

is important to try and understand the mechanisms of mutagenesis, to evaluate the significance of various types of mutational change and to develop ways of detecting and limiting mutagenic exposure of the human population. Later, if and when germ cell mutagenesis is demonstrated, our efforts along these lines will be more than justified.

'Mutations in Man' is a collection of papers which summarise various aspects of the study of mutagenesis in respect of man. The authors achieve this with varying degrees of success. Among the topics covered are DNA adducts and their biological relevance, the repair of DNA lesions, the structure and organisation of the human genome, the effects and monitoring of point mutations in the human population and human nondisjunction. Of particular interest is the contribution of Evans on the organisation of the Human Genome. Strictly this is not mutagenesis, of course, but it presents the framework within which discussion of human mutagenesis must take place. Also worthy of comment are the contributions by Vogel on gene mutations and their effects (this includes some of the interesting recent molecular studies and avoids becoming simply a catalogue), and the careful chapter by Natarajan which deals with the possible causes of chromosomal aberration, their frequencies in the human population and relationships between aberrations and human disorders.

Inevitably in a volume motivated by interest in possible effects of environmental agents several chapters deal with particular instances of the effects of mutagenic agents in the environment. Gebhart presents data on chromosome aberration in the lymphocytes of patients undergoing chemotherapy and Obe and colleagues deal with studies on mutagenicity of cigarette smoke. The editor has, however, thankfully resisted the temptation to include yet another detailed discussion on the evaluation of short-term tests. The topic of testing and inference is not ignored but it is dealt with in more general terms by Sobels in a chapter dealing with the achievements in the field of environmental mutagenesis. These include the improved identification of premutational lesions, better methods of dose estimation and a better understanding of carcinogen-mutagen relationships. Sobels also deals with risk assessment and reminds us of his ingenious 'parallelagram' approach still as yet largely untried. Mutagenic hazards to man are hard to assess and the book ends with a summary of present methodology and thinking in the field of risk estimation using small mammals as the test organisms. Although much of this has been published before it is useful to have it brought together here.

One or two chapters are disappointingly sparse in content and some contain little which can be said to be directly related to man, but the book as a whole is a useful addition to the literature on Mutagenesis.

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On Being the Right Size and other essays. By J. B. S. HALDANE. Edited by JOHN MAYNARD SMITH. Oxford University Press. 1985. 191 pages. £4.95. ISBN 0 19 286045 3.

Popular scientific writing has in general an even shorter active life than most serious articles published in scientific journals – both are rapidly overtaken by progress. It is, therefore, a unique event for a selection of popular scientific essays, mainly published before the last world war, to be reissued now; and this is even more remarkable since many of these essays are coloured by a political bias which the author made no attempt to disguise. That the author was J. B. S. Haldane will, I suspect, be a sufficient lure to send all those who knew him or his work hurrying off to the nearest bookshop for this little paperback.

Haldane was undoubtedly a master essayist, and surely *the* master of the popular

science essay, linking up his themes with unexpected references (e.g. to Hearnshaw's theorem), items of information (e.g. cocoa and winkles are among the best sources of iron, far superior to spinach in spite of Popeye the Sailor), and ingenious deductions (e.g. the hookworm, passed on to their owners by negro slaves, probably played a big part in the defeat of the slave-owners in the American Civil War). The article entitled 'Pain-killers' particularly intrigued me. Haldane claims to have taken a large dose of heroin four times a day for ten days without getting any kick out of it or losing an hour's sleep when he stopped the experiment. Was he genetically immune to heroin, or was this immunity a side-effect of one of the many poisons he had dosed himself with experimentally over the years?

I think that both school and college students will find much to interest them in these essays, including even advice on 'How to write a popular scientific article'. They should try to emulate him, but they will find Haldane's elegant simplicity deceptive and extremely difficult to imitate. On the other hand, their teachers may send them off to assess some of Haldane's ideas in the light of 50 years or so of intervening scientific progress.

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