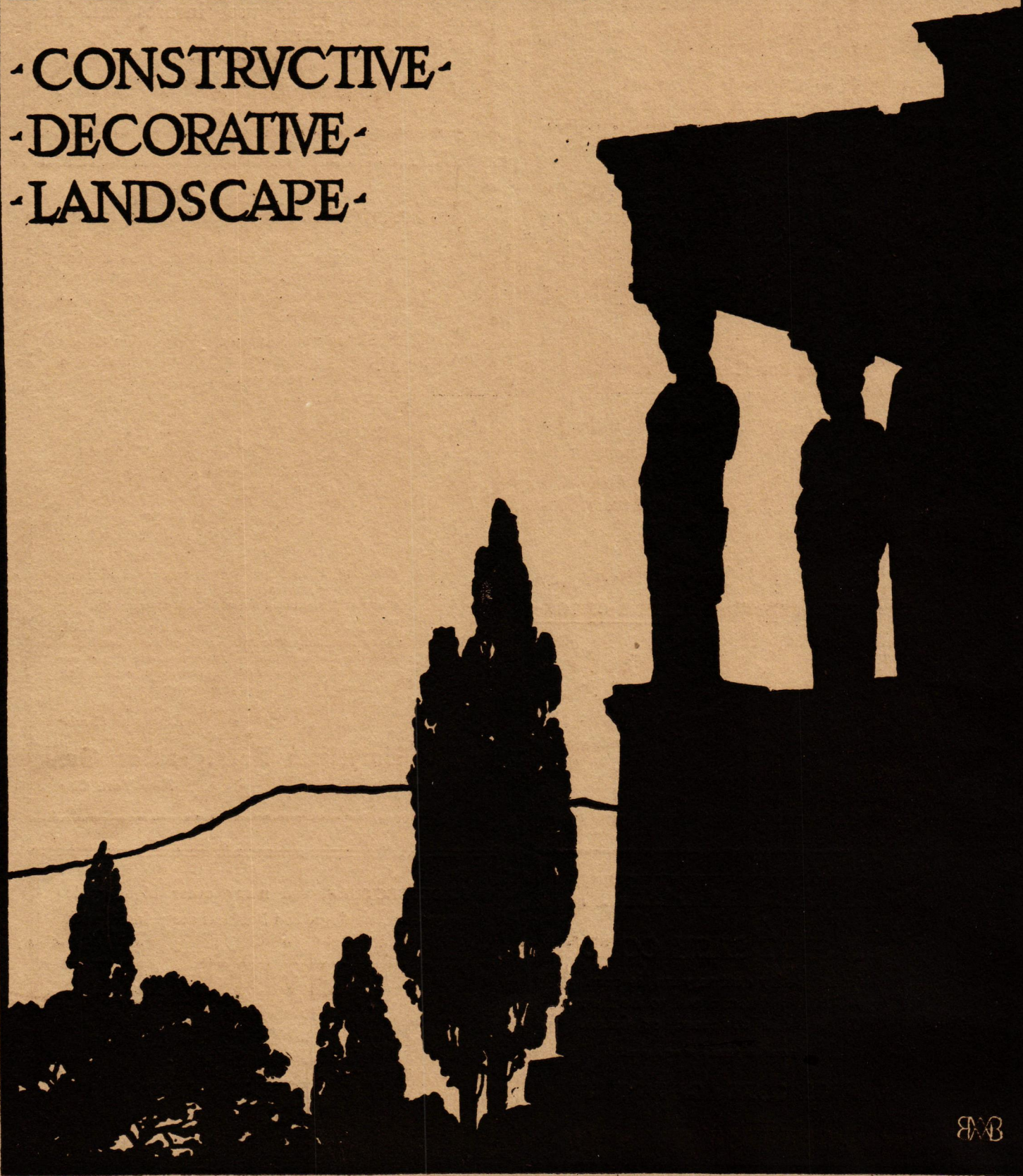


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VOLUME XXXIV

SEPTEMBER 1916

NUMBER 3



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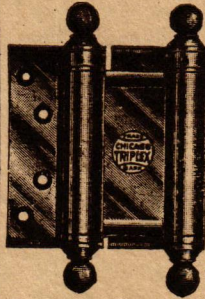


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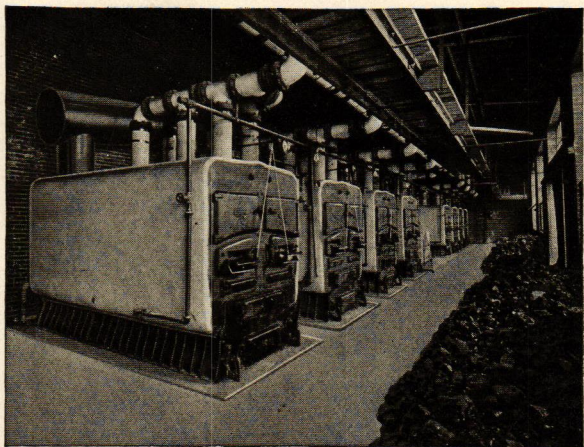
Modern factory management recognizes that good heating and ventilation makes the worker comfortable and increases his production. Provision is now generally made in all modern factories for the installation of the most practical and successful heating and ventilating equipment.

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have earned the right to be classed as A 1 equipment. Thousands of new and remodeled factories in the country are so equipped. Architects everywhere have learned from experience that an iron-clad specification for *Ideal Smokeless Down-Draft Boilers and Vento Heaters* means that the one most vital and important feature of that building is assured of success.

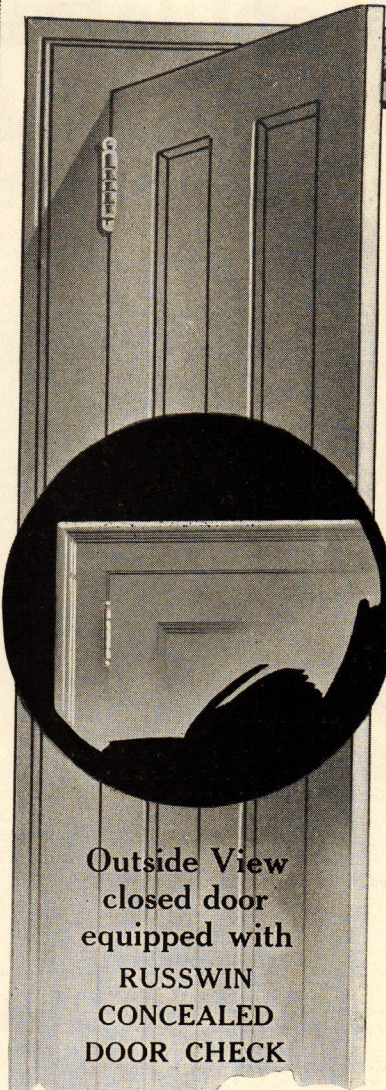


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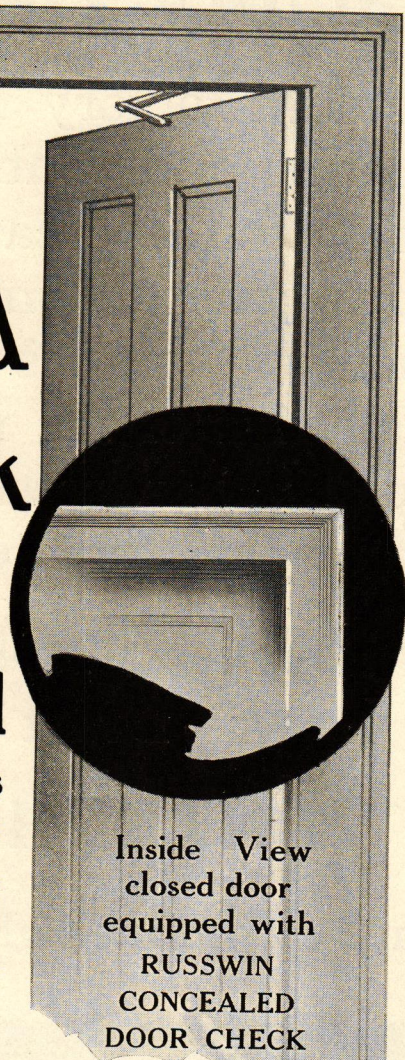
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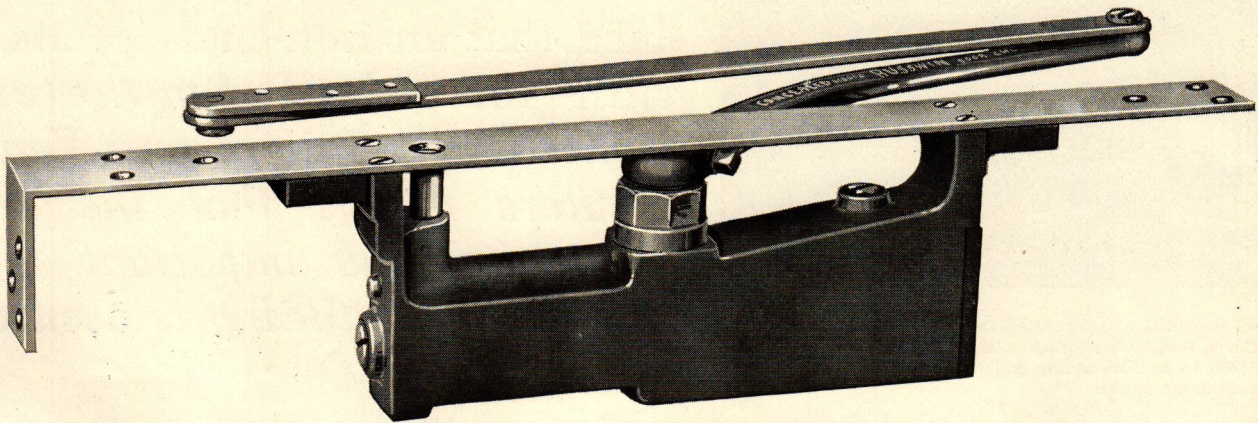
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when the door is closed,
one that can be applied
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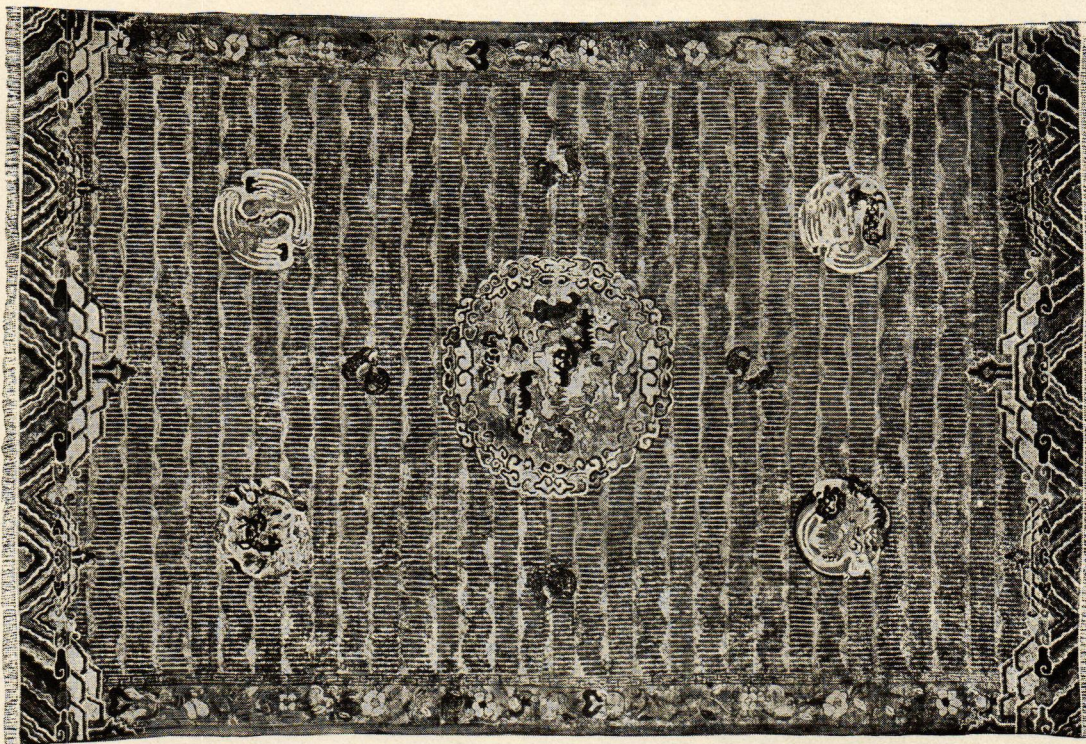
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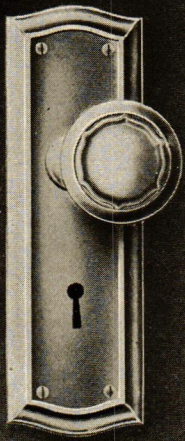
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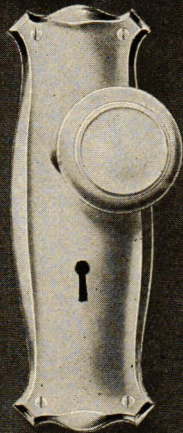
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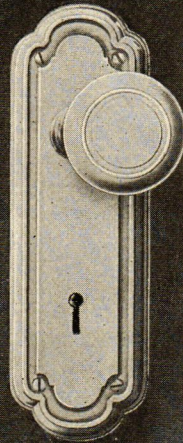
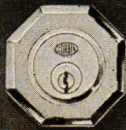
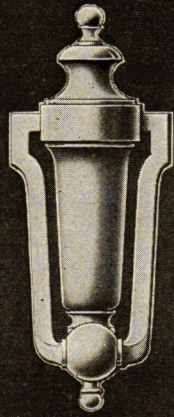
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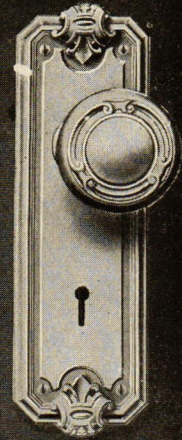
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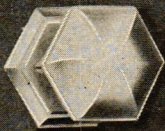
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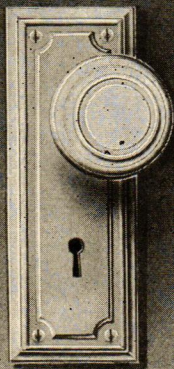
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ANVERS



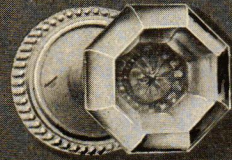
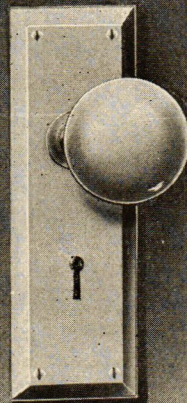
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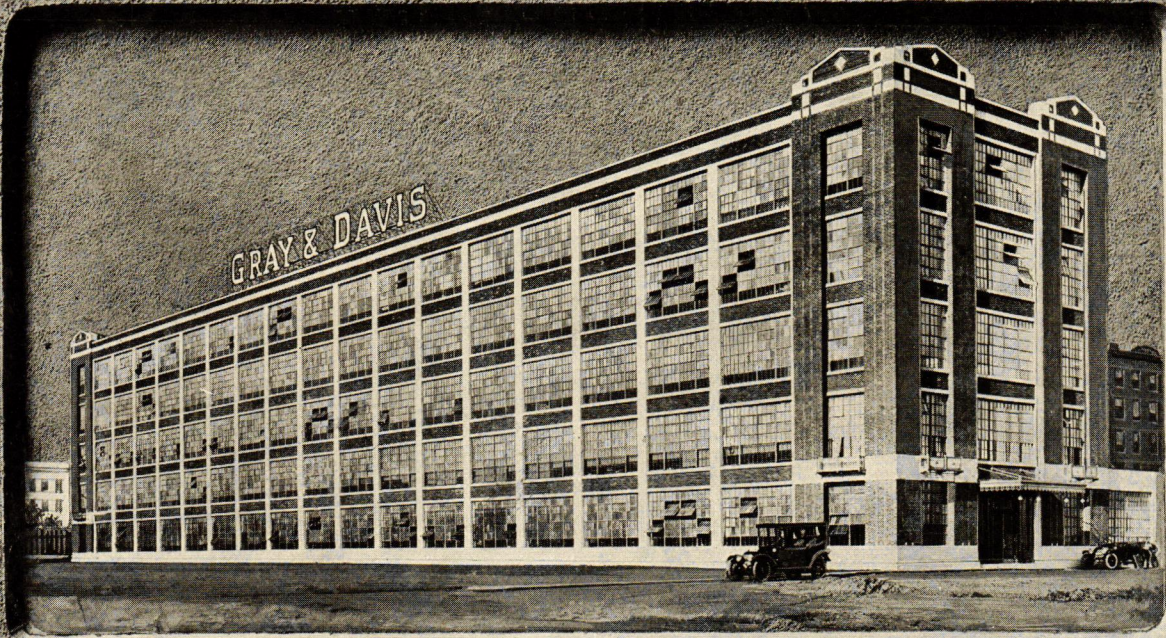
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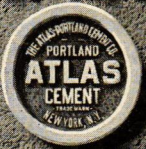
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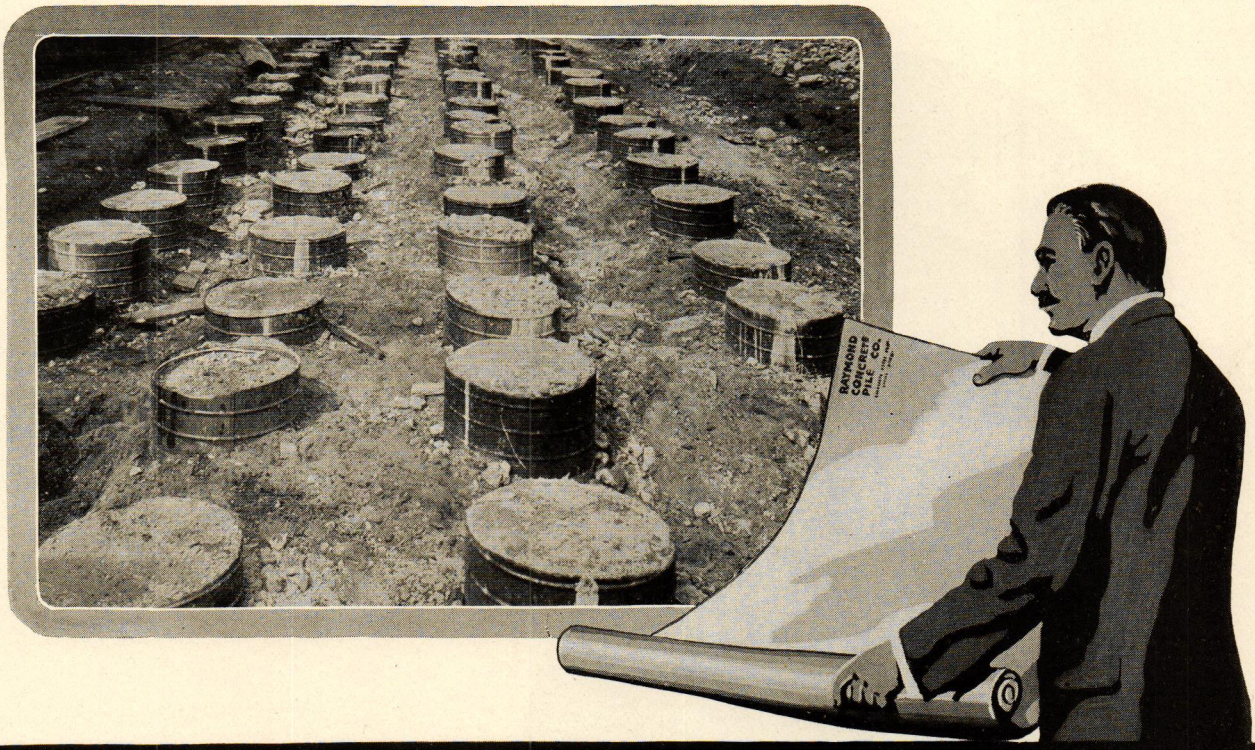
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- 3 The combined core and shell is driven into the ground to sufficient penetration. The core is then collapsed and withdrawn from the shell.
- 4 The shell—which remains in the ground—is then carefully inspected as it is to be the receptacle of the GREEN concrete.
- 5 Carefully prepared concrete is now poured into the shell, thus forming a complete Raymond Pile, perfect from tip to top.

Simple, isn't it?

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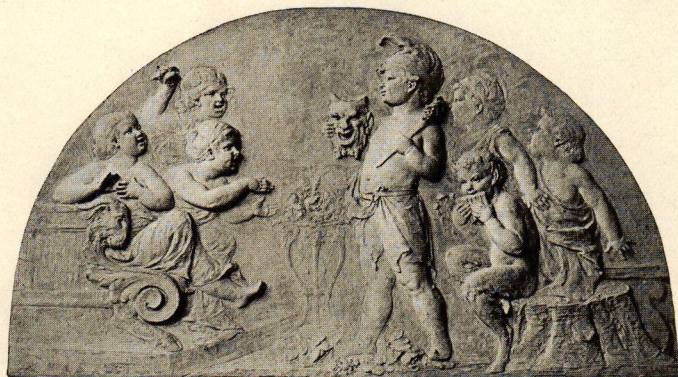
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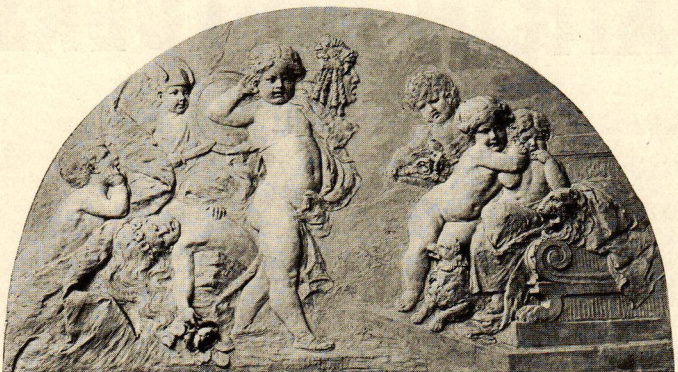
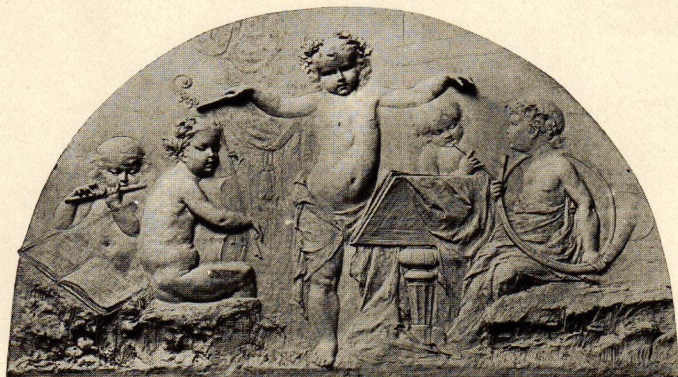
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A form for every pile—

A pile for every purpose.



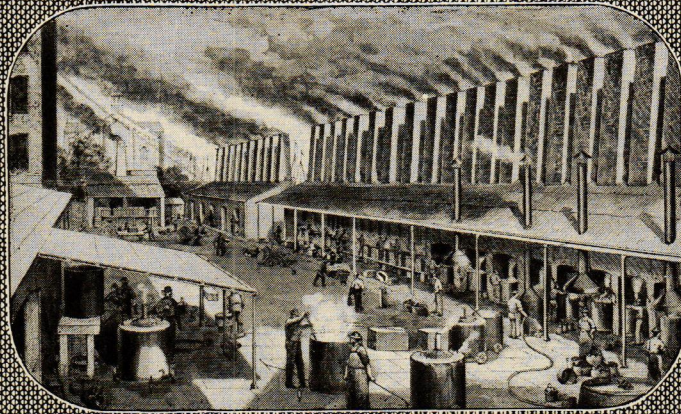
NORTHWESTERN
is a short form of
specification for archi-
tectural Terra Cotta
of superior quality.



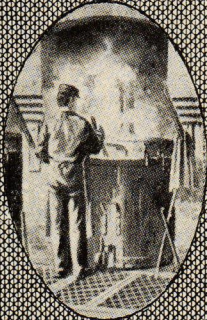
COMEDY, Music, Tragedy: panels for
a photoplay theatre in Omaha, Ne-
braska—Harry Lawrie, Architect.

Modeled in the studios of The North-
western Terra Cotta Co., and executed
in Northwestern Cream Enamel Terra
Cotta.

THE NORTHWESTERN TERRA COTTA Co.
CHICAGO



BATTERY OF GUM MELTING KETTLES WHERE WE MAKE 11500 GALLONS OF VARNISH AT A SINGLE BATCH



CLOSE UP VIEW OF KETTLE IN OPERATION

Varnish in Architecture

Deviltries

When a job of wood finishing turns out badly, whether it does not dry properly or whether it cracks, peels, chips, blooms, pits, sags, wrinkles or does anything else it should not do, it is a common thing among wood finishers to attribute the trouble to one of the "deviltries" of varnish.

Sometimes this is true, but the right varnish properly applied develops no "deviltries."

Given the right varnish for the right use and a competent finisher the right results are infallible, and a satisfactory finish can be had in no other way.

One of the most certain means of avoiding varnish troubles and ensuring a finish that will satisfy completely is the specification of Berry Brothers Architectural Finishes.

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LIQUID GRANITE—floor varnish. Makes smooth, satiny finish. Lasting, waterproof, marproof, also adapted for bathrooms, window sills and casings, and all interior work where great durability is desired.

LUXEBERRY WOOD FINISH—for general interior work. Develops and preserves the grain of all woods, and makes a handsome and lasting finish. Rubs perfectly.

LUXEBERRY SPAR—for exterior work. Especially adapted for durability under extreme exposure — front doors, store fronts, marine work, etc. Makes handsome finish and will not turn white under the severest conditions of wear.

BERRY BROTHERS
(INCORPORATED)
World's Largest Varnish Makers
Established 1858

Factories: Detroit Walkerville San Francisco

Scrap Book Item

Cut It Out

Cypress

While cypress has the beautiful grain and other essentials that make it a desirable wood for interior trim, it is more sappy than other woods, which is a handicap from the finisher's standpoint.

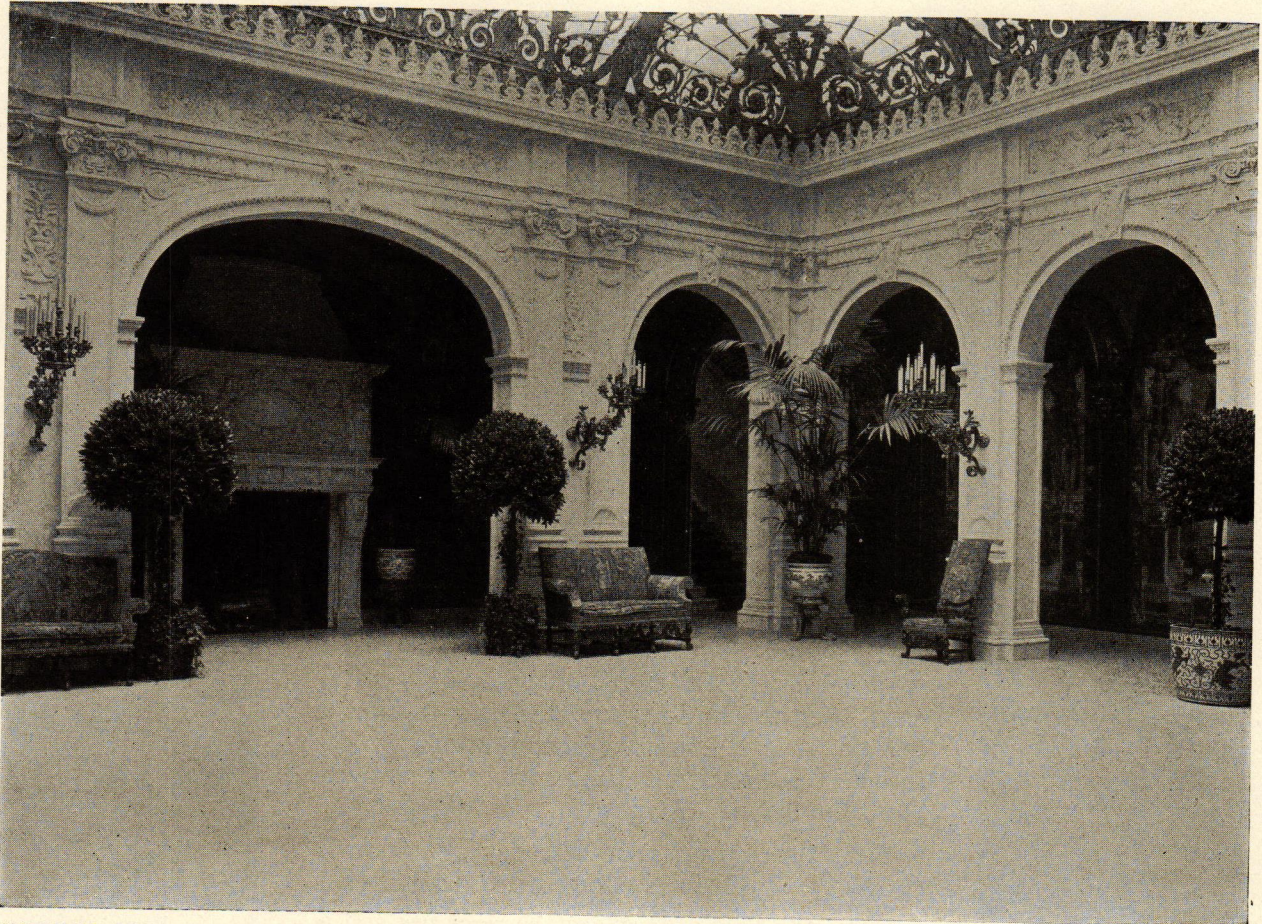
One or two coats of shellac is the most effective sap killer, care being taken to sand down close so that no shellac film remains on the surface.

It is claimed by some finishers, that undercoats of shellac have a tendency to cause the varnish coats to crack. A close sanding down as suggested will obviate all danger of this.

Ordinary liquid fillers will not keep in the sap. If the wood is to be stained, stain first and follow with the shellac coats.

Berry Brothers, Varnish Mfrs., Detroit, Mich. (294)





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“ARDSLEY” IS A HEAVY, WOOL-BACK CHENILLE FABRIC, IN WIDTHS OF
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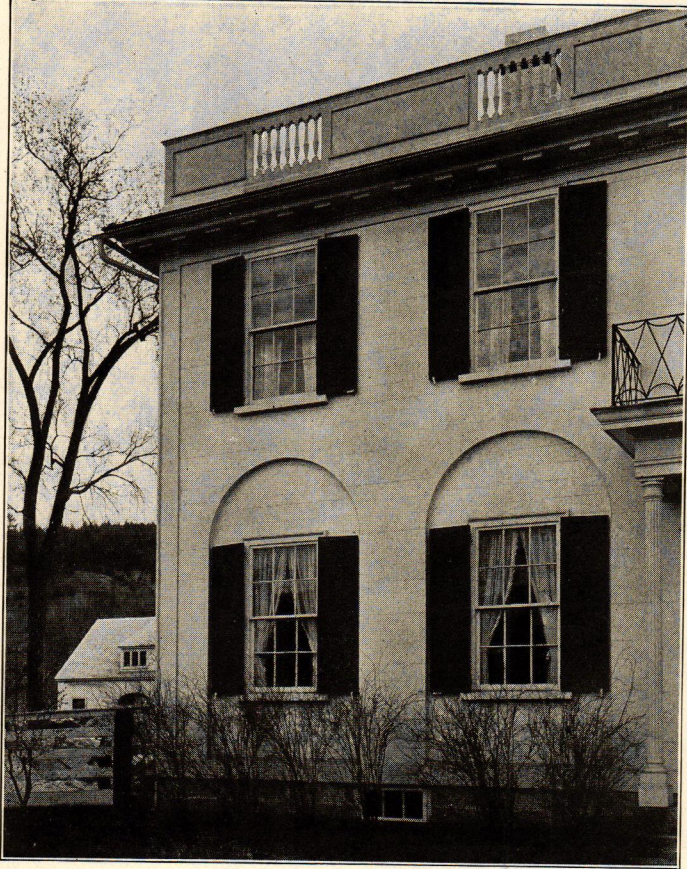
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Thirty-fourth Street

Thirty-fifth Street



Detail of Front Elevation, The Wheeler House, at Orford, New Hampshire. It is believed that this house—a full front view of which was shown on page 11 of the July Monograph—was designed by Bulfinch.

ALL woods have certain uses for which they are especially adapted by reason of the peculiar qualities and characteristics which nature has given them; and on their proper selection for these uses, hinges the whole problem of economy in wood construction.

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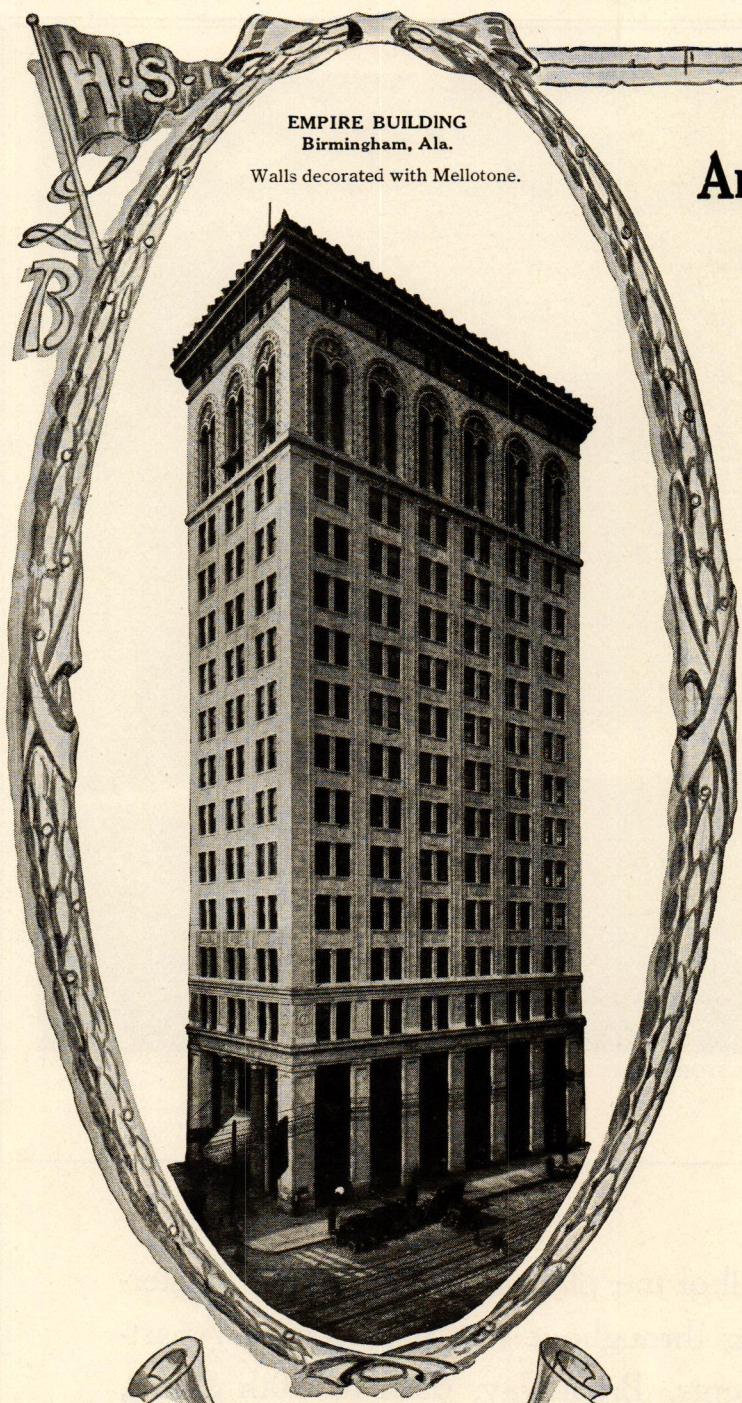
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for outside finish lumber—siding and corner boards; window sash, frames and casing; outside doors, door frames and casings; outside blinds; all exposed porch and balcony lumber; cornice boards, brackets, ornaments and mouldings; and other outside requirements, *not* including shingles.

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You can send us specimens of the actual woodwork to be used. We will not only give you our suggestions for finishing, together with complete specifications, but actually **work out ideas** for you on the specimens submitted and render this service without expense to you.

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Write for a copy of our booklet, "Varnish and Varnishing." It gives the kind of information you want.

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you have only to consult your local Lowe Brothers dealer, write the nearest Lowe Brothers office, or if you wish, communicate direct with our special Architect's Service Department, 101 Park Ave., New York City.

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ENTRANCE HALL, ASTOR COURT APARTMENTS



ASTOR COURT APARTMENTS

All of the plain and ornamental Plastering throughout the Astor Court Apartments, Broadway, 89th to 90th Street, New York, Charles A. Platt, Architect, was executed by

H. W. MILLER, Inc.

Plain and Decorative Plastering and
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New York



HOUSE, ALFRED D. CHILDS, ENGLEWOOD, N. J.

Caretto, Forster & King, Architects. Wm. H. Whyte Construction Co., Builders.

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O. W. KETCHAM

Manufacturer of

Architectural Terra Cotta—Brick—Roofing Tile

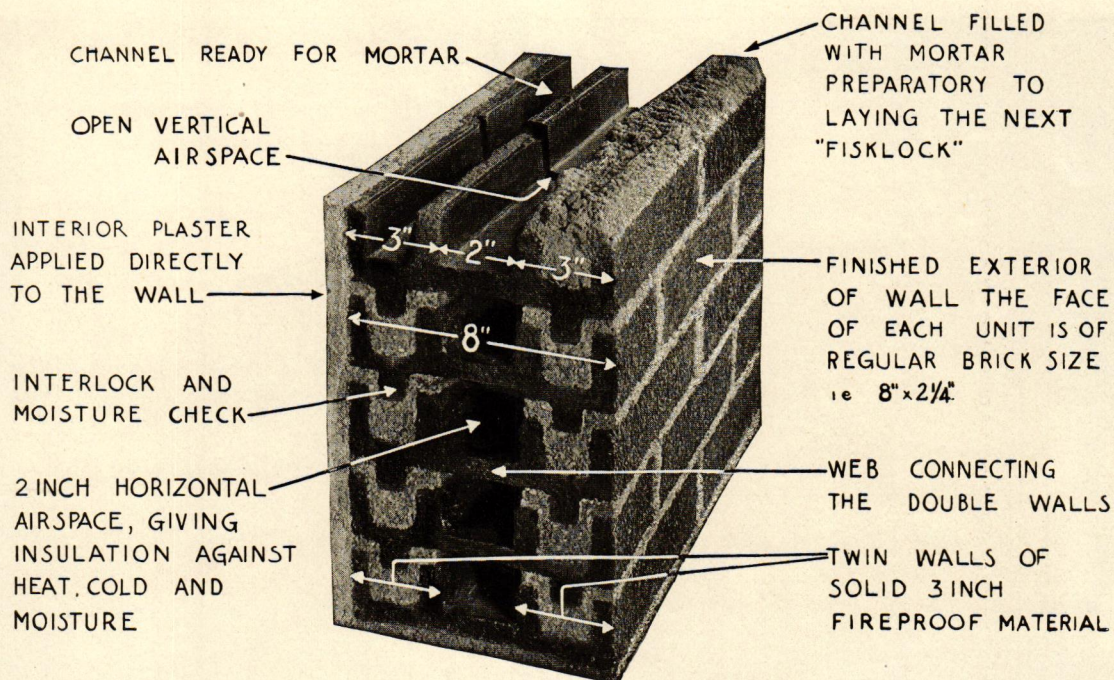
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Hardoncourt—Fiske Patents

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It is sold under the “Open Price Policy”—the same price to all.

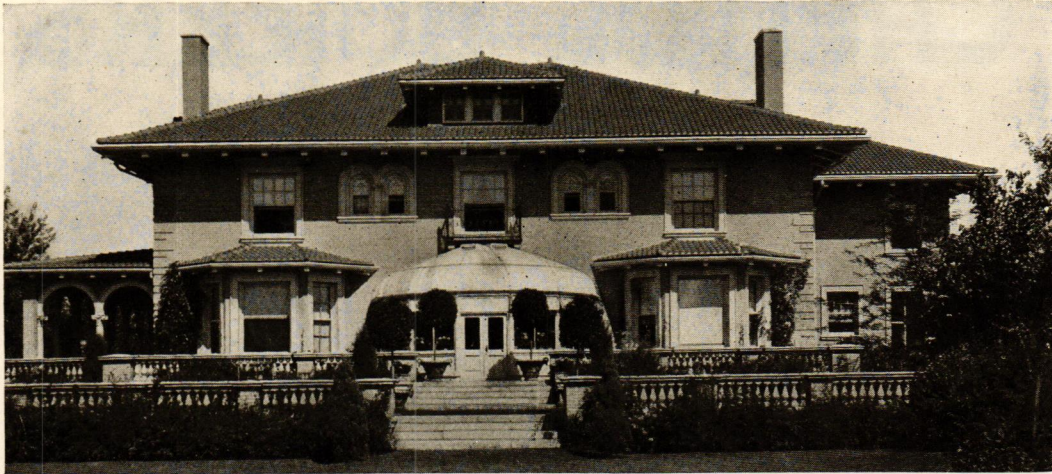
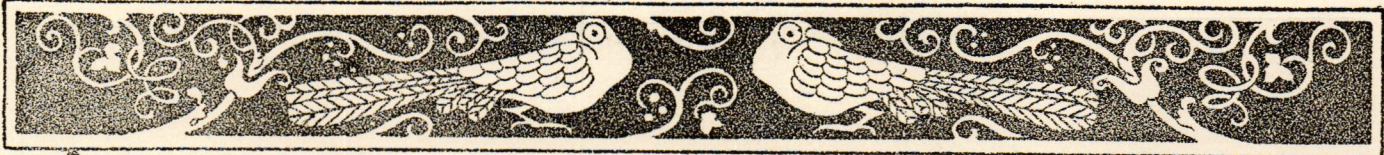
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Removable Conservatory Vestibule erected for Mrs. Jewett, at Colorado Springs, Colorado

Unique Vestibule Glass-In

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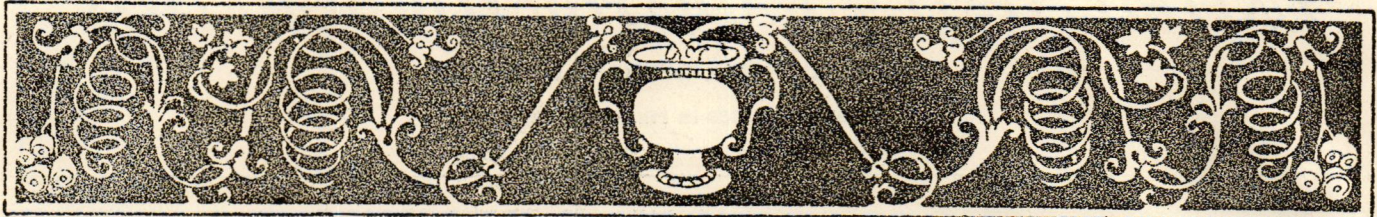
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TORONTO—Royal Bank Bldg.			MONTREAL—Transportation Bldg.		

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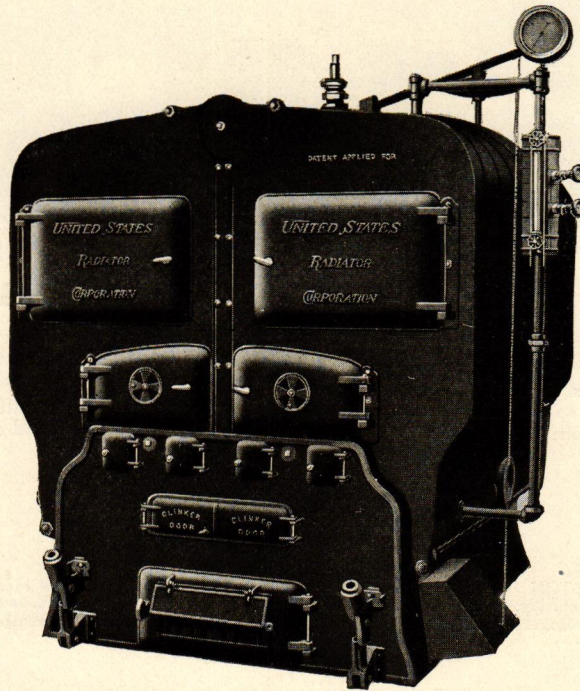
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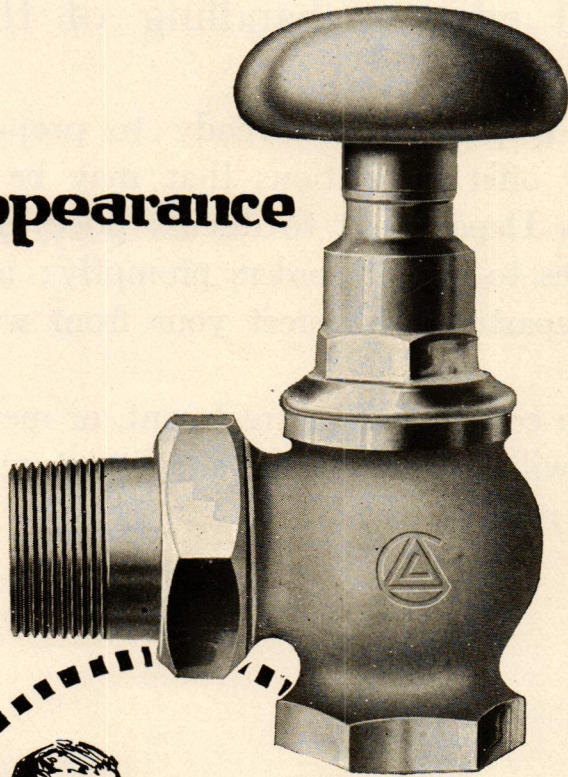
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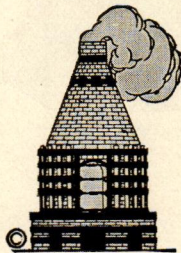
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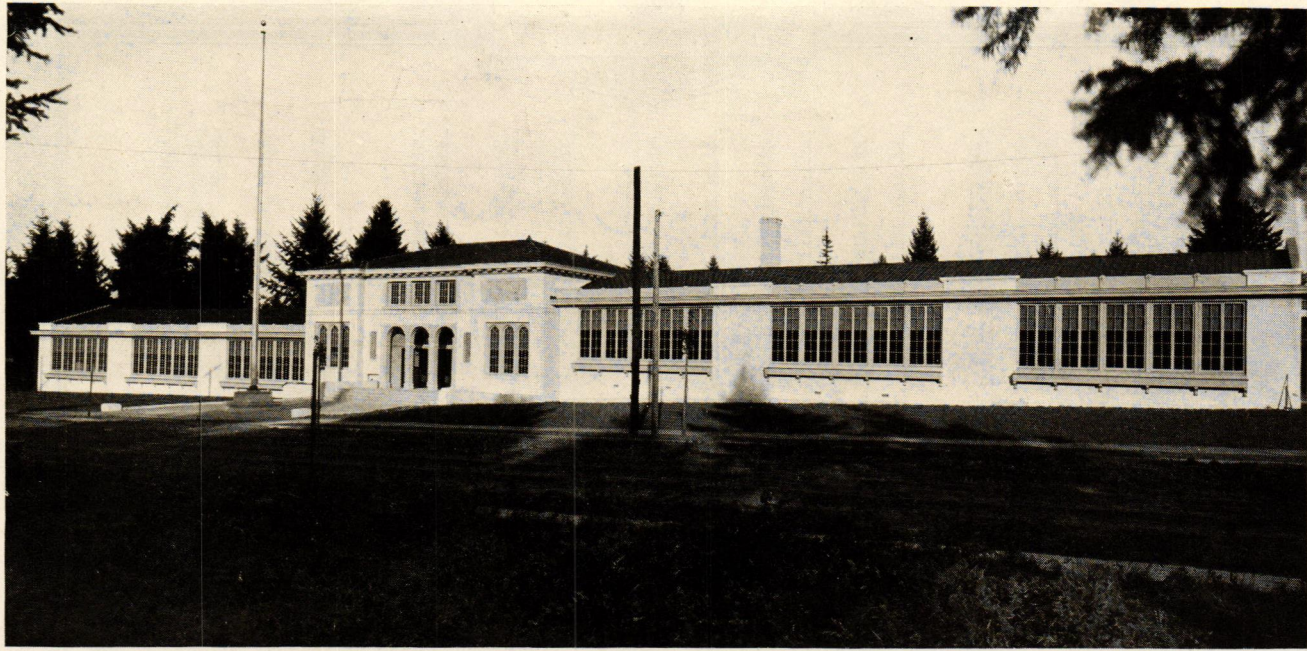
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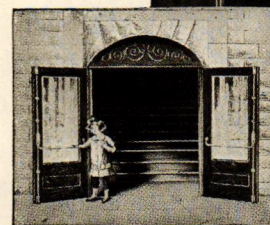
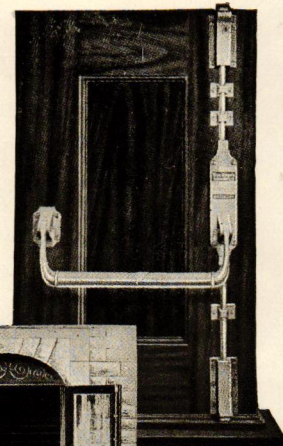
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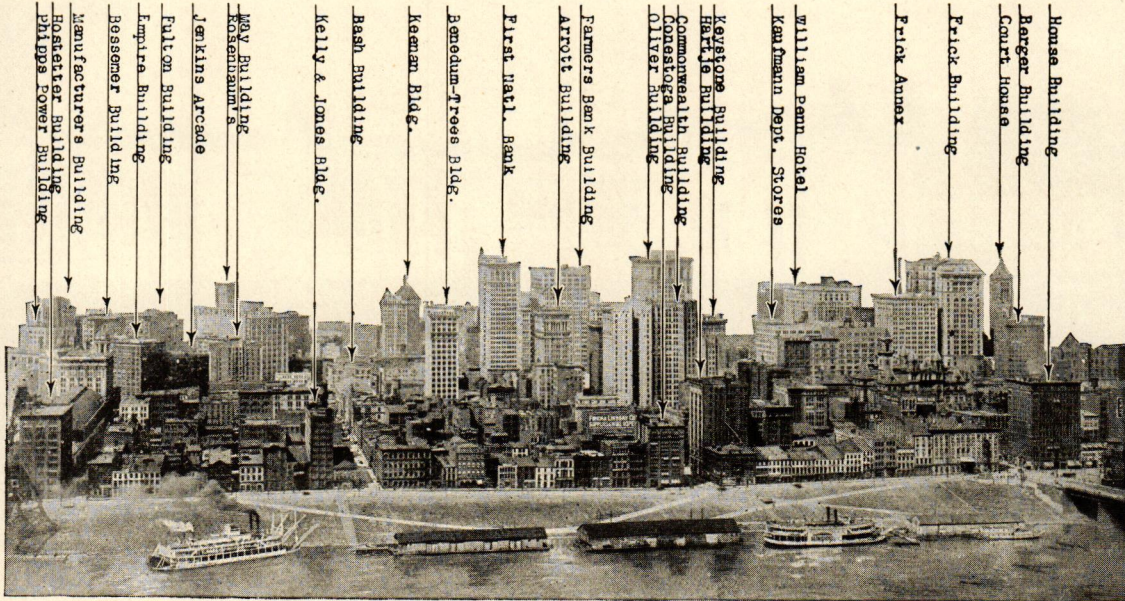
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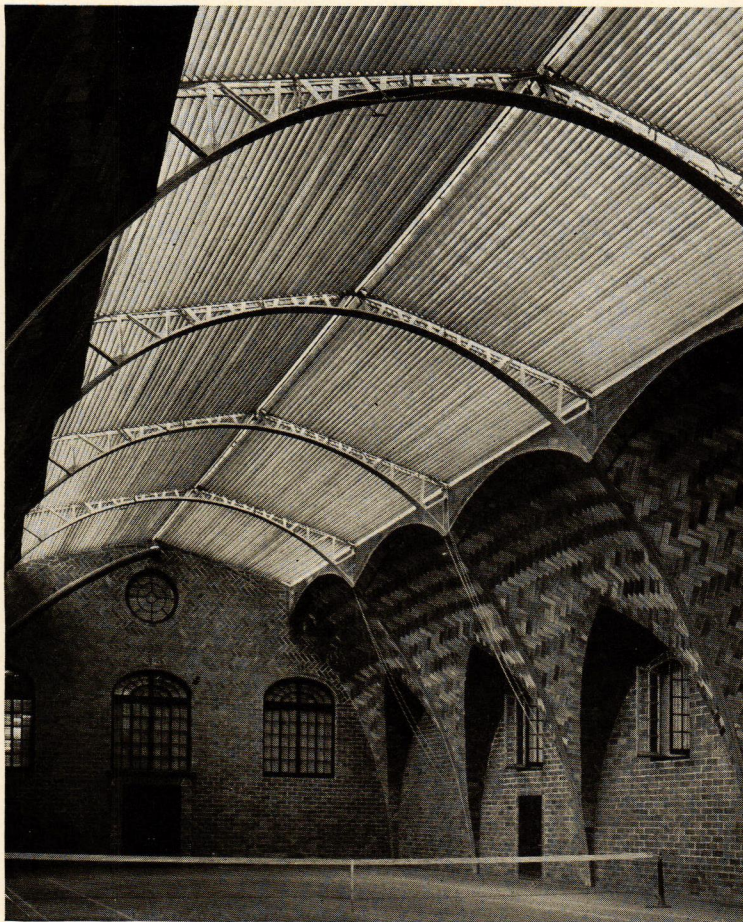
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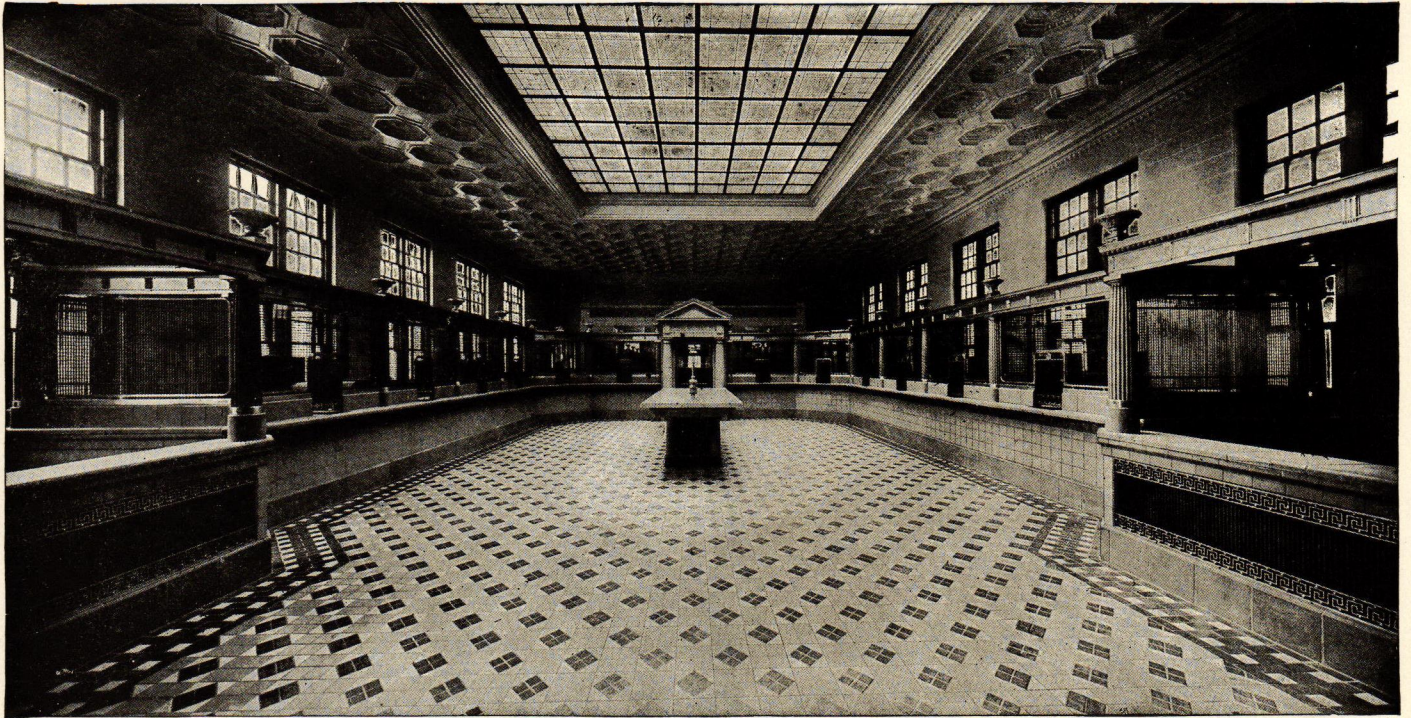
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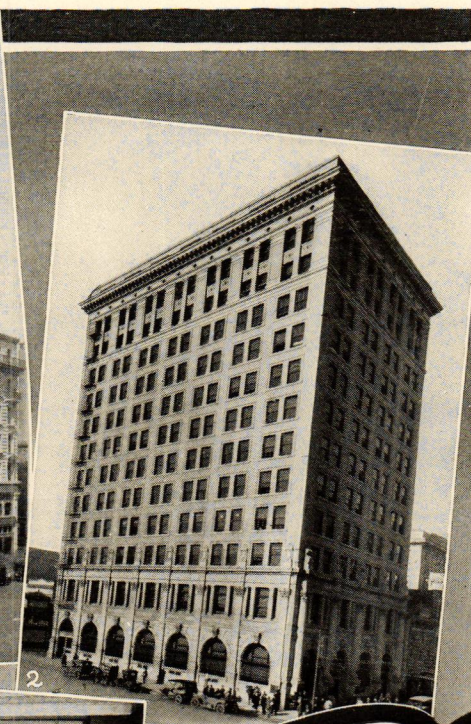
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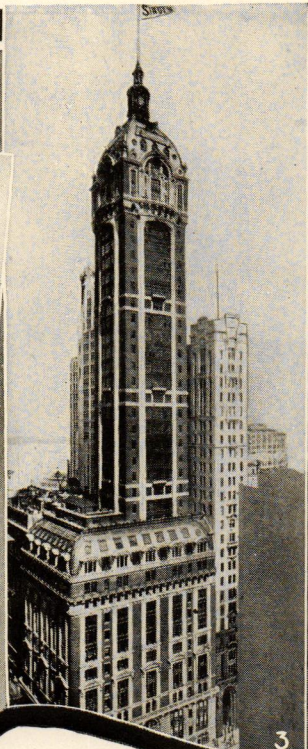
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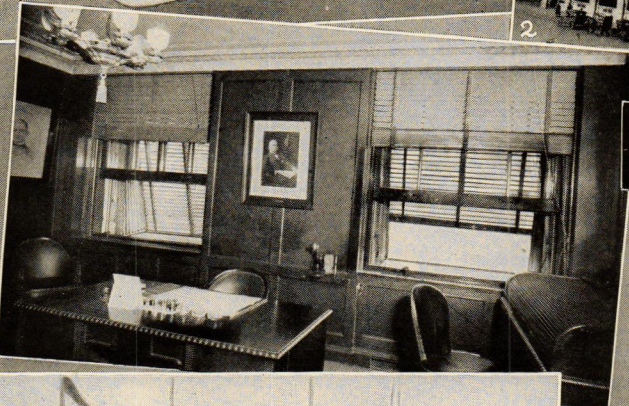
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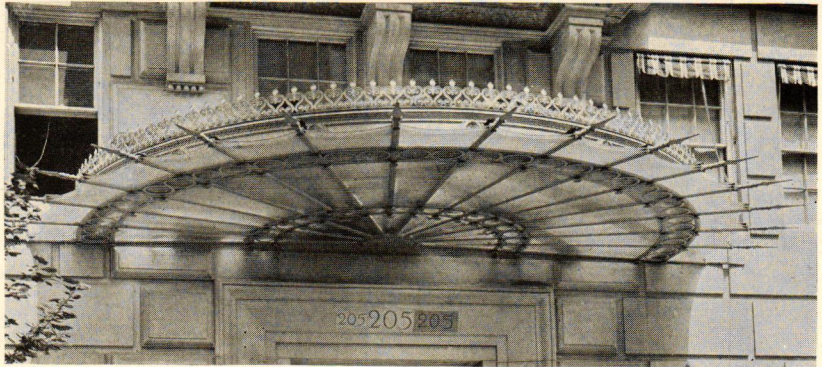
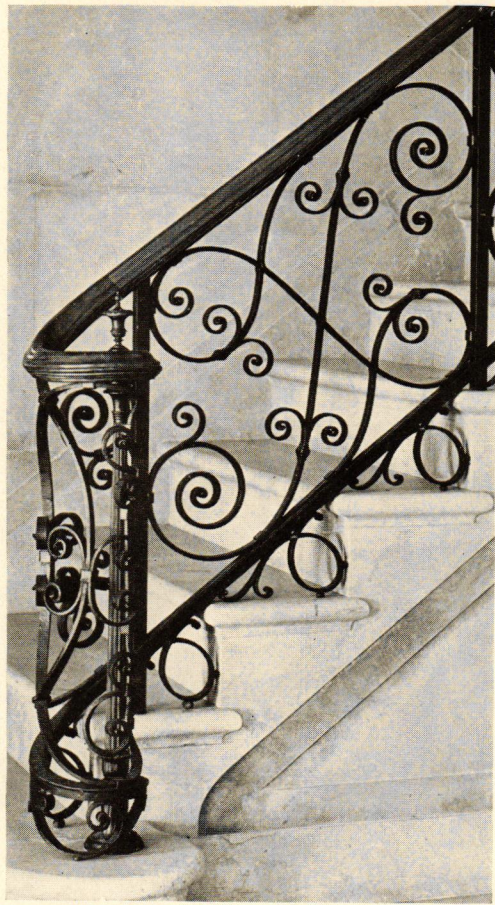
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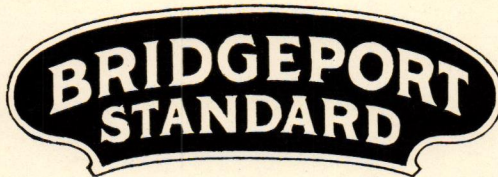
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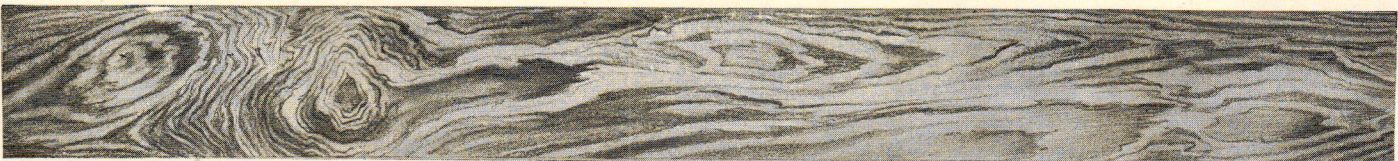


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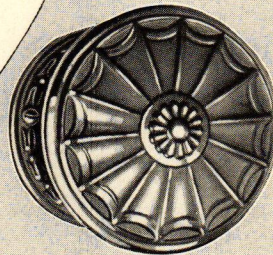
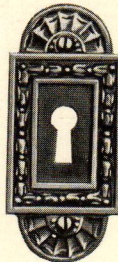
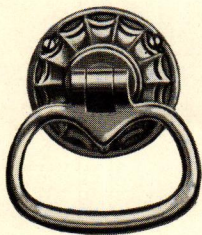
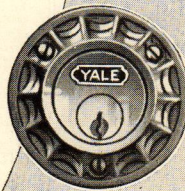
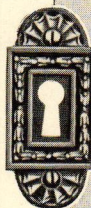
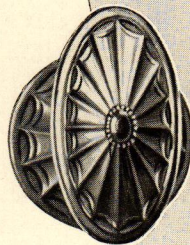
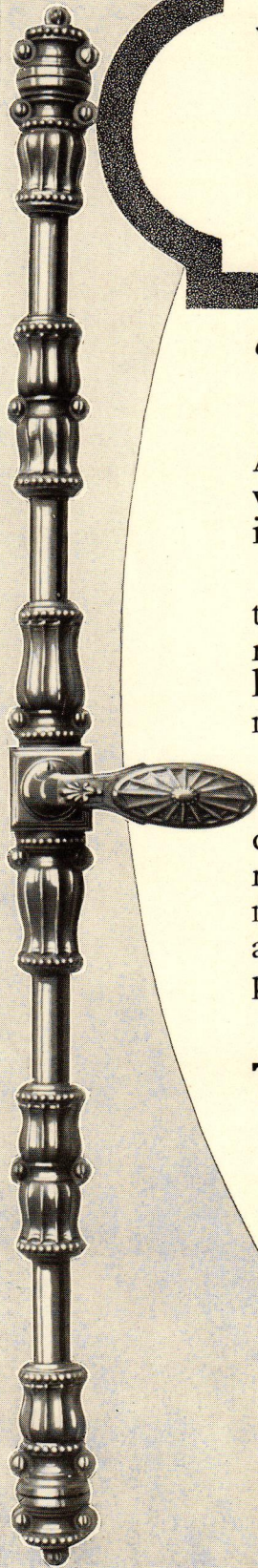
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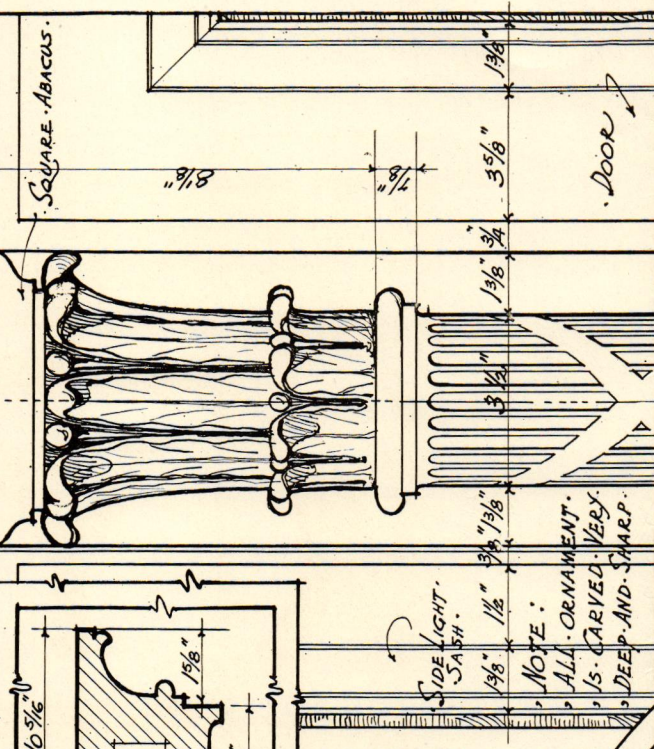
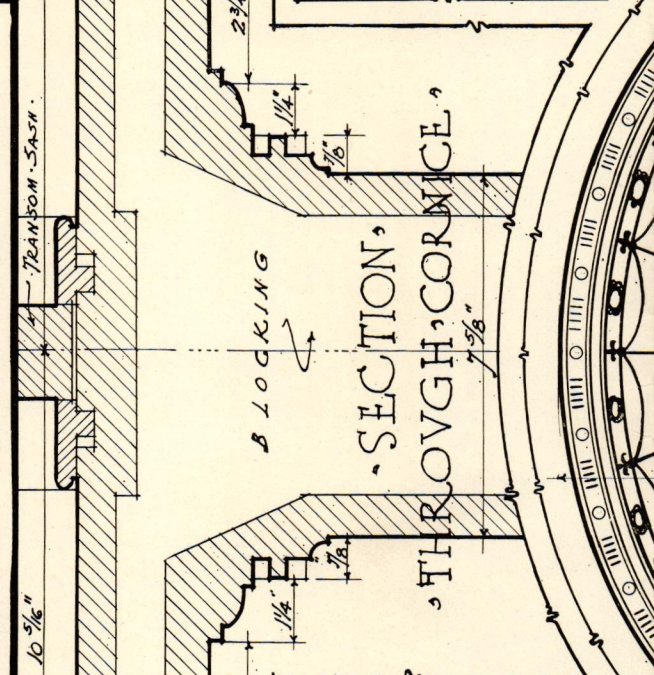
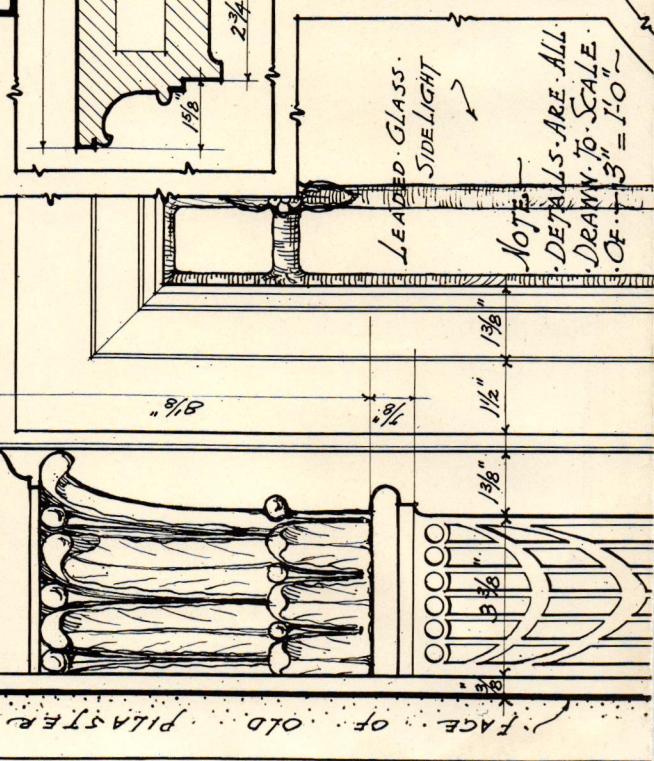
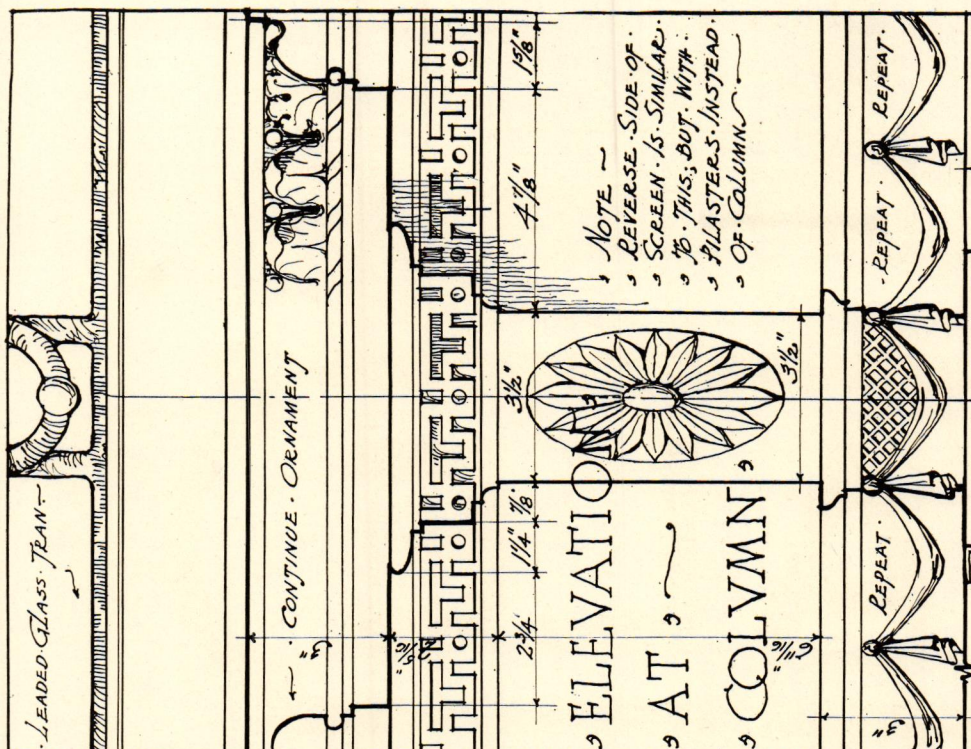
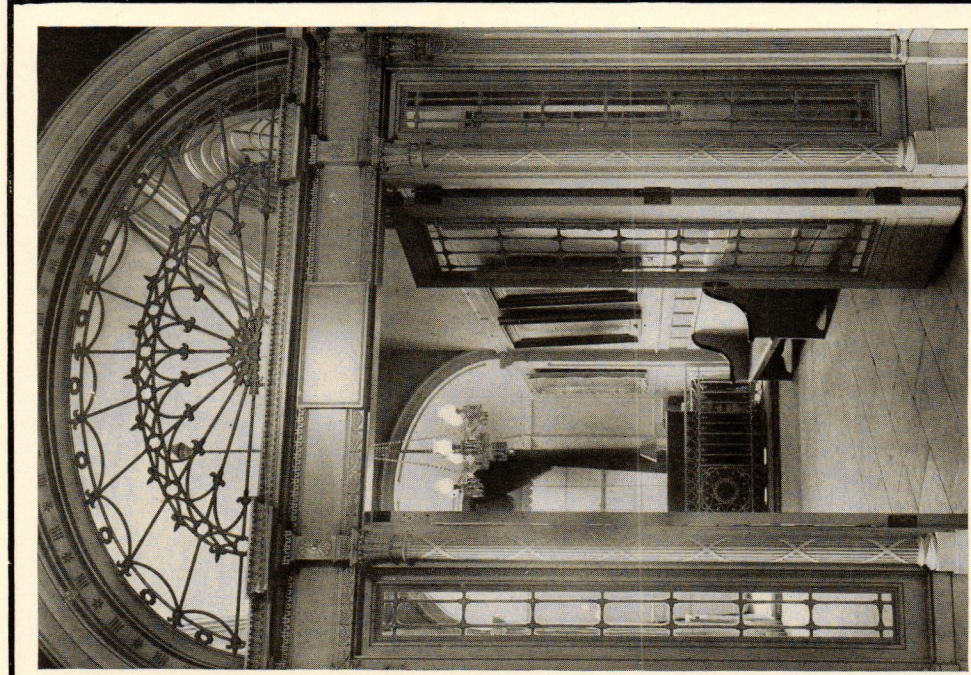
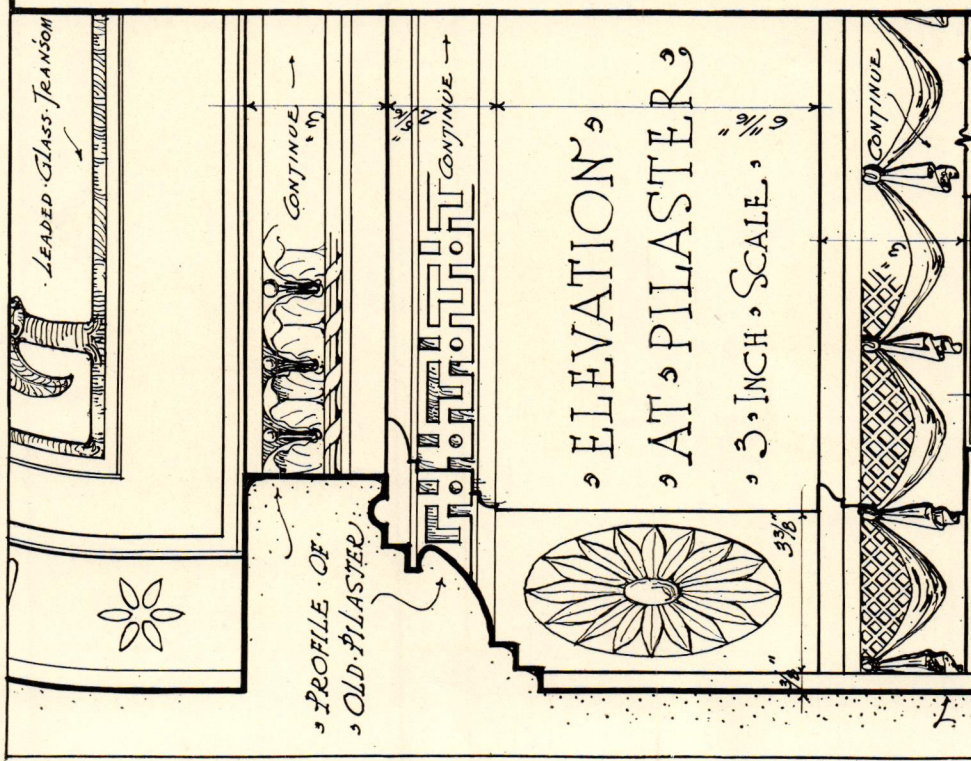
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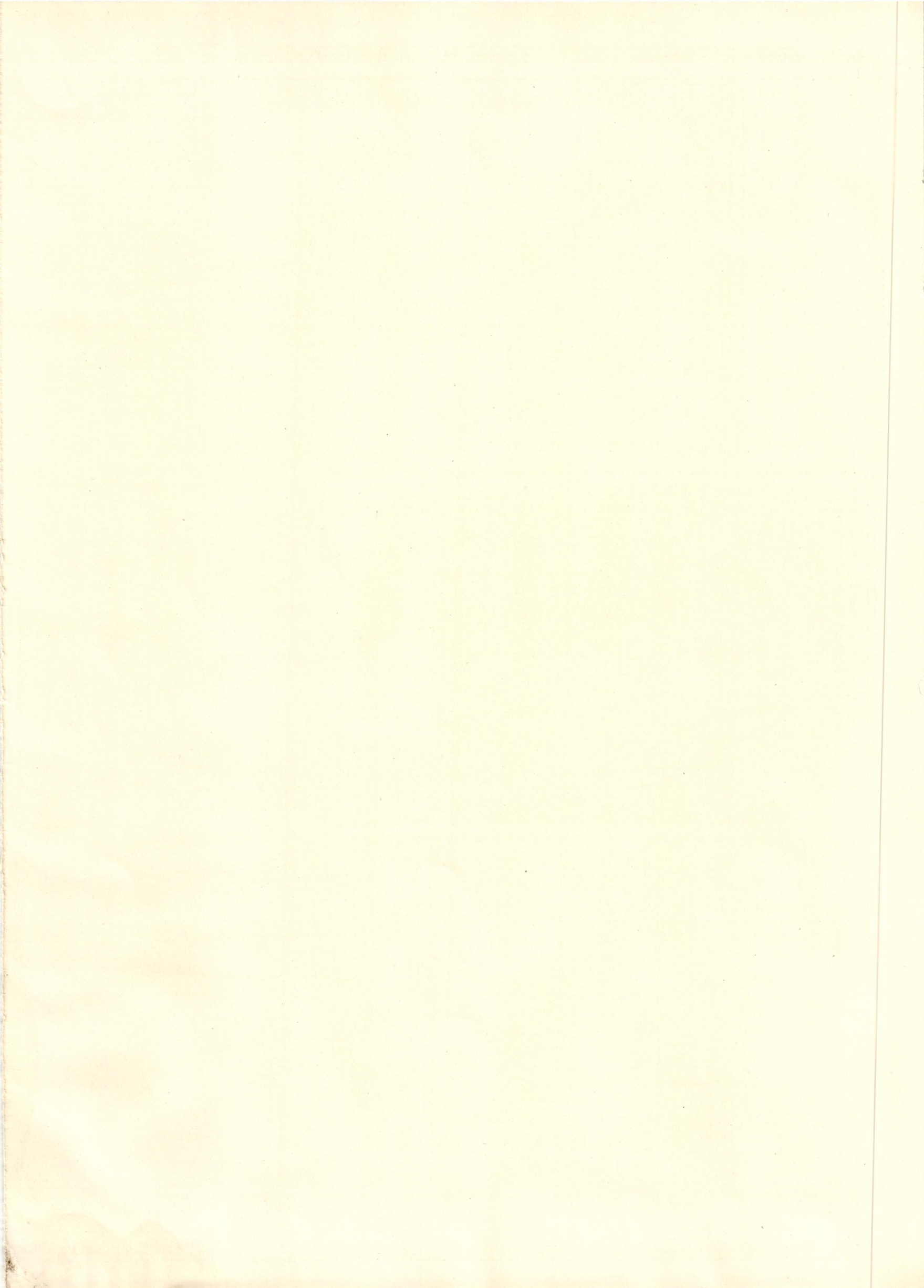
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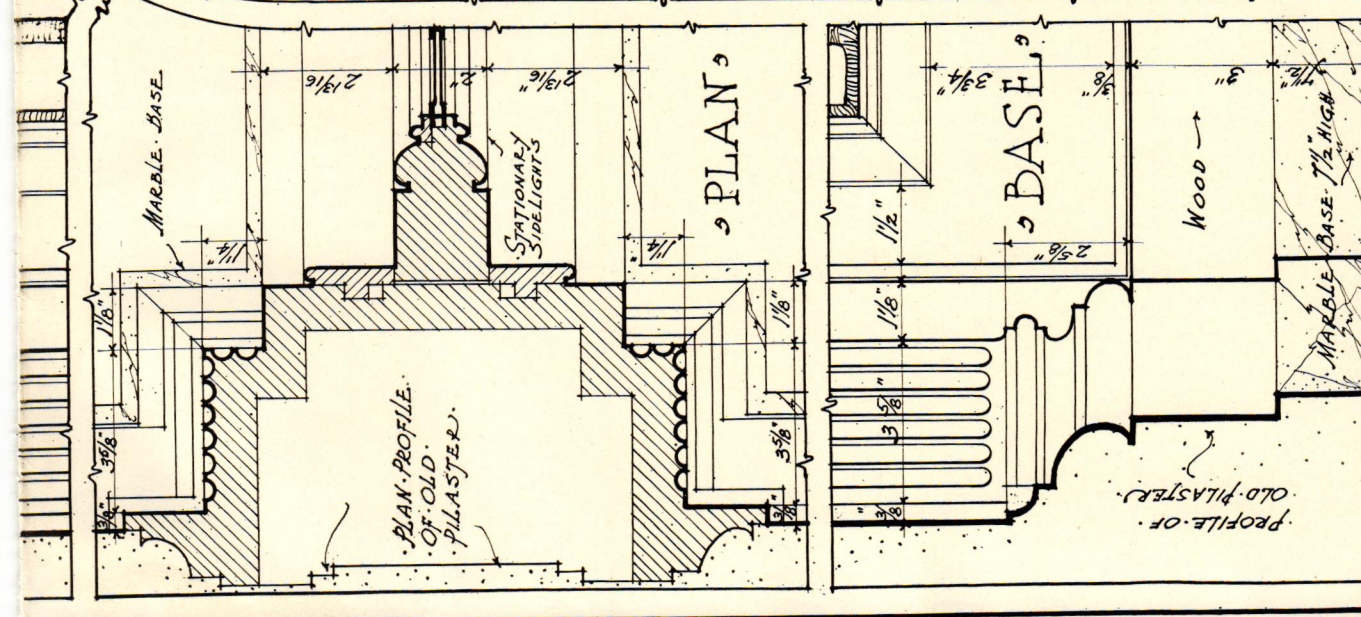
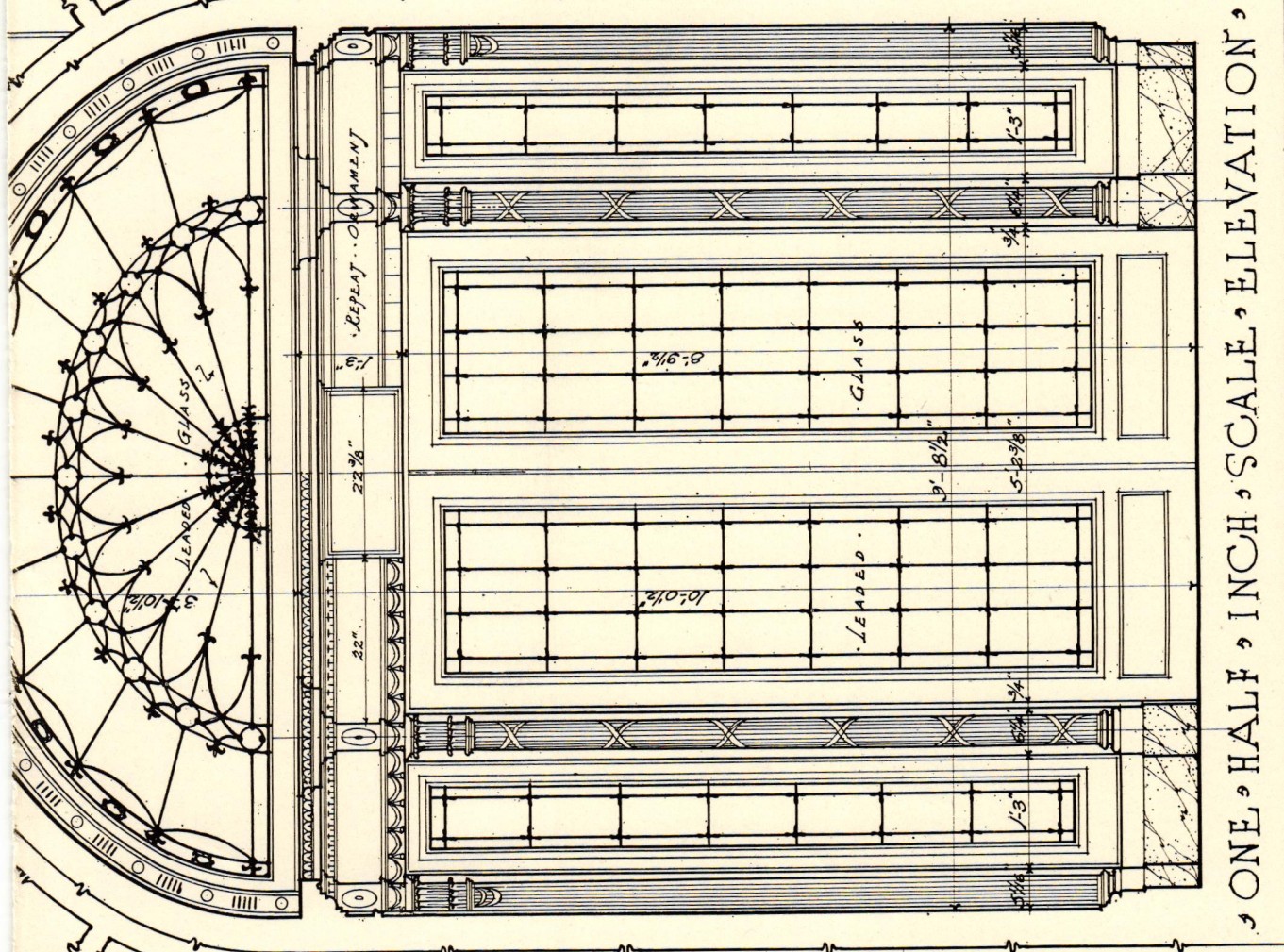
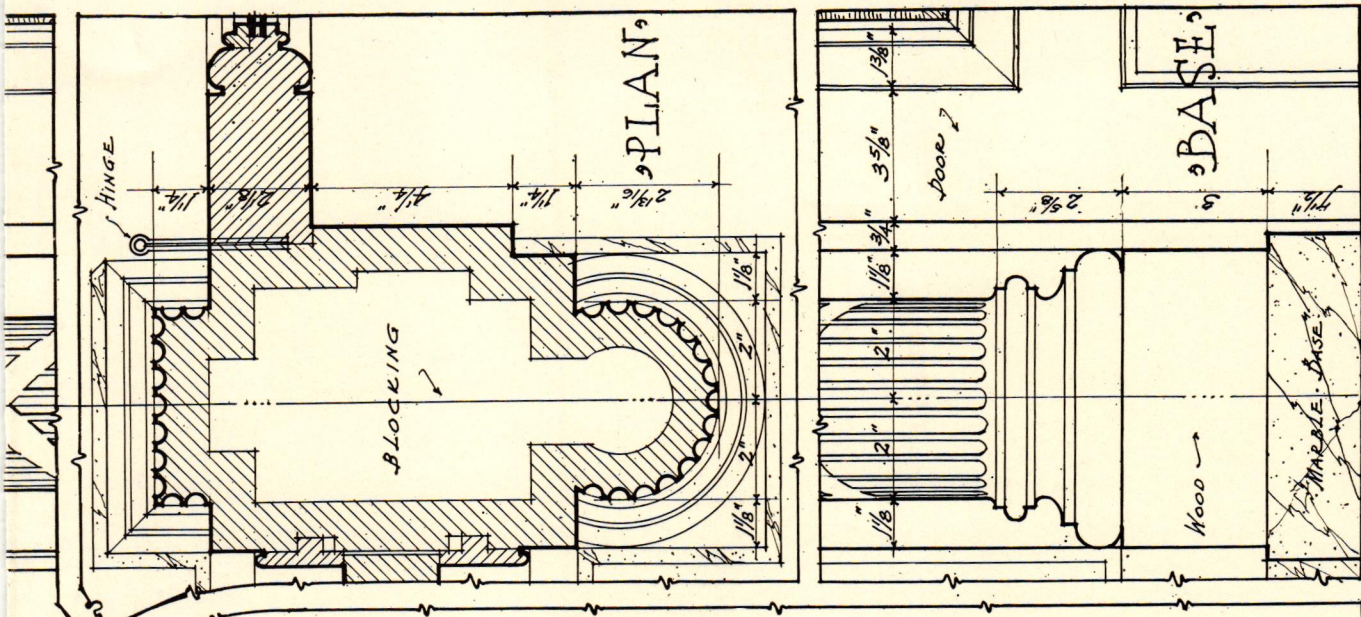
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, DRAWING, NO, 51 ,
 , SEPTEMBER, 1916 ,
 , DRAWN BY WALTER McQUADE ,

, SCREENS IN MAIN CORRIDOR ,
 , NEW YORK CITY HALL ,
 , GROSVENOR-ATTERBURY ARCHT, FOR THE RESTORATION ,
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A BOSSI MANTELPIECE FROM RATHFARNHAM CASTLE DUBLIN COUNTY IRELAND

This is an authentic example of the work of Bossi the great Italian sculptor. It was executed for the Earl of Rathfarnham at the time of the restoration of the castle in the year 1771.

The mantelpiece is of carved statuary marble with grounds of old Convent Sienna. The inlaid frieze panels depict local scenes. The side blocks, consoles and pilasters are ornamented with birds and flowers.

Bossi worked by a secret process which is practically a lost art, so carefully and successfully did he guard it from imitation.

The mantelpiece was brought to America by, and is now in the possession of Arthur Todhunter. New York.

ARCHITECTURE

THE PROFESSIONAL ARCHITECTURAL MONTHLY

VOL. XXXIV

SEPTEMBER, 1916

No. 3

Robert Adam and His Brothers Their Lives, Work and Influence on English Architecture, Decoration and Furniture

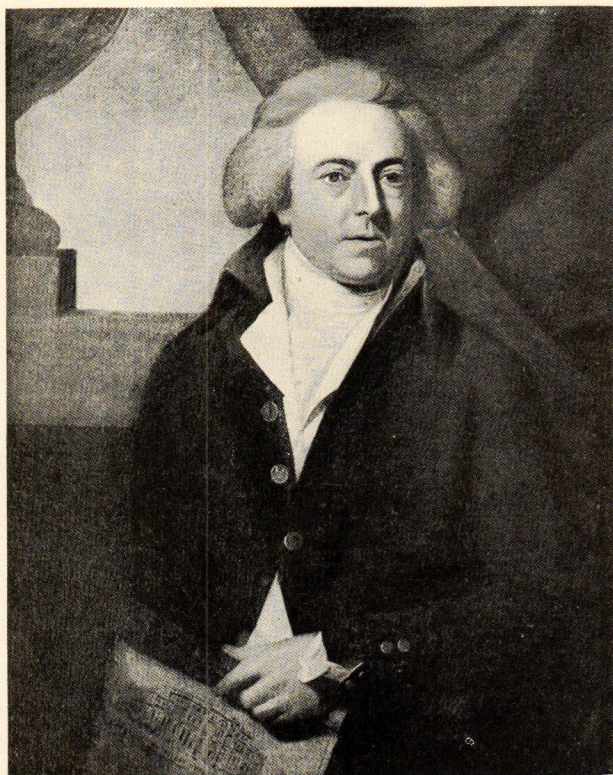
By *John Swarbrick, Assoc. R.I.B.A.*

THE story of the lives and work of Robert Adam and his brothers forms a significant episode in the history of English Renaissance architecture. The character of their work is distinctive, and consequently easily recognizable, so that it has come to be popularly described as the "Adam style."

The delicacy and refinement of Adam interior decorations are so marked, and the work has such individual charm, that it has always evoked interest and admiration, and has exercised a definite, and of late, an increasing influence on the trend of English architectural art.

In the year 1754, Robert Adam left Edinburgh in order to study architecture on the Continent. He was then twenty-six years of age, and had spent some time upon architectural work with his father and brothers, after studying at the Edinburgh University. Abroad, he visited France and Italy, and finally returned home down the Rhine, on account of the hostilities in which England and France were then engaged. Like most travelers, Adam appears to have spent a considerable part of his time in Rome, where he made the acquaintance of Piranesi, the distinguished engraver. He also met his subsequent friend, Charles Louis Clérissseau, an architect who had been awarded the Grand Prix de Rome. The most remarkable incident of Adam's sojourn was the expedition which he conducted to Spalato, where he contrived to make the survey and obtain the drawings of Diocletian's palace, that were published after his return to England. In this undertaking he was assisted by Clérissseau and Antonio Zucchi, in addition to another artist. Shortly after Robert Adam's return, in the year

1760, his younger brother, James, traveled in Italy in company with Clérissseau, Zucchi and others, in order to enjoy similar facilities for study, and also with a view to conducting special research in Southern Italy or Sicily, and, if possible, in Greece, the Levant and Egypt. An adequate impression of the nature of the task undertaken by James Adam, and the thoroughness with which it was conducted, may be formed from the extracts from the "Journal" of his tour, which appear in the text of the present book.

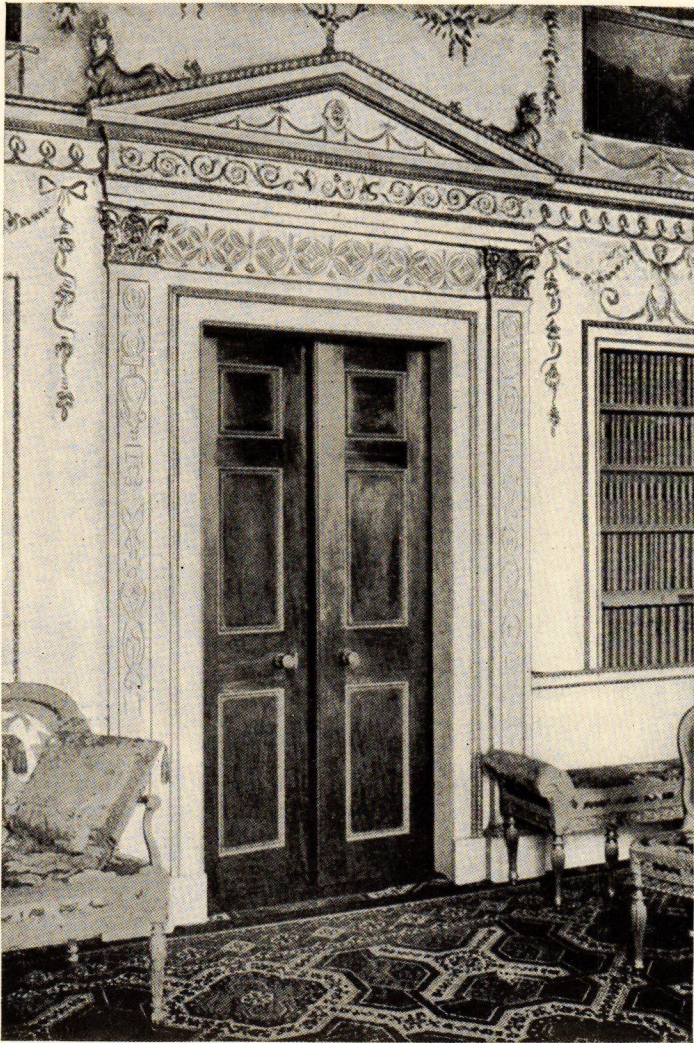


PORTRAIT OF ROBERT ADAM IN THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

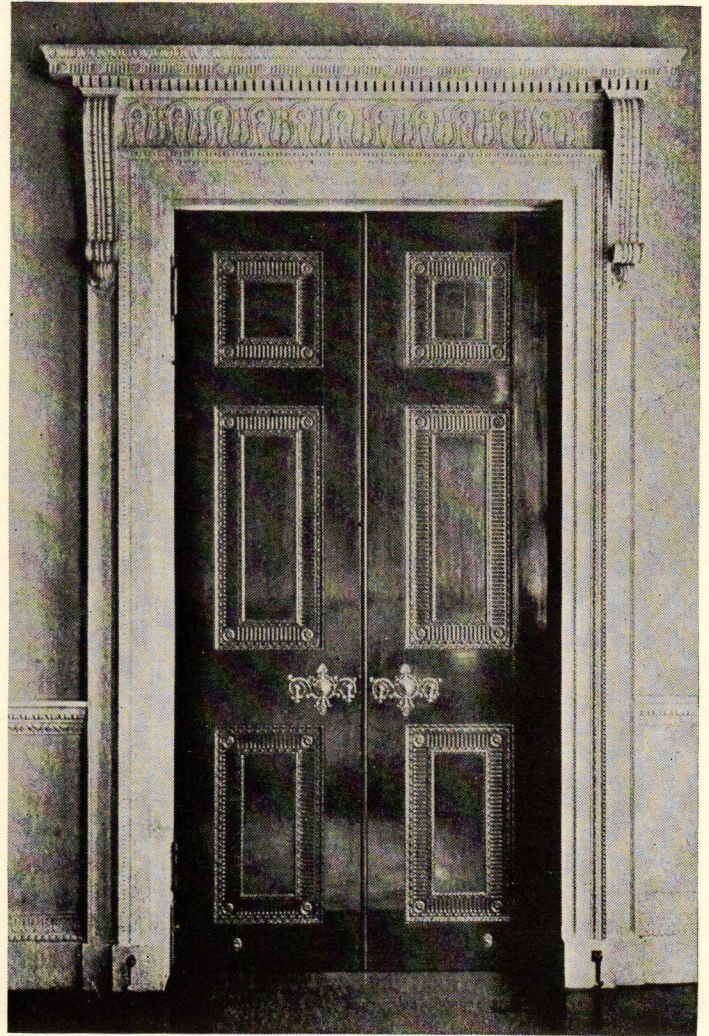
Whilst abroad James purchased, on behalf of George III, the large collection of drawings and prints in the possession of Cardinal Albani, and it is not improbable that, at this time, he may have made the acquaintance of Winckelmann, who was then the librarian of the cardinal. In addition to effecting this purchase, James Adam also acquired for personal use a considerable quantity of drawings of Roman and Cinquecento work, which had not previously been illustrated. By these and other means the brothers contrived to make themselves familiar with the architecture and other artistic work of Roman and Renaissance periods, to a degree that few earlier architects had been able to do. The sources of influence that are traceable in their work were largely, if not mainly, to be found in Roman remains and in the decorative work

of the Cinquecento period, yet they were proud to acknowledge the assistance that they derived in various ways from their knowledge of French work, which they doubtless acquired, knowing that it was requisite that they should be intimately informed of the requirements and fashions of polite, social life in France.

Immediately upon the return of Robert Adam from the



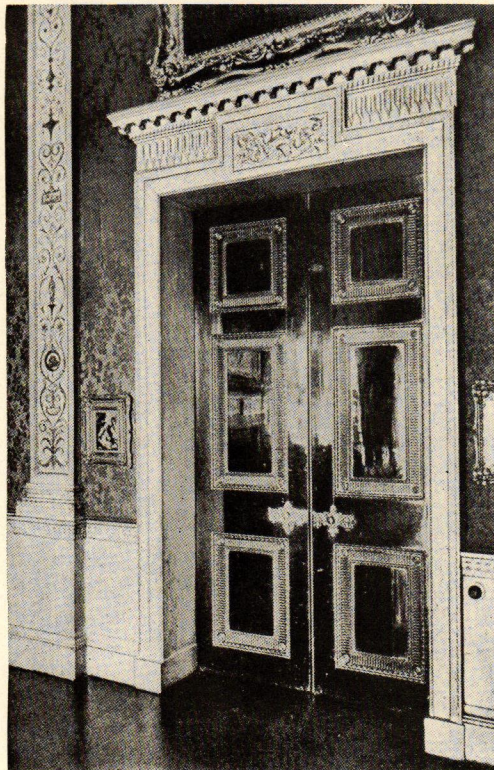
DOORWAY, LONG GALLERY, LYON HOUSE, ISLEWORTH.



DOORWAY, SMALL DINING ROOM, LANSDOWNE HOUSE.

Continent, he commenced to practice in London, where he was subsequently joined by his brothers, James and William, the eldest surviving brother, John, remaining in Scotland. The time was one of great political significance. The two great efforts of the House of Stuart to regain the British throne had failed, and failed so hopelessly that even their most earnest supporters realized that further effort would be unquestionably futile. So thorough had been the final defeat that even the most rebellious realized that nothing could be gained by continuous civil commotion. Prosperity lay in loyal adherence to the Union, and in the conversion of suspicious neighbors into valuable partners for the advancement of mutual aspirations. The greater opportunities that England afforded, moreover, proved a powerful agent in inducing Scotsmen to cross the border, and so gradually break down the barrier that had hitherto prevented the attainment of mutual confidence and loyal co-operation.

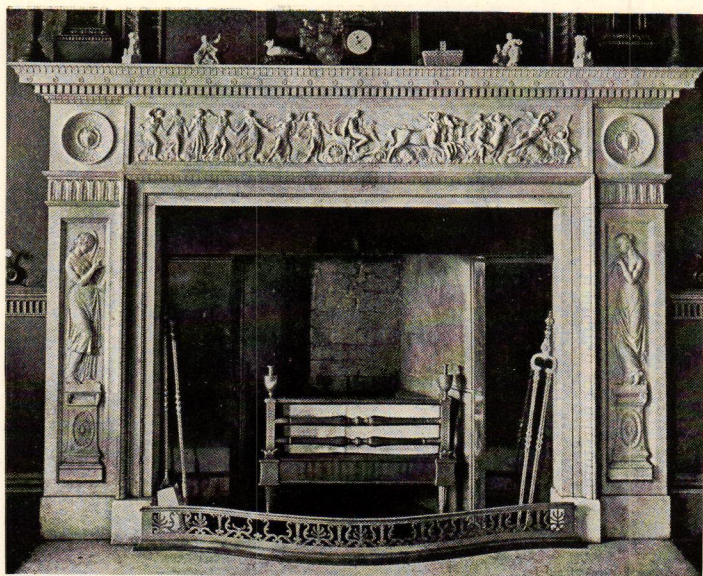
The new king was young, and owing to the death of his father, and the neglect of his grand-



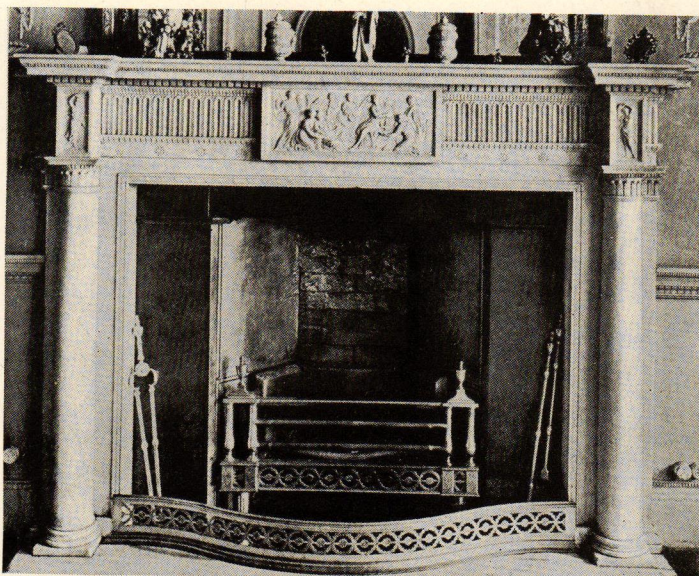
DOORWAY BETWEEN DRAWING ROOMS, LANSDOWNE HOUSE.

father, had been left entirely under the control of his mother, Augusta, Princess of Wales, an imperious woman with autocratic ideas. The princess had been greatly influenced by John, Earl of Bute, a man of varied acquirements, interested in art and particularly in architecture. Upon the accession of George III, the Earl commenced to take part in the administration, and, in accordance with the wishes of the king, sought to secure the termination of hostilities, regardless of the policy of Pitt. In this endeavor he succeeded in the year 1763, when he was appointed prime minister and became the leader of the Tory party. In the meantime, on December 2nd, 1761, William Chambers and Robert Adam were appointed "Joint Architects of His Majesty's Works."

Although there may have been in some circles, even among educated people, an early prejudice against Scotsmen, the services of Robert Adam and his brothers were so widely sought that they at least would seem to have been immune from all disfavor. No architects then living were more generally popular. They became,



CHIMNEY-PIECE, FRONT DRAWING ROOM, 20 ST. JAMES SQ.



CHIMNEY-PIECE, DINING ROOM, 20 ST. JAMES SQ.

in fact, the fashionable architects of the day, and among their clients were the king and queen; Augusta, Princess of Wales; William, Duke of Cumberland, and many of the peerage. Commissions came to them from all parts of the United Kingdom and Ireland, and so great was the demand for their services, that it was with difficulty that they sought to fulfill their engagements, with credit to themselves and with satisfaction to their patrons.

After his return from the Continent, Robert Adam was assisted by the Earl of Bute. His Lordship appears to have been ever ready to exercise his personal influence for the benefit of any of his fellow-countrymen whom he considered to be worthy of encouragement. Adam came to be almost immediately regarded as a scholarly architect with new ideals, and gifted with judgment that rendered his opinion upon all questions relating to his art of the greatest value. Commissions

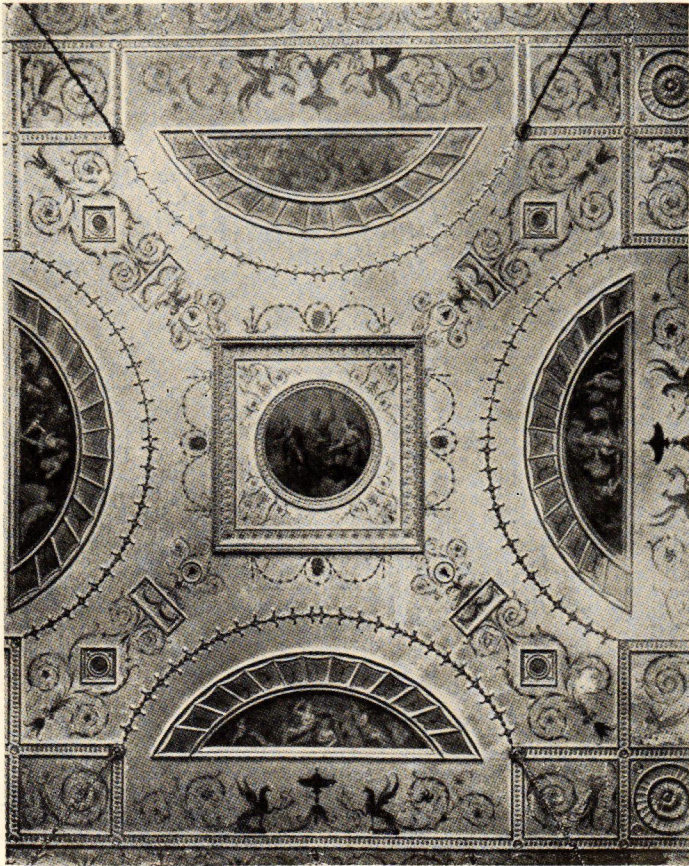
were speedily entrusted to his care, while his advice on questions of taste came to be in great request. Indeed, so highly was his opinion esteemed that his advice was sought, even in cases where other older architects had been already engaged. For example, Lord Coventry requested Adam to visit Croome Court to see the work that was being completed by Launcelot ("Capability") Brown, in the capacity of architect and garden designer; Sir Nathaniel Curzon (afterwards Lord Scarsdale) solicited his views with regard to the scheme for Kedleston, which Matthew Brettingham had commenced, and which James Paine was then about to continue; while Mr. Edwin Lascelles (afterwards Lord Harewood) consulted Robert



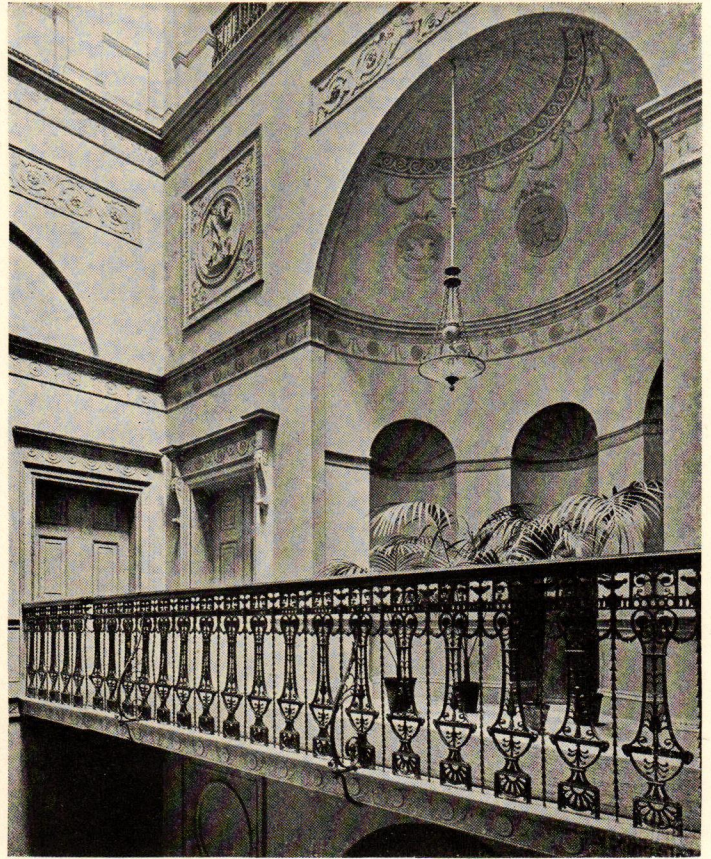
DOORWAY, 5 MANSFIELD ST

Adam about the work of Carr of York at Harewood House, in Yorkshire. Almost as soon as he began to practice he commenced to prepare designs for furniture and the various appointments of private houses and other buildings, as at Harewood House, Yorkshire; Syon House; Osterley House; Kedleston, and Nostell Priory. He realized that an interior could not be pleasing so long as the furniture and fittings bore no relation to the architectural treatment. He perceived that there must be consonance throughout, and that if the work was to attain to true excellence, one scheme of effect must govern the treatment as a whole, and that the carpets, ceilings, walls and fittings, together with the smallest pieces of furniture and sundry features, must all be designed in accordance with the general scheme. The variety of subjects that it became necessary to design, in order to apply this principle, was very considerable. Not only was it

necessary to design cabinets, upholstery, carpets, tapestry and embroidery, but also mirrors, lead fanlights, fire-grates, door furniture, girandoles, epergnes, torchères, and many other details too numerous to mention. Though the designs so made have afforded, and will perhaps continue to afford, material for critics to discuss, none can deny that in the majority there are certain qualities that withstand even severe criticism, and that it is these qualities that modern designers in the so-called "Adam style" seek to secure. These pervading, indestructible characteristics, which are to be found in the best of Robert Adam's work, have survived and are appreciated today no less than were the original designs, from which later artists have derived their general ideas



ADAM ARABESQUE ORNAMENT CEILING, BACK DRAWING ROOM, LANSDOWNE HOUSE.



MAIN STAIRCASE HALL, 20 ST. JAMES SQ.

of treatment. In order to form some conception of the depth of the impression created at the time, by the originality and innovations of Robert Adam, it is necessary to realize how widely different were the schemes to which the country had hitherto been accustomed; indeed, to use the words of the brothers themselves, it may be truly said that they produced "a kind of revolution in the whole system of this useful and elegant art." Though the original suggestions were derived by the brothers from Roman work direct, or borrowed from it through the work of the Cinquecento artists, the credit that is due to them is in no wise diminished on that account, for to them we owe an application of the ancient treatment that expresses a distinct individuality of a widely different type. The contemporary popularity of the designs of Robert Adam speedily produced innumerable imitators, who executed work so closely resembling the style of the brothers that it is now, to say the least, not infrequently a matter of considerable difficulty to distinguish between their work and that of their imitators. Though some of those who designed in the new manner strongly resented the imputation of imitating any one, the fact remains undisputed that work of this kind was



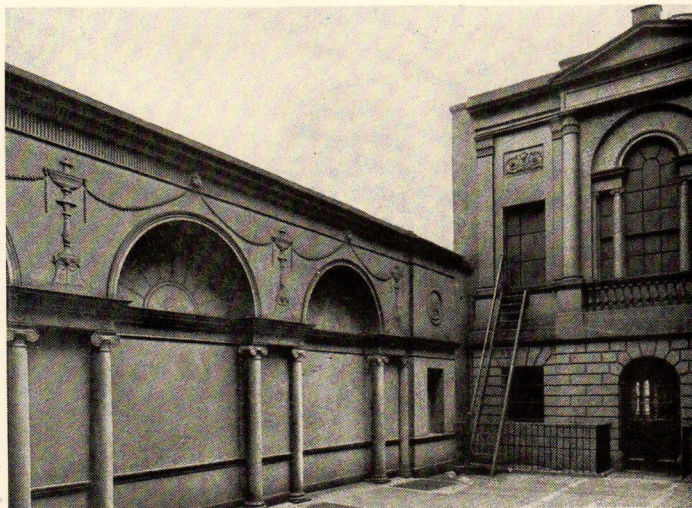
DOORWAY AND LAMP STANDARD, 13 JOHN ST., ADELPHI.

unknown in England until it was introduced in the designs of Robert Adam and subsequently in those of his brother, James. Probably few contemporary designers adopted schemes similar to those of the brothers in a more extensive manner than James Wyatt, who is known as the restorer of the cathedrals, and as the only architect who has occupied the presidential chair of the Royal Academy of Arts. Apart, however, from Wyatt's ecclesiastical work, he was responsible for designing a considerable number of residences in various parts of the country, and the treatment of these buildings, in most cases, so closely resembles the work of the brothers that they are usually either attributed to them, or else described as being in the Adam style.

In the preface to the "Works of Robert and James Adam," the first part of which was published in the year 1773, the brothers wrote: "The novelty and variety of the following designs will, we flatter ourselves, not only excuse, but justify our conduct in communicating them to the world. We have not trod in the path of others, nor derived aid from their labors. In the works which we have had the honor to execute, we have not only met with the approbation of our employers, but even with the

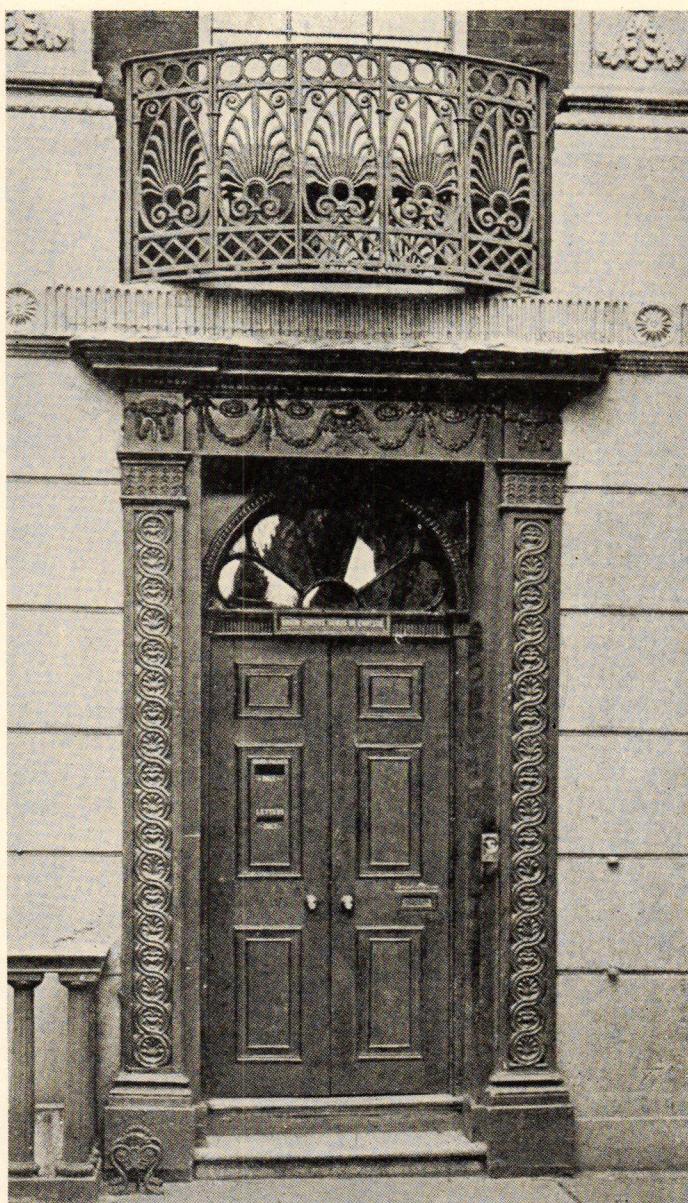


PRINCIPAL STAIRCASE, 1 PORTMAN SQ.



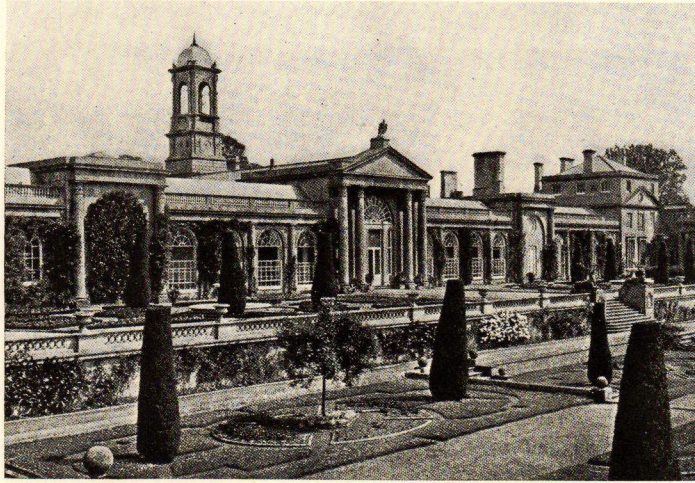
CORNER OF COURTYARD, 20 ST. JAMES SQ.

imitation of other artists, to such a degree as in some measure to have brought about in this country a kind of revolution in the whole system of this useful and elegant art." After making some further introductory remarks, the brothers proceeded: "We by no means presume to find fault with the compositions or to decry the labors of other authors, many of whom have much merit and deserve great praise. Our ambition is to share with others, not to appropriate to ourselves, the applause of the public, and, if we have had any claim to approbation, we found it on this alone: that we flatter ourselves we have been able to seize, with some degree of success, the beautiful spirit of antiquity, and to transfuse it with novelty and variety through all our numerous works." In order to elucidate their meaning more clearly, they add in one of the footnotes of their preface, "Nothing can be more noble and striking, when properly applied, than a fine order of columns, with their bases, capitals, and entablatures: nothing more sterile and disgusting than to see forever the dull repetition of Doric, Ionic, and Corinthian entablatures, in their usual proportions, reigning round every apartment where no order can come, or ought to come, and yet it is astonishing to think that this has been almost invariably the case in the apartments of every house in Europe, that has any pretensions to magnificence, from the days of Bramante down to our time. In smaller rooms, where height is wanting, the architrave has sometimes been omitted, and sometimes

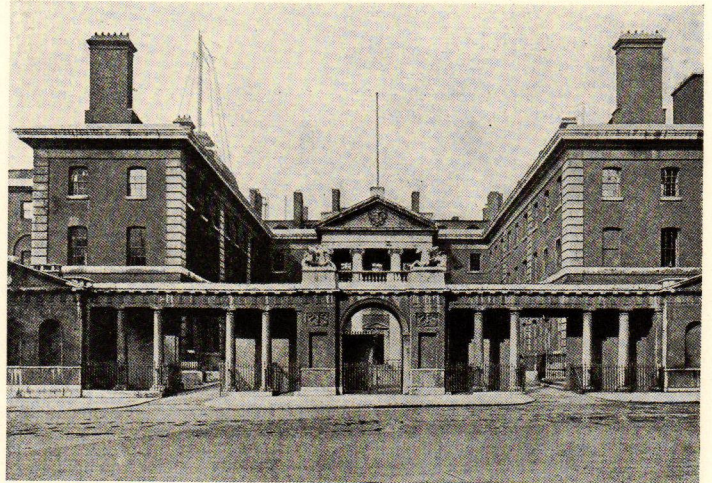


BALCONY AND DOOR IN ADAM ST., ADELPHI.

both architrave and frieze, but their places were ponderously supplied by a cornice of the most ample dimensions, fit for the Temple of Jupiter Tonans, from which it was imitated, perhaps, or, more probably, copied." In another footnote they also explained the reason why they generally avoided the use of the more massive and weighty type of compartment ceilings in the interiors of the buildings they designed. "These absurd compositions," they wrote, "took their rise in Italy under the first of their modern masters, who were no doubt led into that idea from the observation of the soffits used by the ancients in the porticos of their temples and other public works. These the ancients, with their usual skill and judgment, kept of a bold and massive style, suiting them to the strength, magnitude and height of the building, and making an allowance for their being on the exterior part, and adjoining to other great objects, all which served to diminish and lighten the effect of these compartments. But on the inside of their edifices, the ancients were extremely careful to proportion both the size and depth of their compartments and panels to the distance from the eye and the objects with which they were to be compared, and, with regard to the decoration of their private and bathing apartments, they were all delicacy, gaiety, grace, and beauty." The brothers then cited as instances "the Rotunda, the Temple of Peace, the ruins of Hadrian's Villa, the Palace of the Emperors, and other Cryptæ at Rome, with the inimitable remains on the Baian shore."



THE ITALIAN GARDENS AND ORANGERY, BOXWOOD, WILTSHIRE.



THE ADMIRALTY SCREEN.

Referring to the modeling of Syon House, Robert Adam writes: "A proper arrangement and relief of apartments are branches of architecture in which the French have excelled all other nations; these have united magnificently with utility in the hotels of their nobility and have rendered them objects of universal imitation.

"To understand thoroughly the art of living it is necessary, perhaps, to have passed some time amongst the French, and to have studied the customs of that social and conversible people. In one particular, however, our manners prevent us from imitating them. Their eating rooms seldom or never constitute a piece in their great apartments, but lie out of the suite, and in fitting them up little attention is paid to beauty of decoration. The reason of this is obvious; the French meet there only at meals, when they trust to the display of the table for show and magnificence, not to the decoration of the apartment; and as soon as the entertainment is over they immediately retire to the rooms of company. It is not so with us. Accustomed by habit, or induced by the nature of our climate, we indulge more largely in the enjoyment of the bottle. Every person of rank here is either a member of the legislation, or entitled by his condition to take part in the political arrangements of his country, and to enter with ardor into those discussions to which they give rise; these circumstances lead men to live more with one another, and more detached from the society of the ladies. The eating rooms are considered as the apartments of conversation, in which we are to pass a great part of our time. This renders it desirable to have them fitted up with elegance and splendor, but in a style different from that of other apartments. Instead of being hung with damask, tapestry, etc., they are always finished with stucco, and adorned with statues and paintings, that they may not retain the smell of the victuals.

"But leaving a digression, which perhaps may appear not uninteresting, as it points out the necessity of varying the style of architecture so as to accommodate it to the manners



32 SOHO SQ.

and habits of different nations, we shall now return to a more regular inspection and explanation of the plan before us.

"The hall in both our houses and in those of France," Adam continued, "is a spacious apartment, intended as the room of access where servants in livery attend. It is here a room of great dimension, is finished with stucco, as halls always are, and is formed with a recess at each end, one square and the other circular, which have a noble effect and increase the variety."

The brothers Adam exercised a remarkable influence, that extended even to the merest details of internal treatment. The task was so great that only those who held the foremost places in their professions, and were supported by the confidence of wealthy clients, could be expected to achieve any appreciable measure of success. But in the case of the brothers these two essential conditions were fulfilled, and it was due to this circumstance that they were able to exercise a great controlling influence when architecture and the minor arts showed signs of drifting into affairs of fashion, in consequence of the decline of Palladianism, and the resulting disposition to throw off all control. The brothers did not exercise their influence by adhering to the rules and formulæ of the old authorities, but though conscious of their value, tried by the application of the principles of composition to execute designs that were based upon wider knowledge of classic work that they had been able to gain by extensive personal research. The principles are, as they well know, the primary consideration, and Robert Adam was doubtless thinking of this when he wrote, in a letter to Lord Kames, "the detail of our profession comes naturally to the man who understands its great principles, in the laws of beauty and grandeur." "The architect who begins with minute," he continued, "will never rise above the race of those reptile artisans who have crawled about and infested this country for many years." The brothers, also, at a later date, clearly explained their position in the preface of the "Works," where



BOODLE'S CLUB, ST. JAMES ST.

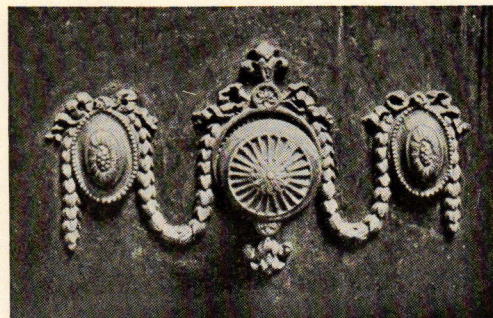
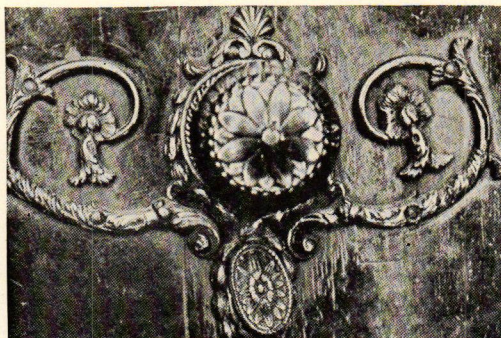
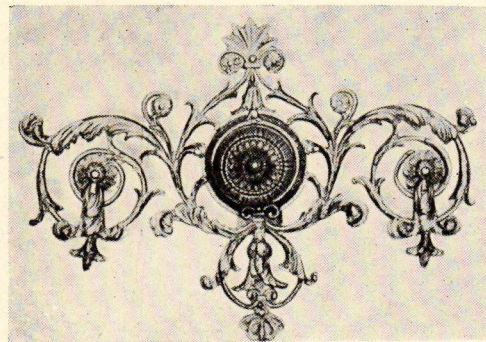
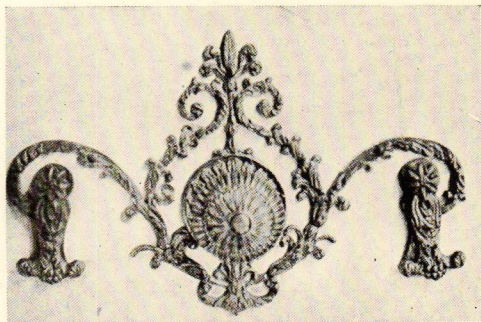


BOARD OF TRADE OFFICES, 1 WHITEHALL.

we read: "We, by no means, presume to find fault with the compositions, or to decry the labors of other authors, many of whom have much merit and deserve great praise. Our ambition is to share with others, not to appropriate to ourselves the applause of the public; and if we have had any claim to approbation, we found it on this alone, that we flatter ourselves we have been able to seize, with some degree of success, the beautiful spirit of antiquity, and to transfuse it, with novelty and variety, through all our numerous works."

Among contemporary architects, few came to be held in such high regard as Robert Adam. Honored by the foremost learned societies of England and Scotland, esteemed by the men

of learning and discernment, and revered by his colleagues and by the young men of his profession, he occupied a place that was accorded to him on account of the services he had rendered as an architect, designer and scholar. "Mr. Adam," declared an Eighteenth-Century writer, "produced a total change in the architecture of this country, and his fertile genius in elegant ornaments was not confined to the decorations of buildings, but has been diffused in almost every branch of manufacture. His talents extended beyond the line of his own profession; he displayed in his numerous drawings in landscape a luxuriance of composition, and an effort of light and shadow, which have scarcely ever been equaled."



FOUR LONDON EXAMPLES OF ADAM DOOR FURNITURE.

XIV. Engineering for Architects

By DeWitt Clinton Pond, M. A.

Mr. Pond has charge of the practical course in Architectural Engineering at Columbia University. He is the author of "Engineering for Architects" recently published in book form. This series, started in July, 1916 ARCHITECTURE, is a continuation of the previous series concluded in the issue of June, 1915.

THERE are three types of columns commonly found in reinforced concrete construction. The first is simply a steel column bedded in concrete, as shown in Fig. 90a, the second is of concrete reinforced with vertical steel bars which are held in place by ties as shown in Fig. 90c, and the third is of concrete reinforced by vertical steel bars and also with spiral reinforcing. The advantage of the first type is that it takes up but little room and is therefore used in places where

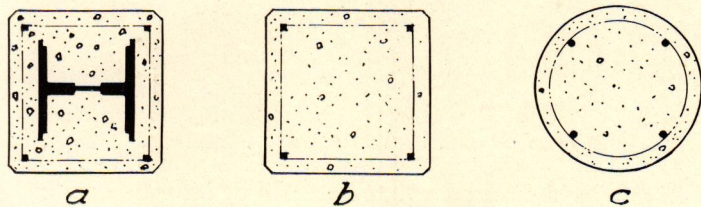


FIGURE 90

ground or floor space is valuable. The disadvantage of this column is that it is expansive, there being considerably more steel in it than in either of the other two types. The second column is used in exterior walls where the shape of the column is made to conform to architectural requirements. This type is usually rectangular or has a cross section that makes it difficult to wind the spiral form of reinforcing advantageously. The column reinforced by vertical rods and spirals is the cheapest and is used for nearly all interior columns.

The law allows from one-half of one per cent. to four per cent. of the cross-sectional area of a column to be made up of vertical steel reinforcement secured against displacement by one-quarter-inch steel ties placed not more than fifteen diameters of the vertical steel on centres. It is apparent that much less steel will be required for this type of reinforcing than will be used in case the ordinary steel column section is made use of, consisting of plates and angles, or in case an "H" section is employed. However, for buildings over twelve stories in height, and where space is valuable, the structural column is the best type to use. There must be not less than four inches of concrete surrounding the steel, according to the law, and this concrete acts as fireproofing and as a brace to the steel. The bracing action of the concrete makes it possible to consider the steel in direct compression, with no tendency toward bending. When, however, the column is of such a height that the ratio of the length to the least radius of gyration is more than 120, the section must be increased as such a column is not allowed by law. For the ordinary unsupported lengths of columns, however, the steel in the built-up section can be given its full value of 16,000 pounds, which is the maximum allowable stress per square inch for steel in compression with the usual factor of safety of four. The concrete itself must be reinforced, however, with not less than one per cent. of steel. Not more than one-half of the reinforcing steel shall be placed vertically, the other half being used for ties.

The rules given above may be made clearer by an example. Suppose that it is necessary to support a load of

800,000 pounds on a column 14 feet high. In order to find the area of structural steel that will be needed it is necessary to divide the load by 16,000 pounds. $800,000 \div 16,000 = 50$ square inches. In the "Pocket Companion" published by the Carnegie Steel Company, 1913 Edition, on page 274 can be found a table giving the safe loads for plate and angle columns and the areas, moments of inertia, radii of gyration, and weights of various sections. A section made of a 14-inch by $\frac{5}{8}$ -inch web plate, four 6-inch by 4-inch by $\frac{5}{8}$ -inch angles, and two 14-inch by $\frac{5}{8}$ -inch cover plates is shown to have an area of 49.69 square inches which will be considered as large enough.

Around this steel there must be a casing of concrete which must be 4 inches thick. The total over-all dimensions of the column will therefore be 22 inches by 24 inches as shown in Fig. 91. This concrete must be reinforced with one per cent. of steel, the percentage of reinforcement being the volume of the reinforcing steel divided by the volume of the concrete enclosed by the reinforcing steel. This means that the area of concrete to be considered must be that enclosed within a rectangle that measures 18 inches by 20 inches, in the present case. Out of this rectangle must be taken the area of the structural steel column, or 50 square inches. The area of concrete will be $20 \times 18 = 360$ square inches, minus 50 square inches, which will equal 310 square inches. One per cent. of this area will be 3.1 square inches which must be made up by ties and vertical reinforcing. The vertical reinforcing can be made of four $\frac{5}{8}$ -inch square bars having a total area of 1.56 square inches. The ties or hoops must next be considered and the volume of the concrete that is to be replaced by the steel must be investigated. The area of the reinforcing steel was found to be 3.1 square inches. One-half of this must be supplied by ties or 1.55 square inches will be the area that must be furnished by the ties or hoops. In a height of 12 inches the volume of steel to be supplied will be $1.55 \times 12 = 18.60$ cubic inches. A $\frac{3}{8}$ -inch square bar has a sectional area of .1406 square inches. A hoop made of this size bar will have a total length of 76

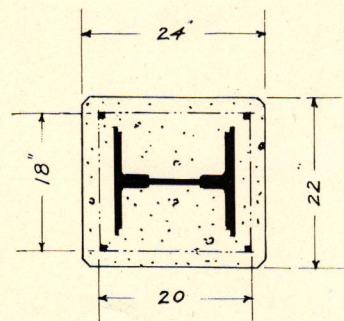


FIGURE 91

inches as it encloses a rectangle 20 inches long and 18 inches wide. The volume of steel in this hoop, or tie, is $.1406 \times 76 = 10.68$ cubic inches. If there are 18.6 cubic inches of steel needed, and there are 10.68 cubic inches of steel in each hoop, there will be $18.60 \div 10.68 = 1.74$ hoops needed in each foot of column, or if the hoops are spaced $12 \div 1.74 = 6.9$ inches on centres the necessary number of ties will be supplied.

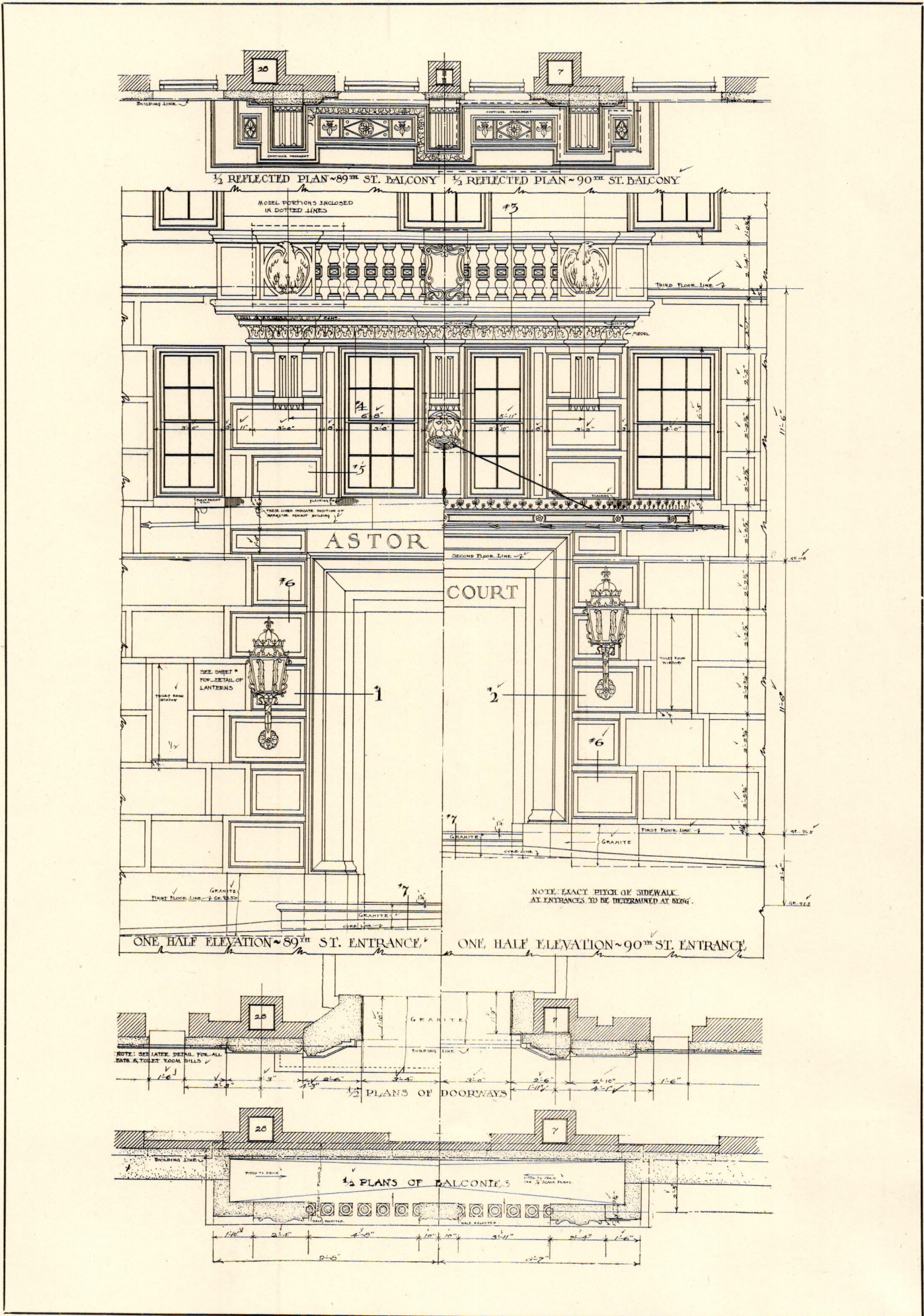


ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.

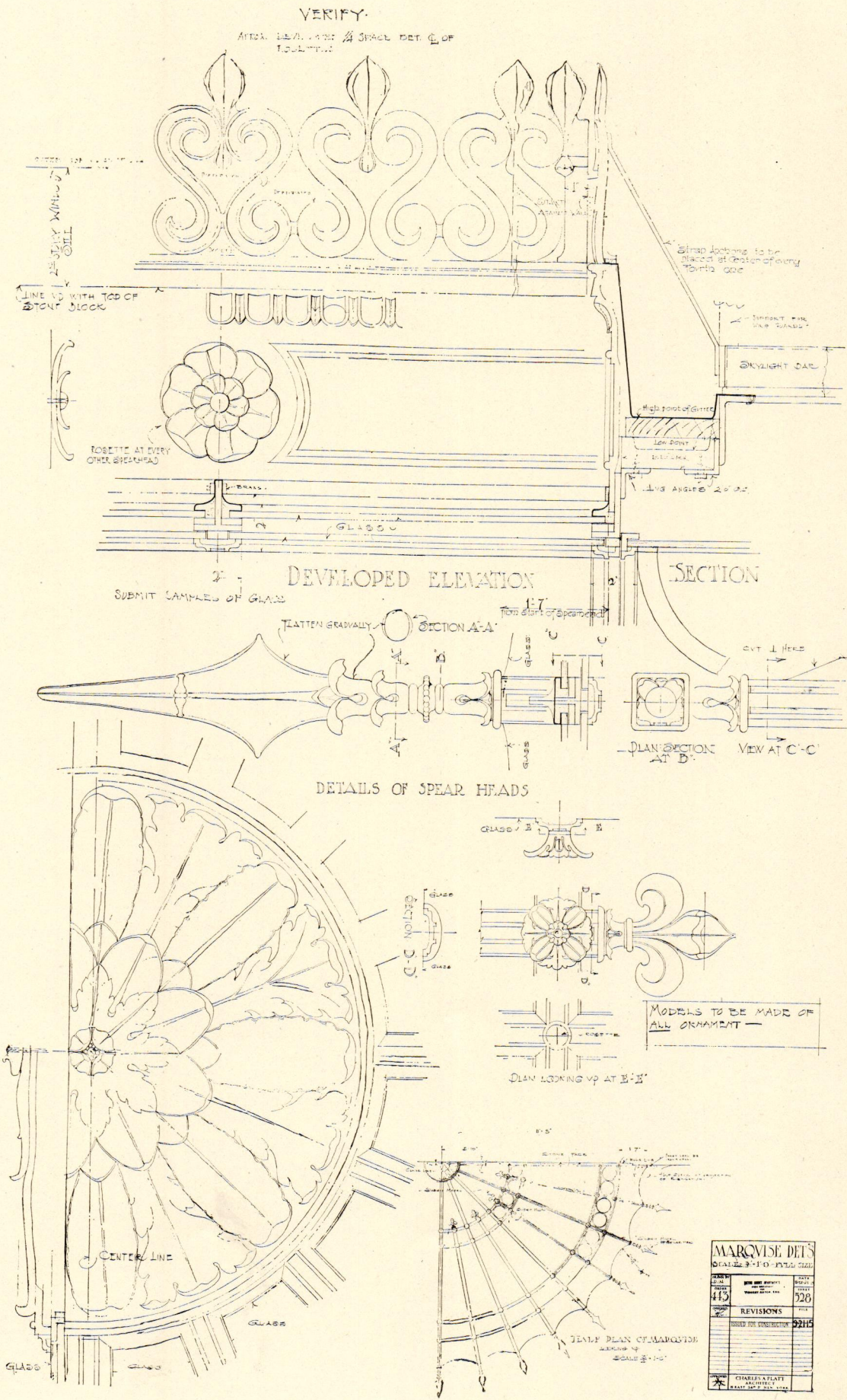
Charles A. Platt, Architect.



ENTRANCE, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.
Charles A. Platt, Architect.



DETAIL OF ENTRANCE, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.
Charles A. Platt, Architect.

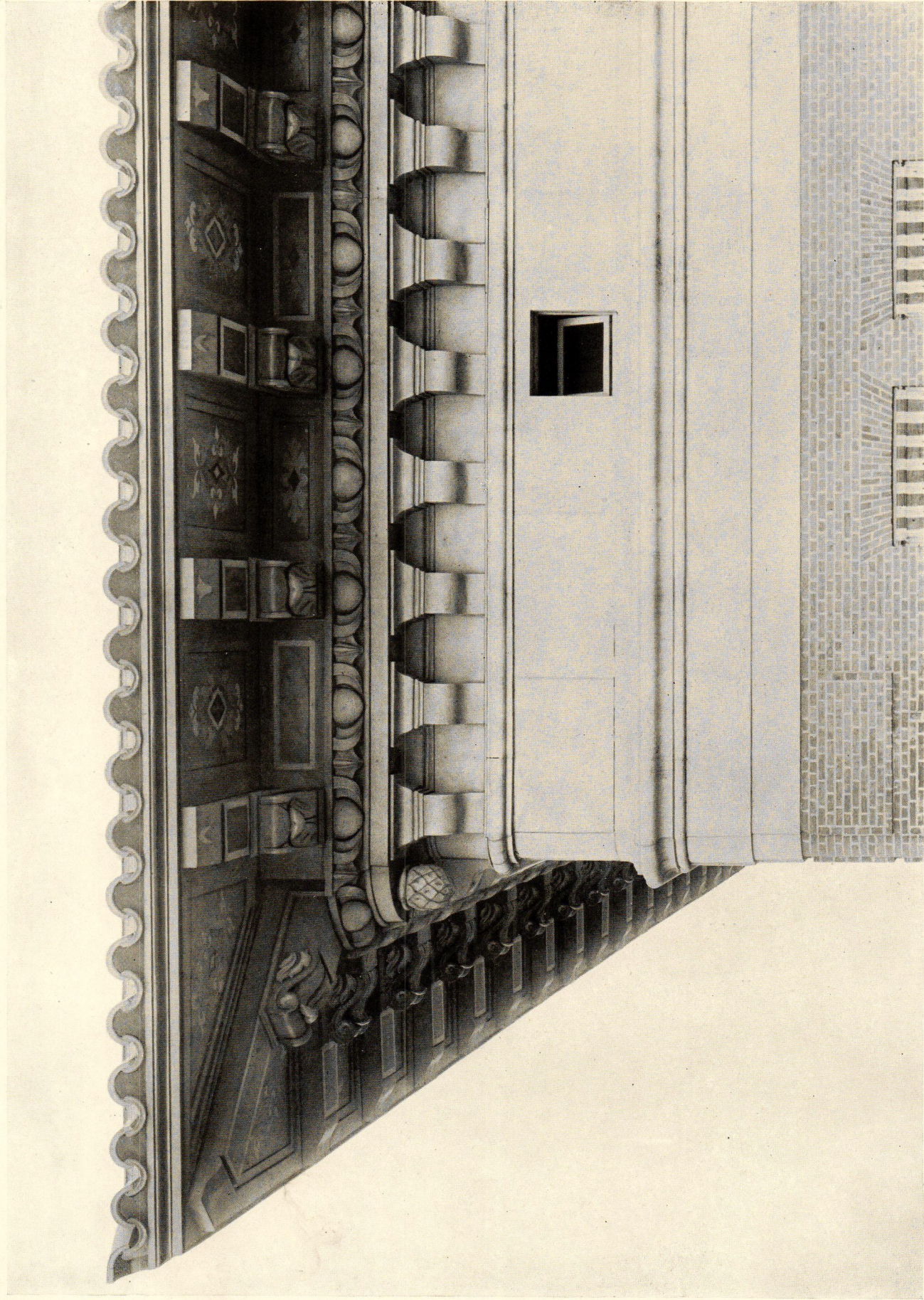


DETAIL OF MARQUISE, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.
Charles A. Platt, Architect.



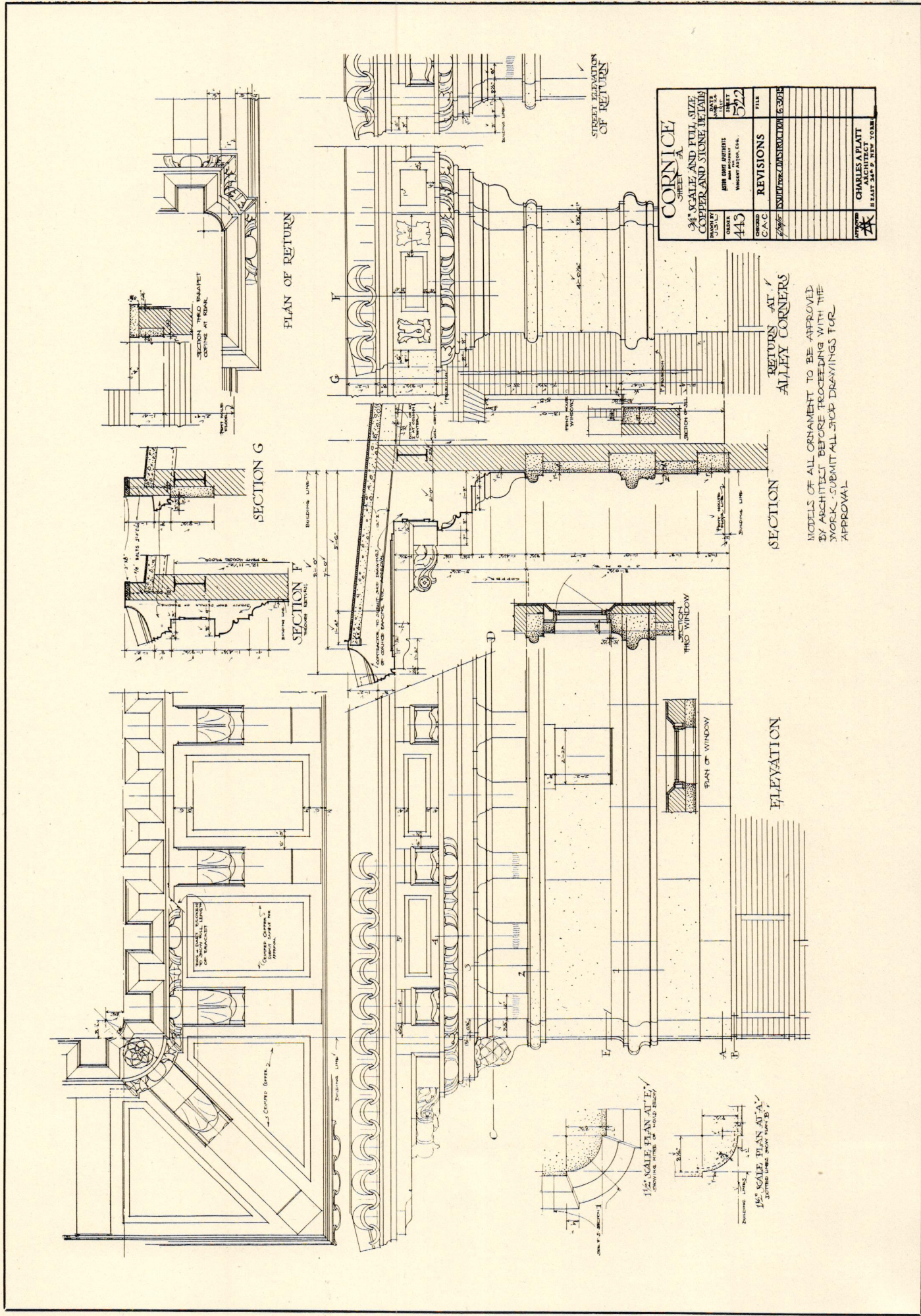
COURT, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.

Charles A. Platt, Architect.



CORNICE, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.

Charles A. Platt, Architect.



CORNICE		SHEET - A	
3/4" SCALE AND FULL SIZE COPPER AND STONE DETAILS			
ORDER NO.	443	REVISED	FILE
BY ARCHITECT	C.A.C.	REVISIONS	
BY CONTRACTOR		NO. FOR CONSTRUCTION	63075
DATE	5/22		
CHARLES A. PLATT		NEW YORK	

MODELS OF ALL ORNAMENT TO BE APPROVED BY ARCHITECT BEFORE PROCEEDING WITH THE WORK. SUBMIT ALL JOB DRAWINGS FOR APPROVAL.

DETAIL OF CORNICE, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.

Charles A. Platt, Architect.

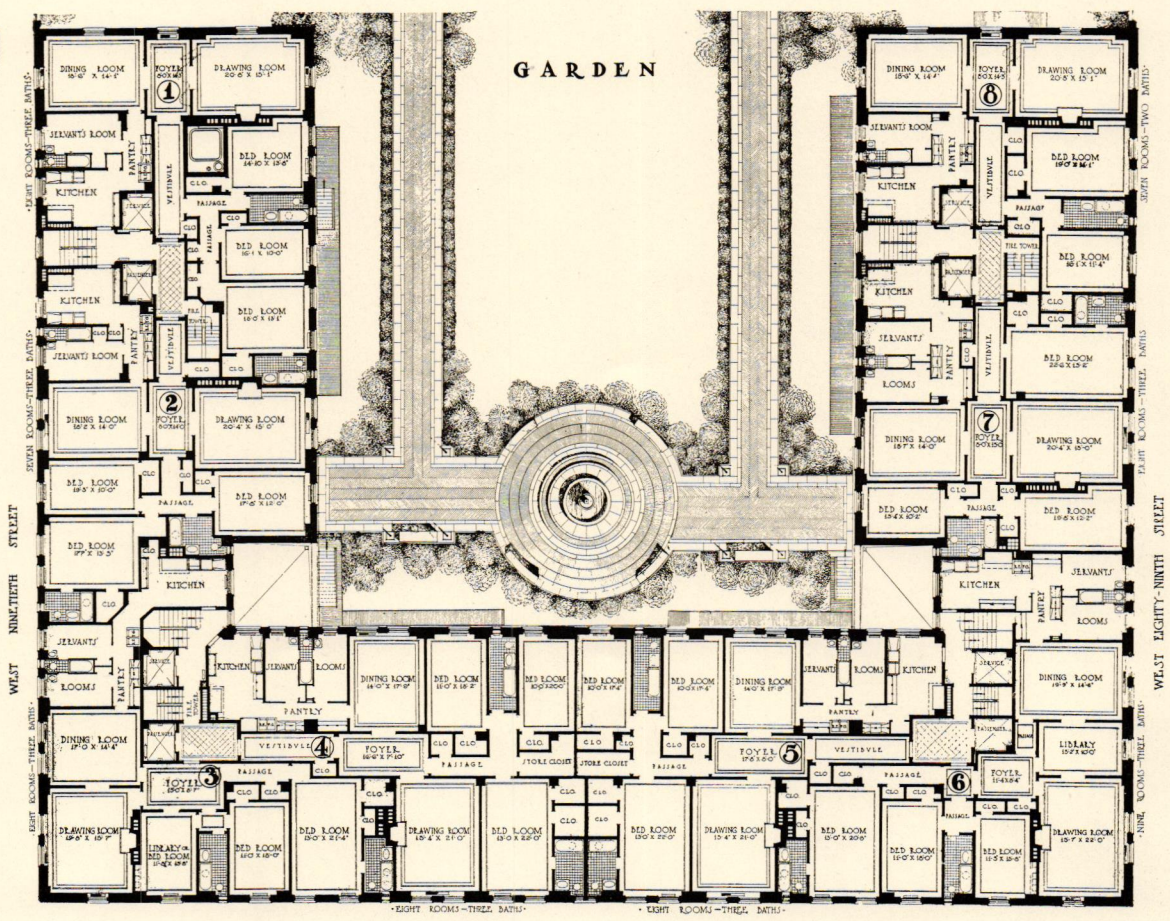
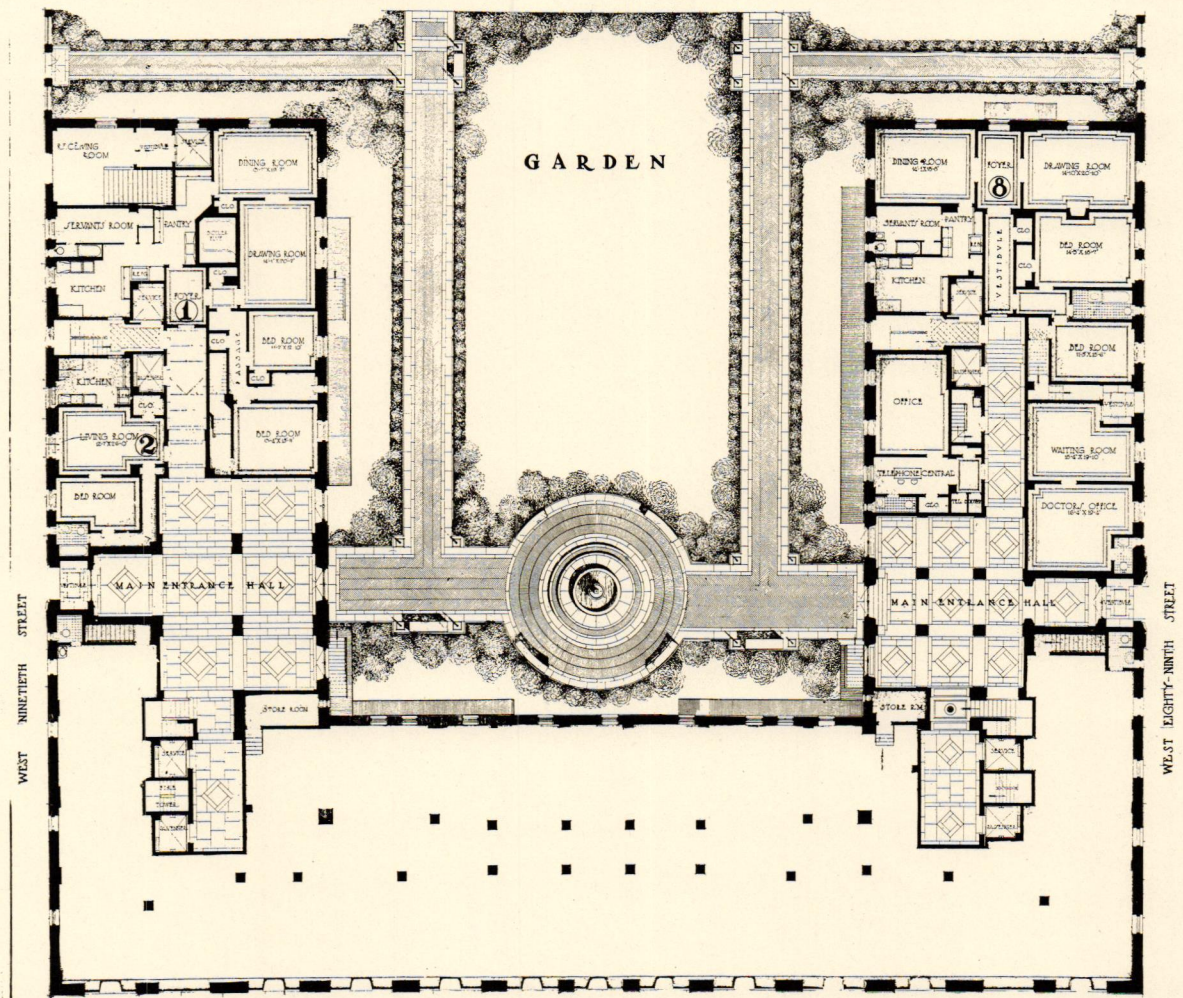


ENTRANCE HALL, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK.

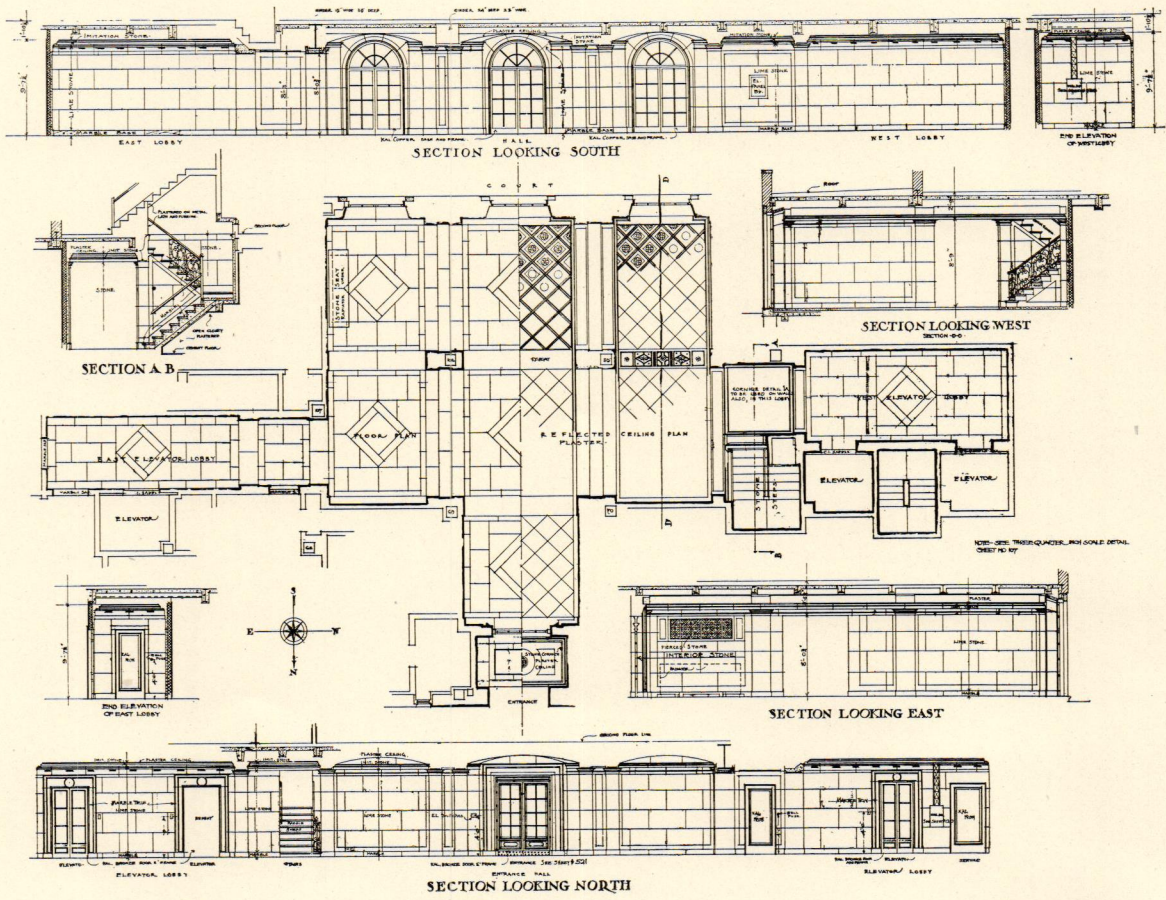
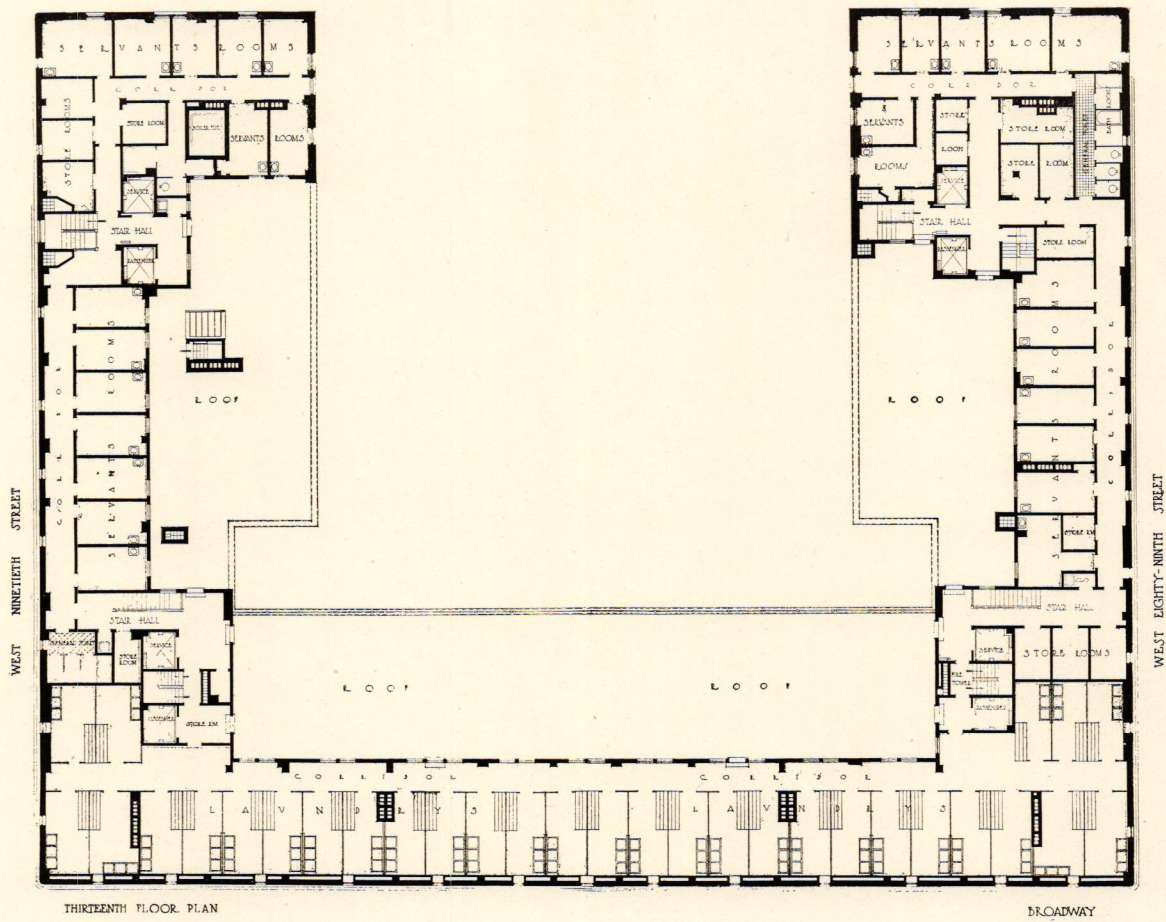
Charles A. Platt, Architect.



TYPICAL DRAWING ROOM, SHOWING WALL TREATMENT, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH, STREET, NEW YORK.
Charles A. Platt, Architect.



FIRST AND TYPICAL FLOOR PLANS, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK. Charles A. Platt, Architect.



THIRTEENTH FLOOR PLAN AND DETAILS OF 90TH STREET HALL, ASTOR COURT APARTMENTS, BROADWAY, 89TH TO 90TH STREET, NEW YORK. Charles A. Platt, Architect.

Actually these hoops will be spaced some even fraction on centers, such as $6\frac{3}{4}$ inches. Fractions less than one-quarter of an inch are not often found in concrete work.

In order to fulfill the conditions required by the building department, the column must have the ratio between the length in inches and the least radius of gyration less than 120. The least radius of gyration is given in the "Pocket Companion" for the section used above as 3.17, and the height was assumed to be 14 feet, or 168 inches. The ratio will therefore be $168 \div 3.17 = 53$ which is well within the limit.

It will be noticed that in the above case the steel is not supposed to buckle or bend and its strength is determined on the basis of the crushing strength of a block of steel divided by a factor of safety of four. The process that a designer has to employ is simply to divide the load on the column by 16,000 pounds and the area of the structural steel will be obtained. The next step is to determine the area of concrete enclosed within the reinforcing, and this area is the *net* area, the space occupied by the structural steel being deducted. One per cent. of this is next determined, and this area must be made of vertical reinforcing and ties or hoops.

When the rectangular column, such as shown in Fig. 90b, is used, the ties consist of $\frac{1}{4}$ -inch square or round bars spaced in such a manner that the distance on centers shall equal the diameter of the vertical bars multiplied by 15. This distance, however, must never be more than one foot. This means that where one-half-inch bars are used the ties must be spaced $7\frac{1}{2}$ inches on centers, and where five-eighth bars are used they must be spaced $9\frac{1}{4}$ inches on centers. The spacing of ties for three-quarter inch vertical bars must be $11\frac{1}{2}$ inches, and for all bars larger than this the spacing must be one foot.

These ties are not supposed to restrain the concrete in case there should be a tendency toward failure, but are used simply to hold the steel in position.

Of course, all the columns having ties need not be rectangular. They can be circular similar to the one shown in Fig. 90c, but as circular columns can be made more economically with spiral reinforcement, it is not advisable to use ties except for rectangular exterior columns.

As has been stated, the building department will allow from one-half per cent. to four per cent. of vertical reinforcing with ties. It is the custom to use the smallest percentage on account of the relative cheapness of concrete. Suppose that architectural requirements were such that the column is 16 inches square. Then the area of the column will be 256 square inches and, if one-half per cent. of this area must be steel there will be 1.28 square inches of vertical reinforcing. It will be noticed that the smallest allowable percentage of steel is used. It also be remembered that when the compressive value of steel in the upper layer of a concrete beam was determined in Article XIV, this value was found on the basis of the relative elastic properties of concrete and steel. The same reasoning holds good in deciding the compressive value of steel in columns. According to the Building Code, section 337 of Article 16, for columns with *longitudinal reinforcement only* and having the percentage of steel and the ties as given above, "the allowable load shall be five hundred pounds per square inch on the concrete, plus seven thousand five hundred pounds on the vertical reinforcement." Also, according to the code, for the above values of steel and concrete the concrete must be mixed in the proportion of one volume of cement to two volumes of sand, and four volumes of stone.

It has been found that there will be needed 1.28 square inches of steel. This steel is actually allowed to be stressed to 7,500 pounds per square inch, but for purposes that will be explained later, it simplifies the design of the column to con-

sider this steel as having a compressive value of 7,000 pounds per square inch. The area of steel will be made up of four $\frac{5}{8}$ -inch bars which will actually have a total area of 1.56 square inches. This steel will have a total compressive value of $1.56 \times 7,000 = 10,920$ pounds.

As concrete, in direct compression, is allowed to be stressed to the extent of 500 pounds per square inch, and, as the area of concrete is 256 square inches, the total compressive value of the concrete is $256 \times 500 = 128,000$ pounds. 10,920 pounds added to 128,000 pounds will give a total allowable compressive value for the column of 138,920 pounds.

The value of 7,000 pounds per square inch allowed to the concrete instead of 7,500 pounds is accounted for by the fact that in determining the compressive value for the concrete the *total* area of the concrete is used and the 500 pounds which might have been allowed to the steel is given to the concrete. The sum of the two values is the same in either case, no matter whether the steel is allowed 7,500 pounds and the *net* area of the concrete used, or if the steel is allowed 7,000 pounds and the *gross* area of the concrete is made use of.

It was stated above that the mixture of concrete was in the proportions of one volume of cement to two volumes of sand and four of stone. This is known as a one-two, four mix. A richer mixture, known as a one, one-and-one-half, three mix may be employed, and in this case the concrete may be considered as having a compressive value of 600 pounds per square inch, and the allowable stress on the steel is considered as 7,200 pounds. If the gross area of the concrete is to be used in determining the value of the concrete in compression, then the allowable load on the steel can be considered as $7,200 - 600 = 6,600$ pounds per square inch. The allowable stress in the steel is always reduced by that in the concrete in order to simplify the calculations.

Engineers who have reason to figure a great number of columns have tables in which these stresses are worked out, and once the dimensions are known the safe load on the column can be taken from the table. In case the loads that the columns must support are known it is possible to select the columns that will support them.

From the information given above it should not be difficult for the architect to work out a table of his own, in case he is unable to obtain one from some friendly engineer, and if there is a considerable amount of concrete work done in his office, such a table will be of great use. Columns are never made less than twelve inches square, and in some offices the minimum dimension is one foot and two inches, or fourteen inches. For the purposes of computing the bearing power of columns the dimensions of the first should be taken as one foot square. The area will be 144 square inches, the allowable load on the concrete for the total area will be $144 \times 500 = 72,000$ pounds if the stress is considered to be 500 pounds per square inch, and 86,400 pounds for a stress of 600 pounds, and the area of the vertical reinforcing must not be less than .72 of a square inch if the smallest allowable percentage of steel is used.

The results may be arranged in the form of a table and determined for rectangular columns measuring from twelve inches to sixty inches square.

It is usually the case that the loads are determined first, and then the column may be selected from the table to carry these loads. In former articles it has been shown that the live loads may be reduced for different floors, according to the rules of the building department. The roof, and the first floor beneath the roof, are considered as bringing the full loads—both dead and live—to the columns, but for floors under this the live loads are reduced 5% at each floor, for buildings more than five floors in height.

The last and most common type of column used in reinforced concrete construction is that type which is designated in the building code as columns "with longitudinal and lateral reinforcement." These are described as having not less than one-half nor more than two per cent. of hoops or spirals spaced not further apart than one-sixth of the diameter of the enclosed column nor more than three inches, and having not less than one per cent. nor more than four per cent. of vertical reinforcement. On the concrete in such a column the unit allowable stress is 500 pounds for the ordinary mixture, or 600 pounds for a "rich," or a one, one-and-one-half, three mix. As a rule the richer mixture is used.

The allowable stress in the vertical steel used in connection with this rich mixture is 7,200 pounds per square inch, as has been stated, but this is reduced not only by the allowable unit stress on the concrete but by the stress allowed to the concrete because of the spiral reinforcing. This spiral steel is considered as restraining the concrete in case there is a tendency toward failure. It may be considered as holding the concrete within the spiral. For this reason the stress on the concrete may be increased by a load per square inch equal to two times the percentage of lateral reinforcement multiplied by the allowable tensile stress of the steel in the lateral reinforcement. As stated above, the allowable percentage of spiral, or lateral reinforcement, may vary from one-half per cent. to two per cent. As a rule, the largest percentage is used—or 2%. There are two allowable stresses on steel. The first is 16,000 pounds per square inch, which is the allowable stress on mild steel.

Steel used for spiral reinforcing is usually cold drawn steel wire and the allowable tensile stress of this is given in the code as 20,000 pounds per square inch.

The increase in the unit stress of the concrete can be considered as $2 \times 2\% \times 20,000 = 800$ pounds per square inch. The total stress in the concrete, which must be deducted from the 7,200 pounds allowed on the steel, will be $600 + 800 = 1,400$ pounds. The vertical reinforcing steel will therefore be considered as having an allowable unit compressive stress of $7,200 - 1,400 = 5,800$ pounds.

These figures may seem a bit complicated, but an example may make them clearer. Suppose that it is necessary to carry a load of 800,000 pounds. A rule, that will give good working results for the diameter of the column, is to divide the load by 1,146 and take the square root of the result. In the present case this rule may be expressed as follows: $800,000 \div 1,146 = D^2$. D will be found to equal approximately 27 inches. This is the *effective* diameter of the concrete or the area included within the spiral. The actual diameter of the column must

be 4 inches larger than this—there being 2 inches of fire-proofing over the steel—or 31 inches.

The minimum amount of allowable vertical reinforcing, and the maximum amount of lateral reinforcing, are used. In other words there will be 1% of vertical, and 2% of spiral steel.

The area of the concrete within the spiral will be $27 \times 27 \times 3.1416 \times \frac{1}{4} = 572.5$ square inches. One per cent. of this will give 5.725 square inches of vertical steel.

This can be made up of eight 1-inch round bars having a total area of 6.28 square inches.

The concrete will support $572.5 \times 600 = 343,000$ pounds.

The vertical steel will support $6.28 \times 5,800 = 36,000$ pounds. $343,000 + 36,000 = 379,000$ pounds that the concrete and vertical steel will support. $800,000 - 379,000 = 421,000$ pounds that must be supported by the additional stress in the concrete allowed because of the spiral.

If the full 2% of spiral should be used the additional strength that can be allowed will be $572.5 \times 2 \times .02 \times 20,000 = 458,000$ pounds which will be too much. By mathematics it can be found that a percentage of 1.85 will give about the proper amount of steel in the spiral.

In order to find the actual size of the steel bars in the spiral there must be some assumptions made. The actual percentage must be decided upon. In this case 1.85 should give the proper result. The size of the bars used in the spiral must then be assumed, and the distance on centres determined—this distance usually being known as the pitch—or the pitch decided upon and the sectional area of the spiral steel determined. As the pitch is the most easily varied the size of the rods will be assumed in the present case, and the diameter will be taken as 9-16 of an inch, the area being .248 of a square inch. It will then be possible to substitute in the following formula to find the pitch.

$$p = \frac{4 \times \text{Area of Spiral Steel.}}{\text{Percentage} \times \text{Effective Diameter.}}$$

$$p = \frac{4 \times .248}{.0185 \times 27} = 2 \text{ inches.}$$

If 9-16-inch round bars are wound with a pitch of 2 inches there will be enough spiral reinforcement. The method of proceeding to determine the pitch as given above is somewhat lengthy and as a rule engineers have tables, which must necessarily be comprehensive, that simplify the calculations.

With regard to the pitch of the spiral, it might be stated that the law limits the pitch to one-sixth of the effective diameter or to three inches. In the case of the column designed above, one-sixth of 27 inches will be 4.5 inches and so the limiting dimension will be 3 inches for the pitch. As this was found to be 2 inches it is well within this limit.

How New York City Now Controls the Development of Private Property

By George B. Ford

Mr. Ford is Consultant to the Commission on Building Districts and Restrictions

THE city government of New York has just put into effect by a virtually unanimous vote of the Board of Estimate and Apportionment the radical and much-talked-of Zoning law. All future buildings will be restricted as to their height, size and use and the restrictions will be different in different parts of the 327 square miles of the city.

In general, the law will limit the height of the buildings in proportion to the widths of the streets on which they face all the way from two and a half times the width of the street in the financial district, through two times the width of the street in central Manhattan, with one and one-half times in the balance of Manhattan and in small portions of the other bor-

oughs, down to once the width of the street throughout all the rest of the city. A future Equitable building could only be a third as high because it faces on narrow streets, but a tower in the center of it, half as large again as the Woolworth tower, might rise to any height. The Woolworth building, on the other hand, if facing on a park, might be very nearly duplicated. The shopping district on Fifth Avenue will consist of buildings not much higher than Tiffany's, but along 42nd Street buildings may rise about as high as the Hotel Manhattan or Knickerbocker. Twelve and fourteen-story apartments will continue to go up on the main avenues and eight and nine-story apartments on the side streets, but no building of any kind can go any higher except by setting back from the street. Throughout most of the city, however, four or five stories will be the limit. Towers may be built to any height but they cannot cover more than a quarter of the lot. Mansards, dormers and terraces are encouraged; anything that will open up the streets and bring light down into them by making the upper part of the buildings set back from the street above a reasonable height.

The size of buildings will be controlled by the fact that the law requires just so much open space on each lot. This again ranges all the way from the warehouse districts along the commercial waterfront and along the freight railways where a building may cover the whole of its lot, through the B, C and D districts so called, in each of which in succession a building has to provide for larger and larger yards and courts, down to the villa districts where a house can cover only 30 per cent. of its lot and must be widely separated from its neighbor on at least one side. Throughout Manhattan and the densely built-up portions of the other boroughs, yards and courts in office buildings, factories, lofts, hotels, apartments, in fact all buildings, would have to be as large as those that have been required for the last fourteen years in tenement and apartment houses. Everywhere the yards and courts have to be increasingly larger at the top as the building goes up in height, so much so that these requirements tend to limit the practicable economic height of buildings even more effectively than do those directly affecting height. This is particularly true in the outlying boroughs. One important feature of the law is the encouragement it gives to playgrounds for material concessions are allowed to anyone who will provide adequate recreational space in connection with his buildings.

Right here it is desirable to sound a note of warning. It would be most unfortunate if the law were applied as it stands to other cities for it is full of unduly liberal provisions in the way of height and size that tend strongly to defeat the object of the law but which were necessitated by the exceptional economic conditions of New York.

As to the use of buildings there are only two general classes of restrictions: first, the districts which are restricted against business and industry of all sorts, the so-called "residence" districts, and second, the tracts which are restricted only against manufacturing and public stables and garages, the so-called "business" districts. In the former almost any kind of building that people live in is allowed, also churches, schools, hospitals and various institutional buildings. In the business districts any residence use is allowed and even a certain small proportion of the unobjectionable types of manufacturing. The use districts have been laid down street by street and, in fact, block by block, depending on existing conditions and tendencies. The result has been that about two-fifths of Manhattan and about two-thirds of the whole city has been set aside for all time for strictly residential use, while the main thoroughfares, the transit streets and all other streets that are or might be appropriately used for stores or show rooms are

set aside as business streets. Many streets which are now seriously invaded by factories or garages are restricted against them from now on because it was felt they were a distinct harm to the street. On this ground all of the central part of Manhattan above 23rd Street was made a business district despite the fact that there were already hundreds of factories employing in all upwards of 30,000 operatives within the district. This law will not touch the existing factory lofts as it is in no sense retroactive, but the "Saving New York" movement, in which most of the merchants along Fifth Avenue combined to oust the factories in the neighborhood, has already succeeded in persuading almost all of the manufacturers to move away. It was a remarkable and timely vindication of the economic need of this law.

It is interesting to see how the unbroken residence districts have been becoming larger and larger at the insistence of the property owners themselves so that in some cases of their own volition they must walk at least a mile to the nearest store of any sort. These restrictions do not interfere in any way with existing or future private restrictions placed on any property except that if this law happens to be more drastic than the latter in any particular this law would govern.

All of the balance of the city which is not in one or the other of these two kinds of districts is left unrestricted. It includes all of the land appropriate for industry along the navigable waterfront and along the freight railways, as well as most of the territory which is now given over to manufacturing. It includes also scattered throughout the city a number of blocks which are already invaded by public garages or which are appropriate for that use. Certain other areas, especially around Jamaica Bay and along the shores of Staten Island are left entirely undetermined in their use pending the working out of the plans for the port and terminal facilities of New York.

In the various reports of the commission nothing whatever has been said about the effect of the new law on the appearance of the city, and yet within the next 25 or 50 years it is bound to make the city far more orderly and even more beautiful. It has been said that it would spoil the glorious sky line of New York and rob the city of its "crowning glories." But so far from doing that, I am convinced that the sky line of New York some 25 or 50 years from now will be far more wonderful than anything we have yet dreamed of, for the law is full of special provisions which are bound to encourage the erection of towers, mansards, dormers, terracing roofs of a variety far different from anything which this country has yet seen. More immediately, it will put order and harmony into the streets of the city, particularly the residential streets. It will tend to prevent the streets from being broken up as they are now.

Ultimately one of the greatest effects of all will be the effect which it is bound to have on family life and citizenship, for as the character of neighborhoods become assured families will begin to settle down in one place instead of constantly shifting about as they do now. Local ties will be formed, neighborhood spirit will grow; social and community consciousness will develop and people as groups will take more and more interest in affairs, both social and civic, of their neighborhood.

The result is bound to be, as it always has been under similar conditions, that just in proportion as people do take more interest in their surroundings they contribute more to the direction of the control of these surroundings. In that way a civic spirit and citizenship is built up and in that way this new law is bound to contribute to better family life and better government.

The Growth in Architecture

By *Halsey Ricardo, F.R.I.B.A.*

ON nearly the last page of that amazingly able little book by Professor Lethaby on architecture—a book that all interested in architecture ought to possess and study with close attention—there is this pregnant statement: “No art that is only one man deep is worth much; it should be a thousand men deep.” It has been much the fashion—especially from the time of the Early Italian Renaissance onwards—to accentuate the names of the architects of the famous masterpieces, and to regard them—the architects—as the sole creators and originators of their works. I do not mean that they regarded themselves, or that we regard them, as independent of tradition and experience; but that we look upon such men as Brunelleschi, Bramante, Peruzzi, Michael Angelo, Sir Christopher Wren, and so forth, as creative ends in themselves, as independent phenomena who individually affected and controlled the tendency of their time. But from another point of view we may look upon them as resultants rather than causes; the environment has produced them, they have not constructed the environment. Samuel Butler—the author of “Erewhon”—puts it aphoristically in this way: An egg is not the means by which a hen contrives to produce another bird; the hen is the contrivance by which an egg enables itself to produce another egg. The stream of life—which is the cardinal thing—is immortal, and the various mortal shapes in which it manifests itself to our eyes are the outward sign of its current, and owe their characteristics to the actual composition of the stream at that moment of their appearance, its structure being the synthesis of effective individual influences resolved into a kind of general quality and direction. To come to our own particular tributary of this stream, we may take the building instinct in mankind as immortal—that is to say, as co-existent with mankind itself. Its manifestation at any particular period of the world’s history depends upon the ideals prevalent at that time, and the structural resources—in the matter of technical abilities and materials—of the builders. The dominant factor determining these manifestations is the main stream of life carrying the aspirations and voicing the ideal of the nation, the constructional instinct being secondary and tributary to the greater stream. With the egg the simple ideal is, no doubt, the preservation of the endless chord of life, without attempting much control over the intermediate phenomena which serve as carriers. It deplores celibacy naturally, and resists violent endeavors at crossings; species are, comparatively, fixed, and hybridization is only permissible within defined limits. Subject to these conditions, the hen may do what she likes, and mate with whom she pleases—it is her egg that is the justification of her existence.

With a nation the issues are more involved. The chord of life consists of many strands, closely and loosely interwoven, and beside it are many supplementary and contributory threads, running parallel, running crossways, obstructing, blending, confusing, or accentuating the main issues of life. “Sports” occur: “throw-backs” to some predominant or persistent strand in the main cable—diversions into new or reactionary channels—accelerations and slackening of speed; the seeming tangle now clearing itself and again shrouding itself indecipherably. It

has its nodes, its pulsations; at times it is lyrical in its outcry, at others solemn in its vibration, mysterious in its silence. It voices the passions, the hopes, of a thousand hearts, for it is the pulse of the nation and the nation’s ideal is in its utterance. This history of the world is shown by its art, with a faithfulness that no other record can approach—for it is not consciously a record, and has no side to take in politics or in government, beyond ministering to their requirements. By their skill in engineering—especially hydraulic engineering—Mesopotamia was a fruitful and verdant land; they had mathematics enough to be land surveyors and astronomers, and in a country where the nights are clear, and a considerable portion of life is carried on beneath the starry splendor of the firmament, astrology takes a prominent place, in religion and in the details of daily life. But their art shows them to have been a cruel people, yet with a great capacity of suffering born stolidly and without resistance. With the Egyptians it was otherwise. The bulk of the population were devoted agriculturists. They hated war, and had no delight in the pomp and circumstance of military display. The Arab delight in the horse of war—as witness the Book of Job—spelt misery and physical pain to them, as evidence of their conscription and servitude—and in their pictures of animal life the horse appears rarely as a beast of burden or traction. But with the animal life about them the Egyptians show an exceptional sympathy. Think what it means to have acquired the ability to draw those hieroglyphics, to have seized upon and reduced the vital characteristics of bird and beast to such simple formulæ, and yet so instinct with the individuality and power of the thing represented.

In mediæval times the constitution of society was quite different; instead of one vast empire regulated by an oligarchy of aristocracy, under the direction of a field marshal, we get a feudal system of government, side by side with independent communes. Cities were virtually republics in the Thirteenth or Fourteenth Centuries, and life was fiercely competitive, full of expansion—and the enthusiasm following it—engendered by the new forces and sentiments in peoples hitherto quasi-nomad, and predatory rather than gregarious, outside the tribal connections. Their architecture was the architecture of equipoise—the architecture of the mason in excelsis—and of the craftsman, as a builder, whether he worked in stone, timber, or metal. Different from the decadent Roman architecture, the early mediæval—i. e., to the middle of the Fourteenth Century—was integral in all its features. Columns and pilasters were not applied for effect, or to mask the facts of construction; they sprang from the constructional necessities of the case. And while the Romans (under the empire) could afford to be lavish both with their materials and their labor, the builders during the Middle Ages had to be as sparing and resourceful, on both these particulars, as their ambitions would permit. Roman art was the outcome of the Roman ideal—his outlook and point of view upon life. This is the main point. His materials and methods of workmanship were of only secondary importance. Relying on his cement to achieve his daring constructions, he often had to build in stone countries, where the

lime was weak and stone was hard to quarry—he raised basilicas, barracks and palaces undiscouraged, built bridges, aqueducts, and viaducts on the same grandiose scale as he was accustomed to in the Campagna round Rome. Their modulus of construction was imperial, the mediæval modulus was civic, almost parochial. The Roman had no internal insurrections to consider; his contest was against the far-off barbarian. The citizen, from the Eleventh Century onwards, had to fear, besides party quarrels, the encroachment of the barons and feudal superiors; the passage, if not the invasion, of alien kings; to defend themselves against organized bands of brigands, and to extinguish any attempt at competition from a neighboring city. But for the church—which was common to all the peoples in Europe—architecture would have become petty, jealous and sullen. It fostered the element of romance, it kept the crafts together under its ægis, and gave them their opportunity to develop. The same spirit that was ready to abandon all immediate earthly gain, in undertaking to wrest the Holy Sepulchre from the grasp of the Infidel, produced the churches of Chartres, Amiens and Beauvais. Even the military architecture was a product of the church's encouragement of religious enthusiasm. Kings as well as great lords hastened to Palestine to grapple with the Saracen and drive him from the land. There they encountered an architecture that was as old as Nebuchadnezzar, and, what was far more exasperating, appeared virtually impregnable. There was much to be learned from these methods of offense and defense, and when the warriors returned to their own homes they built castles like Château Gaillard, Pierrefonds, and our many English castles, all embodying the contrivances they had contended with so exhaustingly in the eastern lands. In the Assyrian room at the British Museum one sees pictures of the storming of towns, with all the apparatus of siege and defense—of walls, moats, drawbridge, machicolations, battlements and loopholes for the archers. All the crafts were concerned in building the cathedral, the monastery, the castle, and the town hall—the mason, the decorator, the carpenter, the glazier, and the metal-worker. The monastery had many functions: besides attending to the welfare of its own inmates it was a hospital for the sick, a school for the craftsmen, the repository of learning, of medical lore; a library, a storehouse, and a hotel. Doubtless there were master minds amongst these workers, in each branch of their labors; but until well into the Fourteenth Century the various craftsmen worked as one gang, with the support of the community behind them and for their encouragement. The popular enthusiasm was great: they helped the oxen to drag the stone and timber; they taxed not only their own luxuries, but their necessities, to defray the expenditure; they criticized and appreciated each adventurous innovation; they applauded the growing dexterity of the craftsmen, they played up to him in the requirements of their own homes. The specialist began to emerge. From the masons came the sculptor and the image-maker; carving—which once was the exuberance of fine mason's craft—became a specialty, and independent of the guild of masons. The illuminator and decorator became the painter, and he emerged from the group of associated workers; he and the sculptors became tradesmen, working on their own, taking orders from all and sundry, making articles irrespective of their place and destination. The carpenters made their distinctions, the finer hands became joiners and carvers, and they got the painters to put the last touches to their handiwork. The metal-workers earlier in the day began to differentiate: the blacksmith from the whitesmith, the worker in iron from the worker in gold and silver, the forge from the muffle. The goldsmith, dealing with enamels, was an illuminator as well as modeler in his way, and the goldsmith's shop became the school from

which, in later times, both painter and sculptor originated, and from where they got their training. The glazier, with his tinctures, rivaled the heraldry of dress and shield, and he drew apart also, to supply his wares to whom should call for them. He did a considerable trade overseas and in foreign parts. So did the tombmakers, with their images in marble and alabaster, the craft organization was gradually splitting up. The standard of technical achievement, always rising, had reached such a point that it was impossible for an "all-round" man to distinguish himself unless he specialized in some particular branch of his craft, and devoted all his power and technique to giving it some individualistic excellence. The name of the craftsman—an artist—begins to appear, and he cultivates his special faculties to justify his reputation. His own craft is to him paramount; he is careless of its contributory function, and he pushes the capabilities of his material to the extreme of its endurance. His sculptured figures are not part of a reverent chorale, they are each solo singers, almost—like the nightingale—requiring the hush of night to be fully appreciated. The revival of learning followed on as an easy consequence with these experimenters in the possibilities of technique in their craft; they not only tried after the utmost that could be done with their material, they looked back into the past ages, to see what had been done, and were surprised at the consummate excellence of the ancients. The mastery of the Greek workman, of the Roman architect, as well as the writers of story and philosophy stood confessed. Greek literature, hitherto unknown, opened out vista upon vista of acute reasoned learning and of impassioned poetry. The fall of Constantinople helped the movement by precipitating upon Europe the collected stores of Greek manuscripts there and in Asia Minor. Greek gems circulated profusely, and full of the uncritical admiration of whatever belonged to classic times, the grounds of Rome and its environs were ransacked to discover what statuary had escaped the destructive fury of Goth and Christian, and what lessons in architecture and detail the perverted and ruined buildings could yield to these ardent revivalists. Their admiration was uncritical, their knowledge of the past was small, and they fell upon their treasure trove with indiscriminating appetite. They took it as it stood, without inquiry as to its genesis or understanding it. Roman architecture was a composite affair—engineering construction veneered with Greek architectural upholstery. When the Italians in the Fifteenth Century attempted to revive the magnificence of classical architecture, they met the problem in the converse way to the ancients. The architecture of Rome was a grandiose massing of concrete structure, poured and moulded into and over forms, like so much viscid lava, which eventually hardened into a homogeneous monolith, requiring for appearance sake to be faced with stone or marble or metal. This was the material backbone of Roman architecture, and it had the advantage that it could be made of quite simple accessible materials and by quite unskilled labor. It was this facility of execution, as well as the surpassing strength of the construction, that enabled the Roman architects to conceive and execute their vast projects. Every facility was pressed upon them; all the space they could desire was given to them. They had the command of unlimited supplies of labor, the cement lay actually beneath their feet, and the aggregate for their concrete was readily procurable. They had not the fear of contractor before their eyes. Under such conditions grew the monuments of Rome in the imperial days. They were vastly different in the days of Papal Rome. It is true that by the end of the Fifteenth Century Popes, Cardinals, and some few princes had accumulated enormous wealth, and were spending huge sums in the building of palaces, strongholds, and churches; yet such expenditure bore no comparison

to the outlay of the Roman emperors. Neither were materials or labor comparable either. Stone and marble were hard to come by—even when you plundered the ruins of their casings—and they cost a good deal to work. The cores of their work were expensive bricks laid in mortar, and the walls were slow to rise. They were dependent very largely on skilled labor and the traditional methods of construction that had grown up from the time when the Northmen had attempted to vault the narrow aisles with stones no larger than a man could carry up the ladder of the scaffolding. The Roman knew little about the properties of the arch: his semicircular heads to his openings, and his concrete domes and vaults, had little lateral thrust, even during construction, and might be credited with none when the concrete had fully set. The mediæval builder knew a great deal about the arch, and had a kind of fearful joy in bending it to his uses and outwitting its mischief by means of his abutments. Like the gun and the steel-clad warship, he developed the destructive and resistant properties of both to such an extent that at Beauvais you have a slender cage of stone, capped with a stone roof, held in place by a forest of sentinel buttresses, quivering under the stress of their duty, like so much stone carpentry. With him an arch was never quiet, and the Italian workman knew its destructive propensities, counteracting some of them with his iron tie-rods near the springing. Again, the use of wood, the profusion of carpentry in the roofs,

would have seemed criminally wasteful in the eyes of the Classic workman. His use of wood was for temporary purposes—for centering, for scaffolding, pontoon work and military bridges, stockades, and the apparatus of war. He covered his concrete roofs with bronze tiles or mosaic where the buildings were of size and importance, and with low-pitched light tiles on a few squared rafters for ordinary occasions. But the mediæval builder treated carpentry with the ingenuity of an income-tax assessor. No subterfuges, no invasions, had any real chance of escape. If the timber wasn't large enough, it was scarfed—ingenious tenons bit into the sides of the sturdy baulks, unfeeling tie-beams grasped the feet of the would-be truant rafters, and detective collar beams well nigh throttled them. Wind braces added to the complexity of the construction, till a cathedral roof seemed, from the inside, to be an extravagantly dense forest, an emporium of useful timbers wasted in the unnecessary task of upholding a steep-pitched lead roof. Something of this tradition pervaded the Italian carpenter's mind, though for the most part he contented himself with the simple king-post roof, covered with tiles laid to a moderately low pitch. This, then, was the artisan's training when a man like Brunelleschi, for instance, had to depend upon his services at the building of the cupola at Florence; and it was this training, this hand knowledge of his craft and his material, that is the life and the grip of the Renaissance.

Will Steel Be Any Cheaper?

By S. M. Fechheimer, *Editor Modern Building*

IS it advisable to postpone building operations in the hope that steel will be lower in price later on? This is the big question that is having the serious consideration of architects and owners throughout the country. A study and understanding of the present steel situation are of vital importance to everyone connected with the building world.

What are the conditions in the steel industry today? What are the prospects for the future? The steel mills are running maximum capacity and yet are unable to cope with the demands. Every report from the steel companies indicates record business with increasing volume of unfilled orders. We are informed that practically all the mills are booked with orders which will keep them busy well into 1917, and yet their regular customers are clamoring for the privilege of entering more orders.

In our own country business conditions have never been better. Our foreign trade for months has been surpassing all records. Our exports for twelve months ending February, 1916, are reported to have been \$3,720,000,000. Money is plentiful and new building construction can be readily financed. What does it matter if a new building does cost slightly more than it would in dull times? The new building is rented almost before it is completed and at attractive rentals. The savings which might be made in dull times would be readily consumed in loss in rentals. It is useless to postpone construction, as there is no prospect of lower cost for some time to come and in the meantime the interest charges and taxes on vacant property continue to accumulate.

Supposing the war were to stop, what then? Records show that although the war has been a powerful stimulus in our present business conditions not over 25% of the present activities are represented by war supplies. It will take months

for European industries to properly organize their manufacturing, and the steel mills abroad will be busy for years afterwards in supplying their own needs and repairing the enormous damage done by the war. A single bridge crossing any one of the important streams requires thousands of tons of steel. Steel ships in great number have been destroyed and must be replaced. Building activity abroad has been at a standstill and must be resumed as soon as the war ceases. These conditions point clearly to the fact that for a long period after the war there will be no European manufacturer able to export steel to America or any other country. In the meantime our steel manufacturers will not only have to take care of their domestic trade but will also be compelled to export to South America and many other countries.

Remember also that the uses for steel are increasing enormously. Articles which formerly were made of wood and other materials are now furnished in steel. The automobile industry alone consumes millions of tons. New uses are being brought forward every day; besides there is the normal increased demand for steel. Our own government has already started its program of preparedness. This will consume large quantities of steel for ships, guns, coast defense, ammunition, etc. Our railroads simply must expand as well as take care of replacements. This means tremendous tonnages of steel for new cars, rails, bridges, etc.

These conditions point clearly to the fact that no matter what effect the close of the war may have on business generally, the steel industry cannot help but advance, and there is no prospect of lower prices for a long time to come.

Conditions unquestionably recommend immediate building with no prospects of lowered cost for a long time to come and with an actual danger of the inability to secure the building at all if too long delayed.

Legal Decisions of Interest to the Architect

These decisions appear monthly and are edited by Mr. John Simpson, the well-known lawyer.

COMPENSATION FOR SERVICES RENDERED.

Architects who had contracted to build a bank building for a fixed sum wrote to the bank, suggesting that the work desired should cost more than the amount limited, and stated that, if the bank insisted on keeping within that limit, the architects would prefer not to do the work. The bank replied that they considered the matter off and would begin negotiations elsewhere. The architects telegraphed that they were ready and anxious to begin the work. In an action for services rendered and expenses disbursed, the Circuit Court of Appeals, Eighth Circuit, holds that the statement that they would prefer not to do the work was not an absolute refusal to do it, which alone was sufficient to authorize rescission by the other party, and they could recover under their contract for their services and disbursements theretofore made and rendered.—*Hoggson Bros. vs. First Nat. Bank of Boswell*, 231 Fed. 869.

WHEN NON-PERFORMANCE OF CONTRACT EXCUSED.

Action was brought by an owner against a contractor for breach of a contract to erect a garage of specified dimensions. The contractor insisted that he was at all times willing to perform, but that the plaintiff insisted upon the construction of a building of different character and of larger dimensions than that required by the contract, to which the defendant refused to accede. The New Jersey Supreme Court held that it was competent for the defendant to prove his willingness to perform, and the refusal of the owner to allow him to do so, excepting under new conditions not contemplated by the contract, and at variance with its provisions. When the owner prevents the contractor from performing or repudiates his obligations under the contract, communicating such repudiation to the contractor, the latter may treat the contract as abandoned, and thus excuse his non-performance.—*Ferber vs. Cona*, 97 Atl. 720.

ACTION ON CONTRACTOR'S SURETY BOND.

An owner was compelled, on default of the construction company contracting to construct a building, to complete it at a cost exceeding the contract price. It sued the construction company and a surety company on its bond to indemnify it from any loss by the failure to complete. The defendant's affidavit of defense failed to deny that the construction company made default, or that the owner took possession and completed the building at the amount sued for, but averred that a copy of the plans and specifications was not annexed to the copy of the contract referred to in the bond. No question arose as to these plans and specifications. The affidavit also denied that one of the plaintiff's exhibits was formally served on the date of the statement, but did not deny that it was received or subsequently came to the knowledge of the parties. It was alleged that certain alterations were made, the extent and value of which the defendants did not know. The contract, however, permitted such alterations. It was also alleged that the plaintiff had made payments to the contractor before they were due, though forbidden by the bond, but not that damage resulted from such payments. The Pennsylvania Supreme Court held that the affidavit was insufficient to state a defense. The defendants set up a claim of set-off for the value of certain property belonging to the construction company which the owner took possession of. The contract provided that when the building should be taken over to be finished by the owner, all materials, goods, chattels and effects in or about the building

should be forfeited to the owner, and might be employed or sold or disposed of as he might direct. It was held that it must be presumed that the architect gave credit for the tools and materials so taken.—*Loughney vs. Huntsman Const. Co.*, 97 Atl. 178.

ARBITRATION AS TO MATERIAL FURNISHED.

On a sub-contractor's petition to enforce a lien for materials a stipulation was made that certain parties agreed upon should examine the defendant's house for which the material was furnished by the plaintiff and report the materials used, and that the price of the materials furnished by the claimant should be estimated at the market price thereof at the time the house was built. The Iowa Supreme Court held that the fixing of the price was committed to the parties agreed upon.—*Ft. Dodge Lumber Co. vs. Rogosch*, 157 N. W. 189.

ENFORCEMENT OF BOND TO RELEASE MECHANIC'S LIEN.

The owner of a building, against which mechanic's liens were filed, filed a bond to release the liens, conditioned that if the owner paid the obligee any sum for which he might obtain judgment or decree, either against the owner or the property, the obligation was to be void, otherwise to remain in force. In a suit to enforce the liens, the Michigan Supreme Court holds that the sureties might be made parties and a decree rendered against them, instead of leaving the lienors to an action at law to enforce their obligations. A decree making the bondsmen liable, as well as the principal, is the most direct method of collection, and denies to the sureties upon the bond no substantial right. As parties defendant they may appear and protect themselves from the establishment of any unjust claim. This is also the law in New York. *Morton vs. Tucker*, 145 N. Y. 244. *Grace Harbor Lumber Co. vs. Ortman*, 157 N. W. 96.

DAMAGES FOR BREACH OF RESTRICTIVE COVENANT BY RAILROAD.

Under New York Const. art. 1, § 6, declaring that private property shall not be taken for public use without just compensation, rights based on restrictive building covenants are property rights which cannot be taken for a public use without just compensation, and which make direct and compensational damages which otherwise would be consequential and non-compensational. The owner of a tract of land laid it out on a map in lots fronting on streets, and, as an inducement to purchasers, sold them by deeds, covenanting that no building or structure for any business purpose whatsoever should be erected on the premises. A railroad purchased lots running across the entire southern part of the tract subject to such restrictions opposite the lots of one of the plaintiffs and adjacent to the premises of the other, and built its railway across such lands partly on an embankment and partly in an open cut, and operated on its tracks many fast electric trains daily. The New York Court of Appeals held, in an action to restrain the maintenance of such structure and the operation of the road, that the defendant railroad had violated the covenant, and that plaintiffs were entitled to damages, a "building or structure" being in the widest sense anything constructed that is erected by art and fixed upon or in the soil composed of different pieces connected together and designed for permanent use in the position in which it is so fixed, and to "erect," meaning not only to raise, but also to build or construct.—*Flynn vs. New York W. & R. Ry. Co.*, 112 N. E. 913.

APPLICATION OF PAYMENTS TO CONTRACTORS.

The owner of a building under construction gave the principal contractor a note on account, which was turned over to a subcontractor and by him to a materialman without instructions as to how it should be credited. The Michigan Supreme Court holds that the materialman had a right to apply a part thereof upon accounts owed him by the subcontractor for material furnished for other jobs, under the rule that a debtor may elect as to the application of a payment, but that if he does not so elect the creditor may elect.—*Grace Harbor Lumber Co. vs. Ortman*, 157 N. W. 96.

DAMAGES FOR BREACH OF BUILDING CONTRACT.

The rule in regard to damages for breach of a building contract is that where the contract is substantially complied with, and the building is such a one as is adapted for the purpose for which it was constructed, and only slight additions or alterations are required to finish the work according to the contract, the defects being remediable at a reasonable expense and without interfering with the rest of the structure, the measure of damages is such a sum as is necessary to make the building conform to the plans and specifications. But where the defects are such that they cannot be remedied without the entire demolition of the building, and the building is worth less than it would have been if constructed according to the contract, the measure of damages is the difference between the value of the building actually tendered and the reasonable value of the building as required to be constructed.—*Gutov vs. Clark*, Michigan Supreme Court, 157 N. W. 49.

ENFORCEMENT OF MECHANIC'S LIENS.

The New York Appellate Division holds that a mechanic's lien cannot be foreclosed under a complaint which fails to comply with section 43 of the Lien Law, by stating whether any other action is pending to recover the lien debt. But although a complaint is insufficient to authorize foreclosure of a mechanic's lien, yet a personal judgment may be entered under it, although none is demanded, especially in view of section 54 of the Lien Law, which provides that the lienor may recover judgment, although he fails to establish a valid lien.—*Prime vs. Hughes*, 159 N. Y. Supp. 1041.

NOTICE BY OWNER OF INTENTION TO COMPLETE WORK.

A building contract provided that upon the contractor's failure to furnish satisfactory labor, the owner, after three days' written notice, could himself supply it. The contractor entered upon the performance of the contract, employing non-union laborers, which was unsatisfactory to the owner. The owner's agent wrote a letter to the contractor requesting him to supply satisfactory labor, but not stating the owner's intention to do so himself after three days. The owner would not permit the employment of non-union men, and furnished its own men, using material which the contractor had delivered on the premises. In an action on a *quantum meruit* for the value of the material delivered and used, the New York Appellate Division held that the letter to the contractor was not the notice contemplated by the contract. Although the contract authorized the owner to use the contractor's material without payment upon his default after written notice, yet where the notice was not given the contractor might recover on a *quantum meruit* for the material used.—*James Ackroyd & Sons vs. Proctor*, 159 N. Y. Supp. 1038.

"CASUAL" EMPLOYMENT UNDER WORKMEN'S COMPENSATION ACTS.

The owner of a house petitioned for review of an award made by the California Industrial Accident Commission under the Workmen's Compensation Act. Section 14 of the act excludes from the meaning of the word "employee" as used in

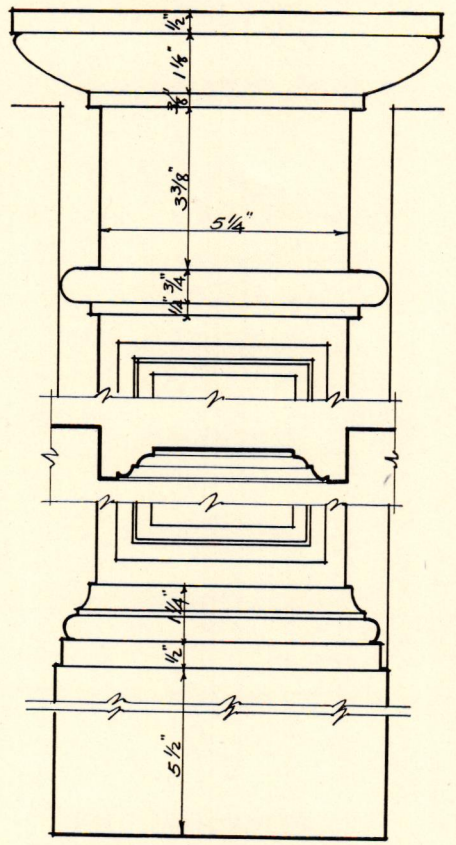
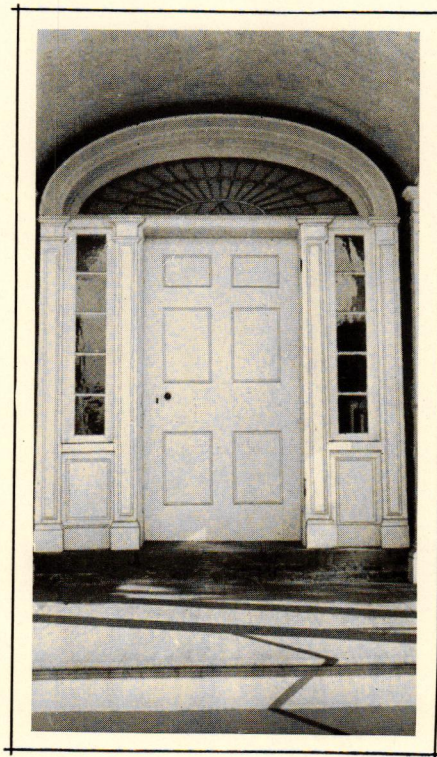
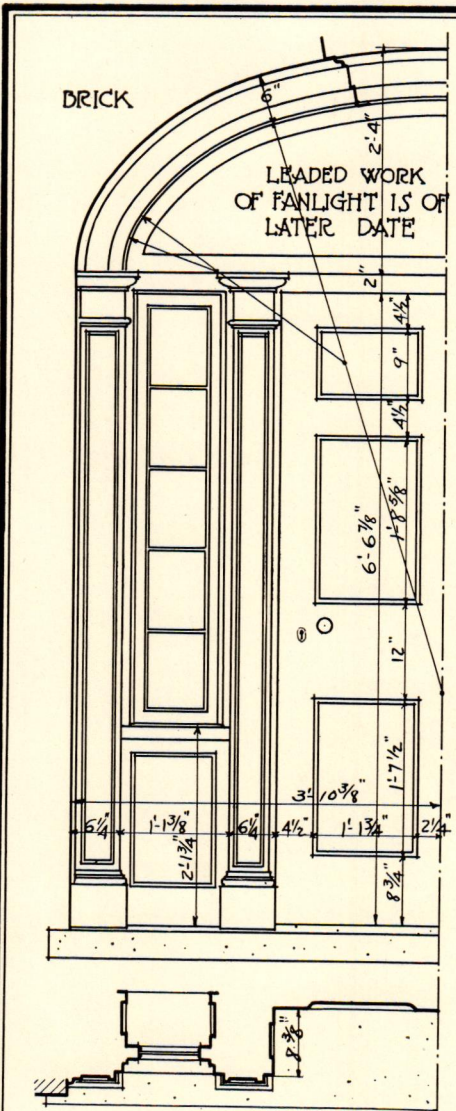
the act any person whose employment is "both casual and not in the usual course of the trade, business, profession or occupation of his employer." The petitioner employed a house painter to paint his house at a rate per day, petitioner to furnish materials. The employment was not for a definite period, but the work could be reasonably finished in two weeks. The Court held that the contract of employment was "casual," and, not being in the usual course of any business of the petitioner, the employment was of a nature which did not entitle the employee to compensation under the act for an injury.—*Blood vs. Industrial Accident Commission*, 157 Pac. 1140.

INSUFFICIENT CERTIFICATES PARTIALLY RELEASING SURETY.

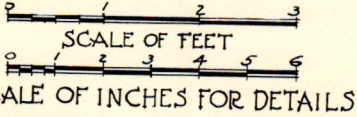
Architect's certificates, upon which the owner of a building under construction paid the contractor as the work progressed, in the absence of fraud or mistake, are conclusive upon all parties, owner, contractor and contractor's surety. A building contract required that the owner should make payments in current funds, and only upon certificates of the architect, on or before the 15th day of each month, in amounts equal to 90 per cent. of the value of the work in place during the preceding month according to the architect's certificates. The certificates on which payments were made by the owner contained no statement of the work in place. Only two of them implied that an estimate had been made or that value had been considered. Three of them requested payment on account of labor and material furnished "as per contract and other extra work." Three of them required payment to parties other than the contractor for material furnished, without any suggestion that it had gone into the building. All the certificates in effect stated only the desire of the architect that the money be paid to the contractor. In an action on the surety's bond the Missouri Supreme Court held that such certificates were not a compliance with the contract, which required the value of the work to appear in the certificates, and that the estimates be founded on the contract price and state the value of the work and material in place relative to the entire amount of the contract. Payment on such certificates was held to constitute a breach of the building contract, so that the surety on the contractor's bond would not be liable for payments made on such certificates. But the surety was not entirely discharged from liability under the bond. The provision regulating the contents of certificates of the architect on which payments should be made was an independent provision, relating only to the evidence on which it might be found that the payments had become due in the amount stated. The loss, if any, occasioned by non-observance was capable of computation and compensation in damages. Therefore the surety was not discharged *in toto* on the bond, since where a stipulation does not go to the root of a contract, so that a failure to perform it would not render the performance of the rest of the contract a thing different in substance from what was contracted for, its breach will not authorize an abandonment. Nor is abandonment authorized where non-performance of a condition does not materially impair the benefit from the performance of the others, the loss being capable of compensation in damages.—*Southern Real Estate Co. vs. Banker's Surety Co.*, 184 S. W. 1031.

LIABILITY FOR INJURY TO FOREMAN.

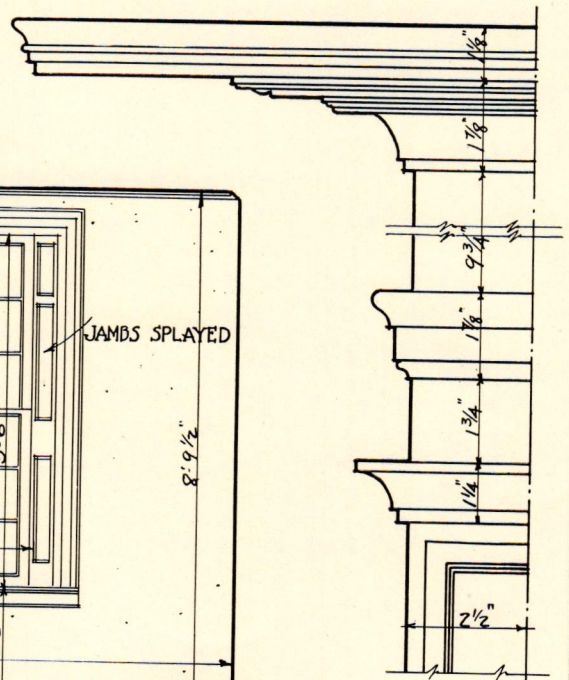
The Kentucky Court of Appeals holds that the foreman on a building job cannot recover from the master for injuries caused by his inferiors, on the ground that the master was negligent in failing to promulgate proper rules, where the work is simple and openly done in such manner that its progress may be easily observed, since, in any event, it was the plaintiff's duty to make the rules.—*Johnson vs. Bates & Rogers Const. Co.*, 186 S. W. 134.



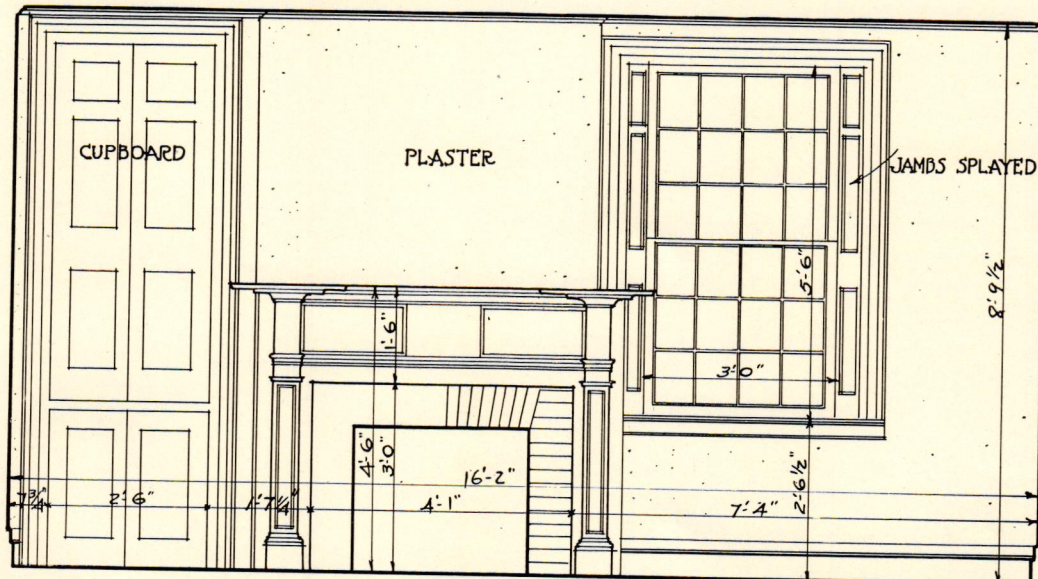
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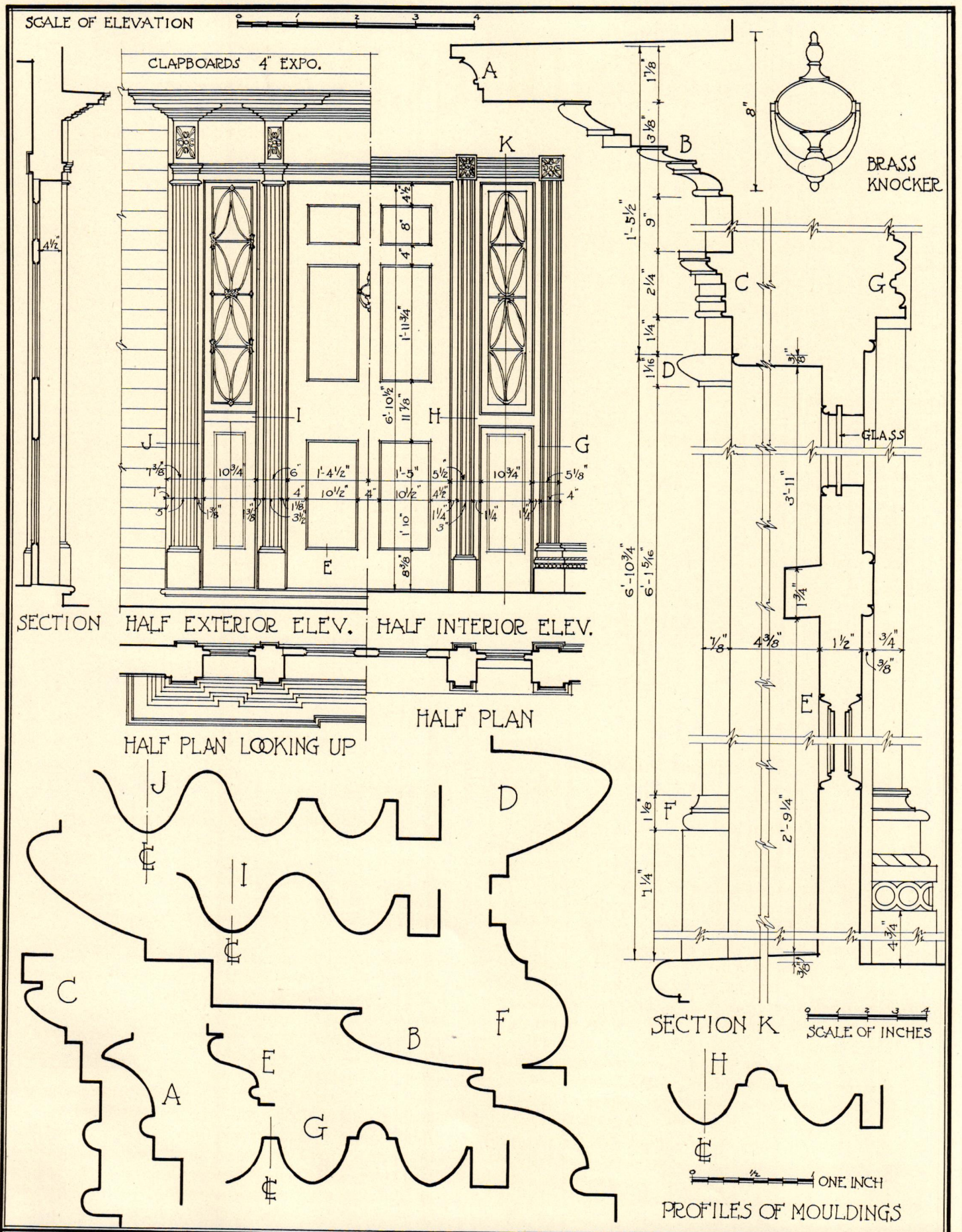


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EARLY ARCHITECTURE OF WESTERN NEW YORK

DOORWAY AND MANTEL - McNALL HOUSE BUILT ABOUT 1828 HENRIETTA, N.Y.

MEASURED & DRAWN BY BENJ. F. BETTS



EARLY ARCHITECTURE OF WESTERN NEW YORK

DOORWAY OF THE NORRIS HOUSE BUILT ABOUT 1824 ROCHESTER N.Y.

MEASURED & DRAWN BY BENJ. F. BETTS

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Editorial

The American Institute of Architects and its Honor Code—Co-operation of the Architect and Draughtsman

THE American Institute of Architects is, to-day, in its superior position because of the energetic labors of its various committees. Its standing in the country and the rules which govern its members are based on the supreme code of honor. It is, therefore, unfortunate that the case quoted below, involving one of its members, and for which a verdict was rendered to the plaintiff, has been made public, thereby injuring much of the good and great work which the A. I. A. has performed. We know, however, that the Institute is capable of protecting its own honor and we hope that the Institute will publish its findings for the benefit of the profession and the public.

"On February 8, 1904, two firms of architects—Reed & Stem and Warren & Wetmore—entered into a partnership, referred to herein as the Associated Architects, for the special purpose of accepting employment in connection with the designing and erection of the Grand Central Station in the city of New York and other buildings that were to be constructed in connection therewith. Charles A. Reed, of Reed & Stem, was made executive head of the association, and the work for which it was organized was undertaken. On November 12th, 1911, Reed died leaving the work unfinished. Shortly thereafter the railroad company canceled the contract with the Associated Architects and signed a new one with Warren & Wetmore, giving them the work in question. The plaintiff,

Stem, and William J. Reed, executor of the estate of Charles A. Reed, claim that the cancellation of the original contract and the substitution of Warren & Wetmore was brought about at the suggestion of the latter for the purpose of excluding the plaintiff and the Reed estate from the profits of the work which had been assigned to the Associated Architects and upon which they were then working as uncompleted business. The question presented for decision is whether the plaintiff is entitled to an accounting, and if so, what is to be the scope thereof.

A consideration of the rule of law governing the relationship and conduct of partners toward one another is of material assistance in working out the rights of the parties hereto. In their dealings with each other partners occupy a position of trust and confidence, and the authorities unanimously agree that there is scarcely any relation in life which calls for more absolute good faith than the relationship of partners. Each is the general agent of the firm with power to affect the interests of all. Hence the law has thrown a protection around the partnership as such by requiring that every advantage which an individual can gain in the business must inure to the benefit of the firm. A purer and more elevated morality is demanded of partners than the common morality of the trade, and the standard by which they are tried in a court of equity is far higher than the ordinary standards of business. Ques-

tionable dealings of any kind will not be tolerated. Narrow views resulting in the preference of one partner at the expense of the firm must yield to broad principles of fair dealing and highmindedness."—Extract from decision for the plaintiff by Judge Delehanty.

THE following letter was received with a request for its publication. The draughtsman is in the office of an architect in one of our smaller cities. Certain typographical errors in the author's copy have been corrected, but the matter is otherwise unchanged and we recommend it to the attention of our readers, together with the comment thereon:

EDITOR ARCHITECTURE:

Dear Sir:—The following is something that should not only be read, but should make the reader do some thinking on his part, toward suggestions to make things better than they are now.

A young man is taken into an architect's office, promised all kinds of opportunities, advancements, told of the big salaries made by draughtsmen, etc. He is given a salary so small that at the end of three years, his salary is smaller than a common laborer's. He does not equal an apprentice, and in the trades, the poorest workmen get a bigger salary than a good draughtsman.

Once a draughtsman, always a draughtsman, unless you have some relation with more money than brains, who wants to start you in business; otherwise the draughtsman will never get started, because he cannot save enough from his salary. The architect will advise going to college to study, but what for? When your college days are over, you can get a position (I would call it a grind) for six months for practical experience, without pay, then you'll get a big salary.

I suppose that if an architect were to tell you the truth about the chances that a mere draughtsman has, there would be fewer draughtsmen.

Architecture is not a trade; you do not serve a few years and then you have mastered it. No! Have you ever heard of an endless job? If not, try learning architecture; it is a slow, tedious, nerve-racking, grinding business, but when you find this out, it is too late to start in any other business.

Some form of co-operation between architect and draughtsman, probably a percentage basis on all work, would mean more work, fewer mistakes, the draughtsman would be on the lookout for new clients for the architect, perhaps the draughtsman might be taken into the firm and perhaps do away with the old saying, "The only way an architect can get rich is by marrying one of his clients." If you know of any other way, pass it along.

Everyone knows that the draughtsman is the big cog in the big building machine. Who makes the drawings? If a job is behind, who does the hurrying to get it out on time?

Now shouldn't he receive more money than the tradesman who is only a minor part of this great building machine?

All trades and professions have organized to increase their weekly allowance, why can't the draughtsmen form an association to better themselves, if the architects won't co-operate with them; it will have to come some day, and why not now?

We have no knowledge concerning the author of the above letter, nor can we believe that his view of his profession is general among draughtsmen. Yet he has conveyed to us the impression that his criticisms, however ill expressed, are thoughtful and sincere, and the complaints he has to make must be

due to the circumstances in which he finds himself placed, rather than to a naturally discontented frame of mind.

Architects in general are accustomed to think that the relations existing between the front office and the draughting room, are mutually satisfactory. It is quite possible that the employer of the man who wrote the article printed above, feels that he has working for him an earnest and satisfied body of draughtsmen, and yet from one of them we receive a letter, which, though obviously mistaken in many respects, bears intrinsic evidence of a very genuine discontent, which must be in part justified. That the writer's attitude toward the profession is substantially incorrect, cannot be doubted. He may have been promised, as he suggests, all sorts of opportunities and advancement, which have not materialized, but as to whether the fault is his own, or that of the employer, no one can say. It is not unusual for men to fail to advance because of their own inability, nor is it unusual for men to begin in the lowest possible position in an architect's office and to work themselves up very early into independent practice or into a partnership. One of the most famous architects in this country has as his partner a man who worked for him a number of years ago as an office boy, and who, by his ability and fidelity, made himself so valuable to his employer, that when the time came that he was worth more than he could earn as a draughtsman, his employer preferred to take him into partnership, rather than to lose him, as would have been the case had he struck out for himself. This case is by no means rare and while we have no definite knowledge of just how the men constituting the firm of McKim, Mead and White began their connection with the firm of which they are now members, we understand that the present firm consists of six men, five of whom have been advanced from the draughting room. Surely this is co-operation of the kind which the writer of the above letter desires.

That opportunities for advancement are by no means limited to the large firms, may be proven by the following case of one of the small offices, which we know to be authentic. The office was established some twelve years ago. The first office boy was the son of a mechanic, with a natural taste for drawing. He held the position as office boy for about a year and a half, then becoming a sort of junior draughtsman. He learned readily, advancing steadily in opportunity and salary, and finally left the office to go into partnership with a man who had been formerly employed as a draughtsman in the same office, and had finally established himself independent practice in one of the smaller cities, and realizing his own limited capacity in designing, wanted some one to take care of the draughting room while he confined himself to the practical end.

The office boy who succeeded to his position, was likewise a fellow whose opportunities for school education had been limited in the extreme. He too, was given an opportunity to do tracing and drawing in the office, and supplemented this by a course at the Mechanics' Institute, and later in one of the ateliers of the Beaux Arts Society. His development in every respect was very rapid. He became a superb draughtsman and a capable designer, and his education was not confined to architectural work, but in manners, dress, and general intelligence he showed commensurate improvement.

He went into several of the competitions held under the auspices of the architectural magazines, won one or two, and with the proceeds of these prizes, supplemented by savings from his salary, he made a trip to Europe of about six months. Soon after his return, the efficiency he had shown in the competitions attracted the attention of the manager of one of the real estate development companies and he was given several houses to build on the property controlled by that company.

Other work followed and now he has an independent practice of as good quality and of great value as that of the office in which he was so long an employee. In the same small office the third office boy is now head draughtsman and has already designed several buildings under his own name and has taken out his state license to practice architecture. He too, is on his way to independent practice although he began his business life with as little training and education as any of the others.

Now, these cases are all direct refutations of the statement the writer of the preceding letter has made, that there is only one way in which to get started and that is to have some relative set you up in business. Of course, we all know that a good connection and good business-getting ability will succeed in procuring work more rapidly than ability to design alone, but work obtained in this way will not bring to a man permanent and enduring success, unless the quality of his work is so high that he would in any case have succeeded. We could name a half dozen of the men most prominent in this country, who began life as office boys or junior draughtsmen, whose training was secured entirely outside of colleges or was supplemented by such brief courses as they could take at night, and pay for out of the sums made by day. Certainly no man whose start in life is due to accident of birth rather than to his own ability and determination to succeed, can contemplate his career with anything like the pleasure and satisfaction that these men experience and that in itself must be a more than sufficient compensation for their laborious efforts in building up their practices.

Nor do we believe that the average architect works less hours, does less during the hours he works, or is less responsible for the design of the work which goes out over his name, than are his draughtsmen. We do not mean to say that every architect can instruct all the men in his office, for there are in this profession, as in all others, dilettanti who depend upon others, and whose only real relation to their work is the fact that they have secured it and that their names are on the drawings. The draughtsman may be the big cog in the machine, but the architect is the motive power that drives it, and in the proper conduct of business it is as essential that the motive power should be perfect as that the cog should be in its correct position.

The one thing which this article does seem to say to the architect more clearly than anything else, is that he should be considerate of his men and be respected by them. No man who does not run his office on purely business principles can possibly be successful, either in the return he gets from it, or in the artistic quality of his work, but sound business principles will dictate to him considerate and proper treatment of his men. Certainly the employing architects find it difficult enough to obtain draughtsmen whose knowledge of design is not of the most rudimentary character, and the architect who has in his office a man with real feeling for proportion and an ability to subordinate his own conceptions of design to those of his employer, is a man who is blessed indeed. Draughtsmen of this character are those most eagerly sought for and most appreciated, and aside from such men there are few offices which find it necessary to lure draughtsmen into their clutches with gaudy promises and flaming hopes.

One more thing; the man who goes into architecture to amass a fortune had better get out of the profession; he cannot attain his ambition in it, and the profession does not want its practitioners to be possessed of such low ideals.

THE question of advertising the profession of architecture has been the subject of much discussion since the last Convention, at which the Board of Directors was asked to study the proposals which were advocated during the discus-

sion, as well as the methods which had been tried by several of the Chapters, says the A. I. A. Journal.

We feel qualified to state that, in presenting its report, the Committee on Publications was guided not alone by the professional standard which has hitherto considered advertising as unprofessional, but by the fact that in no collective advertising of architecture as a profession is it possible to make general statements which are true. It is idle to consider this question without remembering that there are architects and men who call themselves such. No standard of ability exists or can exist. Yet advertising must rest upon a substantial guarantee that the promises made or implied shall be made good. To advertise the architect as qualified, by his title alone, to perform the duties and discharge the responsibilities which rest upon every practitioner, is to proclaim something which is not true; no assurance whatever can be given that the architect chosen under the influence of such an advertisement is able to satisfactorily discharge those duties and responsibilities.

We reprint the report of the Committee on Publications to which we have referred:

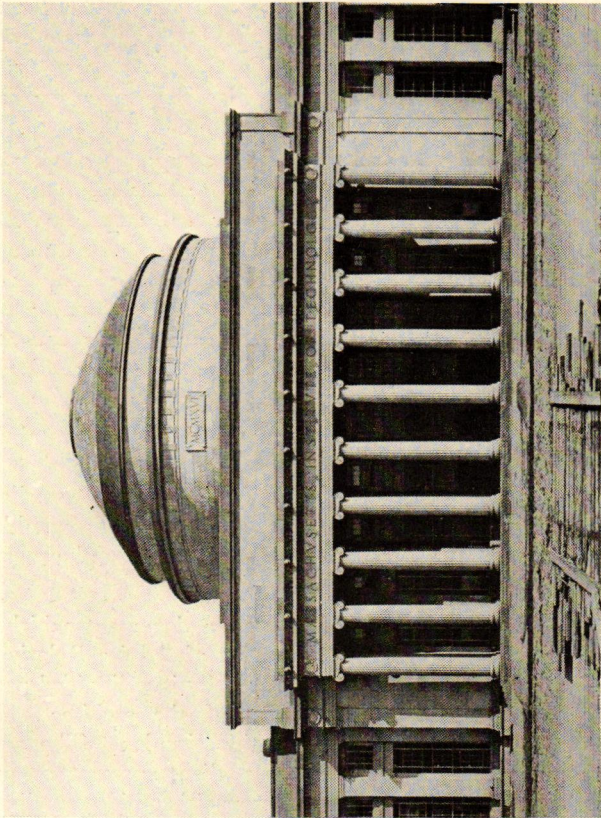
"The Committee on Publications has given careful consideration to the request of the Board of Directors that it should formulate some method for bringing about a closer relation and a better understanding between the architects and the public; that in making such an effort it should especially have in view the circular issued by the Iowa Chapter and the various expressions in favor of some sort of advertising plan put forward during the past year. The Committee has obtained a good many opinions upon the subject from its representatives in Chapters throughout the country.

"It is probably beyond dispute that unsatisfactory conditions exist, greatly varying in different localities; that the reasons for the employment of an architect even are in some cases unknown to those who would be highly benefited by being made aware of them. The question is whether, through the issuance of any declaration by the Institute, these conditions can be materially bettered. To find an answer to this question, it is probably wise to consider the evidence offered by past experience.

"Everybody knows that since the founding of the Institute and especially during the past, say, thirty years, the standing of the architect and profession has vastly improved; many of us now in active practice can recall the days when the architect had little or no position. The prime cause of the change is not very obscure: briefly, it is the assumption by the architects themselves of larger responsibilities; of constantly higher artistic and technical equipment; of growing educational standards and accomplishments. We believe that in these indisputable facts lies an inescapable fundamental law of progress. Holding this belief, we must conclude that any document consisting largely of a claim to superior excellence is but little wanted where such excellence exists; would be of little advantage in default of it, and of doubtful propriety in any case.

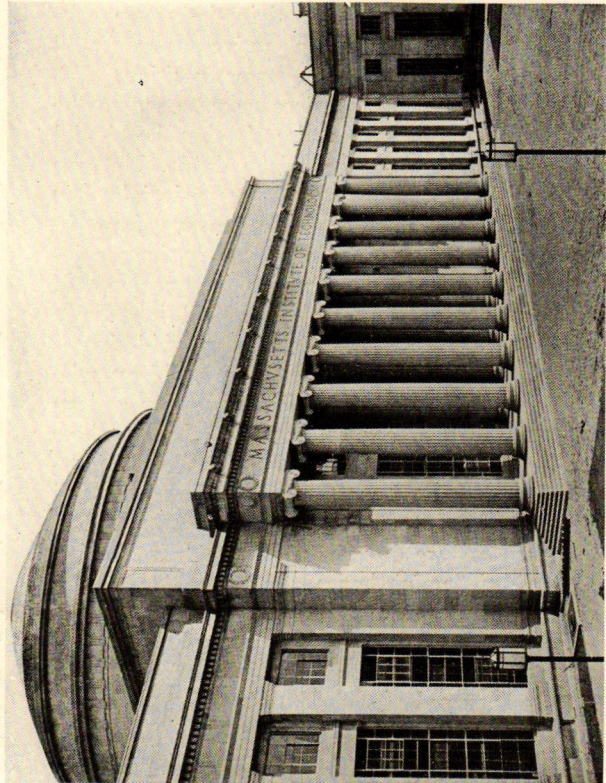
"The Institute has already issued a document which, in our judgment, is adequate. Its circular of Advice Relative to Principles of Practice and Canons of Ethics is a dignified paper, frankly declaring the responsibilities of the architect. We recommend the widespread use of this circular. The architect who places it in the hand of a client, present or prospective, has in no wise derogated from either his own dignity or that of the body of which he is a member; has made a proper claim. The matter of his ability had better be otherwise determined."

American Architect.



Entrance, Main Building, Mass. Institute of Technology, Cambridge.

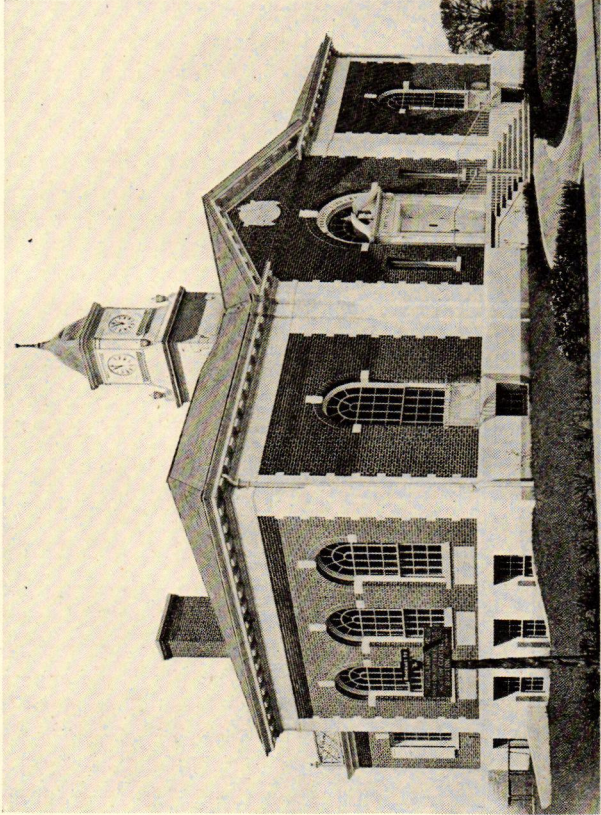
American Architect.



Main Building, Facing Court, Mass. Institute of Technology, Cambridge.

W. W. Bosworth, Architect.

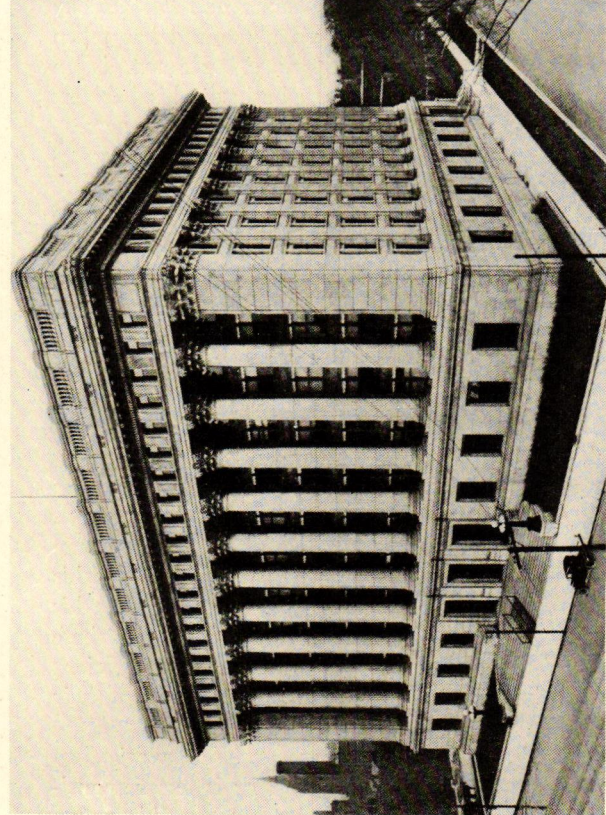
Brickbuilder.



Public Library, Needham, Mass.

J. H. Ritchie, Architect.

Architectural Record.



Northwestern Mutual Life Ins. Co., Milwaukee, Wis.


Marshall & Fox, Architects.

MONTHLY PICTORIAL REVIEW SHOWING THE BEST WORK PRESENTED BY OUR CONTEMPORARIES.



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You will know good roofing tin by the Target-and-Arrow on it. That trade-mark was created by the old firm of Taylor, in the early days of the tinsplate industry, and the Taylors knew what tinsplate quality meant. Four generations of sheet-metal roofers have used Taylor roofing tin with success and profit. It is made today like it was made more than fifty years ago. No "modern methods" have changed it from the tin that grandfather's father knew. You can absolutely guarantee a roof of Target-and-Arrow tin, but first be sure it is not one of the many imitations. Look for the Target-and-Arrow.



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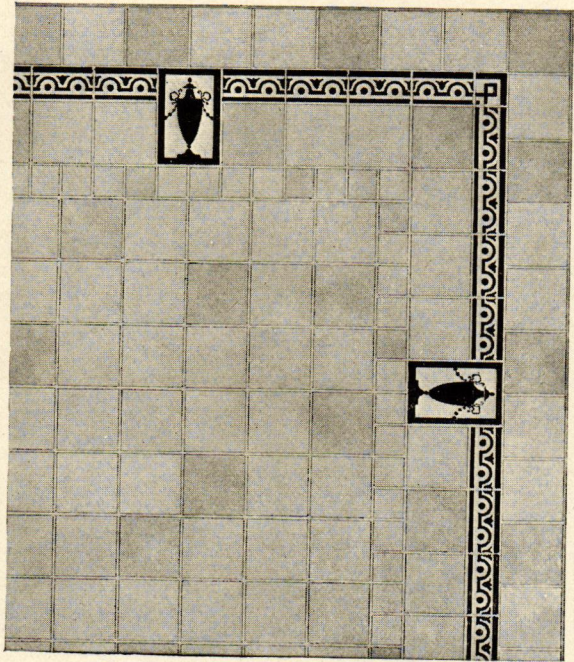
The Recognized Standard
and be assured of

Fire Protection
Breakage Protection
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and Satisfaction

Write for Report on Diffusion of Light

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The above illustrates a floor laid with our
TOURAINÉ GRANITE in an Adam design

Faience Department
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Zanesville, O. Maurer, N. J.



COUNTRY RESIDENCE, E. T. BEDFORD, GREEN'S FARMS, CONN.
Montrose Morris, Architect.

The painting on this house was done with
MATHESON WHITE LEAD
Many of the finest buildings in this country
bear testimony to the superiority of this lead.
MATHESON WHITE LEAD
Will make a white mark on any other
lead, and will cover more surface and
cover it better.

IT IS STRICTLY PURE
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Barrett Specification Roofs

Guaranteed for 20 Years

No Upkeep Cost for 20 Years — Absolutely Guaranteed

Here are details of a plan to guarantee your roof for 20 years—at no extra cost.

It's a new feature of Barrett Service. We know from an experience of over half a century that a Barrett Specification Roof, if properly laid by a good roofing contractor, will last at least 20 years. Scores of roofs of this type have lasted almost twice that period.

In order that purchasers may have the benefit of this experience we have arranged with one of the largest Surety Companies in America—the United States Fidelity & Guaranty Company of Baltimore—to issue, hereafter, a 20 Year Guaranty Bond on all Barrett Specification Roofs of 50 squares or more in all towns in the United States and Canada of 25,000 population and over—and in smaller places where our Inspection Service is available.

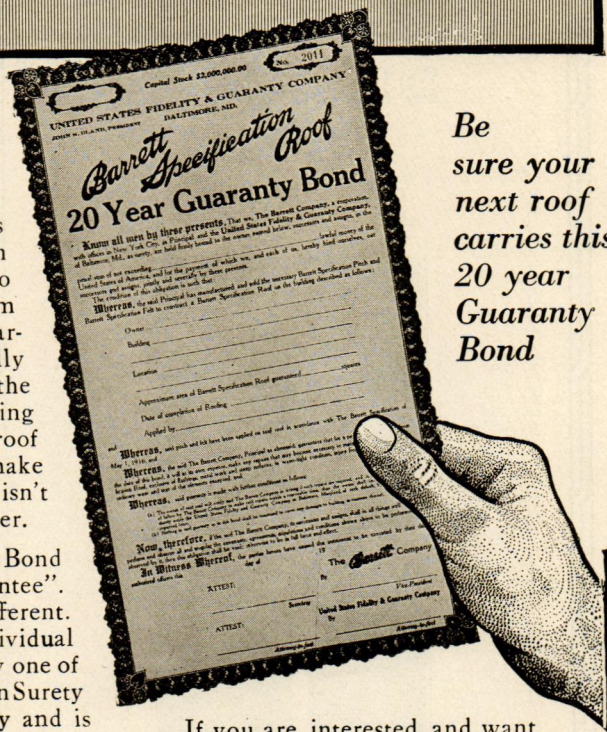
Our only requirements are that the roofing contractor shall be satisfactory to us and that the Specification dated May 1, 1916, shall be strictly followed.

All you have to do to secure the 20 Year Guaranty Bond is to give the

roofing contractors copies of the Barrett Specification of that date, and tell them to figure on that basis. From the buyer's standpoint the arrangement is practically ideal, for under the plan the owner is assured of having an inspector on the roof whose only interest is to make it as good as possible—for if it isn't right we alone are the loser.

Do not confuse this Surety Bond with the ordinary "Guarantee". It is something quite different. It is issued, not by an individual or a manufacturer, but by one of the largest and best known Surety Companies in the country and is a legal, workable document that has no loopholes.

When you give the roofing contractor a copy of The Barrett Specification of May 1, 1916, to figure on, you are ordering the very best roof it is possible to construct and one that takes the base rate of insurance. In addition you secure a 20 Year Surety Bond, guaranteeing freedom from upkeep cost for that period.



Be sure your next roof carries this 20 year Guaranty Bond

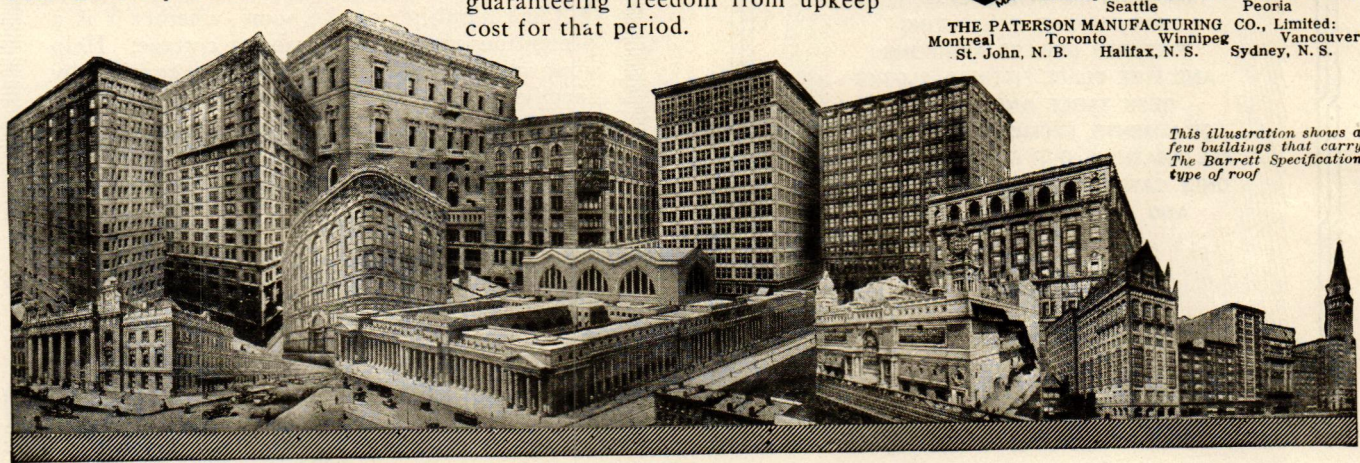
If you are interested and want any further information, write our nearest office and the matter will have prompt and careful attention.

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Largest Manufacturers in the World of Roofing and Roofing Materials

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THE PATERSON MANUFACTURING CO., Limited:
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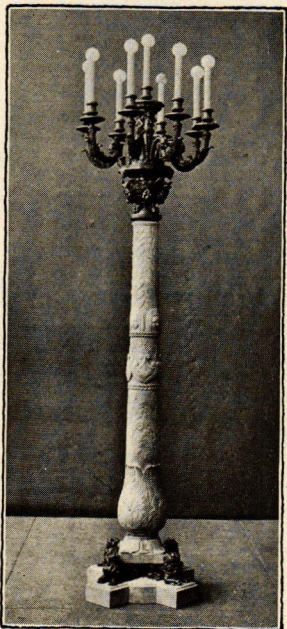
This illustration shows a few buildings that carry The Barrett Specification type of roof



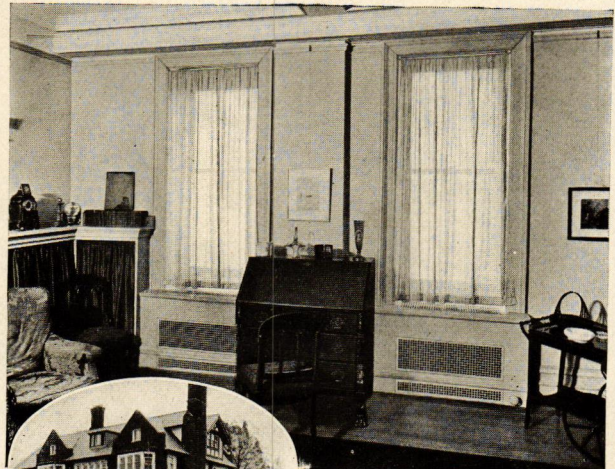
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for Radiator Enclosures**

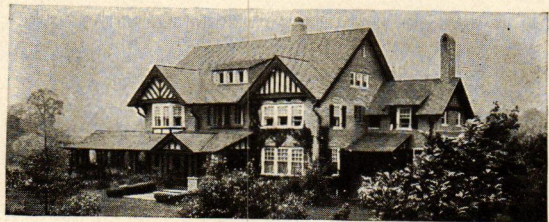
Decorative Metal must not be confused with the ordinary Ornamental Iron. Our seventy years' experience in manufacturing flat perforated castings has enabled us to make unusually high grade grilles and register faces in cast iron, cast bronze and brass. These can be plated or have an enameled paint baked on to match any finish. We also design and model them to meet any period of decoration.

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Duhring, Okie & Ziegler, Architects.

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**JOHNSON SYSTEM
of TEMPERATURE REGULATION
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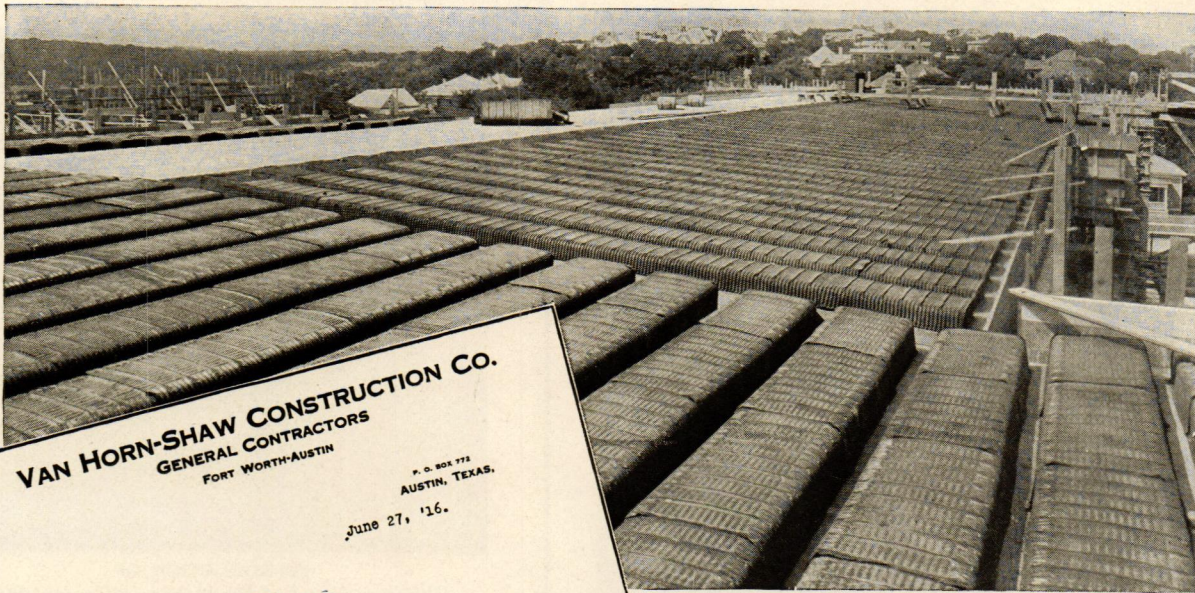
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 GENERAL CONTRACTORS
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P. O. BOX 772
 AUSTIN, TEXAS.

June 27, '16.

Trussed Concrete Steel Co.,
 Detroit, Mich.

RE - AUSTIN HIGH SCHOOL

Enclosed find photograph of above building.

It might interest you to know that fire-proof alternates were asked for on above building, and at least ten different designs were submitted; some wall bearing, some beam and slab, but all were rejected except ours on "Floretyle system," because the Architect and Owners wanted maximum ventilation and light, and could only get it by using Floretyle, due to long spans.

Fortunately, the exterior design provided for pilasters between the long spans and brick mullions between windows, so by the use of thin beams, some inverted and a few H beam columns in mullions, concrete columns concealed in pilasters and Floretyle for slabs, we were able to keep all columns and beams out of class-rooms.

We have used over 40,000 sq. ft. of Floretyle on this job, wheeled concrete and piled steel over the top of it, and we must say we are more than delighted with the manner in which it has stood up, with the ease it has been handled, and especially the economy of open forms.

Thanking you for the excellent cooperation extended by your company, and assuring you we are another Floretyle convert.

VAN HORN-SHAW CONSTRUCTION CO.
 By: *J. S. Shaw*

JSS-B

Prominent Contractor Criticises Floretyle Advertising

Mr. J. S. Shaw of Van Horn-Shaw Construction Co., prominent contractors, criticises the fact that our Floretyle advertising does not lay sufficient stress on the economy of Floretyle construction.

He says: "The writer thinks the big weak point in your Floretyle advertising is the fact that you do not lay more stress on the economical saving in forms, labor and the large salvage of material used in the forms."

He writes further:

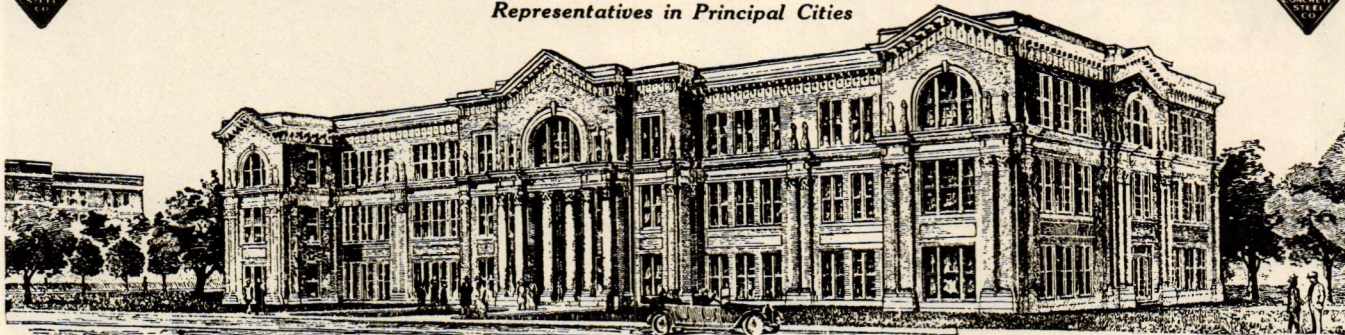
Ten Systems Submitted but Floretyle Wins

Nine other systems were rejected on the building because flat ceilings of long span were necessary to assure maximum ventilation and daylight and Floretyle was the only one fully meeting the requirements.

No matter what your building needs you will find Kahn Building Products provide the particular construction exactly meeting every requirement. Write for suggestions and catalogs.

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Dennis R. Walsh, Architect.



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Are requested to call
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ever shown in this
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Chimney Pieces of Distinction in Cement Stone

We are modelers and sculptors, and manufacturers of

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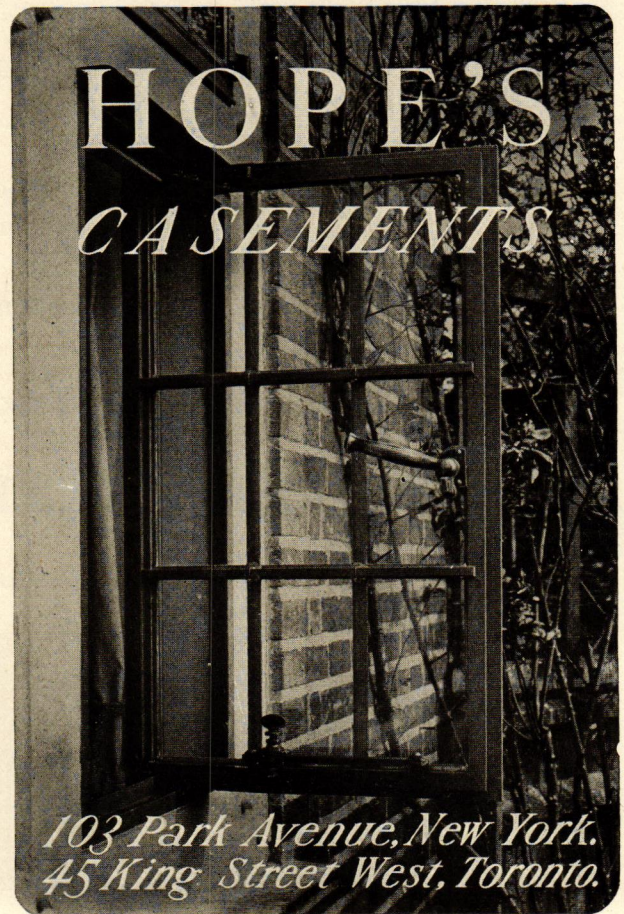
Our work is of the highest grade and executed throughout
the United States.

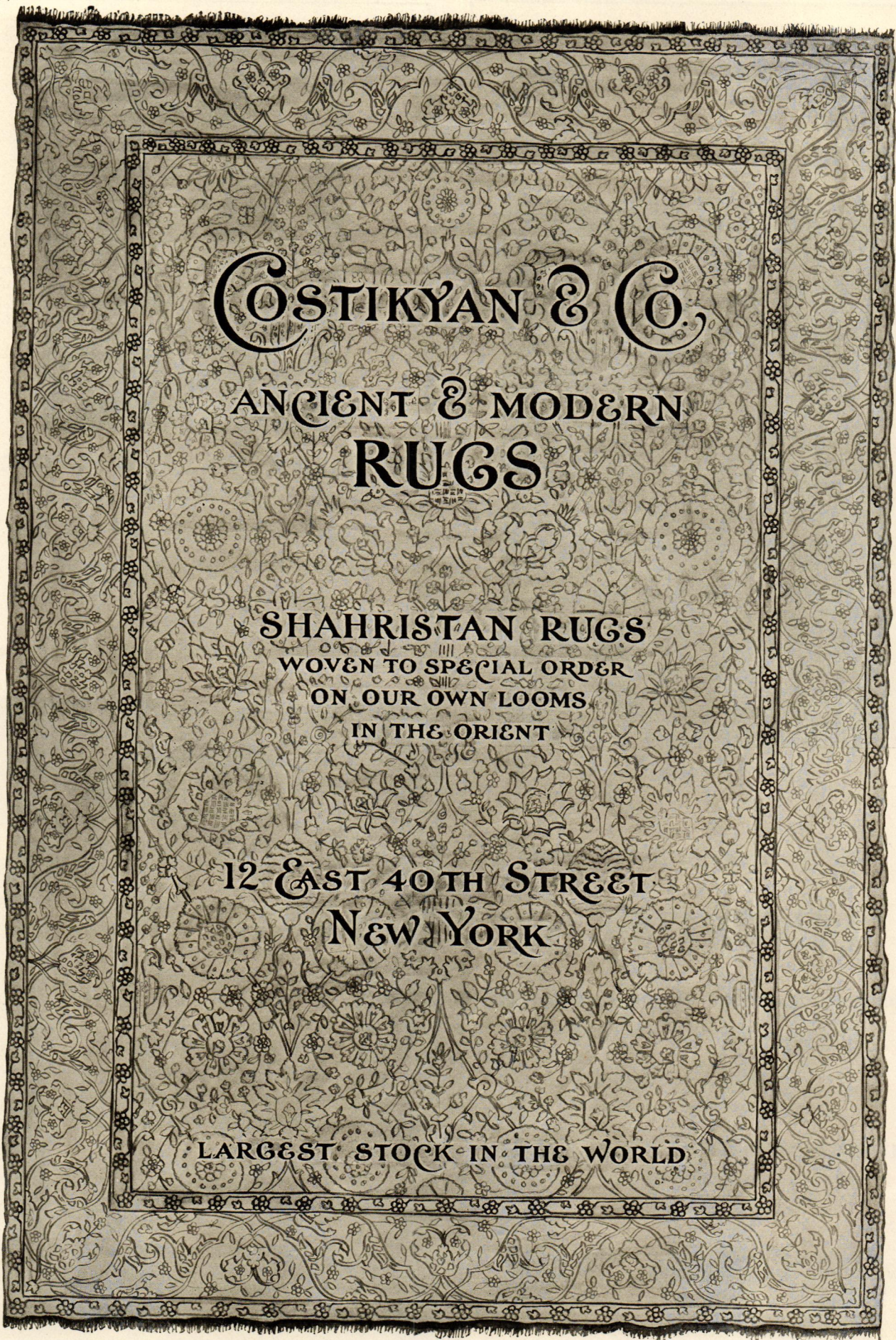
Catalogues are issued and will be sent to Architects only
on application.

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ON OUR OWN LOOMS
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Ask for Illustrated Booklet.

Samples forwarded upon request.

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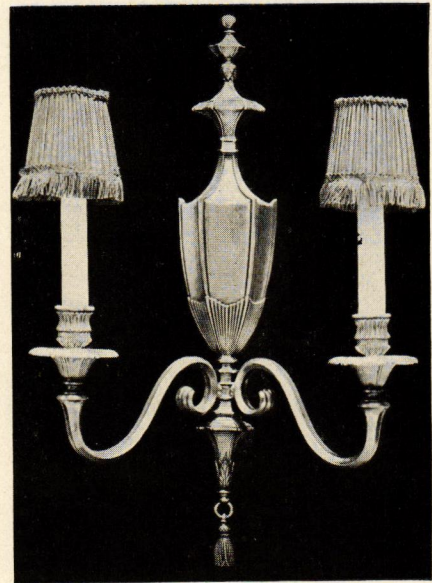
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Eleventh and
Market Streets
PHILADELPHIA

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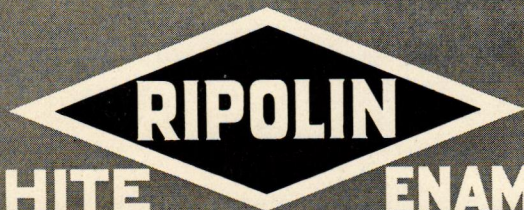
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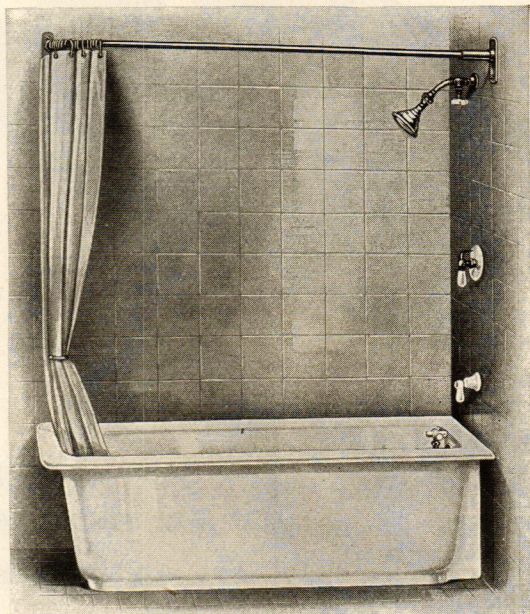
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and you will earn the grati-
tude of clients who appreciate
appearance, durability and
low cost.

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**COSTS LESS
BECAUSE IT GOES FARTHER
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Enameled Iron Recess Bath

A beautiful built-in bath equipped with shower and mixer, the curtain running full length of the tub.

This design insures the utmost luxury and comfort in bathing.

L. Wolff Manufacturing Co.

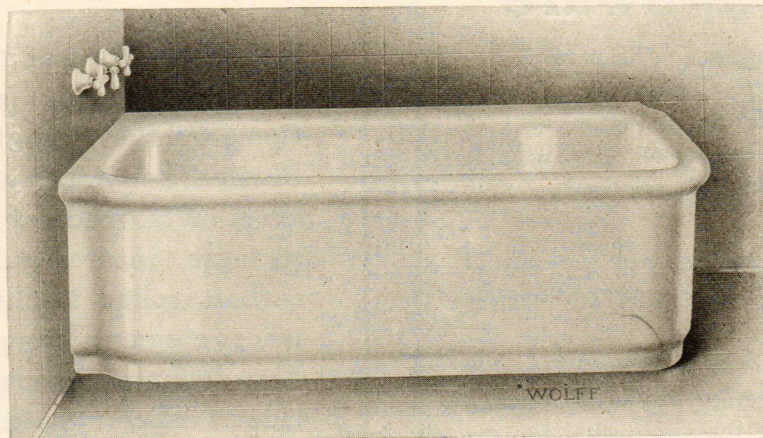
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THE TRAYMORE BATH, as illustrated, has fixtures concealed in the wall.

Send for special pamphlet of THE TRAYMORE BATH



THE TRAYMORE BATH

THE TRAYHAM BATH is same type made for Left and Right Corner with fixtures at exposed end.

THE TRAYCOVE BATH is same type, but made to tile in a recess with fixtures in left or right wall, or in centre of back wall.

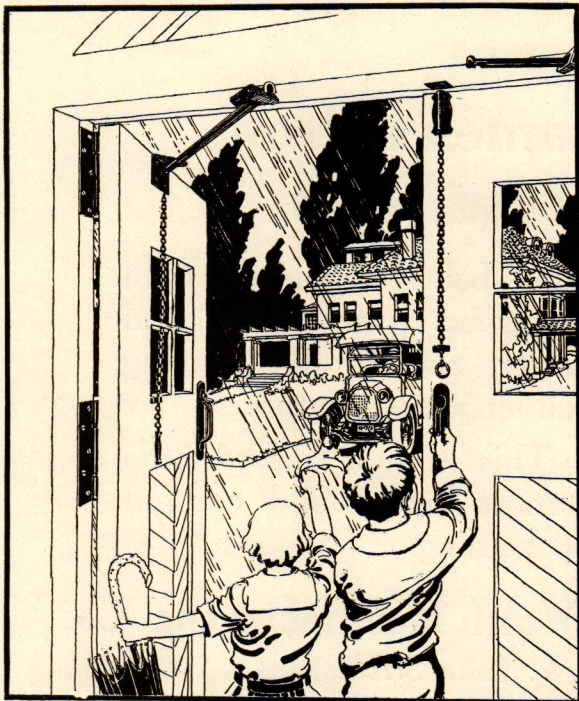
You will find everything in Monument Ware that the words DURABILITY and QUALITY imply.



"Monument Means Merit."

THE MONUMENT POTTERY CO.

TRENTON, N. J.



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STANLEY Garage Hardware

is of special interest because it is a necessity for every modern garage. The Stanley Garage Door Holder, illustrated above, is an arm of steel which holds the door open, preventing it from slamming and injuring the car, while entering or leaving.

There is nothing to break or get out of order. A pull at the chain releases the door and permits it to swing shut.

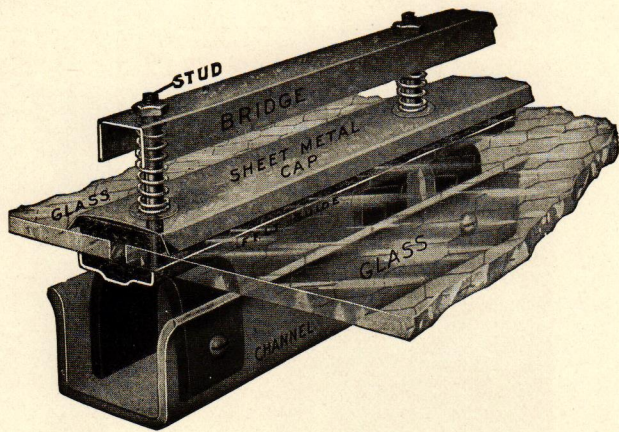
If you are not already familiar with this device and the complete line of Stanley Garage Hardware, we suggest that you send for information.

*Write today for illustrated booklet
"C" on Stanley Garage Hardware*

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1 The Channel in "Anti-Pluvius" Puttyless Skylights is a high carbon rolled steel bar member, $\frac{1}{8}$ inch thick throughout. It is the strong, permanent foundation of the skylight structure.

"A Good Skylight
is an investment,
not an expense."

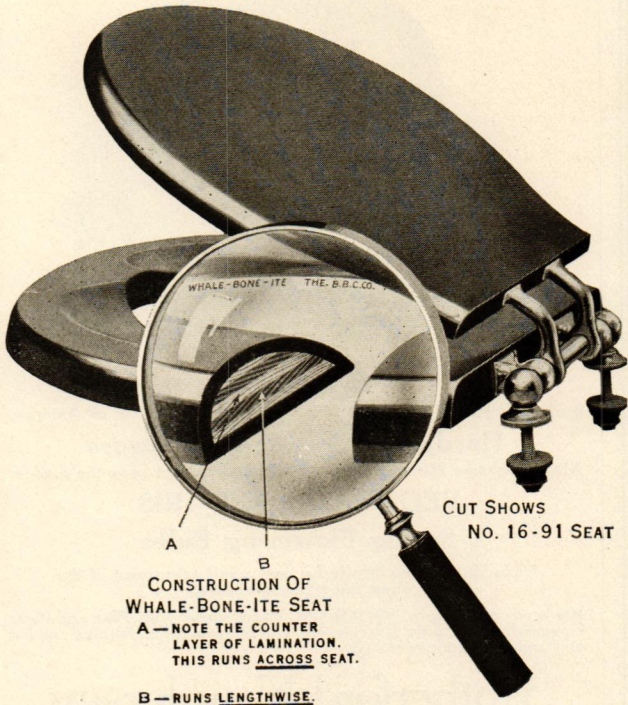
ANTI-PLUVIUS
(Trade Mark)
Puttyless Skylights
Patented

If the foundation of a skylight is weak the whole structure is liable to failure. Compare the strength of the "Anti-Pluvius" channel with a frame of sheet metal made of light metals. Its strength insures safety. The high carbon, rolled steel resists corrosion, where elements conquer sheet metal. The deep, wide form of the gutter carries off condensation freely in any quantity.

We will gladly tell you of an "Anti-Pluvius" installation near you and also send Catalog elaborating the points of these advertisements.

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CLOSET SEATS



Is Built for Service.
 Attractive appearance.
 Emphasizing sanitation.

Its use under the most exacting conditions will prove its **dependability**.

Plumbing fixture experts **acknowledge** its **superiority** and recommend it.

Now installed in Technical Institutions, because it is the best for the requirements.

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Approved and used in the best hotels, office buildings, hospitals, schools and clubs.

Specify Whale-Bone-It for eliminating upkeep. Your client will thank you.

Types for all regular type closets. Made by

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PLUMBING : HEATING : LIGHTING

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**Entire Plumbing Equipment in the New Astor Court
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Massachusetts Institute of Technology, Cambridge Mass., -	W. W. Bosworth



LION OF TUNIS



The African Tile Company of Tunis

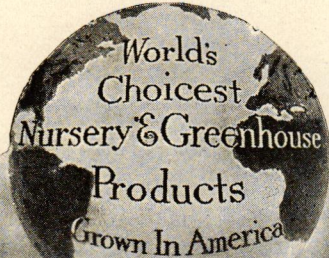
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(Near Tiffany's)

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There is only one family in North Africa who can produce this work in a commercial way. The designs are taken from the Bardo Museum, and from old Mosques and Palaces supervised by the Architect of the French Government.

The colors are those found in old tapestries, and cannot be copied in this country. They are all hand painted and sun-dried, and should appeal to the Architect and to those who are seeking the beautiful in burnt clay for their homes and gardens.

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Special AUTUMN Planting

Evergreens

In quality, variety and extent our collection is unrivalled in America.

Hardy Old Fashioned Flowers

All of the most liked varieties. The blossoms that *make* the garden.

PEONIES Many Notable Introductions IRIS

Spring Flowering Bulbs

Daffodils, Tulips, Hyacinths, and a full assortment of the best miscellaneous bulbs.

300 acres of Nursery, 500,000 feet under glass. We Plan and Plant Grounds and Gardens Everywhere. Write *now* for illustrated catalog of Autumn Plantings No. 65.

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SEPTEMBER PLANTING

Evergreens 6 to 30 ft. high for Immediate Boundaries to Gardens and Grounds.

Evergreens 1 to 6 ft. high for Foundations.

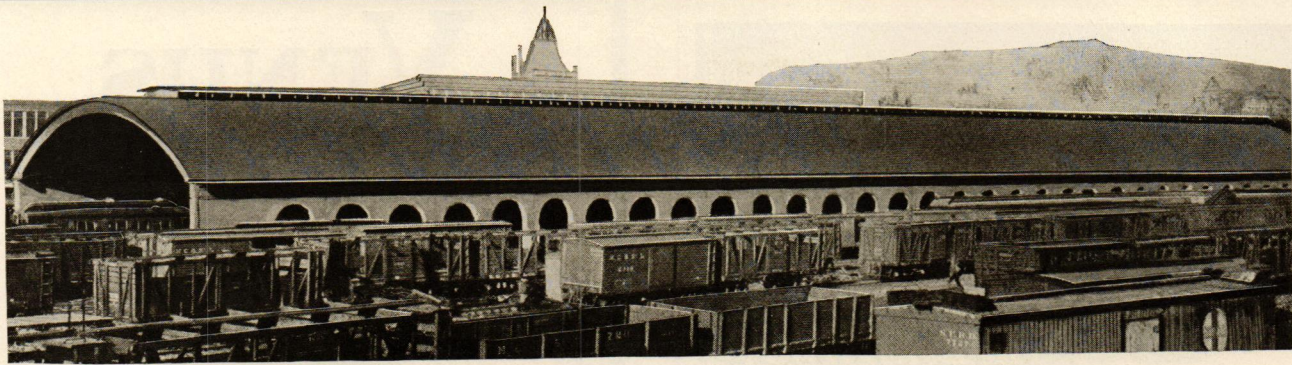
Hardy Garden Flowers.

September is an excellent time for this work. The trees like it and repay you with beautiful results now and next summer. You will like it because you can give it more personal attention than in the spring when you have to see to planting of garden seeds and other necessary spring work.

Now is the time to select large 20 years old shade trees for planting early in October. You can see just what they will do for you. Send for series of booklets and folders showing garden work best adapted for each month.

All stock from the Hicks Nurseries guaranteed to grow satisfactorily or replaced.

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Carey Flexible Cement Roofing

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The Carey Booklet of Specifications is prepared expressly for your use. Have you sent for your copy?

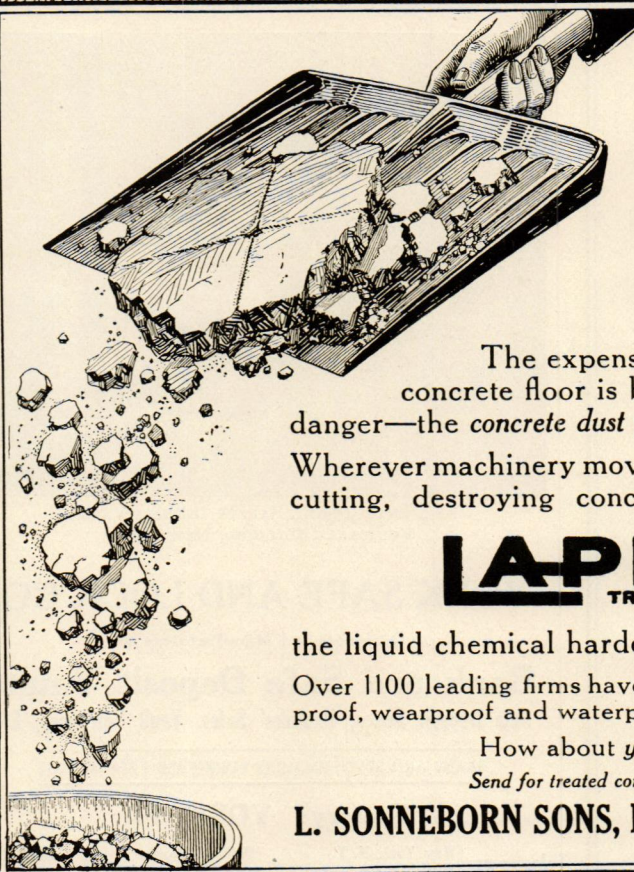


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The expense of repairing and then re-topping your concrete floor is bad enough. But it's the "meanwhile" danger—the *concrete dust* which is even more costly.

Wherever machinery moves or merchandise is exposed, the sharp, cutting, destroying concrete dust penetrates—unless you use

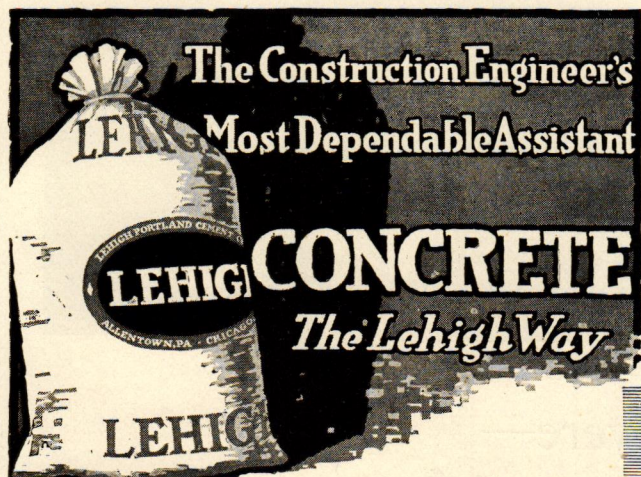
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the liquid chemical hardener for concrete floors. It's guaranteed. Over 1100 leading firms have used Lapidolith. Their floors are now dust-proof, wearproof and waterproof.

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Send for treated concrete block, testimonials and sample flask.

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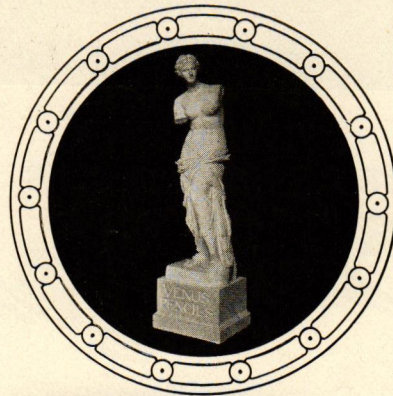


"Concrete for Permanence."

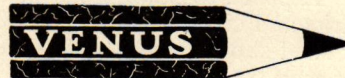
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10¢ PENCIL**

REMARKABLE for its even smoothness, unvarying high standard, and perfect adaptability for every known purpose.

17 degrees ranging from 6B softest to 9H hardest and two copying. Distinctive Venus water mark finish. You need Venus Pencils. See your dealer.

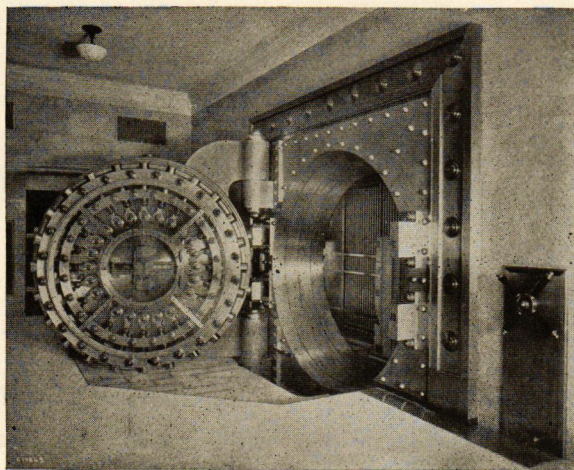


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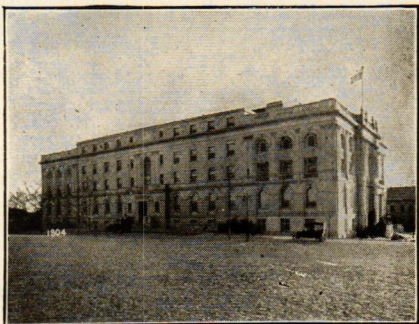
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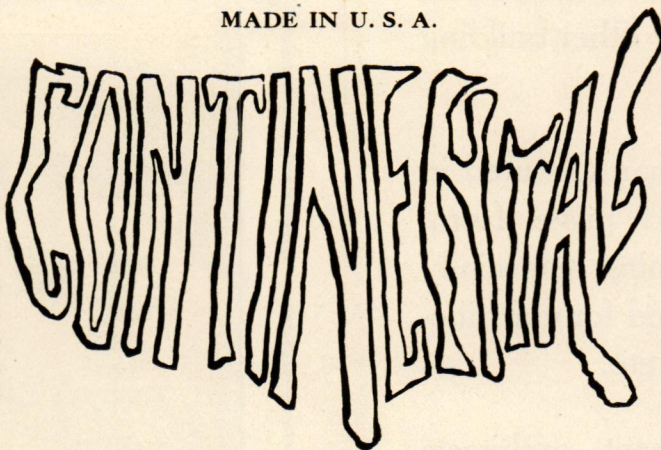
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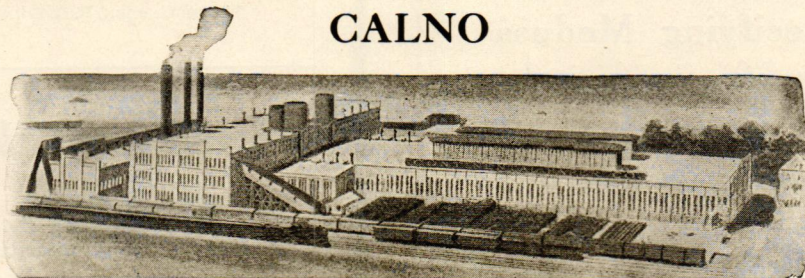
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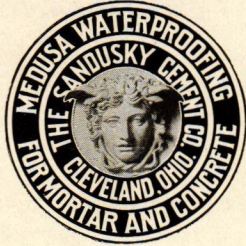


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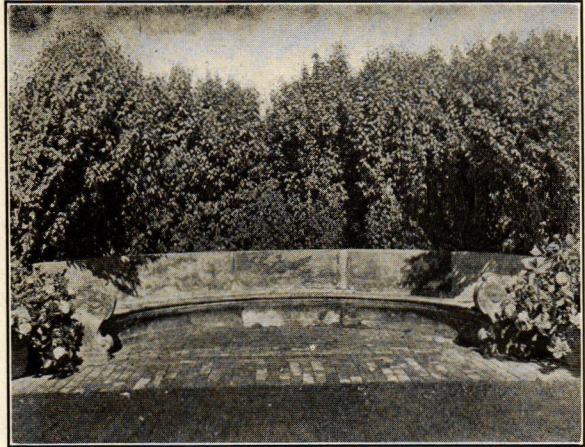
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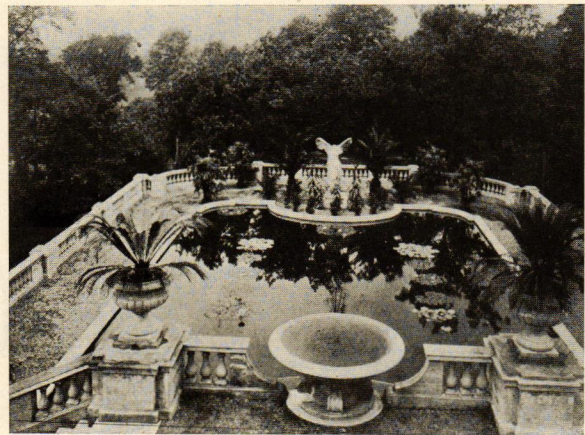
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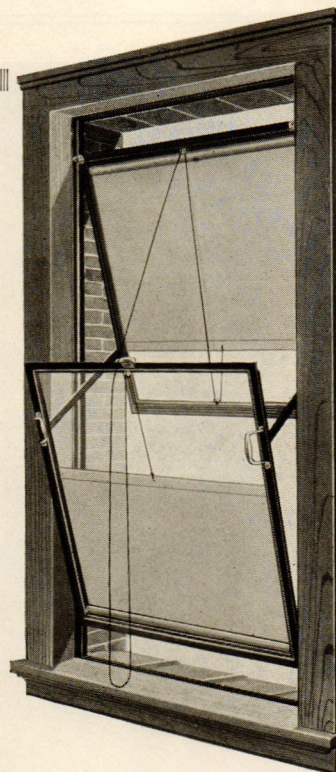
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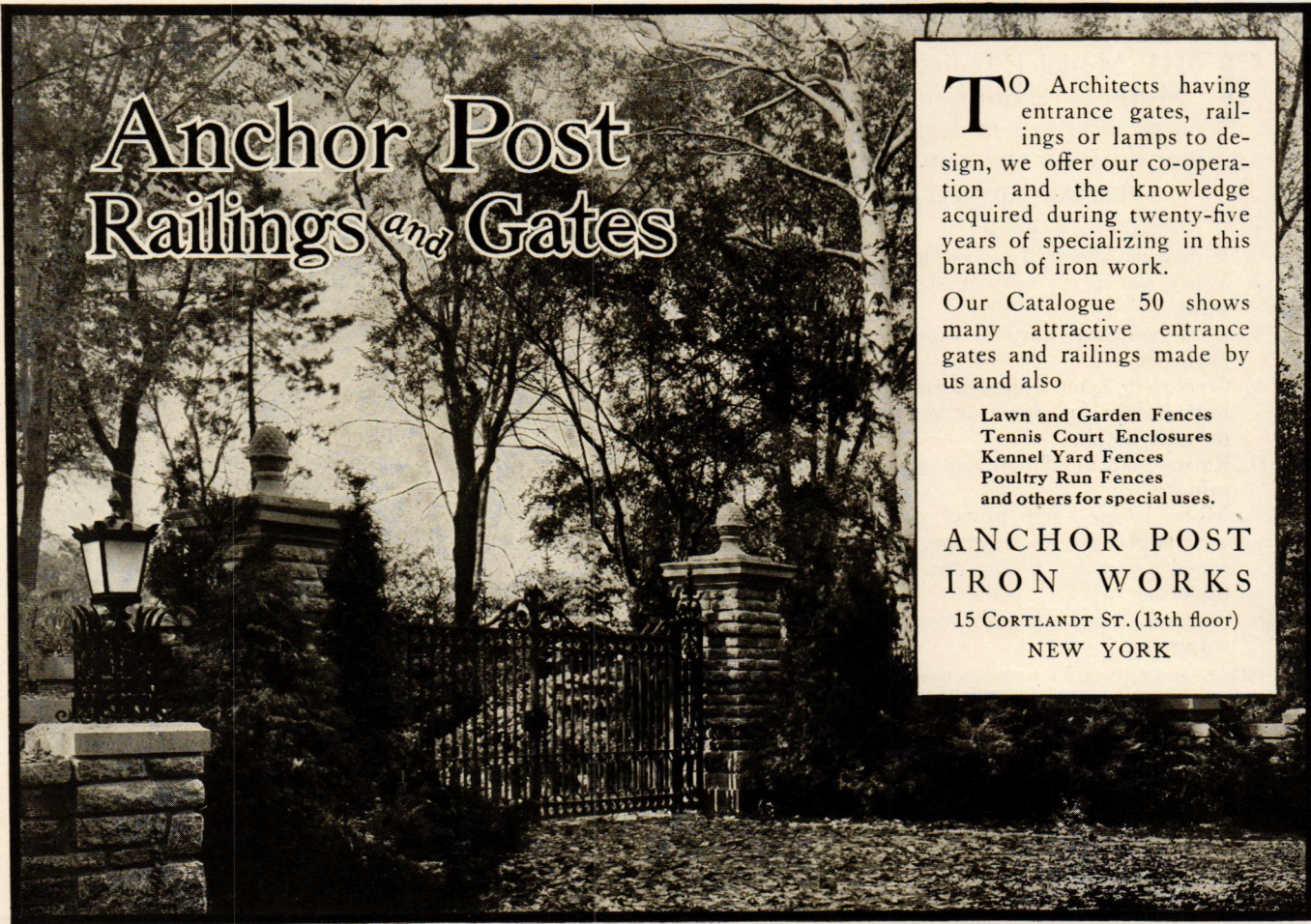
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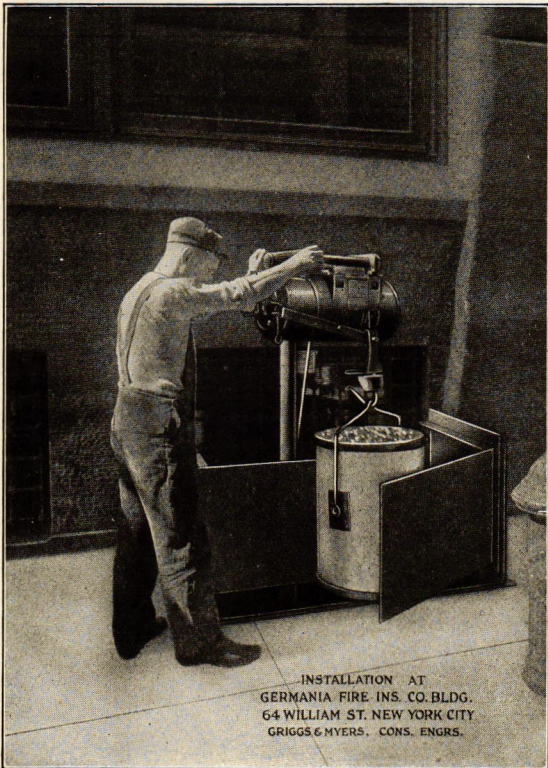
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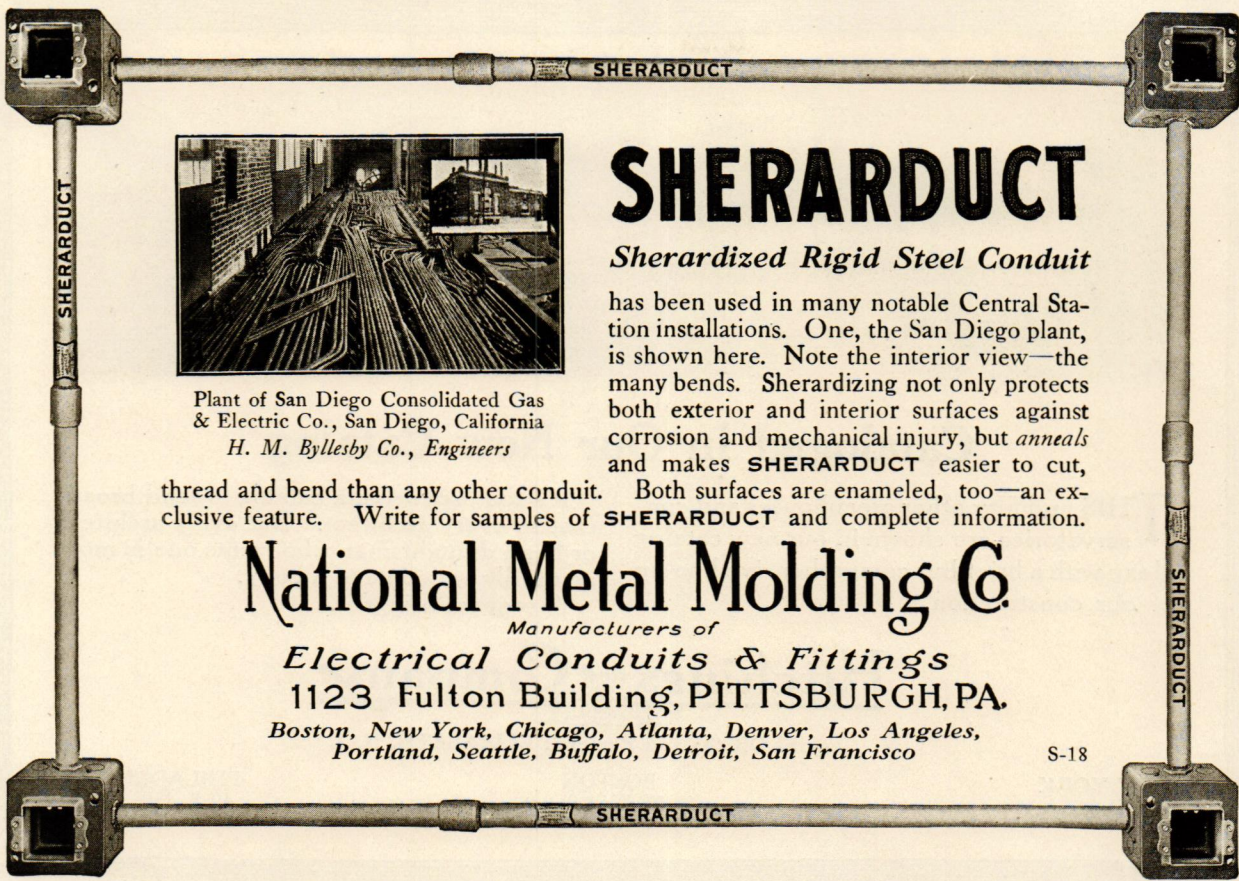
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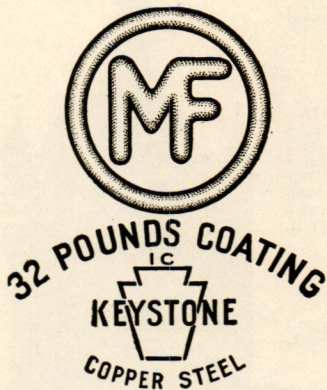
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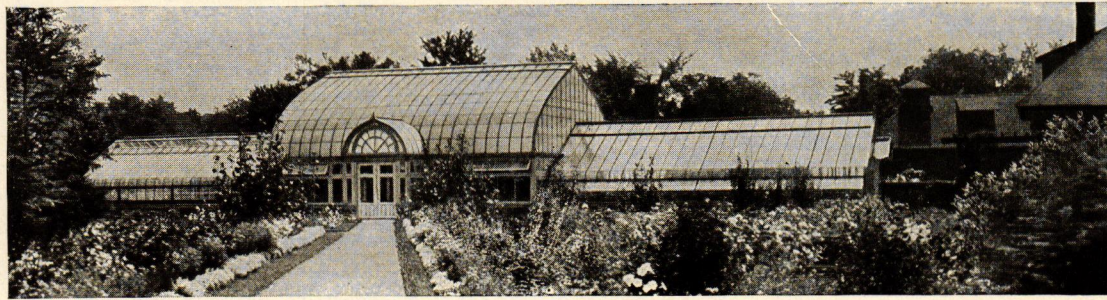
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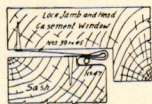


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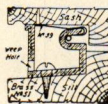
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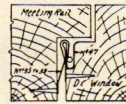
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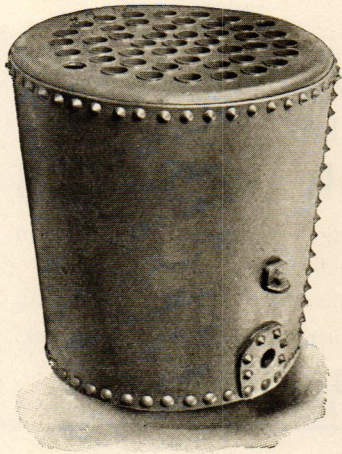
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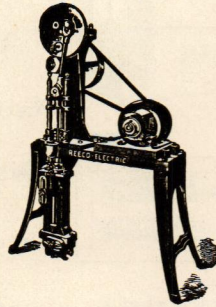
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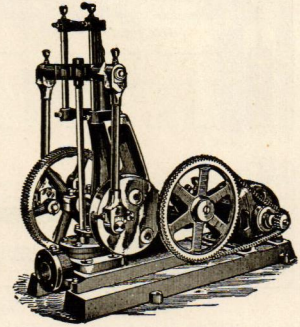
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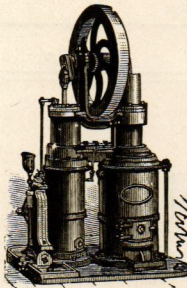
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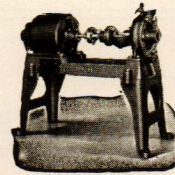
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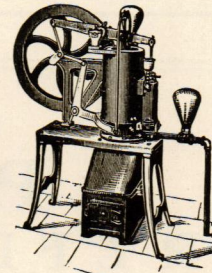
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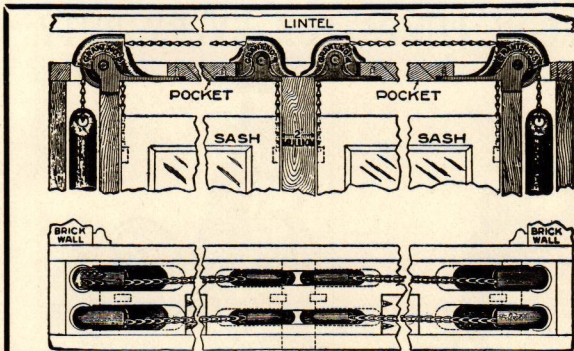
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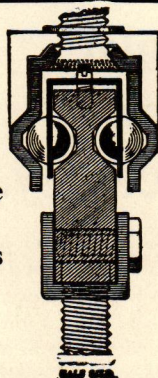
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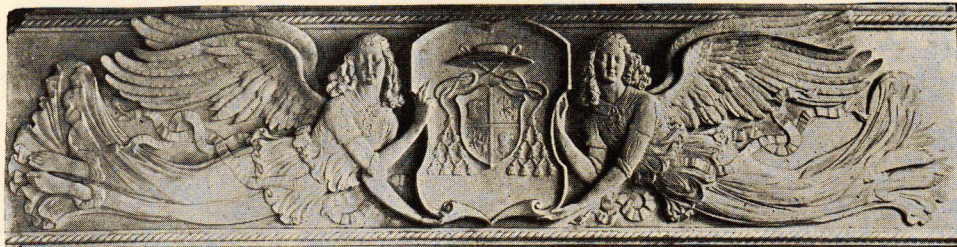
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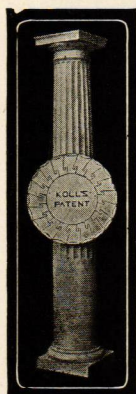
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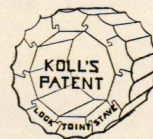


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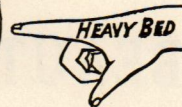


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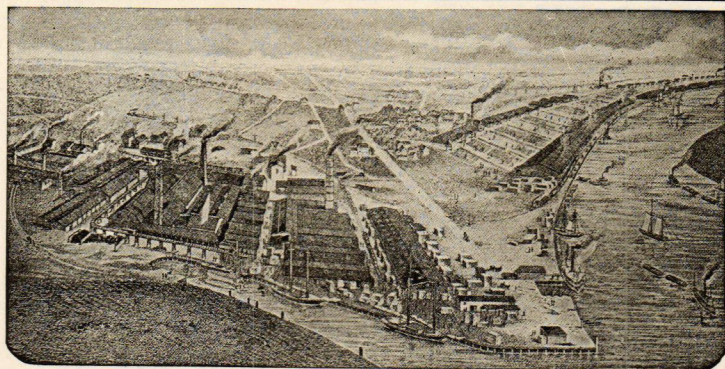
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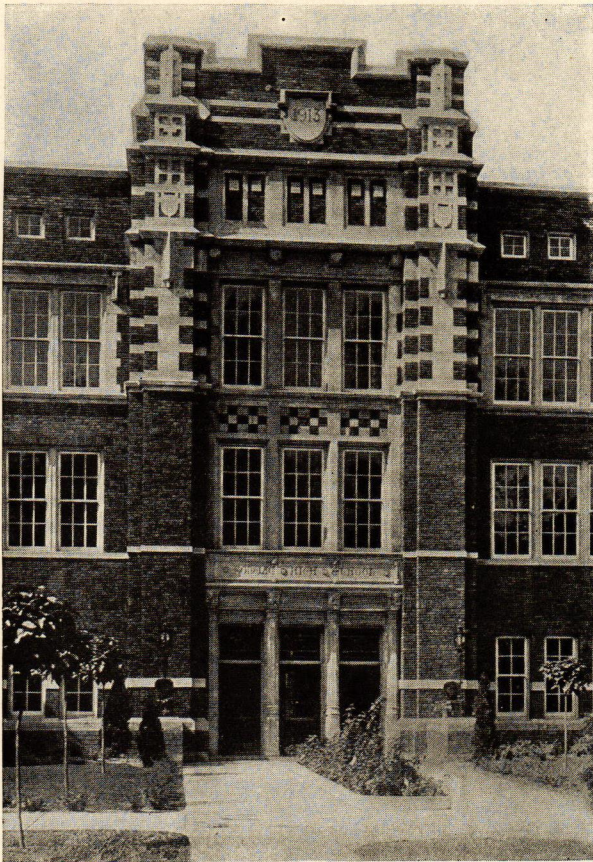
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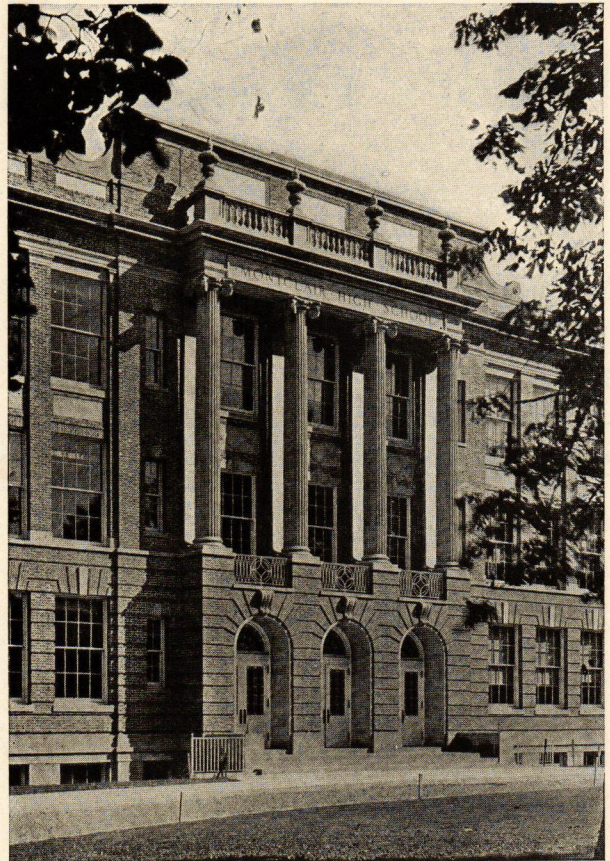
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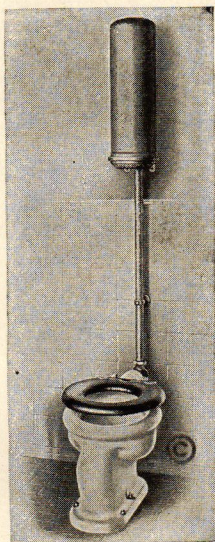


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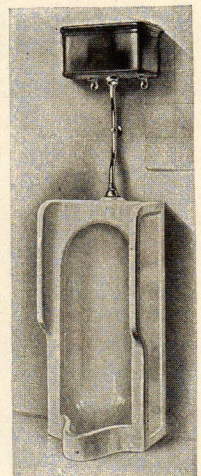
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