

History of the Primates

An Introduction to the Study of Fossil Man. By Prof. W. E. Le Gros Clark. Fourth edition. Pp. 6+119. (London: British Museum (Natural History), 1954.) 4s.

PROF. W. E. LE GROS CLARK is indeed a master in his subject, and the fourth edition of his "History of the Primates", printed for the trustees of the British Museum (Natural History), contains the latest ideas on this problem put in a way that the non-specialist can appreciate. Of recent years, much new evidence has accumulated. The discovery in Kenya of primitive apes of Miocene age (very possibly the basal 'stuff' from which has evolved both the line of man and of the anthropoid apes) and the finding by Prof. R. A. Dart and Dr. R. Broom in South Africa of the early Pleistocene Australopithecinae (ape-men not yet classed as human by the author, Prof. Le Gros Clark, until evidence turns up to show that they were talkers and tool makers) have completely revolutionized previous ideas on the subject.

The Piltdown hoax is treated firmly, if discreetly, and, of course, the Galley Hill skull is dismissed as being of a relatively recent date. He also dismisses as unproved the great antiquity of the Kanam and Kanjera finds in Kenya. The fact that new test methods have been discovered, which would make another such hoax as that of Piltdown impossible, is pointed out; these new methods, some chemical such as the fluorine test and others physical such as the carbon-14 method of dating, are extremely valuable aids for study quite apart from the question of detecting frauds.

Prof. Le Gros Clark concludes his book with a timely warning: "If Man has gained his intellectual dominance over his fellow creatures by concentrating his evolutionary energies on the development of his brain, it remains to be seen whether he can now maintain his position by contriving a method of living in orderly relations with members of his own species. If he fails to do so he may yet follow the example of many other groups of animals which have achieved a temporary ascendancy by an exaggerated development of some particular structural mechanism. He may become extinct". M. C. BURKITT

Bernstein Polynomials

By Prof. G. G. Lorentz. (Mathematical Expositions, No. 8.) Pp. x+130. (Toronto: University of Toronto Press; London: Oxford University Press, 1953.) 45s. net.

THIS book consists of four chapters. In the first, properties of Bernstein polynomials in the real domain are developed, beginning with the proof of the approximation theorem of Weierstrass. The close connexion with the theory of probability is emphasized, and some of the results, relating to monotone or convex functions or functions of bounded variation, are due to the author and have previously only appeared in the Russian journal *Mat. Sbornik*.

In the second chapter Bernstein polynomials are generalized and applied to the approximation of discontinuous functions of general type (integrable or measurable). The connexion with moment problems and the theory of summation is discussed, and the approximation of $f(x)$ by linear sums of powers x^{α_r} , where $\alpha_0, \alpha_1, \dots, \alpha_r, \dots$ is a sequence such that $\sum \alpha_r^{-1}$ is divergent is studied. In Chapter 3 contact is made with abstract analysis. It begins

with a discussion of Banach spaces and functionals, and then moment problems (with Stieltjes integrals) are considered. Other topics treated are rearrangements of functions, spaces of functions and Hausdorff methods of summation. The last chapter deals with the theory of Bernstein polynomials in the complex domain, and this ends with the consideration of degenerate polynomials and the connexion with the summation of power series.

The author has a clear style, even if a little concentrated in places, and has covered a great deal of material in the space available. The printing is excellent, as is usual with the University of Toronto Press. L. S. GODDARD

Molecular Structure and Related Problems

Edited by Y. Asami and Prof. K. Higasi. (Monograph Series of the Research Institute of Applied Electricity, No. 4 (1954).) Pp. vii+140. (Sapporo: Research Institute of Applied Electricity, Hokkaido University, 1954; Oxford: Basil Blackwell.) 25s.

PROFS. Y. ASAMI and K. Higasi have gathered together a group of nine papers, most of which represent work in molecular structure associated with their two departments at Hokkaido University in northern Japan. These articles, several of which are in the nature of reviews, were read at a symposium in Hokkaido in November 1953. They show how great is the development of theoretical and experimental chemistry in Japan.

As would be expected from a country where the tropolone system was first discovered, several of the articles deal with π -electron problems. But dipole moments, the hydrogen bond, the activated complex in chemical reactions, the dispersion of ultrasonic waves, paramagnetic resonance and intermolecular potentials are also included. The standard of publication and printing is high. The English language used is beyond reproach.

Mechanics of Materials

By Prof. E. P. Popov. (Prentice-Hall Civil Engineering and Engineering Mechanics Series.) Pp. xiv+441. (New York: Prentice-Hall, Inc., 1952; London: Macdonald and Co. (Publishers), Ltd., 1953.) 70s. net.

PROF. E. P. POPOV has added another to the list of excellent text-books which are available on elementary strength of materials. His object is to present the engineering undergraduate with a clear exposition of the fundamental principles of the subject. He does this admirably and has evidently put much thought into the order, as well as the nature, of the topics considered.

The sixteen chapters adequately cover most of the material that is usually presented in Britain under the title of 'strength of materials', as distinct from 'theory of structures'. This book differs from comparable works in certain respects. For example, it contains a treatment of torsion of thin-walled hollow members which is very welcome. Again, the method of virtual work is presented instead of Castigliano's theorem for the solution of problems by the energy method; certainly, much can be said for the virtual work approach.

The text contains plenty of examples, both worked and unworked (with answers). These problems are a main feature of the book and considerably increase its value. It is unfortunate that the price of the book is so high, because it may prevent many engineering undergraduates from possessing this excellent work.