science" seems to have escaped some of the contributors to this book, not least the sociologists among them.

Here, a word should be said about the contributions of sociology to the present volume. In the essay which deals with medical sociology and science and technology in medicine, the authors devote less than one-fourth of their space to the former and, although they deal with it appreciatively, they see that it touches only spottily on their topic. They point out that it is guided by the tradition of sociology as an academic discipline. What they are indicating is that medical sociology, with all its merits, has not really become part of the culture of science, technology and medicine. The same must be said about the way in which the sociology of science and technology is presented here.

The editors themselves must bear some of the onus for this faulty understanding of the culture of science. Otherwise how could they have omitted any treatment of the impact of scientific knowledge on the outlook and conduct of ordinary members of modern societies? There is nothing in the book about that. Nor is there anything about scientific education. And, except for passing comments in the essays on the history of science and medicine, there is no serious consideration of the process of the growth of scientific knowledge. The editors have found the right name for their subject but they have not found the subject to which to apply it.

In the preface it is stated that "more than anything else, the volume should be useful to teachers of interdisciplinary courses in technology and values or science and society". If their expectation is realized, it will help to maintain such courses of study in their present superficiality and in their arbitrary and distorted conception of their subject. This book has considerable value but it is not a guide for those who are too isolated for their own good from science, technology and medicine, and who do not understand their own peculiar place in its culture. □

Retrovirus research

Tak W. Mak

Molecular Biology of RNA Tumor Viruses. Edited by John R. Stephenson. Pp. 528. (Academic: 1980.) $49.50, £34.20.

THE momentum that was given to retrovirus research by the discovery of reverse transcriptase is still strong. Today, ten years after that discovery, the field remains one of the most active areas in biology. The book, a collection of 12 reviews by as many groups, is an attempt to take stock and evaluate the progress in the field. In general, the reviews are informative though a few chapters are somewhat narrow in that they tend to dwell on the authors' own work. A more important criticism, however, is that the choice of topics suffers from lack of an overall balance that would accurately reflect the efforts in different aspects of retrovirus research. For example, the reviews tend to emphasize mammalian retroviruses, with a strong accent on murine type-C viruses, while omitting much of the avian viruses and their genetics.

The book begins with a good account of the historical development of retrovirus research, from the discovery of Rous sarcoma virus to the present. The three chapters which follow all deal with mammalian type-C retrovirus genes and their transmission. The first is a summary of the efforts to delineate further evolutionary relationships among primates and mice through studies of their endogenous retrovirus sequences. The next, on murine endogenous type-C viruses, is a comprehensive account of the genetics and regulation of murine type-C retroviruses. It contains many helpful tables to aid readers in understanding this complicated field. The third of these opening contributions is on the integration and transmission of exogenous murine type-C virus. It contains some interesting information on germ line integration of exogenous virus. However, it seems rather brief and repetitive after the two preceding, rather ampler, chapters.

The next two contributions are on transforming viruses and retrovirus genomes, respectively. They are both useful reviews. They complement each other well and are presented at an appropriate level for such a volume. That which deals with retrovirus genomes, however, is too short to cover the genome structures of both avian and murine retroviruses. Expansion of this chapter or addition of another article to include more on avian retroviruses and the biochemistry of retroviruses would have been desirable.

The seventh and eighth chapters are on type-C viral proteins and their primary structures. They contain an in-depth look at the proteins of type-C retrovirus and would be useful for investigators interested in the subject. Next come two contributions on reverse transcriptase and heteroduplex mapping — both of which are informative and contain detailed surveys of reverse transcriptase enzymology and heteroduplex mapping of viral genomes. The eleventh chapter is a discussion of type-B and type-D retroviruses. Most of the information presented in this review, unfortunately, is based on the authors' own work, with the consequence that the chapter is too short to cover these interesting viruses in sufficient depth.

The final contribution is a review on the prospects in human retrovirus research. It does, however, present a somewhat unusual perspective as it is more cautious than previous reviews on the subject. The chapter is well balanced and covers the appropriate material comprehensively.

Overall, the book is an adequate compilation of many useful reviews. What is missing, however, is a final section that brings together the diverse ideas and information — instead of leaving the chapters as separate entities — and a discussion of the direction that future work in this field should take. It is also rather unfortunate that, at the time of completion of the book (early 1979), information on molecular cloning studies and structures of proviruses was still scanty, for additional material on these subjects would improve the book. This kind of drawback is perhaps inevitable in such multi-author reviews covering fast-moving areas of research. Nevertheless, this book should stand as a good source of references. It should also be of value to biochemists with a special interest in retroviruses and to pre- and postdoctoral fellows entering the field. □

Tak W. Mak is a Senior Staff Scientist at The Ontario Cancer Institute and an Associate Professor of Medical Biophysics at the University of Toronto.

Evolving theories

Adrian Friday

Phylogenetic Patterns and the Evolutionary Process. Method and Theory in Comparative Biology. By Niles Eldredge and Joel Cracraft. Pp. 349. (Columbia University Press: 1980.) $27.50, £15.50.

ELDREDGE and Cracraft's central theme is that estimates of the pattern of evolutionary history logically precede the making of hypotheses about the process of evolution.

Estimation of the pattern of evolutionary relationships is inevitably carried out by the comparison of similarities between organisms. To Eldredge and Cracraft, shared similarities do not all have equal status in this enterprise but, following the ideas of the late Willi Hennig, a way of organizing such information is to construct a series of nested sets each characterized by at least one evolutionary innovation (Hennig's "synapomorphy"). That these are innovations emphasizes to the authors the importance in such analysis of interpreting the pathway of change in biological characters. Decisions about the sequence of change can often be difficult

©1980 Nature Publishing Group