

### Ways of Thought of Great Mathematicians

An Approach to the History of Mathematics. By Prof. Herbert Meschkowski. Translated by John Dyer-Bennet. (The Mathesis Series.) Pp. viii+110. (San Francisco, London and Amsterdam: Holden-Day, Inc., 1964.) 3.95 dollars, paper; 5.95 dollars, cloth.

THE teacher can generally extract much value from books about background aspects of mathematics. In this tract, Prof. H. Meschkowski selects nine mathematicians, places them briefly in their historical and mathematical setting, and gives examples of their contributions to the advancement of learning, so far as possible in the original form. He deals with Pythagoras, Archimedes, Nicholas of Cusa, Pascal, Leibniz, Gauss, Boole, Weierstrass and Cantor. From Pascal's work, he takes the principle of mathematical induction, from that of Gauss the proof of the fundamental theorem of algebra, that a polynomial has at least one zero; to illustrate the scope of Weierstrass's ideas, he gives a hitherto unpublished letter from Schwarz to Cantor in which the master's methods are used to provide a proof, claimed by Schwarz to be the first valid proof, that a function with a zero derivative must be a constant. Certainly a book to be placed in any good school library. T. A. A. BROADBENT

### The Elements of Pulse Techniques

By O. H. Davie. Pp. ix+197. (London: Chapman and Hall, Ltd., 1964.) 35s. net.

IN writing this book on pulse techniques the author has aimed at providing a comparatively non-mathematical review of relevant circuit techniques and applications for the technician and user, rather than for the professional electronic engineer. The applications are therefore more of an instrument or a monitoring character, as opposed to systems such as digital equipment.

Proceeding from an examination of the properties of a single pulse and a train of pulses, mainly with respect to their frequency spectra, the effects of simple passive networks on pulse inputs are considered. This is then linked with active sources to provide pulse generators. Strangely, for this type of book, high-voltage impulse generators are included. A short chapter on delay cables and filter sections, which is written in a rather misleading manner, precedes two very full chapters on pulse amplification and pulse measurement, respectively. These latter two chapters are by far the best in the book and are really excellent. The last chapter, dealing with applications, is very wide in scope and does not set out to give anything but the broad principles involved. This may be realized by remarking that the content ranges over ultrasonics, high-voltage techniques and transistor switching parameters, to gas lasers.

Altogether, the book is well written and well illustrated, however it does contain some irritating errors. This is particularly true of the opening chapter where some of the errors are fundamental. Since the book is intended for the less (electronically) experienced reader, rather more importance must be attached to these mistakes. The only other criticism is the four-to-one preponderance of valve to transistor circuits in the book.

For the industrial user of electronic instruments this book will provide an excellent background, while its extensive bibliography will allow deeper reading in any chosen field.

IAN COCHRANE

### The Birds of Natal and Zululand

By P. A. Clancey. Pp. xxxiv+511+58 plates. (Edinburgh: Oliver and Boyd Ltd., 1964.) 84s.

THIS is a valuable contribution to the literature of African ornithology. There are already modern works on the birds of southern Africa, or of political South Africa, but these cover vast areas with a varied bird-life about which a great deal has still to be learnt; indispensable as they are in providing a broad framework in the

present state of knowledge, they leave room for intensive studies of narrower geographical scope. This is such a study, relating to Natal and Zululand (together comprising the Province of Natal in the Republic of South Africa). The author is equipped for his special task by having held museum appointments in Natal since 1950, with opportunities for field work in different parts of his area. The result is an intimate picture of the particular avifauna.

The treatment is systematic; for each species or subspecies occurring in the area there is a rather fuller description than is common in works of this kind, and due account is taken of differences in respect of sex, age or season. There follows a statement of local status, and then an indication of extra-limital range and related forms; the latter section is in some instances expanded to discuss controversial questions of subspecific taxonomy, a subject on which the author holds decided views. The ecological requirements of the bird, as known in the area, are then considered; there are also brief notes on its biology, with dates of breeding season where known.

Apart from the palaeartic migrants and the sea-birds (including one penguin as a regular visitor), the avifauna has three main elements. In the low-lying coastal area, with its hot and humid summers, there is a southward infiltration of tropical forms from East Africa. In the grasslands and forests at a considerable elevation inland, there is a northward ranging of temperate forms from Cape Province. Finally, there are the forms of continental or cosmopolitan distribution.

Fortunate is the author who can himself illustrate his book with the skill Mr. Clancey shows here. He provides 41 excellent colour plates and a similar number of text-figures of birds. There is also a map, and there are 17 plates of black-and-white photographs by Dennis Cleaver usefully illustrating types of topography and vegetation. It is, altogether, an attractive production.

LANDSBOROUGH THOMSON

### Le Gisement de Ternifine

Vol. 1. By C. Arambourg and R. Hoffstetter. Thirty-second Mémoire of the Archives de l'Institut de Paléontologie Humaine. Pp. 192+8 plates. (Paris: Masson et Cie., 1963.) 74s.

FOLLOWING a short introductory section by both authors, this book contains a detailed descriptive text on the human fossils discovered by Arambourg himself at Ternifine, Algeria, during 1954 and 1955, and named by him *Atlantthropus mauritanicus*. The human remains consist of two and a half mandibles and a parietal bone and they were found associated with a Middle Pleistocene fauna, together with Chelleo-Acheulian hand-axes, cleavers and large Clactonian flakes. Work on the site—a flooded sand-pit—was unfortunately brought to an end by the Algerian Civil War, but there seems no reason why it should not be continued at some future date.

The three mandibles show considerable variation in both size and form, in spite of their close association. Two of them were quite massive, comparable to the heavy *Pithecanthropus robustus* mandible found in Java by von Koenigswald, and possibly not so very different from the newly discovered mandible from Bed II Olduvai. In their dental characters, however, they compare closely with Pekin man. In all, they have a close affinity with the east Asian *Homo erectus* fossils, and in this lies the importance of the discovery. Here we have evidence of the extension of the range of *Homo erectus* (the first big-brained men) into Africa from those sites in Java and China from which this species was previously known. The range has been extended further by Dr. L. S. B. Leakey's discovery of an *erectus* skull at Olduvai (Bed II) in 1960. The amount of variation shown by these fossils is such as we would expect in such well separated geographical subspecies of a polytypic species.

Prof. Arambourg's monograph is traditional in scope, carefully prepared and well illustrated. B. CAMPBELL