

is when he writes: 'It is not new principles that we need but a willingness to accept ... that biological systems occupy a different region of the space of physical relations than do simpler physico-chemical systems'. In short, biology is not physics. I cannot accept this as a useful statement for two reasons. Firstly, it is true to the point of platitude. Secondly, we can learn a lot about biological systems by pretending they do follow simple laws — it is the basis of both population genetics and theoretical ecology. When biology doesn't fit (as is usually the case) we are forced to find out why. Without the reductionist approach we cannot work out what the questions are.

Reading *The Triple Helix* is rather like being told off for something but not being sure what it is. Lewontin acknowledges that much of the book has 'a distinctly negative flavour' and makes an attempt in the last chapter to be more constructive. However, his solution to the problem of how to think about biology in terms of wider contexts is essentially just that of the reductionist — to identify semi-independent sub-systems and work within these bounds. Yet this is just what biologists do all the time. Nobody studies a gene nucleotide by nucleotide. We do not consider each feather in a peacock's tail as an independent unit. Biology is nothing but the study of how complex traits are made up of many small details. It is the level of our understanding that dictates the focus of current research. Adjust the focus either way, and the picture becomes blurred.

GILEAN MCVAN

*Institute of Cell, Animal and Population Biology
King's Buildings
University of Edinburgh
Edinburgh EH9 3JT
U.K.*

Cancer: The Evolutionary Legacy. Mel Greaves. Oxford University Press, Oxford. 2000. Pp. 271. Price £19.99, hardback. ISBN 0 19 262835 6.

Everyone (including geneticists) should know about cancer. After all, as our society becomes better at curing the really big current killers, such as heart disease and infectious diseases, cancer is much more likely to kill us in our old age. The problem is that cancer is now such a terribly complicated set of diseases that simplistic thinking and analysis are no longer enough. It needs a good and lucid intellect to explain it, even to geneticists, and in Professor Greaves an able communicator has been found. I have read many 'popular' cancer books, some with a multitude of colour illustrations to make their point (and to relieve the complexities), but rarely have I actually enjoyed the read.

This small and sparsely illustrated volume held my attention, and actually demanded a re-read to check on the bits I missed first time through. There was even humour to lighten the load. The account of increased cancer risk from smoking

was considerably enhanced (without losing the serious message) by quotations from Bob Newhart's sketch on tobacco (or 'civilisation' as it was known at the time!). We are even presented with a glowing example of Bernard Levin's prose on the subject of smoking. I hope that the contemporary writings of John Diamond, also of *The Times*, (who is under treatment in Professor Greaves' own Institute) could be included in a second edition.

But there is a serious side to it all. This erudite text explores cancer as a genetic disease and ultimately as an example of natural selection. This could descend, as it often does in plenary lectures, into an extensive list of cancer-associated genes and/or an account (suitably neutral in tone of course) of the lecturer's own area of research. Not so. This book is a balanced and selective account, using common examples, rather than an overwhelming encyclopaedic approach. True, the nit picker may find omissions, but as a whole the subject is conveyed with wit, fluency and authority.

The concept that our uncoupling (to coin a phrase) of sex for reproduction from sex for pleasure lies at the heart of the two biggest gender-specific cancers (breast and prostate) is a particular theme. Man's foolishness in other areas such as his 'modern' diet and treatment of the environment rightly do not escape the caustic treatment of Professor Greaves' pen. The comparison between cancer incidences past, present and future should give us plenty of food for thought.

Although not a text book, I would rate *Cancer: The Evolutionary Legacy* an essential read for new graduate students, undergraduates in a specialist cancer option, medical practitioners wanting to update their medical school oncology ... and even tired old geneticists. In these days of information overload and deep specialisation, the next generation of cancer researchers frequently become obsessed with the leaves on the trees, while never glimpsing the wood or the forest! Here is the problem in 271 pages. It is not until page 218, that the cause of cancer is defined in the following two sentences: 'So no, it isn't your job, your stressful lifestyle, your genes, your diet, just bad luck, or an act of God that's to blame: a multi-layered web of exposures and modifiers is involved. And, by and large, this network is a construct of very long-running evolutionary contests and problem solving, human history and social engineering — heavily garnished in more recent centuries and decades with commercial and political imperatives, and pervaded throughout by chance.'

Yes it's complex, and although the disease has been with us for a very long time (here beautifully put into historical context), it can rarely have been described with such aplomb.

NORMAN J. MAITLAND

*Cancer Research Unit
Department of Biology
University of York
P. O. Box 373
York YO10 5YW
U.K.*