

for which the cantilever type may be profitably employed is about 2,700 feet; (5) the span of equal cost for the types is 1,670 feet.

Few changes are made in the revised edition, and these are principally in furtherance of greater clearness. The term "limiting span" is introduced as signifying the span length which each type of bridge cannot physically exceed. The longest span at which the cross-section of the principal members will not exceed an assigned maximum value, determined by the limitations of design, fabrication, transportation and erection, is then termed the "maximum span." Added usefulness is conferred on the book by bringing the bibliographies up to date and amplifying the tables of bridges noteworthy for length of span or other features of interest. Four folding plates, showing the elevations and cross-sections of suspension bridges and cantilevers from 1,000 to 3,000 feet have been inserted illustrating the designs described in the text.

The excellence of this little book should commend it to anyone having to do with the design of long-span bridges.

**Reinforced Concrete Construction**—Vol. II., Retaining Walls and Buildings.—By George A. Hool, S.B., Associate Professor of Structural Engineering, the University of Wisconsin. Drawings by Frank C. Thiessen, B.S., Instructor in Structural Engineering, the University of Wisconsin. New York: McGraw-Hill Book Company, Inc. 666 pages; 411 illustrations in the text and 34 full-page and folding plates; cloth; size, 6 x 9 in. Price, \$5.00 net.

**Reviewed by C. R. Young, M. Can. Soc. C.E.**

The excellence of the previous text-books prepared for use in the Extension Division of the University of Wisconsin is fully maintained in the second volume of Professor Hool's treatise on Reinforced Concrete Construction. Although the presentation has evidently been adapted to the needs of those students who must largely depend upon their own resources, the work can scarcely be said to lose value to the practising engineer on this account. So much practical information is contained in the six hundred odd pages that a little over-elaboration of a point is easily overlooked.

The book is divided into two parts, the first dealing with retaining walls, and the second with buildings. Of the 666 pages, however, 602 pages deal with buildings, a proportion to which no exception can be taken.

Retaining walls are covered in three chapters, dealing with the theory of stability, design and construction. Little space is given to the first and third divisions of the subject, the students' problem being assumed, as it would appear from the text, to be largely centred about design. In calculating the external forces on walls, the author employs the method of equivalent fluid pressure, undoubtedly a simple method of dealing with the problem.

Under buildings, floors are given first consideration. Monolithic beam and girder construction is exhibited very thoroughly, as far as design is concerned, by a detailed design of a typical floor panel in four different ways. Full-page plates containing details of these various schemes are given, even each reinforcing rod being fully detailed. Another panel is then designed, in one-way hollow tile construction, affording an instructive comparison with the monolithic type. The flat slab system, while perhaps not given the attention which Mr. Turner might desire, is nevertheless clearly described, as far as essentials are concerned. The author is not impressed with the accuracy of Grashof's analysis, and prefers the beam method or the circular plate method. Unit construction is deservedly given some space, followed by a discussion of various details and floor attachments. Chapter V. is devoted to types of reinforcement.

Following the discussion of floors, come excellent chapters on Roofs, Columns, Foundations, Walls and Partitions and Stairs. Valuable though the information in the chapter on Elevator Shafts may be, from the fact that it chiefly concerns elevators, it appears to be somewhat out of place in a text-book on reinforced concrete construction. One of the most valuable portions of the work is that dealing with continuous beams, eccentricity of loading on columns and wind stresses. Particularly with respect to the former, the fullness of detail, characteristic of the author's method, is likely to be appreciated.

The general discussion of structural elements is then effectively illustrated by two examples of the design of entire buildings. These examples are not in detail, portions of one of the buildings having previously been discussed minutely, but the general considerations and the specifications cited are particularly useful to the designer who has previously confined his attention to parts rather than the whole.

Proceeding to construction, Materials, Forms, Bending and Placing of Reinforcements, Proportioning, Mixing and Placing of Concrete, Finishing of Surfaces and Waterproofing are adequately considered. Mr. A. W. Ransome contributes an authoritative chapter on Construction Plant, and Mr. Leslie H. Allen, of the Aberthaw Construction Company, a most useful section on Estimating. The work is concluded by the inclusion in an Appendix of the Second Report of the Joint Committee on Concrete and Reinforced Concrete.

Considered in its entirety, there is little which can be criticized in the book. It appears to be fairly free from typographical and other errors, although the reviewer might point out that the strength requirements for cement and mortar on page 444 are erroneously given as pounds per square foot instead of pounds per square inch. Broadly judged, therefore, the book must be regarded as a most useful contribution to the literature of reinforced concrete.

**Cement, Concrete and Bricks.**—By Alfred B. Searles, Lecturer on Brickmaking under Cantor Bequest, Consulting Ceramic Engineer, Sheffield, England. Published by Constable & Company, Limited, Leicester Square, W.C., London. 412 pages; size, 6 x 9 in.; cloth. Price, \$3.00.

This book is one of a series of text-books introductory to the chemistry of the national industries, and, therefore, deals in detail with the chemistry of the materials mentioned in the title. It is descriptive rather than technical, and it is a collection of facts rather than an exposition of any new theorem. The illustrations and examples are English, and are, therefore, not as convincing to Canadians.

There are four distinct divisions in the book, the first of which deals with cements, commencing with a chapter on the raw materials and concluding with a descriptive chapter of the usual tests. The second division is called concrete, and is, like the part on cement, laboriously thorough in descriptive detail. The lines of stress in beams are shown in carefully prepared illustrations, but no mention is made of the rules which govern the shape, length, height or breadth of it. Reinforcing systems are illustrated, but nothing is said about the disposition of the steel; so that this part is not of technical value. The three chapters on bricks are the most interesting and instructive in the book, although they are not to be considered as a text on the subject. The fourth division, which consists of five pages, and which seems to have been added as an appendix, does not deal with siliceous bricks as fully as the subject deserves.

The book is well written and well indexed, making it convenient as a reference. It may be considered as a summary of the facts regarding cement, concrete and bricks without proofs or rules.