REVIEWS

Proceedings of the First Congress on Theoretical and Applied Mechanics. (Published by the Indian Society of Theoretical and Applied Mechanics, Indian Institute of Technology, Kharagpur.) (New Mahamaya Press, Calcutta), 1956. Pp. 284. Price Rs. 15.

The First Congress of Theoretical and Applied Mechanics was held on the 1st and 2nd of November 1955, at Kharagpur and was organised by Prof. B. R. Seth and presided over by Dr. K. S. Krishnan. More than a hundred delegates participated in the deliberations and 51 papers were read. The volume under review contains 28 complete papers from among those read. One of the papers is from the U.S.A., three from Poland, and the rest from India. Of the various subjects dealt with in the papers, as many as 19 belong to Section I—Elasticity, Plasticity, Rheology, Fluid Mechanics. Section II has only five papers, dealing with Turbulence, Ring Airfoils, Non-Newtonian Fluid, Hyperbolic Profiles and Shock Waves. There is only one paper in Ballistics in Section III, and one on Heat Transfer in Section IV, while the remaining two papers are in Section V, and deal, one with Statistics and the other with Electrical Analogues of Mechanical Vibration Systems. The papers are all of a high standard and will be of great value to one who wishes to keep himself up-to-date in this field.

That the First Congress in Theoretical and Applied Mechanics should have been held so late as 1956, is a reminder how much headway we have still to make in this important branch of knowledge vital to our scientific and industrial progress. One also gets the impression that work in this field is sporadic and well-knit schools of systematic development in our centres of learning are yet to develop.

A. NARASINGA RAO.

History of Analytic Geometry. By Carl B. Boyer. (Scripta Mathematica Studies Nos. 6 and 7.) (Published by Scripta Mathematica, New York), 1956 Pp. 291.

Analytic geometry was the independent invention of two men, neither of whom was a professional mathematician—Pierre de Fermat (1608-65) a lawyer, and René Descartes (1596-1650) a philosopher. Fermat composed a short treatise of about 20 pages devoted to the line circle and conic sections in which occurs the significant sentence: "Whenever in a final equation two unknown quantities are found, we have a locus, the extremity of one of these describing a line, straight or curved." Fermat did not invent co-ordinates nor was he the first to use graphical representation. Descartes, though aware of the connection between equations and curves seems to have considered the curve as not adequately defined unless he obtained an actual mechanical construction for it by a regular and continuous motion, and was more interested in the application of algebraic equations to the solution of geometrical problems. The immediate path to analytical geometry was, however, prepared by developments in algebra such as a symbolic notation, the use of equation forms, free use of negative numbers, etc., than by those in geometry.

Prof. Carl's book traces the connection between arithmetic and geometry from the earliest times and the ideas of analytical geometry through the pre-Hellenic, Greek, Mediæval and the Renaissance periods. The period immediately following its discovery did not lead to rapid developments in cartesian geometry partly because Descartes' exposition was so terse that it had to be clarified through a long period of commentaries, and partly because it was overshadowed by its younger and more brilliant rival—calculus, which followed soon after. In fact, there was but meagre progress in the 17th and 18th centuries, but in the 19th century—the golden age of analytic geometry—there was an outburst of activity involving the use of imaginary elements, abridged notation, homogeneous co-ordinates, n-dimensional geometry, higher plane curves, line co-ordinates, etc. The book traces the history of the subject to the death of Plücker, who, both in volume and power, contributed more to the development of the subject than any other single person. Truly a fascinating account.

A. NARASINGA RAO.

Protective Painting of Structural Steel. By F. Fancutt and J. C. Hudson. (Chapman and Hall), 1957. Pp. xiv + 102. Price 21 *sh.*

In 1941, the Protection Coatings (Corrosion) Sub-Committee of the Corrosion Committee of the British Iron and Steel Research Association published a brochure on "Protective Paint-

ing of Structural Steel". Further investigations in this field incorporating the Sub-Committee's researches have made the present publication of this book possible in a completely revised edition prepared by the authors for the Sub-Committee.

The book describes the facts concerning the methods of protecting structural steel work against atmospheric corrosion by means of paint, used alone or in conjunction with metal coatings. The results of the Sub-Committee's researches indicate that surface preparation of the steel for painting is very important for successful and economical protection. The choice of paints is discussed and useful information regarding priming paints, finishing paints, tar and bitumen paints, etc., has been given. In the chapter, 'Painting Procedure', the authors bring out clearly the importance of good painting condition. They have compared different methods of paint application and have indicated the importance of paint film thickness for good protection of steel work. Various other subjects are considered, such as the use of flame cleaning and of the newly introduced pretreatment primers as a preparation for painting structural steel. Reference is also made to heat-resisting paints and to painting schemes for metal coatings or steel.

Information given in the book is bound to be very useful to corrosion engineers to help in minimising corrosion in steel. The usefulness of the book would have been greatly enhanced if ancillary subjects of the protection of submerged steel or of steel that is buried in soil, etc., had also been dealt at length.

G. S. LADDHA.

Chemical Engineering Reports—How to Search the Literature and Prepare a Report. Fourth Edition. By Kenneth A. Kobe. (*Interscience Publishers*), 1957. Pp. viii + 175. Price $3.00.

The report under review has been prepared to assist the novice in chemical engineering to become familiar with the literature and learn how to use it to enable him to present the essential facts suitably in the form of a report. The report details the various means of obtaining organised information from books, monographs, journals, reports, as well as the methods for conducting a proper literature search, and to get data for economical evaluation of a project. The essential parts of a report, the various types of reports and their presentation are very clearly presented, and the procedure involved in making such reports is indicated. Attention is focussed on the technique of report writing, citing of literature, preparation of graphs, etc. The report presents valuable information on various aspects of report writing, and will be a useful addition to the libraries of technical institutions.

G. S. LADDHA.

Tubes for Computers. By the Members of the Philips Electron Tube Division. (Philip's Technical Library.) (Available from Philips Electrical Co., Ltd., Calcutta-20), 1956. Pp. ix + 51. Price Rs. 5.

Four series of technical books are being published by Philips Technical Library, of which the series on electronic tubes is highly useful to an electronic engineer, as it gives the data and circuits of valves used in amplification, transmission, U.H.F. generation, television, etc. This book which is the twelfth in this series is mainly intended to present the technical data of certain types of vacuum tubes specially designed for their use in digital computers.

The book is divided into three sections. In the first section, after a brief introduction, the principle and working of bistable, monostable and A-stable mutivibrator circuits and gate circuits are clearly described. The characteristic curves of special tubes E 90 c.c., E 92 c.c., E 88 c.c. and E 81 H and some of the circuits that are used in high-speed computers (one million pulses per second) are given in the second section. In low-speed computers, generally cold cathode tubes such as Z 50 T and Z 70 U are employed. The last section deals with the data and circuits of these tubes.

This book will be of immense help, not only to an electronic engineer but also to a physicist who is interested in designing fast scaling units having extremely short resolving times. Particular attention has been paid in getting up the book in an excellent manner. No doubt this book will be a valuable addition to any technical library. Similar books on this series will be eagerly awaited by research workers in this field.

E. V. K.

The Adrenal Cortex. By I. Chester Jones. (*Cambridge University Press*), 1957. Pp. x + 315. Price 37 *sh.* 6 *d.* net.

The literature on the adrenal gland has grown to enormous proportions recently, following the discovery of many of its steroid hormones of considerable physiological and clinical importance, with the result, a research worker on adrenals is often at sea, in his efforts to collect the literature on the subject. For him, the

monograph "The Adrenal Cortex", by I. Chester Jones comes in quite handy, enabling him to view the problems associated with adrenal cortex more as a whole, in that it gives him a complete idea of the comparative endocrinological studies on adrenal glands of animals from marsupials to fish, along with exhaustive accounts on the gross anatomy, histology, the chemistry and biosynthesis of steroid hormones, functions of the adrenal cortex and its relationship to peripheral tissues and finally on the natural abnormalities of its function as seen in eutherian mammals. The brilliant monograph ends with a chapter on "correlation of structure and function" of the adrenal glands in which the author puts forward a hypothesis that "the ionic regulation at the kidney level by cortical hormones" is the prime necessity for the evolution of vertebrates. In 245 pages, written in good style, quoting material from nearly 1,100 references, the author covers the literature up to the end of 1955. The book will be of very great value to research workers in basic medical sciences and in biological subjects.

V. SRINIVASAN

The Mollusca of Krusadi Island, Vol. I, No. 2, Part 7. By S. Thomas Satyamurti. (Bulletin of the Madras Government Museum, New Series, Natural History Section), 1956. Price Rs. 9-6-0.

The first account of the Mollusca of Krusadi Island was published in 1927 by the then Superintendent of the Museum, Dr. F. H Gravely. Nearly three decades have elapsed since then and thanks to the rich shell collections presented to the Museum by the late Mr. M. D. Crichton and the intensive collections made by the present author during the past few years, the present account, which is a sequel to Part 6 of the same series, have brought to light several new species not previously recorded from Krusadi Island and its immediate environs.

The Mollusca, as the name indicates, are soft-bodied animals and the group includes the snails, chitons, cowries, limpets, whelks, oysters, mussels, cuttlefish, etc. Many are provided with characteristic shells, while a few, such as the Nudibranchiata are entirely soft-bodied. The majority of the forms have only limited powers of locomotion while a few, such as the scallops and the cephalopods, are active swimmers.

As many as 450 species of Mollusca belonging to the 5 classes have been described and figured in the two parts. Part 6 has dealt with the two classes Amphineura (chitons) and the Gastropoda (snails and their allies). In the present part, the author has dealt with the remaining 3 classes, the Scaphopoda (tusk-shells), Pelecypoda (mussels, oysters and their allies) and the Cephalopoda (cuttlefish and squids).

Apart from numerous additions to the previous account by Dr. Gravely, the present author has adopted the most recent system of classification and nomenclature for the various species. The author has expressed his indebtedness to experts like Mr. R. Winkworth and Dr. W. J. Rees for the indentification of many of the species. Almost every species has been illustrated. The present Part, together with Part 6, compiled by Dr. Satyamurti, are valuable additions to the existing accounts on the littoral marine fauna off the Indian Coast in which Mollusca constitutes a major group, both in variety and numbers.

The present publication, along with Part 6 in the Series will be of immense value to the teachers, students and research workers visiting the island as a ready reference and guide for the identification of the various reef-dwelling species of Mollusca in the Island. The two parts will also be worthy and welcome additions to the libraries of all educational and research institutions.

P. N. G

Books Received

Progress in Nuclear Physics, Vol. V. Edited by O. R. Frisch. (Pergamon Press), 1956. Pp. vii + 325. Price £ 4.00.

Advances in Geophysics, Vol. III. Edited by H. E. Landsburg. (Academic Press, Inc.), 1957. Pp. x + 378. Price $ 8.80.

Discovery Reports—New Observations on the Aberrant Medusa Tetraplatia Volitans Busch. Vol. XXIX. By William J. Rees and Ernest White. (Cambridge University Press), 1957. Pp. 129-140. Price 8 *sh.* 6 *d.*

A Handbook of Some South Indian Weeds. By C. Tadulingam, G. Venkatanarayana, C. Rajasekhara Mudaliar and J. Sakharam Rao. (Government Press, Madras), 1955. Pp. xi + 488. Price Rs. 7.

Advances in Virus Research, Vol. IV. Edited by Kenneth M. Smith and Max A. Lauffer. (Academic Press Inc.), 1957. Pp. ix + 339. Price $ 8.00.

Venoms. Edited by Eleanor E. Buckley and Nandor Porges. (American Association for the Advancement of Science, Washington), 1956. Pp. xii + 467. Price $ 9.50.