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

scission can occur, bleomycin requires the presence of trace amounts of ferrous ions under aerobic conditions, leading to the now widely held view that oxygen-free radicals are directly involved in these destructive processes. Experiments with a variety of radical scavengers as well as spin trapping experiments are described which implicate the superoxide radical as an intermediate in the formation of the more active hydroxyl radical. Closed covalent circular DNA has proved to be an extremely sensitive substrate for testing bleomycin-dependent free radical damage. The same bacteriophage PM2 DNA was used by most groups studying the interaction of bleomycin with DNA. Overlap was minimal and emphasis served to illustrate the sensitivity and importance of this new technique as a measure of antitumour activity as distinct from less specific functions such as antimicrobial killing.

The final section of this book describes some of the biological effects of the bleomycins with particular reference to their cytotoxic properties. Interstitial pulmonary fibrosis is frequently a serious clinical complication of bleomycin theraphy, consequently efforts to minimise undesirable side effects have been attempted by structural modifications to the drug, addition of inhibitors and removal of competing metal ions.

This symposium, devoted entirely to the drug bleomycin, has been edited with care and skill to produce a book of considerable interest to biochemists working in the field of antitumour antibiotics.

J. M. Gutteridge

Steroid Hormones

by D. B. Gower
Croom Helm; London, 1979
116 pages. £7.95 (hardback), £2.95 (paperback)

This short book is published as one in a series of books related to medicine by Croom Helm. While other books, also developed from lectures delivered to medical students have been published (e.g., Biochemistry of Steroid Hormones, edited by H. L. J. Makin, Blackwell Scientific, 1975) their cost probably put them beyond the reach of most students.

Included in the book Steroid Hormones is a chapter dealing with steroid structure with an introduction to the complexities of steroid nomenclature. One of the aims of the author was to provide an integrated approach to understanding the chemistry, biochemistry, physiology and endocrinology of steroid hormones and this has been achieved at a level suitable for undergratuates. Subsequent chapters include an introduction to the mechanisms of action of oestrogens and androgens. Some indication of the plasma levels of several steroids found in normal subjects is given with an account of the factors involved in the control of steroid hormone production.

The last two chapters of the book are more clinically orientated although it is doubtful, if as suggested, that this book will serve, as is suggested, equally well for medical students as for clinicians in endocrinology and gynaecology. The distinction between Cushing's disease and Cushing's syndrome, discussed in the last chapter requires clarification, as this is a point that often causes confusion amongst medical students.

Although treatment of some topics is of necessity brief, and frequent reference is made to the more costly book edited by Makin, this short text can be recommended to supplement the lecture notes of students attending an introductory course on steroid hormones.

M. J. Reed