

Animal Ancestors

By Sonia Cole. Drawings and Reconstructions by M. Maitland Howard. Pp. 78. (London: Phoenix House, Ltd.; New York: E. P. Dutton and Co., Inc., 1964.) 13s. 6d. net.

WHEN some striking palaeontological find is made, the non-specialist student has until now had great difficulty in finding any information other than in works of a very technical and scholarly nature, or in the often rather inaccurate and very generalized popular science books. Mrs. Cole is to be congratulated in her production of a clear, concise and thoroughly readable work which fills this gap and makes mammalian palaeontology a living science which can be compared with our own personal knowledge of the world we live in to-day. Miss Maitland Howard's excellent drawings are an essential part of this book; the differentiation, by colour, of known fact from enlightened supposition is particularly clear.

Mammalian evolution is a very wide subject and extremely difficult to condense into a book which is easily read, light to handle and reasonable in price; it is inevitable that much has to be left out. No two palaeontologists would agree on the choice of priorities, or even on the much debated branches of family trees, which in *Animal Ancestors* have to be very generalized and so unfortunately lose some of their value. The relationship between hyraxes and elephants is perhaps too strongly emphasized; the mention of undescribed remains from the Upper Miocene of Kenya which could be a connecting link between anthracotheres and hippos as having "actually been proved" seems rather premature.

There is a full and comprehensive index, so often omitted in works of this nature; the addition of a list of books for further reading would be of benefit to those readers wishing to continue studying the subject which Mrs. Cole and Miss Maitland Howard have introduced with such clarity. I feel sure *Animal Ancestors* will have a wide appeal and will quickly find its way on to the shelves of public libraries and educational institutions as well as private collections. S. C. CORYNDON

Monograph on Radio Waves and Circuits

Proceedings of Commission VI on Radio Waves and Circuits during the XIIIth General Assembly of URSI, London, September 1960. Edited by Samuel Silver. Pp. vii + 377. (Amsterdam, London and New York: Elsevier Publishing Company, 1963.) 150s.

THIS book is primarily a collection of papers describing new work, prepared by acknowledged experts for discussion at meetings of specialists in Commission VI of the International Scientific Radio Union. Even in one small volume the range of subjects touched on is wide: electromagnetic wave boundary problems, propagation of waves in statistically inhomogeneous media, information theory and coding problems, aeriels and data-processing for radio astronomy, and solid-state circuits. The diversity of subjects covered by Commission VI is explained by the editor in terms of the realization of the need for a co-ordinating unit within the International Scientific Radio Union which could deal with the many expanding new areas of research and the new developments in applied mathematics; it would bring together engineers, physicists and mathematicians on problems which were previously regarded as purely ancillary by the other Commissions, the interests of which were turning more to the geophysical and cosmological import of radio propagation research. Commission VI was formed with this object in mind.

Most of the papers in the book describe original work on a particular aspect of a subject, although one or two are in the nature of reviews, and useful references are given. As with all material in the forefront of knowledge, the papers provoked discussion at the meetings,

and this discussion is reported in the book; some is of philosophical interest, as, for example, that on surface waves.

It should be emphasized again that this publication is primarily a collection of the papers which were presented at Commission VI, and does not purport to be a text-book. It will be of interest to specialists and those wishing to sense developments taking place in new fields. At the price of £7 10s. this is not, perhaps, a book which the average reader would expect to buy, but he might, nevertheless, expect to find it on the shelves of a good specialist library. R. W. MEADOWS

Tables of Natural and Common Logarithms to 110 Decimals

By W. E. Mansell. (Royal Society Mathematical Tables, Vol. 8.) Pp. xviii + 95. (Cambridge: At the University Press, 1964. Published for the Royal Society.) 40s. net.

THESE tables originated in a part of the extensive computations made, without machine, by William Ernest Mansell (1877-1953), an accountant, who in his will made provision for their publication. They have been edited by Dr. A. J. Thompson, with assistance in checking from several persons and institutions. They give both logarithms to base e (pp. 1-47) and logarithms to base 10 (pp. 49-95), to 110 decimals, of all integers up to 1,000 and also of $1 + m \cdot 10^{-n}$, where $m = 1(1)9$, $n = 5(1)12$. An introduction explaining construction, checking and use of the tables ends (p. xviii) with a noteworthy table of mathematical constants to 110 decimals.

There is no difficulty in justifying a certain amount of tabulation of important functions to, say, 20 or 25 decimals. Dr. Thompson's own monumental 20-decimal *Logarithmetica Britannica* must have struck many numerical analysts as particularly well judged. To justify tabulation to more than 100 decimals is always more difficult. The editor acknowledges that logarithms to so many decimals are infrequently required. One feels that Mansell must have been a compulsive calculator who followed, with no more equipment and with similar *éclat*, in the footsteps of those great computers Abraham Sharp (1653-1742) and Isaac Wolfram (c. 1725-c. 1787). It is impossible not to admire a work so definitive of its kind, and it is pleasant to think that these logarithms, known for some time to have been computed, have now been fortunate in finding skilful editing and publication. Any computing enthusiast who purchases this volume will acquire, in a moderate compass, a powerful tool to which he will probably turn more often than he at first anticipates. It goes without saying that the volume should be available in specialized libraries of numerical analysis.

ALAN FLETCHER

Chymia

Annual Studies in the History of Chemistry, Vol. 9. Editor-in-Chief: Henry M. Leicester. Pp. 221. (Philadelphia: University of Pennsylvania Press; London: Oxford University Press, 1964.) 40s. net.

VOLUME 9 of *Chymia* contains more articles than usual and covers a range of topics. There are obituaries, with portraits of Eva V. Armstrong and Clara de Milt, both contributors to the history of chemistry. There are three papers dealing with, or connected with, Sir Humphry Davy, one of these concerning the work of Grotthuss on gaseous combustion. Three papers on chemistry and technology in the East, and discussions of chemical laboratories in Russia, indicators, Sir B. C. Brodie and his calculus of chemical operations, elements and nucleosynthesis in the nineteenth century, Boyle on the degradation of gold, mining education in South America, and the water controversy, make up the rest of this interesting collection. J. R. PARTINGTON