companion to the second edition of his *Introduction to Quantitative Genetics* (for review see *Nature* **295**, 475; 1982), and individual problems are cross-referenced to the main text. He has devised a novel and effective numbering system which prevents one seeing the solution to the following problem, even accidentally or subliminally. He gives more space to the answers than to the questions, while in Stansfield's *Theory and Problems of Genetics* the answers are a third of the length of the problems. In this second book each set of problems is introduced by some notes punctuated with definitions and worked examples. While Stansfield's book will be a helpful source for teachers requiring new problems — those on DNA and molecular genetics being particularly welcome — its format will not make it attractive to students nor will its small type and poor paper.

The last two books are competing for the same host: people who buy cartoon books in the hope of absorbing knowledge painlessly. In *DNA for Beginners*, Borin van Loon, the illustrator, evidently gained the upper hand, even to the extent of providing a self-portrait. There are some striking montages and most of the famous scientists are recognizable but the overall presentation of the cell is overly mechanical; all the enzymes are variants of bulldozers or locomotives. Even so, the book will raise a chuckle amongst molecular biologists of all kinds. The artwork of Gonick and Wheelis's little paperback is less polished but the storyline flows much better. The models are simpler and more molecular: there is a charming RNA polymerase beast which has to work hard for its living. Despite a basic confusion over crossing-over, the book covers transmission genetics, genetic engineering and its social consequences effectively. *The Cartoon Guide to Genetics* is fun and can be recommended to people asking for a simple introduction to genetics and molecular biology. It can be likened to a useful weed — highly successful in the short term but ultimately ephemeral. □

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Molecular intrigue

W.J. Brammar

Molecular Biology: A Comprehensive Introduction to Prokaryotes and Eukaryotes.
By David Freifelder.
Jones & Bartlett, 20 Park Plaza, Boston, MA: 1983. Pp.979. $35.
Companion workbook $8.95.

Genes. By Benjamin Lewin.
Wiley: 1983. Pp.715. $43.85, £27.35.

THE exciting developments in our understanding of molecular biology, together with the potential for biotechnological exploitation, have made the subject very popular with students and created a continual need for predigested information in the form of reviews and textbooks. Well-written texts can make an invaluable contribution to the development of a subject through their ability to influence large numbers of future practitioners. The two new books reviewed here have the quality to make a significant impact in molecular biology, though it is likely to be temporary given the pace of discovery in the field.

David Freifelder's *Molecular Biology* is based on a course taught by the author at Brandeis University and attempts a broad coverage of molecular biology at an intermediate level. Freifelder's philosophy is that "molecular biology must emphasize both molecules and biology and that to be molecular it must also be chemical and physical". Although this accurately reflects the approach taken, biologists without an advanced training in chemistry and physics should not be alarmed; the chemical and physical principles are unobtrusive and are introduced only to clarify the discussion of molecular phenomena.

The first of the 22 chapters explains the logical and methodological approach to molecular biology and introduces those prokaryotic and eukaryotic systems that are the main subjects for molecular analysis. Freifelder's belief in the value of the genetic approach alongside *in vitro* biochemical and physical techniques, and in the wisdom of choosing relatively simple systems with which to establish principles, is apparent at this early stage.

The second chapter provides a parallel introduction to basic biochemical concepts, including metabolic pathways and energy metabolism, before Freifelder launches into the accounts of the structures and properties of macromolecules and the methods used to study them, and then consideration of nucleic acids, proteins and macromolecular aggregates. DNA replication, repair and mutagenesis each have their own chapters, while translation merits 110 pages in two chapters on "The Information Problem" and "The Machinery of Protein Synthesis". Recombination, bacteriophages, plasmids, animal and plant viruses and the control of gene expression are all treated in similar detail.

Freifelder is remarkably successful in achieving his aims. He manages to remain authoritative throughout the book despite its wide coverage, and he has the gifted teacher's ability to make the material seem simple and the way ahead challenging but full of promise. The clear text is augmented by many well-designed, two-tone illustrations and some excellent photographs and electron micrographs. The legends are occasionally at variance with the diagrams, but the errors are few and usually trivial. *Molecular Biology* will be an excellent source-book for students. I anticipate that the coming years will see a long line of new editions.

In *Genes*, the latest of Benjamin Lewin's series of successful molecular genetics texts, the author has set himself the task of distilling the mass of recent information "to discern general principles and describe the state of the art". This is a forbiddingly difficult goal in a field that is progressing so rapidly. But a *modus operandi* that allows him to assemble text alongside or ahead of the current literature and remarkable alacrity by the publisher have resulted in its complete achievement.

Lewin contends that *Genes* is "simply about genes, recognizing what amounts to a new field whose extraordinary progress has all but overwhelmed the traditional discipline of genetics". Many would interpret "overwhelmed" as hyperbole and readers of John Fincham's excellent new textbook, *Genetics* (for review see p.117), will appreciate the validity and value of interweaving the new, molecular information with the existing tenets of the subject to produce a lively and cohesive discipline still recognizable as genetics. Indeed, one of the strengths of Lewin's book is the frequent illumination of the phenomena of classical genetics by molecular information.

Lewin assumes no prior knowledge of molecular biology, providing clear introductory chapters on the gene from the genetic and biochemical viewpoints. With an abrupt change of pace we are introduced within ten pages to restriction mapping, DNA sequencing, interrupted and overlapping genes. This sets the tone for the rest of the book, which deals in remarkable detail with all aspects of gene structure and function. Prokaryotic and eukaryotic systems are given equal weight, with all the major experimental systems being considered. The treatment is fully contemporary with the 1983 literature and its depth is well suited to the advanced undergraduate student. Where conclusions require qualification, Lewin provides a full and balanced discussion of the alternative possibilities. Each chapter concludes with a short bibliography largely confined to review articles.

Lewin's style is vigorous and clear, providing information succinctly and without fuss. All the important points are illustrated by helpful diagrams, drawn to scale in several tones, while a 14-page glossary is provided to minimize the usual problem of terminology. The story of molecular genetics is now an intriguing one to tell, and in *Genes* Lewin relates it with great enthusiasm and skill. I would advise all students of molecular genetics to procure a personal copy and to assimilate its contents. □

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