

Computers

Analogue and Digital Computers. Edited by A. C. D. Haley and W. E. Scott. Philosophical Library, Inc., New York, N. Y., 1960. Cloth, $5\frac{1}{2} \times 9$ in., viii and 308 pp. \$15.

REVIEWED BY HEINZ WALDBURGER¹

THIS book presents basic material on the design and the functioning of both analog and digital computers. The first chapter is devoted to the introduction of the two types of machines. Three chapters are used to describe analog machines by means of a presentation which leads from the general to the specific. They cover operation of complete computers, design of computing systems, and computing circuits.

The presentation of digital machines (six chapters) begins with a chapter on number representation followed by one describing the operation of a computer system. Then circuitry, storage devices, and input-output equipment are each treated in a separate chapter.

Finally, a few remarks about programming, though not mentioning the wide range of present-day applications, close this hardware-oriented book.

Hydrometry

Hydrometry. Theory and Practice of Hydraulic Measurements. By A. T. Troškolański. Pergamon Press, New York, N. Y., 1961. Cloth 7×10 in., xix and 684 pp. \$18.

REVIEWED BY S. KOLUPAILA²

THIS book is aimed at flow measurements, mostly for water supply and hydraulic engineering, but not at density determination, as dictionaries discriminate this science.

Author considers following elements of measurements: time, angle, distance and height, area, volume, pressure, velocity, intensity of flow, and total flow. Principles and methods of measurements are presented in the 1st part, while the 2nd part explains the instruments and equipment. Some most significant chapters are: water-level gages; integrators; hydrostatic manometers; elastic pressure gages; hydrometric floats; impact-pressure velocity meters; hydrometric current meters; electromagnetic current meters; traveling screen; measuring weirs; palisades; throated flumes; constriction flowmeters; centrifugal-head meters; variable aperture meters; inertia pressure method; salt-titration method; salt-velocity method; measuring orifices and nozzles; danaldes; water meters—inferential, positive, compound; hydrometric laboratories. General bibliography, conversion tables, and an extensive subject index with terms translated into French and German conclude this treatise. Valuable lists of references are given after every chapter.

Turbocompressors

Axial und Radial Kompressoren. By B. Eckert and E. Schnell. Springer-Verlag, Berlin, 1961. Cloth, 8×11 in., xvi and 527 pp. DM 89.

REVIEWED BY J. KESTIN³

THIS is a book for which no parallel exists in the English language—on either side of the Atlantic. It contains an ex-

¹ Research Associate, Brown University, Providence, R. I.

² Professor, Department of Civil Engineering, University of Notre Dame, Notre Dame, Ind.

³ Professor, Division of Engineering, Brown University, Providence, R. I.

tensive, synthesizing treatment of a particular type of device; in this case, turbocompressors, both axial and radial. German authors always excelled in this type of treatise in which, in one comprehensive work, an attempt is made to discuss all topics in applied science which are relevant to a particular technology or to the design of a particular class of machine. There exist treatises on internal-combustion engines, boilers, lifting machines, steam turbines (of which the volumes of Stodola are an outstanding example), etc., etc. A treatise of this kind normally embraces all aspects of the subject, thermodynamic considerations, problems of stressing, vibration, regulation, and such other branches of the engineering sciences as must be brought to bear in order to insure a successful design, successful, that is, in all its aspects, ranging from a deeply thought-out specification to trouble-free individual assemblies.

It is, however, symptomatic of the increasing complexity of modern design problems that the present volume, in spite of its 527 pages of unusually large format, could not be as comprehensive as the older works written in the same tradition. For example, all problems of stressing or vibration as well as a detailed discussion and classification of the various design forms of the elements of compressors have been excluded.

Your reviewer has often wondered at the reasons for the existence of this kind of book in Germany, Switzerland, and Eastern Europe, and for their absence in this country and in England. These are most likely to have their roots in the differences in the respective organizations of design offices in industry and of academic institutions for the education of future engineers. It is quite certain that the present book will be used extensively by students of design in those countries, but not by their opposite numbers here or in England. This is no place to embark on an inquiry into the wider ramifications of this remark, but it will be perhaps pertinent to note that the first edition of this book which appeared in 1953 was translated into Polish and Russian, but that the chances of its appearing in English are very meager indeed.

Elastic Stability

Theory of Elastic Stability. By S. P. Timoshenko and J. M. Gere. Second Edition. McGraw-Hill Book Company, Inc., New York, N. Y., 1961. xvi and 541 pp. \$15.

REVIEWED BY W. PRAGER⁴

THE first edition of this text was published a quarter of a century ago. By stimulating interest in structural stability, it has contributed much to the rapid growth of the field, which must have made the selection of the material for the present edition a difficult task. The authors wisely decided to maintain the didactic character of the earlier work rather than aim at an encyclopedic coverage of the field. Though many changes have been made to bring the subject matter up to date, the over-all impression is not disturbed.

Chap. 1, now entitled "Beam-columns," has been slightly shortened by the omission of the discussion of inelastic effects. The same omission has been made in Chap. 2, which has, on the other hand, been enlarged to include buckling under nonconservative forces and dynamic buckling. A new Chap. 3 on "Inelastic Buckling of Bars" has been inserted. Chap. 4 on "Experiments and Design Formulas" is essentially the same as the corresponding chapter of the first edition. Chap. 5 on "Torsional Buckling" constitutes another major addition to the

⁴ L. Herbert Ballou University Professor, Brown University, Providence, R. I. Mem. ASME.

The best available guide to the elastic stability of large structures, this book introduces the principles and theory of structural stability. It was co-authored by the father of modern engineering mechanics. Enter your mobile number or email address below and we'll send you a link to download the free Kindle App. Elastic instability is a form of instability occurring in elastic systems, such as buckling of beams and plates subject to large compressive loads. There are a lot of ways to study this kind of instability. One of them is to use the method of incremental deformations based on superposing a small perturbation on an equilibrium solution. Consider as a simple example a rigid beam of length L , hinged in one end and free in the other, and having an angular spring attached to the hinged end. The beam is