, or summaries help to emphasize points of significance or of uncertainty and give a valuable sense of perspective. Presumably tissue culture-mongers will read this volume anyway. Haematologists and others may find it a useful, quick guide to the subject as it was in 1968.

H. E. M. KAY

Human Trophoblast By Arthur T. Hertig (Pp. vii + 344; illustrated. \$12.00). Springfield, Illinois: Charles C. Thomas. 1969.

This publication relates many of the contributions and thoughts of the author that have resulted from a thirty-five-year study. The origin and development of the human trophoblast is described in detail and there is a helpful chapter on examination of the placenta. Although not indicated on the cover, the book deals with pathological conditions including hydatidiform mole and choriocarcinoma. To the pathologist these chapters in particular will appeal, but for full understanding of the difficulties in diagnosis the author's explanation of normal trophoblast development should be studied. Distinction between hydatidiform mole and choriocarcinoma is fully discussed; the author considers that 16% of the moles are invasive but questions the too ready link in thought between hydatidiform mole and the true neoplasm choriocarcinoma which may follow any pregnancy. He emphasizes that 'to determine by pathologic or clinical or endocrinologic means whether the lesion is a hydatidiform mole or a choriocarcinoma' may be almost impossible at times, but his text and pictures will greatly help the pathologist concerned with the task. The comprehensive term 'trophoblastic disease' rather than definitive diagnosis may be resorted to, particularly when the material to be examined has been curetted from the uterus. Modern therapy will often be employed in the absence of exact diagnosis.

The book is adequately illustrated, beautifully written, and reflects the humour and wisdom of this well-known author. It should have a wide appeal and will be welcomed, especially by embryologists, obstetricians, and pathologists.

CLAUD W. TAYLOR

Practical Bacteriology By Nuala Crowley, Jean M. Bradley, and J. H. Darrell (Pp. v + 238; illustrated. 50s.). London: Butterworth and Co., Ltd. 1969.

This book, which is concerned entirely with *medical* bacteriology, is essentially a 'teach yourself' bench manual aimed to assist candidates preparing to take the examinations for membership of the Royal College of Pathologists. Virological and certain public health bacteriological procedures are not included. The authors emphasize that the book is intended to supplement routine experience gained in a hospital laboratory. A list of books and references for additional reading is given. Considering the importance of reproducibility in performing Gram's staining technique, reference to the method described by Preston and Morrell (1962) might well have been included. The book

is likely to prove useful to those for whom it is intended.

C. E. D. TAYLOR

Reference

Preston, N. W., and Morrell, A. (1962). *J. Path. Bact.*, **84**, 241.

Review of Medical Microbiology 8th ed. By E. Jawetz, J. L. Melnick, and E. A. Adelberg. (Pp. 502. 58s 6d.) Los Altos, California: and Oxford and Edinburgh: Blackwell Scientific Publications. 1968.

The aim of this book is to provide in some 500 pages a review of those aspects of medical microbiology that are 'of particular significance in the fields of clinical infections and chemotherapy' for medical students, house officers, and practising physicians. This it certainly does not do. A relatively large part of the text is devoted to basic microbiology, and the sections on morphology, biochemistry, and genetics are admirably up to date and interestingly written. They will certainly provide valuable reading matter for the student or young graduate, but he will learn little of practical value from the rest of the book about the intelligent use of the laboratory in clinical practice or about the applications of microbiology to the prevention of disease. This is not because of a shortage of information; indeed the authors have succeeded in mentioning a surprisingly large number of facts. What is often missing is a critical assessment of their significance. For example, the unqualified statement is made that *Bordetella pertussis* may be isolated from a nasopharyngeal (ie, pernasal) swab or by means of a cough plate, but no indication of the relative efficiency of the two methods is given.

Some important topics are dealt with entirely by means of tables. There is one table entitled 'Practical chemical disinfectants' which lists agents that may be used for the treatment of inanimate objects, skin and air, but gives no indication of their activity on different classes of microorganisms. The skin disinfectants listed are soap and water, hexachlorophene soaps, anionic detergents, iodine compounds, and alcohols—in that order. Quaternary ammonium compounds are recommended for the disinfection of inanimate objects and aerosols of glycols for air disinfection.

There is little relation between the amount of space devoted to a topic and its importance in clinical practice. Thus, 53 lines are devoted to *Pseudomonas aeruginosa* and *Pseudomonas* infections—including the remarkable statement that 'involvement of the respiratory tract is uncommon'—but the reovirus group receives 182 lines. The section on sal-

monella and enteric infection is so compressed as to be of little value, and repeats the myth that in enteric fever the faeces are negative until the third week of disease.

JOAN TAYLOR

Neoplastic Development Vol. 1. By L. Foulds. (Pp. xi + 439; illustrated. 110s.) London and New York: Academic Press. 1969.

This is a solid book, closely knit and writ. There are approximately 890 references, and this is only the first volume. To quote from the Preface, 'It is hoped that this discussion will be a helpful introduction to readers who are not conversant with comparatively recent impacts of cybernetics and molecular biology, in their widest senses, on biological method and thought. Volume 2 deals in more detail with special cases of neoplastic development in animals and in man.' Dr Foulds does not invoke much cybernetics although he clearly likes the concept of network-organization in growth control (Weiss), but molecular biology has emphatically stimulated him to much pondering and poring over acres of print.

Critical reviews of the literature can be more satisfactorily critical when the pen is pushed by an old hand in the field; this provides the relish in the first seven chapters on neoplasia. It is worth remembering that *he* says 'No satisfactory definition of neoplasia is available or will be until a great deal more is known about the nature and properties;...' (p. 91). The other eight chapters on biological organization and development biology present him with sloughs and quagmires of speculation and neologisms through which he progresses nobly, and it may be that his own particular efforts to identify and define the strange mechanisms of the cell will in return illuminate the thinking of the professional microchemical and cellular biologists. Perhaps in the next volume he is going to show that the facts already obtained about neoplasia in animals and man can be logically arranged to match the pattern he draws for us in this volume.

It is difficult to summarize intelligibly a long complex journey, and the features the author names might mean little to those who have not been there, but I think the main theme of the last eight chapters can be suggested by the following extractions. 'The most immediate impact of molecular biology upon developmental biology has been on the study of differentiation, ... Differentiation entails the preselection and selection of effective genomes and the transcription and translation of these genomes by linkage with conforming dynamic biochemical systems. ... The problem of preselection

is inextricably related to that of the nature of *competence* which, as here proposed, depends on the differential availability of the utilizable genetic patterns constituting the facultative genome. ... The facultative genome was invented (Foulds, 1963) to take account of the empirical evidence for the differential availability of alternative genetic patterns for use as effective genomes under a variety of circumstances; it provides a genetic basis for pathological *metaplasia* as well as for normal developmental *competence* and capacity and is closely relevant to many problems of neoplastic development as will be described later.' (Pp. 375-6.)

'A basic, and it seems to me incontrovertible, presumption of this discussion is that "genes", and more specifically DNA, have no intrinsic "activity" at all. DNA supplies genetic patterns; dynamic biotonic systems provide all the activity. ... Differentiation is not adequately described in terms of the activation of individual genes; it entails the activation of integrated genetic patterns. The activated genetic patterns constitute *effective genomes*. ... Differential utilization of the genome presupposes a choice between multiple integrated genetic patterns *available* for use as effective genomes. The available choices constitute the *facultative genome*. ... The facultative genome supplies the genetic basis for ... the multiplicity of the differentiative types of neoplasms derived from a single tissue' (Pp. 360-1).

If, as could be the case, I have failed to grasp the significance, perhaps Volume 2 will bring things into focus. Nonetheless this volume has taught me much about neoplasia, about viruses, and about biological organization. This last is surprising and perhaps his success on this stony ground is because Dr Foulds understands and is really trying to help pathologists in fields we know we should but have scarcely time to study. On the terminology used by histopathologists he rather agrees with Smithers, although elsewhere he finds the latter's views 'massively unconvincing' (p. 135).

This volume, apart from its intrinsic interest, is essential reading as a pruning guide for pathologists who write or talk about neoplasia. Even those who merely think about neoplasia are doubtless also awaiting the next volume with excitement.

A. C. LENDRUM

Aetiology of Lung Cancer By Leiv Kreyberg. (Pp. 90; 12 graphs, 23 tables. NKr 48.00) Oslo: Universitetsforlaget. 1969.

In less than one hundred pages Professor Kreyberg, a pathologist of world fame,

has made a useful, scholarly and comprehensive survey of the various forms of lung cancer which he has been studying for more than twenty years.

The book contains a great deal of information about various histological types of the disease and links the histological findings with the sex and environment of the patients concerned, as well as with their smoking habits. Professor Kreyberg concludes that the most common forms of lung cancer—epidermoid carcinoma and small cell anaplastic carcinoma (types I and II of the WHO 1967 histological type code)—are very closely linked to tobacco smoking habits. Indeed, in Professor Kreyberg's experience such tumours hardly ever occur in non-smokers. Furthermore, the risk is not confined to those who smoke cigarettes, pipe tobacco and cigars also exact their toll of lives, although they may be a little less lethal.

Atmospheric pollution, at least as encountered in Norway, is not considered to be a major factor in the aetiology of lung cancer. Occupational influences are of much less importance than smoking habits.

Because this book is written primarily from the standpoint of human biology the synthesis of pathology and epidemiology is most effective. I recommend the volume not only to medical students, clinicians of all degrees of specialization, pathologists and epidemiologists, but also to all others who care about the public health.

R. A. M. CASH

Tumours of the Female Sex Organs Part 2 suppl. By A. T. Hertig and H. Gorio. (Pp. 51; illustrated. \$1.35.) Washington: Armed Forces Institute of Pathology. 1968.

This supplement deals further with tumours of the vulva, vagina, and uterus and is part of the now well known Atlas of Tumour Pathology. Most of the new material concerns the cervix. Readers will find interesting the comments on the epithelial changes in the cervix which may be attributable to taking of the 'contraceptive pill' and warning is given against overdiagnosis of adenocarcinoma in this respect. Unfortunately the ugly term 'adenoma malignum' is mentioned in this section and elsewhere in this supplement though its continued use was rightly condemned in the original fascicle. Dysplasias now described and illustrated, though Fig. 284, published elsewhere, is not a well suited choice.

It is salutary to read that the authors have not changed their view that minimal degrees of stromal invasion in carcinoma *in situ* (p. 103) do not of themselves justify more radical treatment than that required if no such microscopical change had been discovered.