1 *Genet Res., Camb.* (1989), **53**, *pp.* 237–242 *Printed in Great Britain*

Book reviews

Carcinogen Risk Assessment: New Directions in the Qualitative and Quantitative Aspects. Banbury Report 31. Edited by RONALD W. HART AND FRED D. HOERGER. New York: Cold Spring Harbor Laboratory. 1988. 308 pages. Cloth $85.00 ISBN 0 87969 231 6.

The reports of meetings held at the Banbury Centre have now covered an extensive range of topics relating to human health and the impact of exposure to environmental agents in particular. A feature of these volumes is the space devoted to reporting the panel discussions of the various experts brought together to review a particular topic. These discussions are often more illuminating than the individual papers themselves and the contents of this volume are no exception.

At a time when the magnitude of the problem of regulating the use and disposal of chemicals can sometimes look overwhelming with current resources, the topic of Risk Assessment has become of paramount importance if only in helping us define research priorities. At the present time there are more than 60000 'manmade' chemicals produced at levels of more than 1 ton/annum, with a rate of increase in new products of at least 10% per annum. Current estimates would suggest that in the USA alone, there are more than 50000 dump sites with at least 2000 containing some hazardous chemicals. There is also increasing information to suggest that numerous 'natural' materials such as various components of the diet represent some toxicological hazard that requires assessment.

This volume is divided into five sections: *Structure/activity relationships*, *Pharmacokinetic and Metabolic Activity*, *Molecular Biology*, *Integration* and *Policy and Research*. Each section contains a number of keynote papers followed by detailed discussions which fortunately in some cases go beyond the specific topics covered by the formal presentations. Undoubtedly for the specialist the discussions provide a major incentive to the purchase of this volume.

The section on *Structure/Activity Relationship Data* outlines some of the current attempts to predict toxicological hazard of chemicals using our knowledge of the activity of related structures and most importantly illustrates the limitations of such applications. Individual and species variation in the metabolism of potentially toxic chemicals is well illustrated in the *Pharmacokinetic* section. Models of the rates of such factors as partition coefficients between air, blood and various tissues, blood flow rates, respiratory rates etc. are becoming of increasing importance in regulatory decisions upon such chemicals as methylene chloride, where man and the experimental models may show substantial differences which influence the quantitative aspects of the chemical's toxic action.

The section on *Molecular Biology* is rather limited in scope, in that it includes only two presentations; namely a brief review of 'The interactions of some carcinogens with DNA' by Singer and a discussion of 'Non-genotoxic mechanisms in carcinogenesis' by Trosko and Chang. Both papers provoked some lively discussion but this section would have been better balanced if it had included some presentations on present developments such as the role of identifying specific oncogene activation in future hazard assessment.

Overall, the book makes a valuable contribution in presenting the problems that face us in the whole area of assessing the risks of toxic chemicals and the publishers are to be commended on producing the volume in a relatively short interval after the meeting. However, in view of the overwhelming importance of the discussions in these volumes I wonder if they would not be better produced as tapes for more rapid communication to the scientific community.

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Mutation, Developmental Selection and Plant Evolution. By EDWARD J. KLEKOWSKI, JR. New York: Columbia University Press. 1988. 373 pages. $55.00. ISBN 0 231 06528 0.

It has been argued that biological systems have been fashioned by adaptive response to extrinsic conditions of life and intrinsic hazards of genetic instability and error. This book investigates the latter, less familiar of the two categories. Mutation is treated as a destabilizing influence which can be mitigated by particular forms of development and reproductive behaviour, as well as the way the genome is ordered. Plants lack a germline and therefore somatic mutation is an important, potential contributor to mutation frequency in the gametes. But the chances that a somatic mutation will be transmitted to the gametes will be greatly influenced by the position of the affected cell in relation to meristem organization and the rules about which cell layers contribute to