

The International Zoo Yearbook

Vol. 6. Edited by Caroline Jarvis, assisted by Ruth Biegler. Pp. viii + 503 + 67 plates. (London: The Zoological Society of London, 1966.) 126s.

EVERY year since its first appearance in 1960 *The International Zoo Yearbook* has gone from strength to strength. The latest example is bigger than ever and certainly no whit inferior to any of its predecessors. In fact, the venture has been so successful that the publication has now become a scientific journal of international repute quite indispensable to all concerned with the scientific basis, theory and practice of keeping animals in captivity for education, research and display. The scope of the publication is now so wide that it is scarcely feasible to review it in the strict sense. The editor, Miss Caroline Jarvis, deserves warmest congratulations on this great achievement.

W. H. THORPE

The African Elephant

By Rennie Bere. (The World of Animals.) Pp. 96. (London: Arthur Baker, Ltd.; New York: Golden Press, 1966.) 21s. net.

The African Lion

By Mervyn Cowie. (The World of Animals.) Pp. 96. (London: Arthur Baker, Ltd.; New York: Golden Press, 1966.) 21s. net.

THESE attractive picture books are very fully illustrated with coloured and monochrome photographs; the texts are written by men who have spent years among the wild animals of Africa and know them well. A few of the hearsay statements and of the interpretations may seem a little odd, but everything the authors tell at first hand is splendid. The books cover the whole life history of each species, and include many amusing and thrilling stories that will fascinate the general reader. Lions and elephants are species with a high level of social structure, so that accounts of their daily lives and behaviour are particularly appealing to the layman.

Both the authors are devoted conservationists who have given unstinted time and work to the cause they feel so strongly about. Their books discuss some of the problems of conserving wild animals, and show the great success that has been achieved with the lion and the elephant. If man is willing to set aside enough living space for the animals, and to leave them unmolested, they very soon lose much of the shyness induced by constant persecution, and can be approached and watched from comparatively short distances. But conservation is much more than preservation, and needs continued skilful management both of the environment and of the populations of animals inhabiting it. These books ably tell of what is being done in East Africa to ensure that those interesting animals shall not be thoughtlessly exterminated.

L. HARRISON MATTHEWS

Pendulum Gravity Measurements at Sea 1936-1959

By J. Lamar Worzel. Pp. xx + 422. (New York and London: John Wiley and Sons, 1965.) 210s.

BETWEEN 1923 and 1957 oceanic gravity observations were invariably made in submarines using pendulum apparatus pioneered by F. A. Vening-Meinesz. Since 1957 pendulums have been progressively replaced by surface ship gravimeters. Satellite gravity observations are also giving the global picture with increasing accuracy. It is fitting that the close of the pendulum era should be marked by this well-set-out and well-illustrated reference book, which describes nearly three thousand pendulum measurements made from Lamont Geological Observatory and comprising about two-thirds of all pendulum observations at sea. It forms an ideal companion to Vening-Meinesz's *Gravity Expeditions at Sea, 1923-1938*.

Most of the book is devoted to the description of the experimental observations for each cruise and the presentation of the results as tables, base diagrams and maps. All known pendulum observations at sea are plotted on bathymetric charts as Free Air and Bouguer anomalies. In addition to their scientific interest, these observations provide a control network for surface ship gravimeter measurements. Thus the book provides a valuable compilation for all geophysicists connected with the measurement of gravity at sea.

An early discovery of the pendulum was that the oceans are in approximate isostatic equilibrium with the continents, suggesting a thin crust as later proved by seismic refraction surveys. Pendulum measurements have also substantially contributed to our understanding of the main bathymetric features of the oceans, including continental margins, ocean trenches and ocean ridges, all of which are associated with underlying anomalous density distributions in the crust or upper mantle. These and other geological and geodetic aspects are reviewed in a chapter fifty pages long which will provide the main interest of the book for most geologists and geophysicists.

An outstanding scientific contribution of Professors Ewing and Worzel and their colleagues has been the introduction of the combined use of gravity and seismic refraction survey, thereby substantially increasing the power of the two methods taken individually. This is shown by their interpretation of ocean trenches as extension features, in contrast with Vening-Meinesz's compression hypothesis which is based on gravity data alone. In this and other ways the pendulum observations reported in this book have significantly increased our knowledge of the Earth's upper layers beneath the oceans.

M. H. P. BOTT

Chronologies in Old World Archaeology

Edited by Robert W. Ehrich. Pp. xii + 557. (Chicago and London: The University of Chicago Press, 1965.) 56s. cloth; 37s. 6d. paper.

THIS book replaces *Relative Chronologies in Old World Archaeology*, published under the same editorship in 1954; it is not a second edition but a completely new book. There are now fifteen regional papers in the volume, covering the chronology from the earliest Neolithic to the second millennium B.C. With the Near East as the nodal area, coverage extends to Egypt, the Indus valley, China, most of Europe and the Mediterranean—yet only six of the papers include maps. The lack of information from the U.S.S.R. leaves an unavoidable gap.

The approach inevitably varies from region to region. The precise dating of dynastic Egypt; the archaeological typology of Mesopotamia—presented in such detail as to be almost unreadable; the interweaving of radiocarbon dates and archaeological evidence for Europe; and the scarcity of such evidence from China; together such accounts make this book an invaluable record of the present state of knowledge. Most of the papers have summary charts, though these vary a good deal in quality and usefulness.

Radiocarbon dating is the biggest single factor which has rendered the 1954 book out of date. It has had little impact in the Near East, but elsewhere it has revolutionized our concepts of chronology. Because the editor has left each author to present radiocarbon dates as he likes there is inevitably a lack of consistency; most use the half-life of 5,730 years, but some adhere to 5,568. This will have to be resolved before comparative dating between regions can make much progress. The editor regards it as an "impertinence", however, to attempt to produce a unified synthesis in the present fluid state of knowledge, but it is evident from the cross-references between the papers that the time is fast approaching when this should be in our minds.

G. W. DIMBLEBY