which occur in the interpretation of results are not mentioned. The first half of the book reads rather like an encyclopaedia and so partly fails to communicate underlying concepts. A regrettable aspect is the presentation of several data-free sketches, e.g., pH- and temperature-dependence. Experimental results would be more suitable.

Aspiring enzymologists would be better advised to read Alan Fersht's excellent book which demonstrates many of the virtues lacking in the first half of this book. However, having regard to the reader with wider interests, e.g., the medical or industrial biochemist then this book might prove very useful as a convenient handbook since it is an adequate source of references. It is thus to this type of reader that this book is recommended, in particular the laudable chapters mentioned above.

A factor that casued some irritaion to the reviewer was the refusal of the book to lie open (flat) upon my desk; indeed a few pages were liberated in my quite gentle attempts to persuade it to do so.

C. W. Wharton

Antibiotics

Volume V

Part 1: Mechanism of Action of Antibacterial Agents

Part 2: Mechanism of Action of Antieukaryotic and Antiviral Compounds

Edited by F. E. Hahn
Springer-Verlag; Berlin, Heidelberg, New York, 1979
xxvi + 846 pages. Cloth DM 324.00, $178.20

Antibiotics I was published in 1967, was edited by D. Gottlieb and P. D. Shaw and contained a series of reviews concerning the actions of antibiotics. Further volumes have since appeared culminating in the present extended edition. *Antibiotics V* include 42 independent contributions and considers a wide selection of compounds. Part 1 was structured to deal with the modes of action of antibacterial agents whereas part 2 deals with substances inhibiting eukaryotes or viruses. As stated in the preface, however, the separation is somewhat arbitrary since many of the substances cited are potent inhibitors of function in both pro- and eukaryotes. Furthermore, in the selection of compounds synthetic drugs and plant alkaloids have been included along with antibiotics per se.

Inevitably, many topics are not considered. For example, the Editor has chosen to exclude any coverage of the lactam antibiotics, the penicillins and cephalosporins, and he goes to some lengths in the preface to justify this decision. However, this particular aspect of *Antibiotics V* is to me unsatisfactory. Thus certain members of the large and interesting group of naturally-occurring nucleoside and nucleotide analogues are featured incuding, for examples, 9-β-D-arabinofuranosyladenine, showdomycin, 8-azaguanine and 5-iodo-2′-deoxyuridine. The criteria used for selection are obscure, certainly to this reviewer. Furthermore two other books have recently appeared where these and related compounds have been well cited – viz. *Nucleosides as Biological Probes* by R. J. Suhadolnik (Wiley Interscience, 1979) and *Nucleoside Analogues* edited by R. T. Walker, E E. DeClercq and F. Eckstein (Plenum Press, 1979). While I accept that selection of topics for inclusion in the present two volumes must have been a difficult task, I can find no real evidence of an overall grand plan. The Editor concedes that there is a problem in grouping the contributions into logically coherent sections and settles for an alphabetical presentation. However, it does not help to have an article on the

peptidyl transferase inhibitor chloramphenicol preceded by one on bicyclomycin, a potent inhibitor of the biosynthesis of bound form lipoproteins, and followed by one on the antituberculous drug ethambutol. Surely the ribosomal inhibitors considered in volume 1 and including chloramphenical, sparsomycin, streptomycin, tetracycline, thiostrepton, tiamulin and pleuromutilin should have been grouped together. This is particularly relevant for chloramphenicol and lincomycin (also featured in this volume) which have several important features in common. These two compounds could usefully have been subjected to a comparative analysis. More surprising still is the inclusion in volume 1 of an article on the polypeptide antibiotics phenomycin and enomycin. These two compounds can hardly be classed as antibacterial agents since they are apparently selectively toxic towards eukaryotic ribosomes.

In spite of these considerations, however, *Antibiotics V* contains some excellent individual contributions although inevitably a few lame ducks are also in evidence. I wonder though if Professor Hahn might rethink this strategy? As he says in the preface to volume 1 this field no longer possesses the relative homogeneity in the level of knowledge which still existed in 1967 when Antibiotics I was published. Perhaps future volumes really should contain a set number of concise but detailed review articles each concentrating on a group of inhibitors that affect processes within a closely related area. Individual compounds can then be carefully selected from each set and subjected to more extensive coverage. At the least this might provide a coherent picture instead of the current fragmented approach.

Michael Cannon

Bleomycin

Chemical, Biochemical, and Biological Aspects

Edited by S. M. Hecht
Springer-Verlag; Berlin, Heidelberg, New York, 1979
xii + 352 pages. DM 79.00, $34.50, £20.55

As a record of the Proceedings of a joint US–Japanese symposium held in Honolulu 1978, this book summarises current work from the two countries most actively engaged in research into the mechanisms of action of bleomycin. The bleomycins are a complex of low-molecular-weight glycopeptide antibiotics isolated from cultures of *Streptomyces*. They differ from each other in their terminal amine moiety, but all display to some degree anti-tumour, anti-viral and anti-bacterial properties. The drug was first discovered by Professor Umezawa, an active participant at this symposium, who has maintained a close supervisory role over all aspects of bleomycin research. This drug is now used almost universally in oncology centres for the treatment of squamous cell carcinoma, Hodgkin's lymphoma and testicular tumours.

After introductory reviews, three chapters describe recent synthetic and biosynthetic work on bleomycin resulting in certain revisions to its structure. Analysis of bleomycin using liquid chromatography and NMR follow as two rather isolated chapters particularly as a section at the end of the book is devoted to practical assay methods.

Two distinct chemical properties of the drug define its biological activity; an ability to bind to DNA and a high affinity for certain divalent metal ions. Chelation mechanistics and their importance to structure and activity are discussed with reference to copper, iron, zinc and cobalt complexes. The ability of the bleomycin–metal complex to absorb metabolically derived dioxygen is noted as a unique feature shared only by the two naturally occuring compounds, haem and vitamin B_{12}. Bleomycin-mediated damage to linear duplex DNA can be assessed by measuring the release of either bases or malondialdehyde (techniques are given in the assay section). In order that DNA chain