

## Making good

Alan R. Lehmann

### DNA Repair.

By Errol C. Friedberg.  
*W.H. Freeman: 1985. Pp.614. \$39.95, £28.95.*

WORK on oncogenes over the past three years has shown conclusively that a crucial step in the conversion of a normal cell to a cancer cell involves a specific alteration in the cellular DNA, whether this be a single base change or a chromosome rearrangement. In many (if not all) cancers, the initiating event is known to be the interaction of a carcinogenic agent with cellular DNA to produce some form of alteration or damage to the DNA. All cells have evolved a complex series of enzymatic repair pathways to protect themselves from the potentially devastating effects of such damage. The importance of these pathways is shown in a number of human genetic disorders (of which xeroderma pigmentosum is the best known example), in which a molecular defect in a DNA repair pathway may lead not only to an increased frequency of carcinogenesis, but also to disorders in the neurological, immune and vascular systems.

*DNA Repair* provides a comprehensive, detailed and up-to-date description of current knowledge of this subject. The format is similar to *DNA Replication* by Arthur Kornberg, and like that book Friedberg's account is likely to become a classic treatise for postgraduates and research workers.

The subject is covered in a logical manner, starting with the different types of damage produced in DNA by various carcinogens, and simple enzymatic reversal mechanisms. Early events in excision repair are covered with the emphasis on detailed enzymatic mechanisms. Following chapters deal with later steps in excision repair, and with the tolerance mechanisms whereby cells are able to cope with damage which is not removed from their DNA. In each section the relatively well characterized mechanisms elucidated in bacteria are described first, followed by the inevitably more poorly understood processes in eukaryotes. The discussions of the complicated and controversial topics dealt with in the later part of the book are clear and balanced, Friedberg taking especial care to distinguish between fact and speculation.

My only criticism of the book concerns a part of Chapter 1. Here the reader is thrown headlong into some rather subtle points to do with errors in DNA replication with insufficient introduction and definition of terms, and the section would have been better placed in a later chapter. This, however, is merely a niggle. One of the many virtues of *DNA Repair* is the depth and breadth of the literature citations, each of the nine chapters being accompanied by about 200 references; I was unable to find a single important reference which had been omitted. The diagrams are clear and uncluttered, the index is comprehensive and altogether it is difficult to see how the book could have been improved. □

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## Master theses

A. Rupert Hall

### The Classics of Science: A Study of Twelve Enduring Scientific Works.

By Derek Gjertsen.  
*Lilian Barber Press, New York and Gravesend: 1984. Pp.374. Hbk \$24.95, £20; pbk \$15.95, £12.95.*

WHAT is a scientific classic? We may all recognize the type without agreeing upon the supreme examples of it; a classic is on a pedestal. No matter that it is rarely read, and never for pleasure, it is universally admired.

Most with any claim to an opinion would include among the great scientific writers Aristotle and Archimedes (both omitted from this selection), Harvey, Newton, Darwin . . . but there comes a point when the selection of Dalton to the exclusion of Lavoisier (as in the present volume) becomes a mere matter of taste. One could certainly publish a volume parallel to Mr Gjertsen's where a different selection would possess equal scientific merit and in-

clude areas (for example cytology and particle physics) completely neglected by him. Perhaps it is natural that a British author and an American publisher should combine to display five out of twelve scientific classics written by Englishmen; indeed, after Galileo all the "classic" scientists are English with the unique exception of Linnaeus!

The conception of a "classic", therefore, if restricted to twelve or twenty or even a hundred seems devoid of precise meaning. To say that is not to judge Mr Gjertsen's treatment of twelve familiar works from the *Corpus Hippocraticum* to the *Origin of Species* as without value or interest. He has done his work well and each short study is a useful introduction to a specialist literature as well as a review of modern interpretations and critical assessments. Not everyone knows that Lyell published roughly a volume for each year of his writing life, or that the *Origin* has been translated into Latvian (besides 28 other languages). Some "classics" are better and more elaborately treated than others: the last two of them — hardly poles apart in any sense — Lyell's *Principles* and Darwin's *Origin* together rate 66 pages; the

first two (Hippocrates and Euclid) 59. There are a number of small factual slips for detection by the knowledgeable, and some questionable judgements: to hold that the Hippocratic corpus is "arguably the oldest western scientific text" is very much a matter of definition, for example. But preponderantly the book conveys sound information and sensible opinions about what are, by any standards, works of outstanding importance in the history of

## PHILOSOPHIÆ NATURALIS PRINCIPIA MATHEMATICA

Autore J.S. NEWTON, Trin. Coll. Cantab. Soc. Matheseos  
 Professore Lucasiano, & Societatis Regalis Sodali.

IMPRIMATUR.  
 S. PEPYS, Reg. Soc. PRÆSES.  
 Julii 5. 1686.

LONDINI,  
 Jussu Societatis Regiæ ac Typis Josephi Streater. Prostant Ven-  
 lerapud Sam. Smith ad insignia Principis Walliæ in Cœmeterio  
 D. Pauli, alioq; nonnullis Bibliopolas. Anno MDCLXXXVII.

*Classic beginning — the title page of Newton's Principia.*

science. The format is fairly regularly maintained: author's career, context of the book, its content, its reception and its publishing history.

One might describe these twelve vignettes as basic history, and recognize that taken together they give an odd and partial view of the development of science. Presumably it was not the author's intention that a reader should form such a distorted synoptic view by reading steadily through from page 1 to page 357, but rather that he would read particular sections according to his interests and needs. Treated as a mini-encyclopaedia this is a very useful book, capable of stimulating as well as informing. But there are of course other worlds in the history of science to which this method of approach and this choice of examples give no entrance: the danger of Mr Gjertsen's book might be in concealing the existence of such worlds and the merit of exploring them. Again, he probably did not intend to use the Kuhnian language of "scientific revolutions" to recommend a "great men" account of history since his short studies often draw attention to the force of parallelism and convergence (Darwin-Wallace, for example). But in the last resort the continuity of the past — continuity so obvious to us in our own present — is its feature that most resists historical reconstruction, and cannot be promoted by a Horner-like picking out of the plums, even dried plums.

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