

exercised the minds of many famous mathematicians during the past century. The reader of the book under review may be surprised to find names such as Dirichlet, Liouville, Riemann, Poincaré, Volterra, and more recently, Kähler, Liapounov, Lichtenstein and Wavre associated with the subject, but this list alone indicates that the problems involved are fundamental and of the highest status. Liouville published three papers on the theory during the years 1845–1855 and Dirichlet and Riemann each published a paper in 1861. Since about this time a great deal of research has been carried out in this field and the book by Prof. Jardetsky gives a careful and faithful account of the developments that have occurred.

There are two parts, one dealing with figures of equilibrium of a rotating fluid mass, and one with other figures. The former is classical and describes the most exact methods available for determining the figures. It includes chapters on the methods of Poincaré, Liapounov, Lichtenstein and Wavre. The second part covers zonal rotation, varying figures, systems composed of fluid and rigid parts, fluid mass and centres of attraction, and figures of compressible masses. This part takes into account more physical features than the first and is to that extent more realistic, but its results are not so rigorously developed and many of the problems still await solution.

One really valuable feature of the book is that it covers material which, for the most part, was formerly tucked away in obscure or old journals not generally available. The author was the last pupil of Liapounov and thus is well qualified to bring into the light the work of his teacher in this field. He has himself contributed greatly to the subject, and there are references to his work throughout the book. Anyone working in this field will want to consult the bibliography, which is unusually comprehensive.

L. S. GODDARD

The Jaws and Teeth of Primates

Photographs and Commentaries. By W. Warwick James. Pp. xii+328. (London: Pitman Medical Publishing Co., Ltd., 1960.) 105s. net.

THIS book is essentially an atlas of more than two hundred photographic illustrations of the skulls and teeth of representative genera of the modern Primates from tree-shrews to man, each series of illustrations being accompanied by a brief summary of the main features of the dentition. As such, it will provide a convenient work of reference for those who have not ready access to original material in museum collections. The photographs are excellent and have been most skilfully reproduced. The author's notes on the general characters, habits and habitat of each genus are derivative, but unfortunately too often based on early statements in the literature which have been superseded in more recent studies. A number of his observations, also, are surprising and even misleading—for example (in reference to the teeth of 'civilized man'), "Their beauty is regarded as their chief attribute"; in the *Prosimii* "the cerebral hemispheres are only slightly convoluted"; "Very few fossil Primates have been found in North or South America"; gibbons "live in large colonies which may contain fifty to a hundred members"; "Man in his present state, both mentally and physically, is very different from his ancestor a few thousand years ago"; and so forth. The appendixes on tooth development and the articular eminence raise some interesting points, but are too brief to

permit any conclusions of value. Although the text contains statements open to criticism, I would repeat my main assessment, that, considered simply as a photographic atlas, the book certainly deserves commendation as a useful work of reference.

W. LE GROS CLARK

Africa's Place in the Emergence of Civilisation

By Prof. Raymond A. Dart. (The Van Riebeeck Lectures.) Pp. 96. (Johannesburg: South African Broadcasting Corporation.) 2s. 6d.

THE name of Prof. R. A. Dart, who until recently was professor of anatomy at the Witwatersrand University, will always be associated with the discovery of the Taungs skull. At first some of his ideas were scouted as being fantastic, but of recent years new discoveries have brought to light other ape-men of a very early age and many of his notions have been vindicated. A short while ago he was asked to inaugurate the Van Riebeeck Lectures of the South African Broadcasting Corporation, and "Africa's Place in the Emergence of Civilisation" is the result. Prof. Dart is tremendously impressed with the "Miraculous Community-building effects of fishing upon humanity", and it is fair to say that this theme is central to the book. But naturally the first lecture deals with earlier times and the cultural differences between an ape and a first real man. Here perhaps a saying of Schweitzer to me may be of interest; Schweitzer has kept young gorillas and other anthropoid apes in West Africa and he stated that the difference between a gorilla and a man is minimal compared with the difference between a gorilla and any other anthropoid ape. Chapter 2 is concerned with the appearance of true civilization in the Near East; and then we come to fishing, which, of course, involved boats and boat building. But while this helped forward the march of progress, true civilization is based, surely, on community life and law. May I interpolate here the suggestion that civilization starts in the community life of the village but does not come to real fruition until the development of the towns, and that in Africa south of the Sahara there seem to have grown up no real towns before the coming of Europeans; this may be the fact that has caused Africa to lag behind China, northern India, the Near East and western Europe in the evolution of true 'civilizations'. Prof. Dart does not intend his little work to be the last word on an immense subject. But, just as he himself is stimulating to talk to, so his book is stimulating to read even if, for the moment, everyone may not agree with all he says.

M. C. BURKITT

Laboratory Testing in Soil Engineering

By T. N. W. Akroyd. (Geotechnical Monograph No. 1.) Pp. xx+233+32 plates. (London: Soil Mechanics, Ltd.) 50s. net.

MR. AKROYD'S book has been available long enough for quotations from technical reviews to appear on the cover of this edition. All, quite rightly, welcome it as a comprehensive survey, plentifully illustrated by photographs, line drawings and copies of work-sheets. It will be useful to consulting engineers who need a complete account of the kinds of test available, the problems for which the tests are helpful, and the snags that may arise. It could be useful in soils laboratories—teaching or research—where there is some interest in soil as an agricultural raw material.

H. L. PENMAN