Book Reviews

The Year Book of Cancer, 1977. Eds R. L. CLARK & R. W. CUMLEY. (1978) Chicago, London: Year Book Medical Publishers. 499 pp. £19.25 net.

The Year Book series makes available in detailed abstract form some papers considered to be of importance published during 1975 and 1976. The Year Book of Cancer has a large editorial board (160 members) and a very large number of articles are considered for inclusion. Many of the best papers have been included and some of the not so good, and an attempt has been made to review these critically. An extremely wide range of topics is covered. Cancers by site, chemotherapy, immunotherapy and terminal care are dealt with. There is also some attempt to review relevant progress in the basic sciences. Unfortunately, the reviews are inevitably out of date by the time of publication and this makes them of less value. It is a fairly painless way of bringing the oncologist up to date in areas in which he has not a main interest and, for this reason, the book has a place in a library, but I doubt whether many individuals will be prepared to pay the price of a review now about two years out of date.

D. CROWTHER

Mechanisms of Tumour Promotion and Co-carcinogenesis. (Vol. 2 of a series on Carcinogenesis—A comprehensive survey). Eds T. J. SLAGA, A. SWAK & R. K. BOUTWELL. (1978) New York: Raven Press. 588 pp. £26.00 net.

The editors have divided the book into 6 sections followed by a well-presented summary. In reviewing the subject they rightly assign the opening chapter on historical perspectives to Berenblum who discovered the co-carcinogenic action of croton oil. Having made the distinction between co-carcinogens, covering a wide range of modifying influences, and tumour promoters he reminds us of some of the pertinent questions to be considered. A great deal of valuable information on the structure-activity rela-

tionships of the diterpene esters is contained in the chapter by Hecker, which identifies the most active promoting agents and discusses their metabolism and mode of action. A much shorter contribution on the biochemical mechanism of tumour promotion by Boutwell emphasises the work of his own laboratory, in which the induction of ornithine-decarboxylase activity in mouse epidermis by phorbol esters is correlated with their activity as tumour promoters. The chapter on tumour promotion and co-carcinogenesis in relation to our own environment is more speculative, but considers evidence for factors which enhance cancer of the lung, breast, colon and upper alimentary tract in man. The final chapter by Mueller on the possible targets of co-carcinogenesis considers the mechanisms of DNA and chromatin replication, and presents a hypothesis based on observations of the action of phorbol esters on lymphocytes.

Effects of tumour promoters on mouse skin are considered in the next section, and include studies of the kinetics of skin papillomas, the role of cyclic nucleotides, the relation of specific proteins in the epidermis and the information obtained from studies of the inhibition of tumour promotion by steroids. Certain of the biochemical evidence would support the view that tumour promotion may induce a dedifferentiation by modifying gene expression. The fact that the phorbol esters act at concentrations of the order to 10^{-9}M suggests that they may act *via* specific receptors on the cell membrane, but their mode of action has yet to be established.

In the section on *in vitro* studies, a useful comparison is made of the responses of mouse skin keratinocytes, fibroblasts and carcinoma cells by Fusenig & Samsel. They find the greatest effect on the epidermal target cells, but point out that these are derived from newborn mouse epidermis, which is not stimulated *in vivo* by local applications of TPA. The conditions for the induction of ornithine and S-adenosylmethionine decarboxylases in mouse epidermal cell cultures by tumour promoters are examined, and the effect of polyamine biosynthesis on cellular control is suggested as an important aspect of the effect of tumour promoters. One point to emerge is that an anti-inflammatory steroid

which inhibits both tumour promotion in mouse skin *in vivo* and promoter-stimulated DNA synthesis in mouse epidermal cells *in vitro*, actually potentiates ornithine decarboxylase activity *in vivo* and *in vitro*. This section ends with an interesting paper on an organ culture/cell culture system for studying respiratory carcinogenesis, in which epithelial-cell cultures derived from tracheal explants exposed to the carcinogen MNNG and the tumour promoter TPA were examined.

The section on the effects of tumour promoters on biological systems is in some respects an extension of the section in *in vitro* studies. The opening paper is on the role of protease inhibitors in preventing the induction of a special repair system (SOS-repair) by tumour promoters. There are also papers in which a more detailed appraisal of the membrane effects have been made, and studies of effects on lymphocytes, granulocytes and platelets, without any conclusive evidence of their applicability to the two-stage carcinogenic process.

Alternative systems for studying tumour promotion are next considered. Four papers deal with hepatocarcinogenesis, in which different stages in tumour induction are clearly identified, and methods for promoting tumour formation discussed. This is a very promising system for future work. There are also individual papers on tumour promotion in the colon, lung and bladder.

The final section on modifiers of carcinogenesis is concerned mainly with co-carcinogenesis, but does include a paper on the potential of retinoids as inhibitors of tumour formation after initiation has occurred.

There is a substantial variation in the quality of individual contributions, but this book contains a great deal of interesting information. The format is of a high standard and the provision of a subject index is a considerable help. This volume is based on a symposium sponsored by the Biology Division of Oak Ridge National Laboratory and held at Gatlinburg, Tennessee in March 1977. In the past it has been the practice to publish the proceedings of these symposia, together with points raised in discussion, as a supplement to a scientific journal. We would recommend that this practice be resumed and that the papers presented at the meeting together with the associated discussions were again made available as soon as possible. The present arrangement seems to be a com-

promise in which substantial reviews are included together with minor contributions, and the time interval to publication is inevitably extended.

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Fundamentals of Oncology. H. C. PITOT.
(1978) New York, Basel: Marcel Decker.
192 pp. Sw.Fr. 26.00 net.

The book is based on a course of lectures given by the McArdle Laboratory for Cancer Research at the University of Wisconsin, which was designed to inform and interest non-medical scientists, both graduate and undergraduate, in cancer research.

The 12 chapters cover topics ranging from a brief historical account of our knowledge of malignancy (which dates back to 1600 BC) to a description of the current theories and assessment of the experimental evidence relating to the biological and molecular pathogenesis of neoplasia. The diagrams in the book are clear and well drawn, although in some cases (*e.g.* comparison of the morphology of normal and transformed colonies) a photograph would have been preferable as the diagram is obviously an oversimplification. Much information (*e.g.* biochemical functions associated with growth rates in hepatomas) is summarized in tables. Such information is difficult to dissect out of the literature and such summary tables are useful; however it is not clear in this case whether all or only some of the changes are correlated with an increased growth rate. The references are listed at the end of each chapter, which makes the text easy to read, and titles are given so that individual papers can be identified.

Overall, the book is well presented, but in covering such a wide field the information is of necessity oversimplified, which could limit its appeal to biological sciences graduates. It would certainly, however, be a useful book for undergraduate students in both cell biology and medicine who wish to gain a general overview of the present status of our knowledge of the neoplastic process and the biology of tumour cells.

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