DETAILS OF BUILDING CONSTRUCTION

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BY

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PREFACE.

THE author would have preferred to present this book to the public without a prefatory note, had not some explanations seemed necessary in order to prevent misunderstanding. The work is not the result of a deliberate attempt at book-making, undertaken with "malice prepense," but is the outcome of the efforts made by a teacher of architectural construction to present a part of his subject to his students. The drawings, consisting originally of rough sketches on large sheets of wrapping-paper, were at first used for temporary illustration only; but the results proved so satisfactory that it seemed best to study the work more carefully and to put it into more permanent form for class-room use.

This was undertaken some three years ago, still without thought of publication; and it was only after the first sixteen plates in blue-print form had been used for some time that their favorable reception by students, and by others who learned of them through students, suggested that they might prove useful to workers outside the college class-room. The revision and completion of the work were accordingly undertaken. Two or three of the original plates have been redrawn; but to redraw them all for the sake of uniformity and possible minor improvements would have involved an amount of labor not justified by the advantage gained, and would have necessitated a longer delay in publication than seemed advisable. In method of presentation, therefore, the work still shows to a considerable extent the various stages of its progress through a period of full three years. In other respects the attempt has been made, by means of careful revision in the light of the best criticism available, supplemented by continuous study and independent investigation, to present the best methods employed or recommended in present-day practice.

In scope the work limits itself to presenting only such details, principally in wood, as are in common use in domestic architecture and in smaller public buildings. The subject of framing has been entirely omitted, partly because it has been aptly treated elsewhere, partly because it does not lend itself readily to the method of treatment here chosen. In the matter of design the author wishes to put in a disclaimer. Nothing is further from his intention than an attempt to dictate in a question of design, but it has been necessary to use design in order to show construction. Therefore, while every effort has been made to show only the good in design, it should be borne in mind that the book is a treatise not on that subject but on construction.

In the method of presentation, the inconsistency arising from the fact that the work was so long in a process of becoming, and that its final evolution into book form remained so long unforeseen, has already been mentioned. The exact character of this inconsistency may be seen by comparing the plates treating of windows with those treating of doors. In treating of windows one plate is devoted to a certain type of window, with the corresponding details, then another plate takes up a different type, and so on. When, however, the subject of doors is taken up, one plate is devoted to types of doors, another to details of frames, another to details of panels, etc. For this there was no remedy except the radical one of redrawing the plates; and the case did not seem to warrant recourse to measures so heroic, since it is, after all, an open question as to which method is the better.

The device of lettering the notes on the plates, instead of presenting them separately in the form of text, was of necessity a part of the original idea, which contemplated only separate plates; and when the work of revision was undertaken, it seemed wise to retain the scheme. It is hoped that the obvious advantage of having the notes on the plates in close juxtaposition to the drawings to which they refer will more than compensate for the disadvantages of an enforced brevity so severe as to be almost incompatible with good English, and of an appearance of dogmatism which the writer would have preferred, if possible, to avoid. That the notes must be read in conjunction with the study of the drawings, if the latter are to be fully comprehended, would seem to be a fact so obvious as to require no emphasis, had not some of the criticisms received during the progress of the work revealed the fact that the notes had been neglected, despite the device used for securing their perusal.

In the matter of nomenclature care has been taken to use only such terms as are sanctioned by the authority of the best writers on architecture and building, and to use them accurately, not in the hope of bringing order out of the chaos of architectural terminology, but only in the hope of escaping the accusation of having worse confounded the present deplorable confusion.

The drawings have been carefully prepared after a long, practical experience and with the aid of one of the best libraries in this country, supplemented by a large collection of working drawings from the offices of leading architects. No pains have been spared to free them as far as possible from the taints of local practice; and while not all that is shown is unreservedly recommended, great care has been taken not to include anything that has not the authority of good practice, and that may not fairly be called good construction when the element of cost is considered. Some cheap methods of construction have been shown and recommended as good of their kind. Such, for instance, are the wood sills shown on Plate VI., which have already been subjected to adverse criticism, but which it seemed best, after mature consideration, to retain. The wood sill in other than frame buildings has the same excuse for being as has the shingle roof — it is cheap. It can of course be justified only on the score of expense; but it has the sanction of good practice in sections of the country where cut stone is not easily and cheaply obtainable; it is painted and treated frankly as wood, and has stood the test of time.

It has several times been suggested that the dimensions of parts be figured on the various details throughout the work, but to the author this has seemed entirely too dogmatic a procedure. As the sturdy Pennsylvania farmer builds his house with 3 x 5-inch studs,— if he does not build of stone,— and does not think of extravagance, while the toiling dweller in the cyclone regions of the West builds with 2 x 4-inch studs and wonders if he cannot safely space them 24 inches on the centers, so the 2½ or 3-inch window-sill that is accepted as a matter of course in one section would strike terror to the heart of the builder in the thriftier region where the 2-inch sill is an extravagance. In order to make the drawings, however, it was necessary to show material of definite size and thickness, and the dimensions chosen for the various parts have been made to represent as nearly as possible the average of good practice. As everything has been most carefully drawn to scale, the sizes used can be ascertained to a nicety by simply measuring them on the drawings. The type window, Plate IV., has been pretty fully figured, but beyond this it was felt that figured dimensions would seem to be an attempt at finality that would tend to restrict the liberty of choice and the exercise of individual judgment on the part of designer and constructor, without which there can be no true progress. If the work is to be used simply as a copy-book it must inevitably fail of its purpose, which in the intent of the author has been much broader.

In conclusion the author wishes to express his sense of obligation toward all those who have so generously assisted him both directly and indirectly with their criticisms and suggestions during the progress of the work, and his hope that the book will be found sufficiently helpful to elicit further criticism looking towards the improvement of future works of this character, whether by the author or by others.

C. A. M.

ITHACA, N. Y., *May, 1905.*

LIST OF PLATES.

NOTE.

THE THICKNESS OF LUMBER FOR FINISHED WORK.

The boards and planks used for sheathing, flooring, and the finer work about buildings measure in the rough 1 in., 1¼ in., 1½ in., 2 ins., 2½ ins., and 3 ins. in thickness. White pine and other lumber produced in the North is usually sawed to full thickness so that the planing on both sides can ordinarily be done with a reduction of only ⅛ in. in thickness; but lumber from the Southern markets, such as yellow pine, etc., is sawed so that it is necessary to count upon a reduction of ¼ in. in thickness for all lumber having a nominal thickness of 2 ins. or more. This gives the ordinary stock dimensions for the thickness of finished lumber as follows: ⅞ in., 1⅛ in., 1⅜ in., 1¾ in. or 1⅞ in., 2¼ ins. or 2⅜ ins., and 2¾ ins. or 2⅞ ins.

Finished lumber thinner than ⅞ in. must be planed down or re-sawed from rough lumber 1 in. or more in thickness. Stock ceiling boards that are made for the market in large quantities are commonly ⅝ in., ¾ in., ⅞ in., 1 in., and 1¼ in. in thickness, and the price is gradually scaled down with the thickness so that the ⅞ in. material is listed at about 60 per cent of the price of the 1¼ in. material. For ordinary finishing, however, where the stock must be gotten out especially for the particular operation, there is little economy in using ¾ in., ⅝ in. or ½ in. material, as the quantity required for any one operation is usually so small that re-sawing cannot be done economically.