

these similarities is a matter of opinion, and the cynic may be forgiven the thought that if cats had been cheap in pre-myxomatosis days, a case might now be made for writing a practical book on cats—in spite of their tapeta. Monkeys would be even better. Some examples serve to illustrate this point: the solidity of the walls of the eye-ball of man more nearly compares with that of these tissues in cat than in rabbit. This is a matter one recalls whenever tonometric data are compared for different species, and here we learn (p. 236) that aqueous flow rates in rabbit eyes have to be derived from calibration tables constructed for human eyes. Anyone conversant with the trabecular meshworks in the two species will be pardoned for raising his eyebrows over this extrapolation. Secondly, the function of the rabbit retina differs from that of man more than does the feline. As this difference extends to visual behaviour, and there is no evidence of any typically human photopic apparatus in the rabbit, any hope for a search for cone pigments in the rabbit retina would not appear to be prompted by a marked sense of priority. Again, a considerable part of the section on the electron microscopy of the retina contains examples culled from work on guinea-pigs. Even though there are many similarities between the two species in this respect, this is supposed to be a book on the rabbit eye, not on comparative anatomy.

The price of the book is more than £13. For all the troubles now befalling sterling this is a fearful amount of money. At that price one could expect a more uniformly high quality in graphs, especially when they are "after". But the fact remains that the book is a classic of its kind: those who can afford it will find reimbursement in the time saved in looking for references by using the extensive lists after each chapter and also the excellent index.

R. A. WEALE

ANTIBIOTICS RESEARCH

Recent Advances in Chemistry and Biochemistry of Antibiotics

By Prof. Hamao Umezawa. Pp. iv + 264. (Tokyo: Microbial Chemistry Research Foundation, 1964.) 1800 yen; 5 U.S. dollars.

RECENT *Advances in Chemistry and Biochemistry of Antibiotics*, the first book to be published by the Microbial Research Foundation of Japan, sets out to present a readable account of the more important discoveries in the chemistry, biochemistry and mode of action of antibiotics from 1958 to about mid-1964. So far as possible, a chemical classification has been adopted.

The first chapter deals with sarkomycin, griseofulvin, puberulic and stipitatic acids and a host of other non-nitrogenous antibiotics, many of which, like helvolic acid, cephalosporin *P* and fusidic acid, have structures suggesting biogenesis by way of mevalonate. A brief chapter on the glutarimides precedes polyene antifungal agents and macrolides. The important group of antibiotics derived from amino sugars, including streptomycin, bluensomycin, neomycin, paromomycin and kanamycin, follows and concludes with a brief account of the mode of action of streptomycin and kanamycin. Brief reference to *N*-glycoside antibiotics is followed by the penicillins and cephalosporin *C* and a lengthy chapter on antibiotics derived from amino-acids and polypeptides. The remaining chapters are devoted to the tetracyclines, aromatic nitrogen-containing and heterocyclic antibiotics, and conclude with a section on miscellaneous substances such as the antibacterial streptolygidin and the antiprotozoal agents teleocidin *A* and *B*. Structural investigation among many of the substances in the final chapter continues, hence classification is biological rather than chemical.

The style of the book is reminiscent of *Annual Review of Biochemistry*, for which much of the material was originally

written before it was decided to publish it in its present form. In one or two places the text tends to be a catalogue of physical and chemical data and, while this is invaluable for reference, it tends to make those sections less readable. Prof. Umezawa has, however, succeeded in producing a text which is brief and comprehensive but not incomprehensible. It is perhaps surprising that there is no mention of cephaloridine, although the closely related 7-(2-thienyl-acetamido)desacetoxycephalosporanic acid and cephalosporin *C*₄ are both included.

A few typographical errors were found; for example, "bond" (line 7, p. 107), "streptomycetes" (line 15, p. 179) and "guanidino" (line 23, p. 67) are mis-spelt, and the numeral under the structure for rhodosamine (p. 158) should be *T*-XXIV. According to references 137 and 139, the acetoxy group in formula *I*-LVI (p. 27) is misplaced and it is not made clear if this is a revised structure communicated to the author. The page numbers to references 137, 144 and 145 are incorrect and the symbol for tautomerism and not mesomerism should be used at *HT*-XVIII (p. 183), while acetylenedicarboxamide is described on p. 101 and not 102 as indexed. These very minor criticisms are, however, more than abundantly offset by Prof. Umezawa's masterful handling of this subject. In particular, those chapters dealing with amino sugar, amino-acid, peptide, heterocyclic, glutarimide and nitrogen-free antibiotics reflect his expertise, and the penicillins and tetracyclines are excellently presented.

This book provides a wealth of up-to-date information, which, together with almost fifteen hundred references to reviews and original sources, makes it a valuable addition to the bookshelf of all organic chemists, biochemists, and microbiologists interested in current progress in this field of natural products. Prof. Umezawa has set a high standard for future companion volumes.

A. M. COMRIE

UNIFORMITARIANISM VERSUS NEO-CATASTROPHISM

Bombarded Earth

An Essay on the Geological and Biological Effects of Huge Meteorite Impacts. By René Gallant. Pp. 256 + 27 photographs. (London: John Baker Publishers, Ltd., 1964.) 36s. net.

THE great triumph of the British school of geologists represented by Hutton, Playfair and Lyell was to bring order out of chaos simply by postulating the doctrine of uniformitarianism. This assumption removed the need for the continual invocation of catastrophes required by Cuvier's school of thought, with its demand for the 'fixity' of species. The death knell to such ideas was given by Darwin's theory of gradual evolution.

In the past few decades, however, it has become clear that meteoritic impact must have played some part in the shaping of the Earth's features. The basic question at issue is whether the overall effect of meteoritic impact is small or significant. In *Bombarded Earth*, Gallant introduces a hypothesis of neo-catastrophism, the mechanism of which is meteoritic impact, not supplanting uniformitarianism but complementing it.

The first quarter of the book is devoted to a treatment of meteoritic impact, which, by and large, but with certain reservations, represents the consensus among most astronomers and many geologists to-day. From this point of departure, Gallant devotes a chapter to the possibility of shifts of the polar axis and changes in the length of the day by virtue of meteoritic impact on the Earth. Apart from the effect of meteorites in this connexion, such changes of small magnitude are known to occur at present and the causes of some of them are known (Gold, *T.*, *Nature*, **175**, 526; 1955). Gallant finds that significantly large shifts can be brought about without fragmentation of the Earth itself only by a relatively long sequence of