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978-1-107-64536-3 - Architectural Building Construction: A Text Book for the
Architectural and Building Student: Second Edition: Volume Three

Walter R. Jaggard and Francis E. Drury

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ARCHITECTURAL BUILDING
CONSTRUCTION

VOLUME THREE

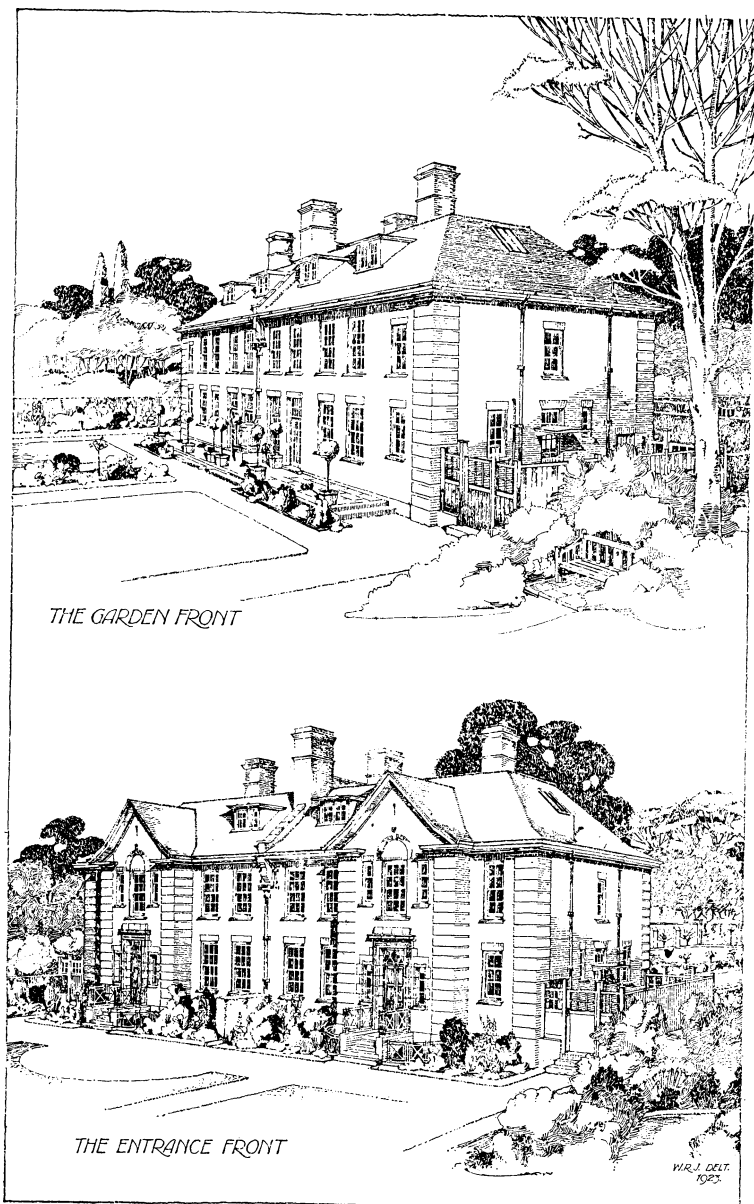
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VIEWS OF THE SEMI-DETACHED HOUSES

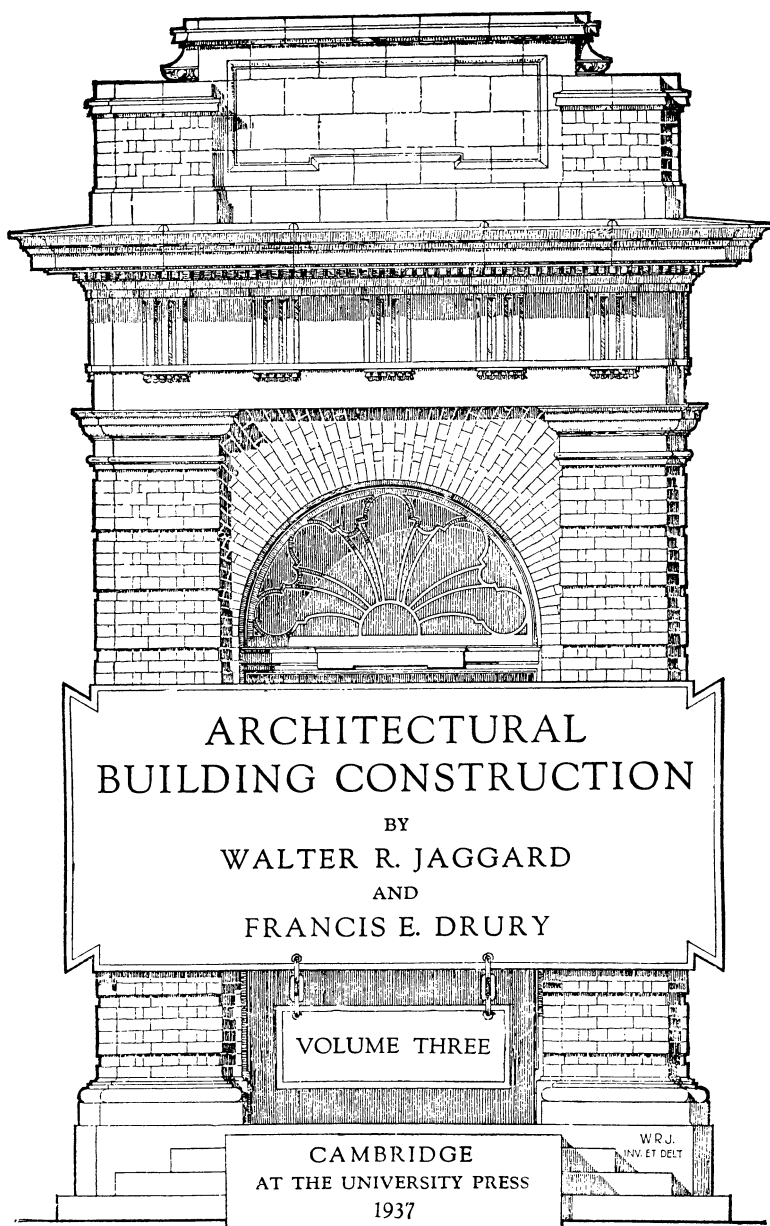
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CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Published in the United States of America by Cambridge University Press, New York

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of
education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781107645363

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First edition 1923

Reprinted 1927, 1932

Second edition (Revised and Enlarged) 1937

First published 1937

First paperback edition 2014

A catalogue record for this publication is available from the British Library

ISBN 978-1-107-64536-3 Paperback

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ARCHITECTURAL BUILDING CONSTRUCTION

A TEXT BOOK FOR THE ARCHITECTURAL
AND BUILDING STUDENT

BY

WALTER R. JAGGARD

AND

FRANCIS E. DRURY

M.Sc.Tech., M.I.Struct.E., F.I.San.E.

Second Edition

(Revised and Enlarged by F. E. DRURY)

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GENERAL PREFACE

IN writing and illustrating the series of works on Architectural Building Construction of which this is the third volume, the authors have been actuated by the desires and objects which are briefly set out below.

That there are many existing books on Building Construction is a well-recognised fact; that some of them have excellent matter, and others have good illustrations is also duly acknowledged, but from a long experience in the practice of Architecture, both in England and the Colonies, and many years of teaching architectural principles and the science of building construction, the authors have been forced to the conclusion that something more in the way of text books is needed for the following reasons.

1. Building Construction should not be divorced from the Principles of Architectural Design. Although it is sometimes true that we find an Architect who can design pleasing structures with little or no knowledge of building construction, it is an undoubted fact that a fine conception of noble architecture must be based upon an intimate and complete knowledge of the proper use of materials, the scientific and fit assembly of the varying units, and an honest and conscientious co-ordination of the work of Architect, Builder and Craftsman.

It may be argued that with the present day use of steel and reinforced concrete, together with other modern materials and methods, we are able to construct some most extravagant fancies in architectural design, which a few years ago would have been quite impossible. Whilst this is quite true, and illustrates the age in which we live, it is also true that the very great majority of our buildings to-day are still erected with the staple materials, such as concrete, brick, stone and timber.

2. For the creation of good architecture it is necessary to study the work produced by our predecessors, and not only the work of ancient civilisations and mediæval peoples, but the best work of more modern architects must be examined. This study is rendered comparatively easy of acquisition through the rapid and cheap facilities offered for travel, and the many excellent books and illus-

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trations which are constantly being published. Attention might here be drawn to the publication entitled, *The Development of English Building Construction*, written by Mr C. F. Innocent, and forming one of the volumes of The Cambridge Technical Series; a perusal of this book will be found both interesting and helpful. Is it possible to apply this method to the study of Building Construction? The authors have been impressed with this idea, and have endeavoured, with some success, to carry it out in their teaching. They have, however, found that in the earlier stages of education this must not be unduly pressed. For elementary students, the teacher should, to some extent, be dictatorial, and whilst selecting a well-proportioned and designed study as an example, should insist upon the construction being shown in a definite manner, although he knows that infinite variety, both in design and construction, is possible. With the more advanced student greater latitude is desirable, and in fact necessary. The authors have, therefore, impressed a certain amount of individuality in the subjects of the first two volumes, but they intend, as far as possible, in the third volume to select examples of established taste and architectural value to illustrate advanced principles of design, maintaining in some cases the constructional details given them by their designer or constructor, but in others, adapting the construction in accordance with modern methods and the more extended use of machinery.

3. Building Construction has more generally been presented to the student in the form of isolated examples, which have no relation whatever to each other, and thus the knowledge obtained cannot be applied to the actual design of a building, even of the smallest dimensions, until a very much later date. Modern methods of teaching demand a greater cohesion. The authors have endeavoured during their teaching experience to obtain or formulate one building into which all the various items comprehended in each year's work could be fitly placed, but after many attempts it was found to be impracticable, and therefore two buildings were arranged, which embody, with few exceptions, all the items necessary for an elementary knowledge of building construction, thus enabling "teaching from the structure itself to be adopted rather than the selection of isolated examples on account of their simplicity".

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This method has been adopted in the first three volumes, but whilst the authors disclaim any idea of presenting great architecture, they do claim that the buildings designed fitly express their purpose, and enable them in a more or less pleasing manner to assemble the different units of the building, and at the same time to inculcate a sense of completeness in the student's work.

4. The acquisition of a knowledge of Building Construction should rightly be a plant of slow but sturdy growth, and in the majority of Architectural and Building Schools the course of instruction covers a period of from three to five years. The first volume of this series is designed to meet the needs of the first year student, the second volume will provide more than is generally required for a second year course, while the third volume will cover a large field of advanced work.

5. The authors have often felt that the ordinary orthogonal presentation of examples of building construction does not sufficiently convey the solidity of the object to an elementary student, and as it is not possible for each student to have, or to make, models of the different units for himself—although such a course would greatly make for efficiency of study—the illustrations have to a large extent been shown in perspective, isometric or pictorial projection. Photographs might, and in some cases will, be used, but the camera, whilst giving a faithful representation of the object, cannot be used to show the construction of hidden parts. On this account dissociated isometric and oblique sketches have been freely used with some slight shading to indicate differing planes, but cast shadows have generally been avoided as tending to obscure the construction, which it is desired to show in the clearest possible manner.

It is strongly recommended that in all Architectural and Building Schools correct scale models—about half full size—of the different items should be made in such a way that the parts may be disassembled, and that the student should be encouraged and advised to study and measure these carefully, and make the usual orthogonal drawings, which are, after all, the media through which Architect, Builder and Craftsman convey their ideas and wishes to one another.

It is necessary to impress strongly upon a student in the early stages of his work, that his knowledge must be presented in a clear and unmistakable way and with some architectural character and

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students should be encouraged carefully to complete all their drawings with full naming of parts, references, and adequate dimensions, and to ink-in and colour, or otherwise distinguish, the materials of construction. They will thus acquire the habit of thoroughness, which is of inestimable value to both draughtsman and craftsman.

In conclusion, the authors' chief endeavour has been to make these volumes of primary importance to students—architect, builder or craftsman—and since in this study, at least, they all meet upon common ground, although each with different aims and objects in life to accomplish, yet, each finding help and guidance herein, there is an augury of the future happy relations which should exist between those engaged in all the branches of the practice of architectural building.

W. R. J.

F. E. D.

June 1916

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PREFACE TO VOLUMES II AND III

IN compiling this volume it was necessary for the authors to give careful consideration to the mode of treatment. At least two courses were open to them, viz. the illustration of methods of construction applied to isolated building details, by selecting examples having no definite relation to or embodiment in any one building, or, to continue the method adopted in the first volume of this series, and endeavour to relate all the items of construction which it appeared desirable to illustrate and discuss, and to apply these rationally within the boundaries of one or more buildings of a definite character.

The latter course commended itself to the authors and they decided to proceed on this basis. Two buildings of different character were selected in order to avoid the aggregation of conflicting details and doubtful combinations of materials which would, of necessity, render a single building very elaborate and complicated, if designed to contain them.

Volume II contains the treatment of such parts of the two buildings as can reasonably be placed before a good second year student in an average school of building or architecture, and the remaining study, for the complete consideration of the two buildings, is given in Volume III.

One of the buildings belongs to the class generally known under building regulations as “domestic buildings”, while the other belongs to the division known as “buildings of the warehouse class”.

A certain amount of overlapping in the preparation of details under the conditions of the treatment selected is inevitable, but it was found convenient and practicable to design two structures which are fairly typical of their respective classes, while embodying the features desirable for study.

These buildings are:

- (1) A semi-detached suburban house.
- (2) A town warehouse.

The architectural treatment of these buildings in plan and elevation has been developed with the intention of illustrating as varied

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PREFACE TO VOLUMES II AND III

a range of constructional examples as possible. It cannot be maintained, however, that all the variations of detail suggested could be embodied or economically used in one building, but each example suggested may be fitly employed as an alternative to other forms of construction in a building of the type to which it refers.

The question of cost has not been overlooked by the authors, but they have not allowed this point to interfere with the objects in view, viz. to illustrate and explain a number of sound and standard methods of construction, generally suited to the class of buildings under consideration.

First cost is not the only point to observe, because it frequently happens that an apparently costly structure is so economical in maintenance that it may ultimately become cheaper and more serviceable than a building of a more meretricious character, where a low first cost appeared to ensure economy.

Furthermore, the mere fact that a building has been erected with costly materials and supplied with much added decoration does not necessarily mean the production of a building of architectural value. Many wayside cottages have that elusive charm, which we know as architecture, and which is very often missing in some of the large town buildings. It should be the business of every student to endeavour, for himself, to find that secret by which the smallest building, by correctly expressing its functions, may, equally with the large and noble, take its place as a work of architecture.

The authors desire to record their indebtedness to all who have been kind enough to supply information, and to take an interest in the preparation of this volume.

W. R. J.

F. E. D.

July 1922

In the present edition the subjects of study have been rearranged and many revisions and additions to the text have also been made.

It is hoped that this change will be an advantage to teachers and students in meeting the needs of grouped course instruction.

Thanks are hereby accorded to Mr Norman Keep, F.R.I.B.A., and Mr R. A. Bix for their valuable assistance in preparing diagrams for this volume.

F. E. D.

April 1936

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*available for download from www.cambridge.org/9781107645363

DOUBLE-PAGE FIGURES: Detail No. 11	<i>between pages 16 and 17</i>
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