

## CIVIL ENGINEERING

### Civil Engineering Reference Book

Edited by J. Comrie. Second edition. Vol. 1 : Pp. xiii+518. Vol. 2 : Pp. xiii+527. Vol. 3 : Pp. xiii+599. Vol. 4 : Pp. xiii+392+lxii. (London : Butterworth and Co. (Publishers), Ltd., 1961.) £17 17s. 0d. the four volumes.

**A** REFERENCE book dealing with so vast a subject as the science and practice of civil engineering would assume enormous proportions if the objective was to provide a self-contained treatment of every aspect of the subject for the engineer. Its proportions would, however, be more modest if it contained a brief review of each aspect of the subject with adequate references to specialist publications. This work in four volumes, by some fifty-six contributors, appears to fall somewhere between these possible forms, though its aim (as stated in the introduction to the first edition) is to give the civil engineer a concise presentation of the fundamentals of the theory and practice of all branches of the subject.

There is a tendency, in those chapters involving mathematical analysis, to deal with matters of detail rather too briefly for the practising engineer. This is remedied in some instances by numerous references to specialist works as, for example, in the chapter on hydraulic power plants. In other instances, however, as in the chapter on strength of materials, the references given are not always adequate for the sophisticated mode of treatment adopted. (The confusion of the mathematical expressions for the strain energy and complementary energy of linear systems in this chapter is noteworthy.)

Chapters on mathematics, statistics, physics and chemistry, mechanics, mechanics of fluids, strength of materials, thin slabs and shells, surveying, building materials, cements, measuring appliances and general tables are contained in Volume 1. Volume 2 deals with soil mechanics, site investigation, foundations, hydraulic power plants (for example, dams, conduits and turbines), overhead transmission lines, tunnels and tunnelling practice, land drainage, hydraulics of rivers and canals, coastal engineering and explosives. Structural theory and practice relating to metal (including welding and welded construction), concrete, timber and brick and masonry construction, including buildings and bridges, is the subject of Volume 3. The fourth volume is concerned with waterways, highways, railways, airports, harbours and docks, water supplies, sewerage, civil engineering in town planning, works construction, specifications and quantities, fire protection of buildings, legal notes and patents (British). Extensive revision of the contents of the previous edition has been carried out, and the chapters on hydraulic power plants, overhead transmission lines, structural concrete, prestressed concrete, masonry and brickwork and aesthetics of bridge design are new.

It is surprising to find that such an important topic as the plastic theory of the ultimate load-carrying capacity of ductile metal structures is confined to a few non-mathematical paragraphs in the chapter on steel building structures, in view of the detailed treatment of many other aspects. (The chapter on the theory of structures is devoted entirely to an attempt at a comprehensive treatment of the various so-called methods of analysing frameworks in the elastic condition, and is thoroughly conventional.)

With the exception of the chapters on surveying, materials and measuring appliances and the tabulated data, the value of Volume 1 seems questionable. Almost any attempt to deal with subjects such as mathematics and mechanics adequately and in directly useful form for the engineer, within the compass of a single chapter as in this volume, would meet with very limited success. Moreover, there is no difficulty in obtaining good text-books in English on basic aspects of the engineering sciences. Works on engineering design and practice are much less common, however, and it would appear that the value of this book as a whole lies more in its presentation of this kind of matter than in the abbreviated accounts of theory which it contains. Even though a book of this kind requires fairly frequent revision (at least every ten years) to take account of progress, the appearance of a second edition is some indication of its appeal to the practising engineers for whom it is written.

T. M. CHARLTON

## THE BIOLOGY OF MICRO-ORGANISMS

An Introduction to the Biology of Micro-organisms  
By Lilian E. Hawker, A. H. Linton, B. F. Folkes  
and M. J. Carlile. Pp. 452+50 plates+48 figures.  
(London: Edward Arnold (Publishers), Ltd., 1960.)  
35s. net.

**T**HE study of micro-organisms is wide-ranging and rapidly developing. This is partly because of the increasing recognition of their economic importance as agents in the manufacture of useful products, in soil fertility, and as agents of disease and spoilage; and partly because the study of microbial physiology has much to contribute to cell physiology in general. The rapid rates of reproduction of many micro-organisms make them extremely valuable tools for the study of many phenomena of general biological importance.

There are very few books which attempt to give between one pair of covers a conspectus of the morphology, physiology and ecology of the major groups of micro-organisms. Therefore this book serves a very useful purpose as a general introduction to this wide subject, without attempting to be a complete text-book of microbiology (if such be possible). It is divided into three sections: (1) morphology and life-cycles of micro-organisms, with chapters on bacteria, fungi, protozoa and slime-moulds, algae, viruses (148 pp.); (2) physiology and metabolism (118 pp.); (3) ecology of micro-organisms, including the microbiology of soil, air and water, animal and plant pathogens, the microbiology of food and other commercial products, and industrial fermentations (140 pp.). There are an appendix (20 pp.) on some techniques used in the study of micro-organisms, and an index (26 pp.).

The book is well illustrated with many photographs and diagrams. Each chapter ends with a well-chosen list of books and articles for further reading. The book should be very useful to undergraduate students of microbiology and related fields; and to postgraduates in other sciences who wish to have in convenient form a concise survey of microbiology—of the biological forms concerned, their physiology, and the numerous fields of microbial activity. The book is well printed and well produced, and is extremely good value, by modern standards, for its modest price.

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