

techniques that may be useful in the analysis of mutagenic insults, and covers widely both somatic and genetic end points. Most important is perhaps the general introduction, which outlines requirements and pitfalls in this type of epidemiological research. These are formidable, and the discussion should have a sobering effect on both enthusiastic researchers and worried Doomsday prophets. If effects are so difficult to detect and quantify, it must mean that the species has an inherent stability or self-purgatory capacity of fundamental importance. Which of course does not reduce the urgency of this type of research.

The guidelines do not give recommendations or a ranking list as to the advantages of the various methods. It is pointed out that much is gained by utilizing registration systems already in operation (marriage, birth, handicap, etc.) and so one might have expected emphasis laid on the clinically important endpoints. Perhaps a distinction should be made between efforts aimed at the scientific analysis of genetic stability versus the observation of the *de facto* importance of a given insult. It is interesting that a recent ICPEMC paper (Delehanty *et al.*) reviews a whole series of new approaches to mutation studies in humans with molecular techniques aimed at DNA variation, while concurrently an emerging international collaborative project on genetic effects in children of treated cancer patients plans to utilize the most straightforward genetic endpoint of all, the sentinel phenotype.

One final aspect to ponder. The International Commission for the Protection against Environmental Mutagens and Carcinogens (ICPEMC), with Fred de Serres as vice-chairman, has over the past decade produced dozens of papers in the fields covered by the two reports reviewed here, including *Mutation Epidemiology: Review and Recommendations* from ICPEMC Committee 5, also chaired by J. R. Miller. Yet ICPEMC is not mentioned anywhere in the two reports. Where did we go wrong?

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*Evolution from Molecules to Man*. Edited by D. S. Bendall. Cambridge University Press, Cambridge. 1985, 594 pages. Paperback £12.95. ISBN 0 521 289335.

Evolution continues to be a major inspiration for biological research, still competing with the narrow demands of applied biology and biotechnology for interest and research funds. The centenary of Charles Darwin's death produced many commemorative conferences in 1982, of which probably the best was the one organised, appropriately, by Darwin College Cambridge (UK). A hardback edition of the Conference

papers appeared in 1983, at a price beyond the reach of most pockets, but we can now welcome a paperback edition, otherwise unchanged, whose 594 pages are excellent value at under £13. Its 28 articles are in general solid, very well written and aimed at the more general biologist rather than the evolution expert. As might be expected, they cover a very wide range of topics, in which there is plenty of current activity – both research and argument. These articles are grouped into four main sections, whose headings give a general idea of what the book covers. (1) EVOLUTIONARY HISTORY – a misleading title since the articles are concerned mainly with the evolution of Darwin's thought, with analysis in terms of physical, holistic and dialectical materialism thrown in for good measure. Michael Lerner and his book *Genetic Homeostasis* (1954) get honourable mention in G. E. Allen's article. (2) MOLECULAR AND CELLULAR EVOLUTION deals with aspects of the leading edge of evolution-inspired research, including evolution of gene families and gene clusters, *bricolage* in evolution (an excellent article by François Jacob), three dimensional structures of proteins, and the attempt by the Archaeobacteria to overturn our beliefs about the origin of the Eukaryotes. (3) EVOLUTION OF WHOLE ORGANISMS covers many ongoing arguments on population genetics, ecology, microevolution versus macroevolution, punctuated evolution versus gradualism, why some evolutionary groups have remained apparently unchanged for many millions of years, and so on. (4) EVOLUTION OF SOCIAL BEHAVIOUR contains 7 articles in this speculative if not contentious field which are well worth study, though I will not attempt to summarize them. No doubt the bases of human behaviour will be better understood by the time of the Darwin bicentenary celebrations, though it is confidently predicted that these will be still full of arguments and rival theories. Meanwhile, we can enjoy the speculations in this volume about the origin of taboos against incest, and the ingenious attempts to apply game theory to explain why the British (and a few other nations who have picked up the habit from us) go in for queues rather than for a free-for-all and devil-take-the-hindmost at bus stops and ticket offices (but not, it is claimed, at bars in public houses. This anomaly might have something to do with the bad influence of beer drinking and restricted drinking hours on the British mind).

This book is by no means a complete up-to-date survey of evolutionary knowledge, theory and disagreement; but I found it very readable, stimulating and enjoyably contentious. As an endpiece let me draw the reader's attention to the excellent introduction by Sir Andrew Huxley entitled 'How far will Darwin take us?', in which his last paragraph suggests that only a study of paranormal phenomena such as thought transference might possibly lead to a breakthrough in the mind-body problem of human consciousness. I would have poured scorn on this sug-

gestion but for the thoughts that (1) Sir Andrew knows enormously more about the  $10^{11}$  cells of the human brain than I do, and (2) the University of Edinburgh has recently established an Arthur Koest-

ler Chair in Paranormal Phenomena and appointed an incumbent.

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