THE AMERICAN ARCHITECT AND THE ARCHITECTURAL REVIEW

Founded Eighteen Hundred Seventy Six

FRENCH AND SPANISH CHURCHES, BY SAMUEL CHAMBERLAIN ❦ EARLY UTAH ARCHITECTURE ❦ DESIGN OF SEATING AREAS FOR VISIBILITY ❦ ILLUSTRATIONS: HOTEL GIBSON, CINCINNATI ❦ POLICE HEADQUARTERS, DETROIT SHRINE BUILDING, MEMPHIS

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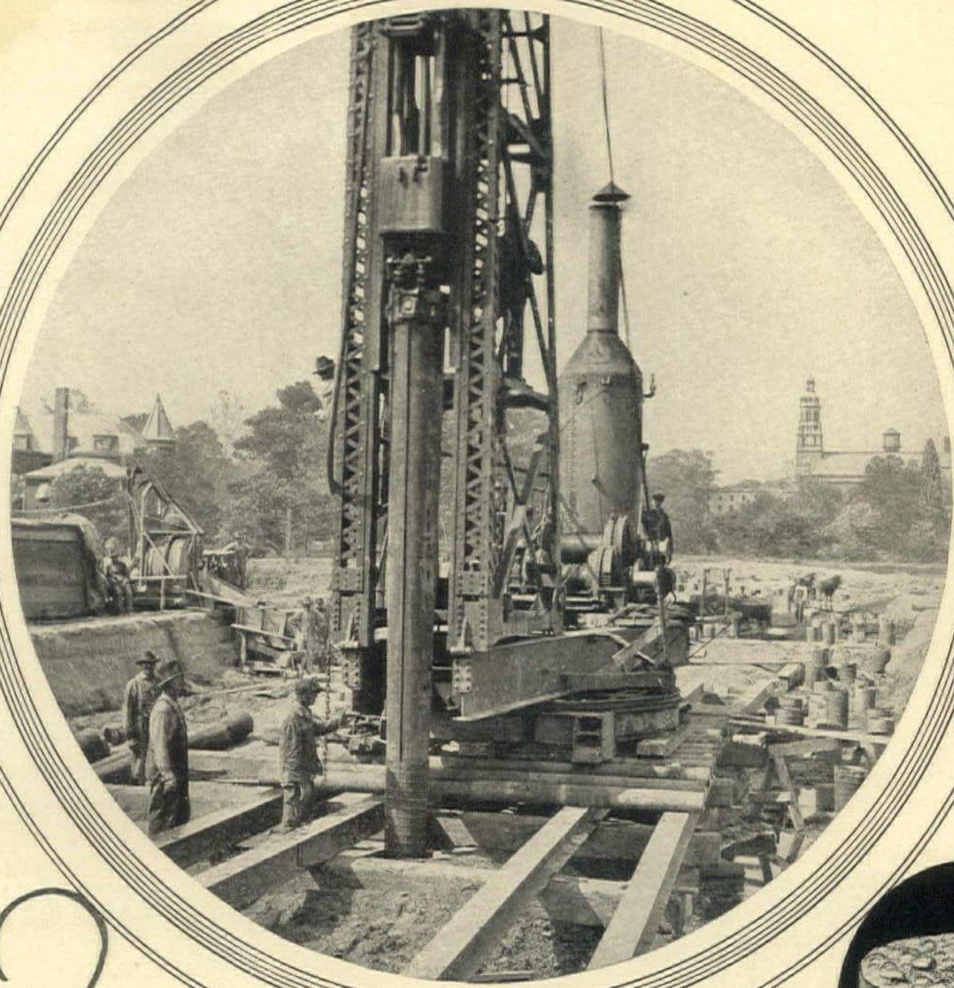

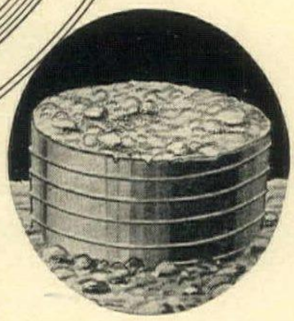

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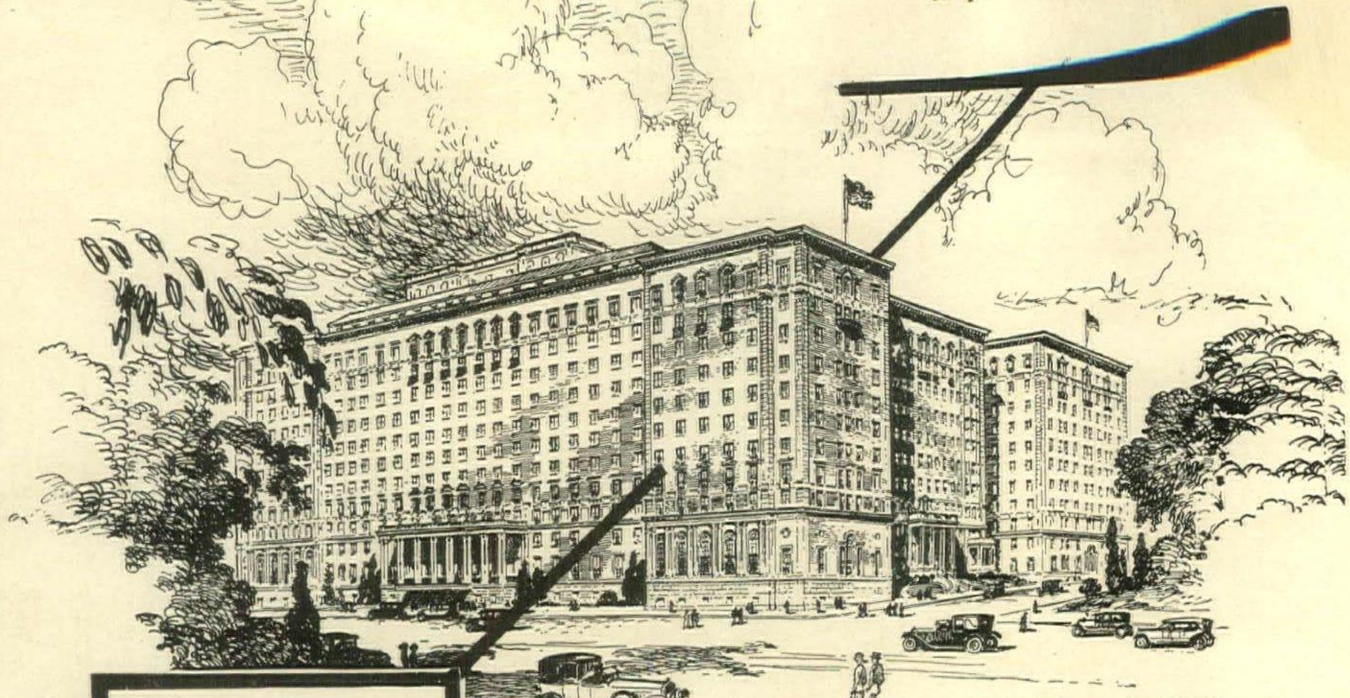

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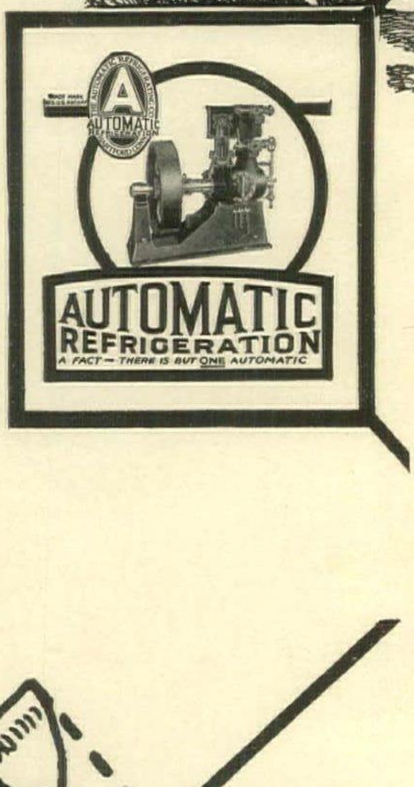

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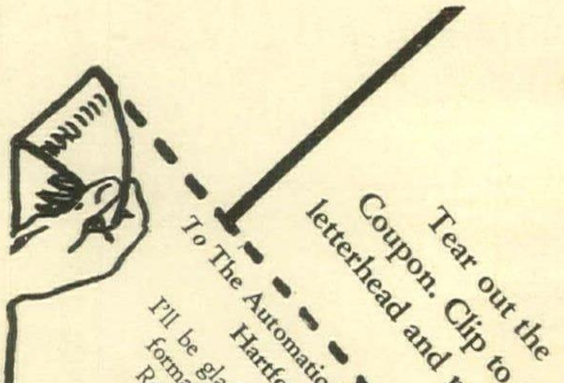

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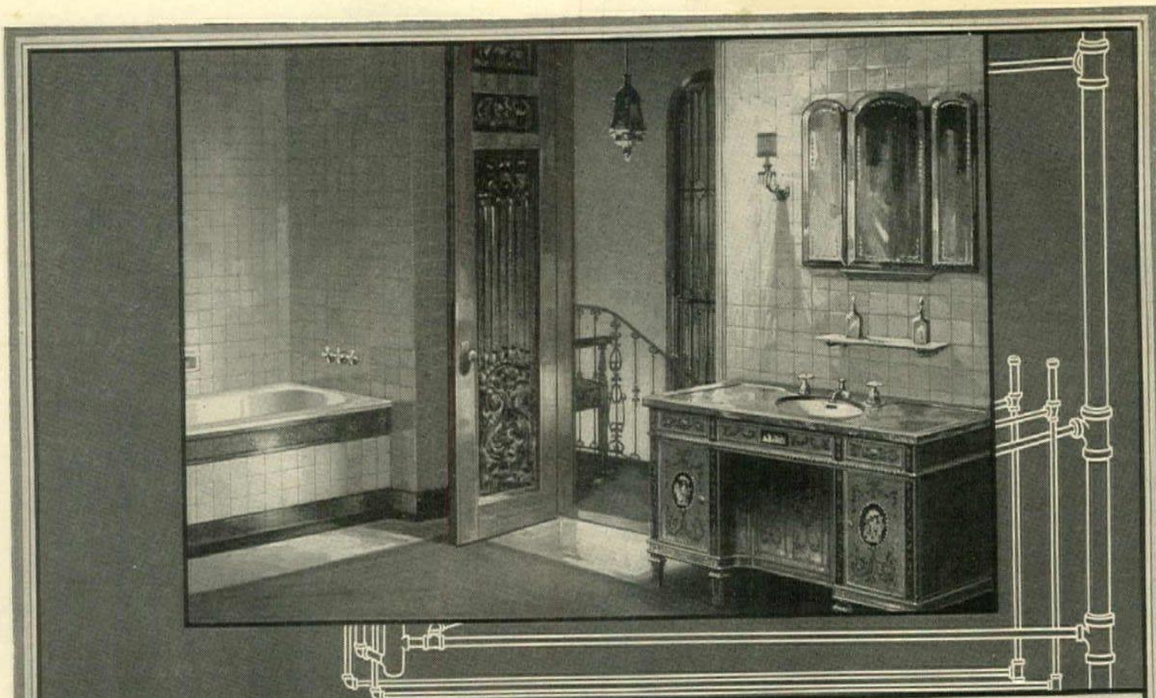

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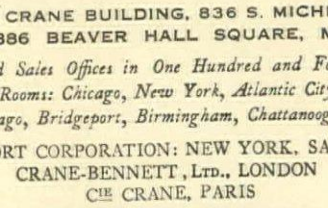

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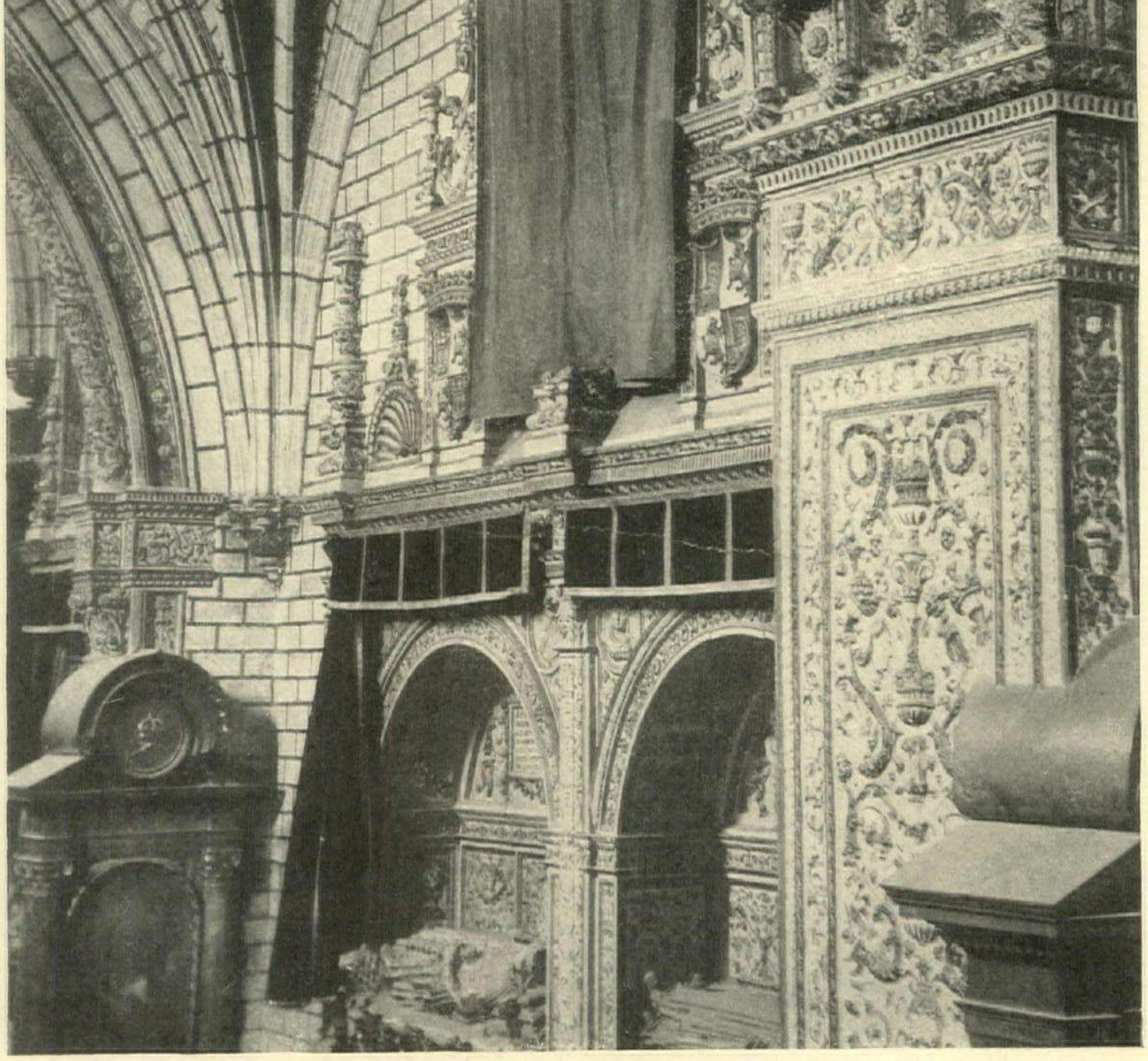

CHAPEL IN CATHEDRAL, TOLEDO, SPAIN

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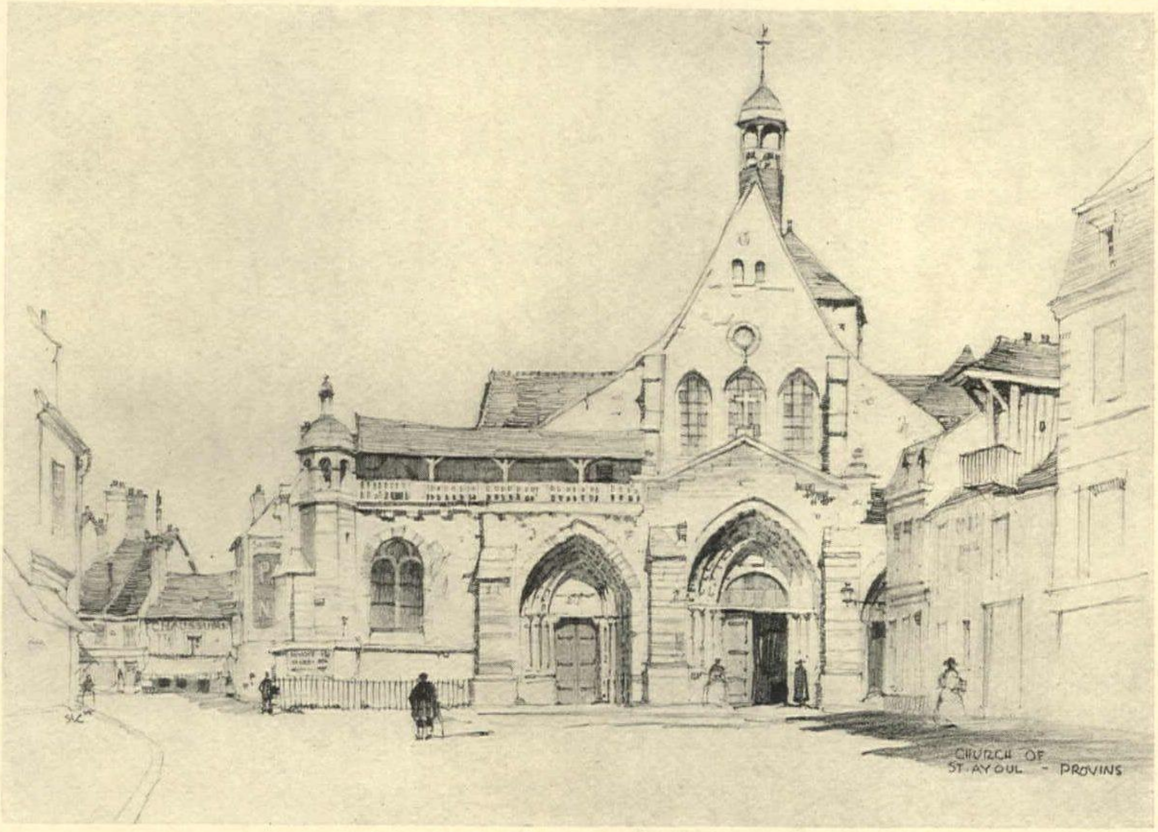


CHURCH OF ST. AYOUL, PROVINS

FRENCH *and* SPANISH COUNTRY CHURCHES

Sketches and not very significant comment by SAMUEL CHAMBERLAIN

NO French landscape seems to be entirely complete without the familiar touch of a country church spire. One associates it with poplar-lined roads, patchwork fields, tile roofs and muffin-like wheat stacks as being an inseparable accessory to the charm of rural France. It is as characteristic as the Dutch windmill, the Italian cypress, the American silo. And no type of architectural monument, naturally enough, appears in greater variety and frequency than the churches. One can jot down a hundred church towers in a day's railway journey. One of America's best known architects has a notebook filled with delightful sketches of such subjects which he made from a moving train. Transportation has become speedier and bumpier since that time, I am hoping. Efforts to follow his worthy example resulted in jostled jottings of a somewhat grotesque nature.

One stumbles across such a number of small churches, the very directness and simplicity of whose exteriors are expressive of the organism within. A sketch is much more useful in discussing them than weighty paragraphs. Hence the unusual scattering of illustration. One of the familiar examples is the Church of St. Ayoul at Provins, a curious and fascinating jumble, whose picturesqueness is only exceeded by its eccentricities of plan. The Church of St. Lazare, in the happy little Bergundian town of Avallon, is likewise a bit of a melange, but it is the possessor of one of the most exquisite Romanesque portals in the world. Angouleme rests so secure in the possession of its cathedral that one never hears of the half concealed little church here shown. Only the tower is visible over the housetops, and it is necessary to wander through many a garlic-reeking alley before finding the padded doors which lead to a somber and lovely interior. Cahors, in the center of one of the few barren areas in France, is by no means barren of architectural delicacies. It is one of the most satisfying towns in the Midi, full of colorful corners, of which the doorway to the cathedral is but one.

The smaller sketches afford a comparison between the small churches of scattered towns in France and Spain. It is a matter of considerable regret that at least one of the four splendid churches in Etampes is not included. There is a leaning church tower in this long drawn out town, and it leans on a subtle and very decided curve. A touch of lowbrow comedy might also have been added by showing a church in the Marne which possesses an impressive row of very seasick looking gargoyles, each muzzled with an ample inverted megaphone and accompanying lengths of slender rain pipe. Not far from the Chemin des Dames is a most pathetic church, made of corrugated iron, belfry and all. Rusty, disreputable in appearance, defiant, it possesses an exterior that is expressive of a good deal also.

Northern Spain abounds in bulky little churches, most of which repeat the same motif with but slight variations. There is always the heavily buttressed cubicle, punched with tiny and seemingly inadequate windows, the long block of the square tower with its belfry and a lone touch of ornament in the rich entrance portal. In color, they are almost indistinguishable from the brownish, rocky soil, but their severe profiles lend a civilized touch to a brilliant bleakness that is uniquely Spanish. The intensely romantic spot of Segovia is overladen with them, in addition to its dramatic cathedral. The small towns of Andalusia are more accessible than those in the North and it is possible to find many lovely old churches outside of Seville if one is of the bicycling temperament. A plain little church in Burgos, San Nicolas, gives no hint of the aston-

TOWER OF A CHURCH IN ANGOULEME, FRANCE

ishing reredos within. Such fantastically fine stone carving is supposedly unsurpassed in Spain. Assuredly it knocks the breath completely out of the unsuspecting beholder. Such detail might be expected on a royal wedding cake or a bit of carved ivory, but not on a tremendous expanse of hard stone.

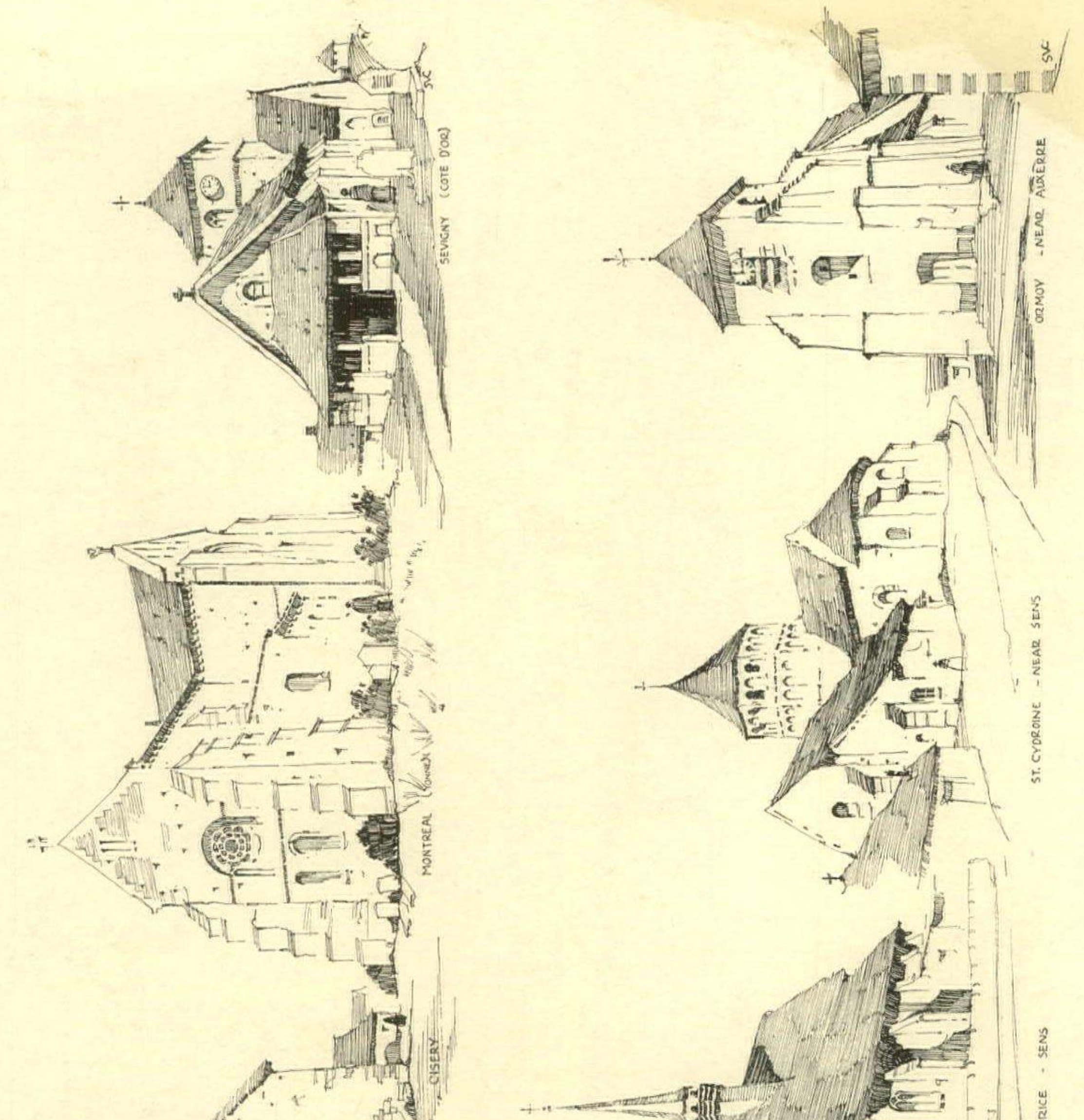
roofs and moulding gravestones hung with permanent tin violets that rattle in the wind. She could say many gentle things about homely little side chapels and quaint niches, but not much about the semi-barbarous modern church decorations that mar so many church walls. A wonderful picture might be painted of a country church

ROMANESQUE DOORWAY OF THE CHURCH AT CAHORS

FROM THE ORIGINAL SKETCH BY SAMUEL CHAMBERLAIN

Such are the very scattered and matter-of-fact observations of a literal-minded correspondent upon a many-sided subject. Were a dear old lady romanticist to approach it, more emphasis would be laid upon atmospheric touches, upon cool, whitewashed interiors, beaming old priests puttering around the churchyard, moss grown

wedding. The groom, braced by a sizeable "dot," in the most formal and uncomfortable of evening clothes, although the wedding be at noon; the bride a hidden, white pom-pom; the guests in paper shirt fronts, rented clothes and detachable cuffs which detach at the wrong moment; it all makes up into a delectable character study. The



EIGHT COUNTRY CHURCHES IN FRANCE

(From the original sketch by Samuel Chamberlain)

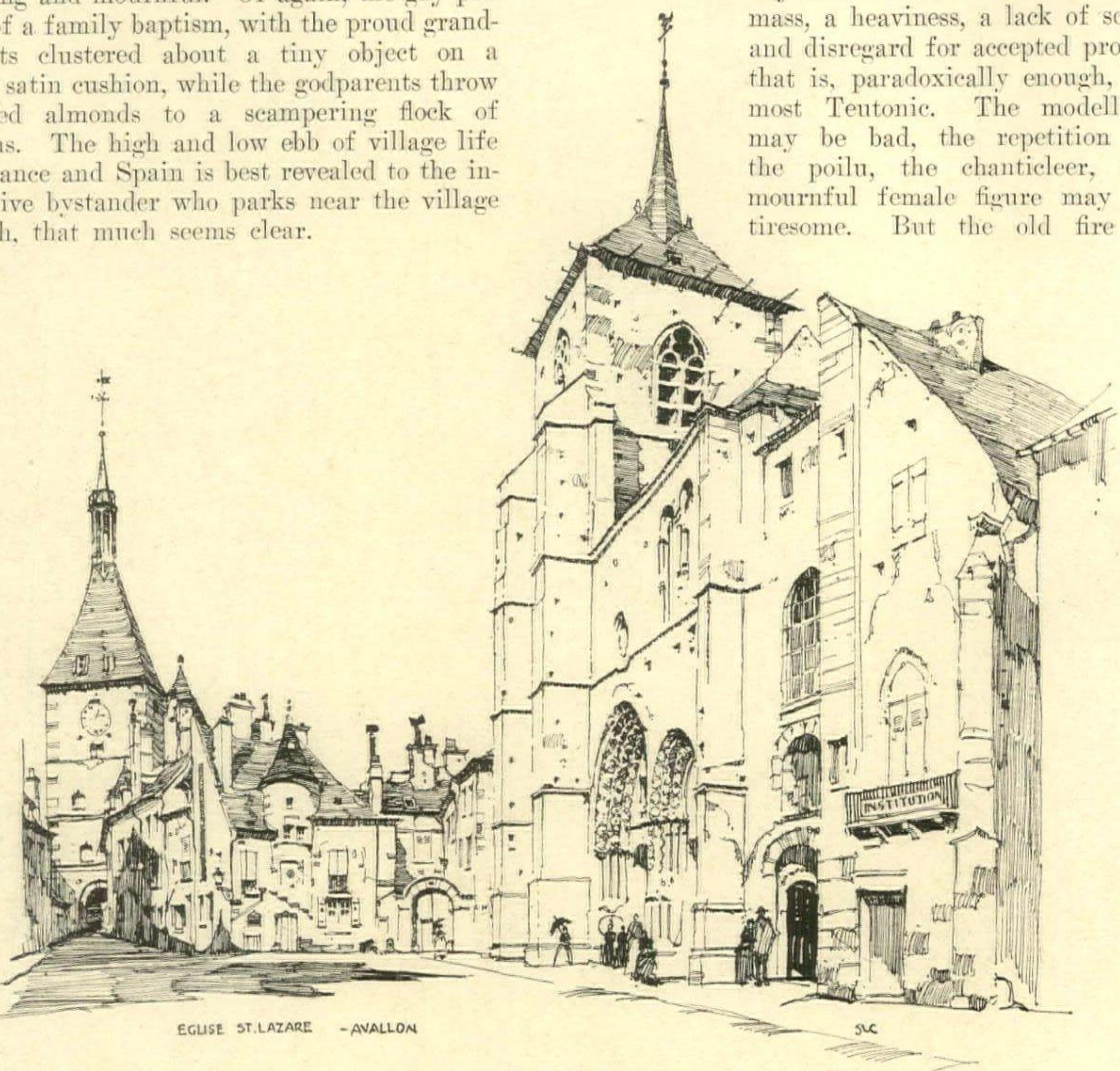
COUNTRY CHURCHES IN SPAIN

(From the original sketch by Samuel Chamberlain)

father of the bride gives the party and, as in funerals, the extent of the flare is the index of his prominence. To be the favored guest at the wedding of a banker's daughter is to sit down to many a dinner party before an array of eight different wine glasses. Or a dismal scene might be shown in the same church setting; black plumed horses, heavy hangings of black and white about the doors, church bells that magically become piercing and mournful. Or again, the gay picture of a family baptism, with the proud grandparents clustered about a tiny object on a white satin cushion, while the godparents throw candied almonds to a scampering flock of gamins. The high and low ebb of village life in France and Spain is best revealed to the inquisitive bystander who parks near the village church, that much seems clear.

war memorials in France. The idea of erecting a library, an auditorium or any memorial of a utilitarian character does not appeal to them. It does not agree with their conception of the fitness of things.

A decidedly modern influence is noted in a large percentage of these post-war efforts. Some of the monuments seem to have been the brain children of the ultra-modern designer of Spinelly's boudoir suite. Some have a mass, a heaviness, a lack of scale and disregard for accepted profile that is, paradoxically enough, almost Teutonic. The modelling may be bad, the repetition of the poilu, the chanticleer, the mournful female figure may be tiresome. But the old fire is there. Whatever may be their shortcomings, the designers have revealed by this recent work that they are intensely earnest, that they are continually reaching out, groping for a vital and genuine and individualistic means of expressing themselves. Cold archæology has no place and will not be accepted in expressing a thought so close to their hearts. Nor has it any particular relation to the turmoil just passed. Shining clearly through these memorials is the very finest spirit of a mournful, a noble and a victorious France. Such a fact bespeaks a rather fine architecture.

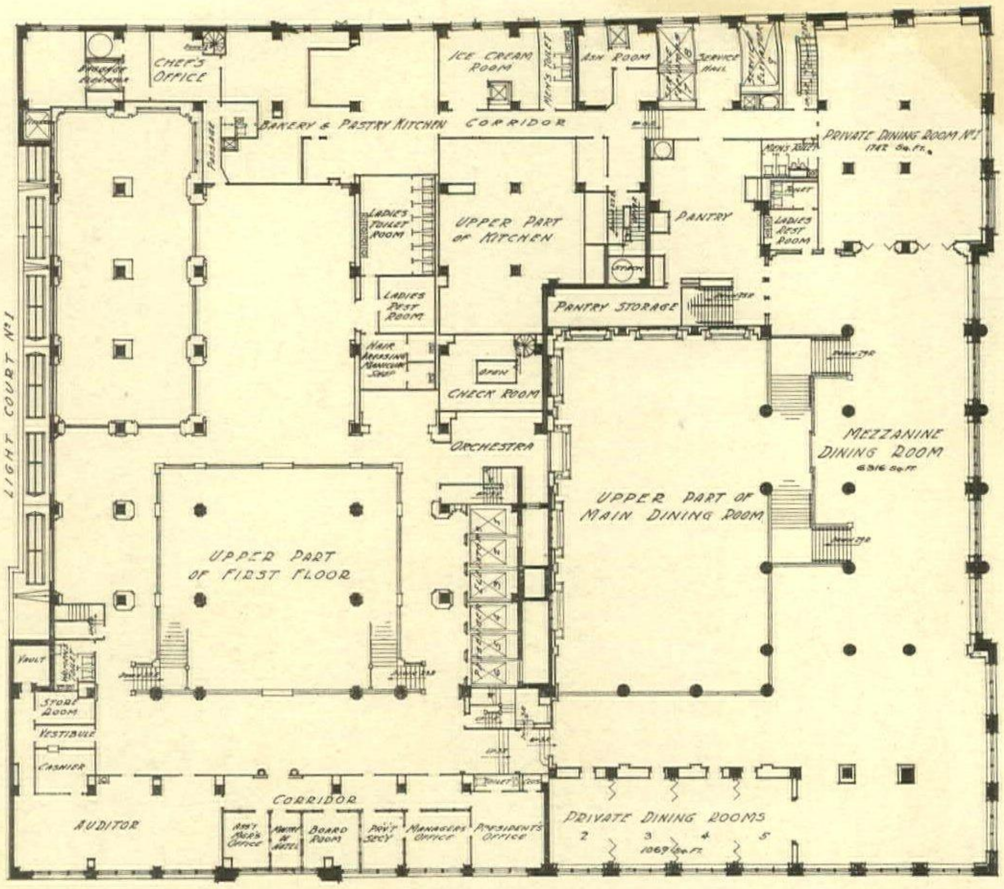


EGLISE ST. LAZARE, AVALLON

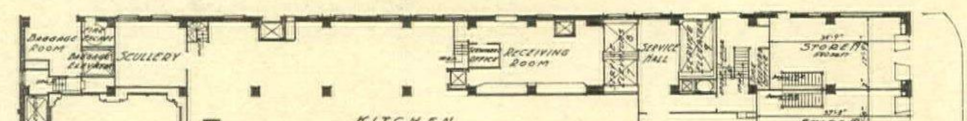
Contemporaneous ecclesiastical architecture in France is rather embarrassing to discuss, especially if one is a bit pro-French. An interesting exhibit of very recent developments in design, however, is found in the monuments to the dead of the war, which are being dedicated in ever increasing numbers. Hamlets that cannot afford a new coat of paint for the town hall, have raised enough funds to commemorate the heroism of their "enfants morts pour la Patrie." What the larger cities will do remains to be seen. Their more ambitious programs are slower in taking definite shape. One fact seems certain regarding

HOTEL GIBSON, CINCINNATI, OHIO

GUSTAVE W. DRACH, ARCHITECT



MEZZANINE FLOOR PLAN



GROUND FLOOR PLAN

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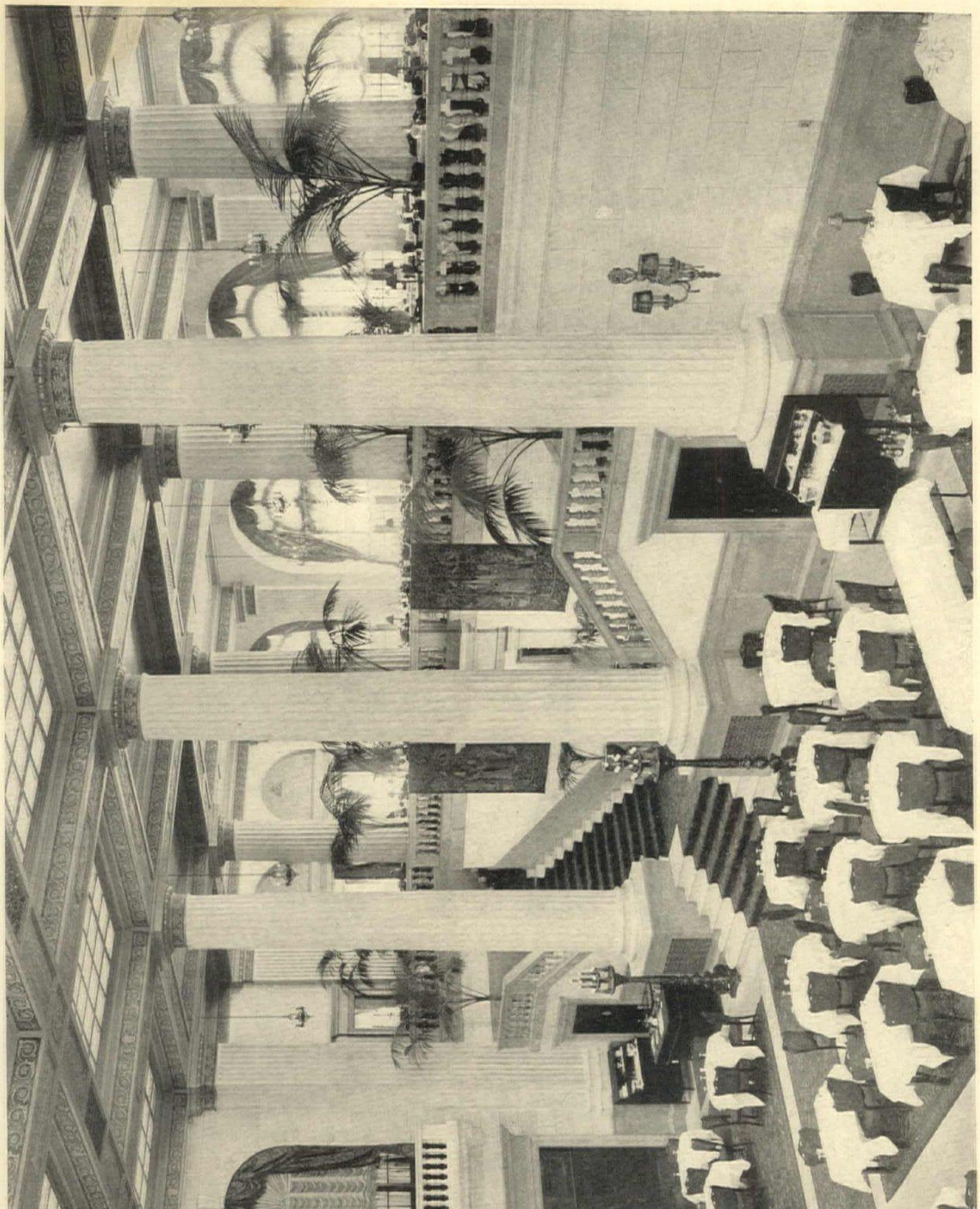
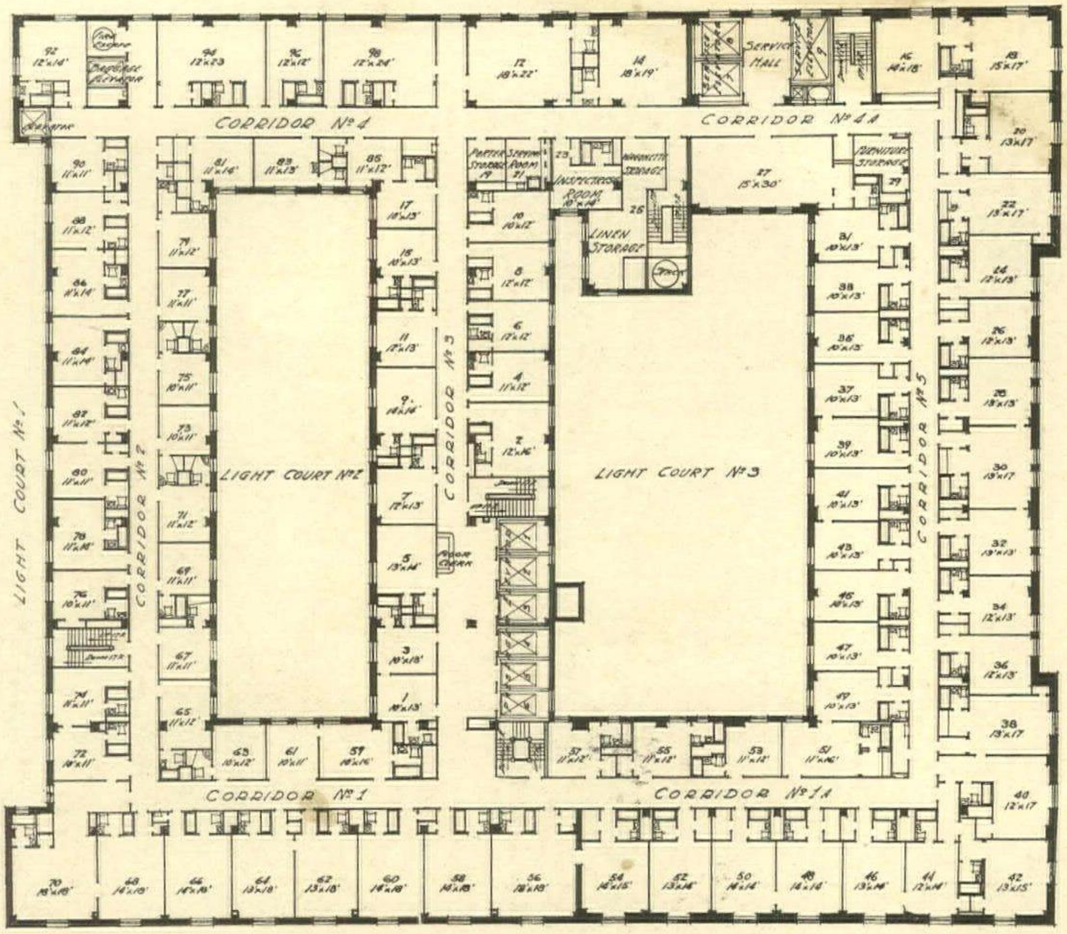
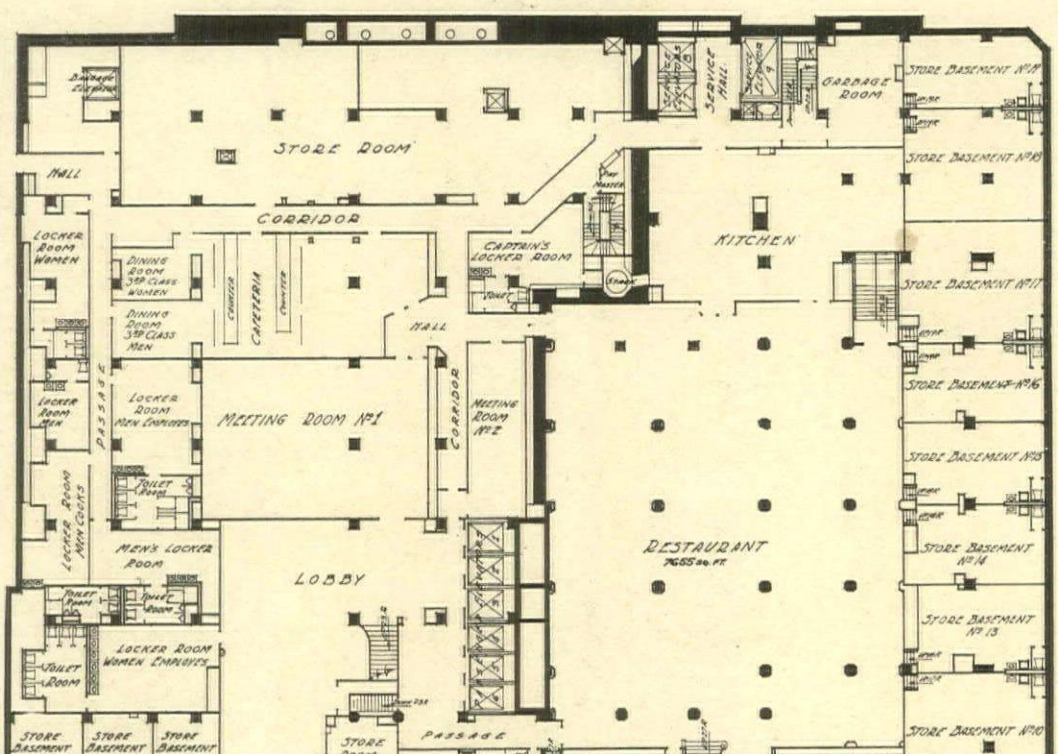


MAIN DINING ROOM
HOTEL GIBSON, CINCINNATI, OHIO
GUSTAVE W. DRACH, ARCHITECT



TYPICAL FLOOR PLAN



BASEMENT FLOOR PLAN

HOTEL GIBSON, CINCINNATI, OHIO

GUSTAVE W. DRACH, ARCHITECT

ROOF GARDEN
HOTEL GIBSON, CINCINNATI, OHIO
GUSTAVE W. DRACH, ARCHITECT

LOBBY

MEZZANINE DINING ROOM

HOTEL GIBSON, CINCINNATI, OHIO

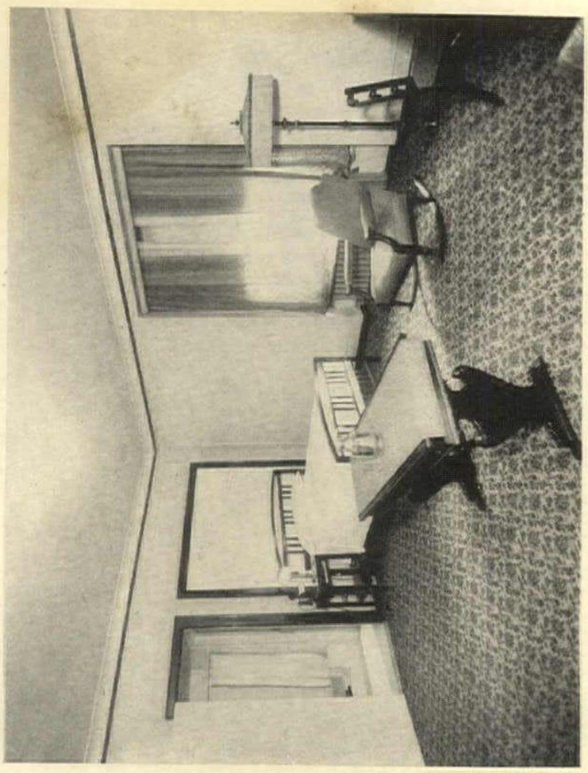
GUSTAVE W. DRACH, ARCHITECT

LADIES' LOUNGE

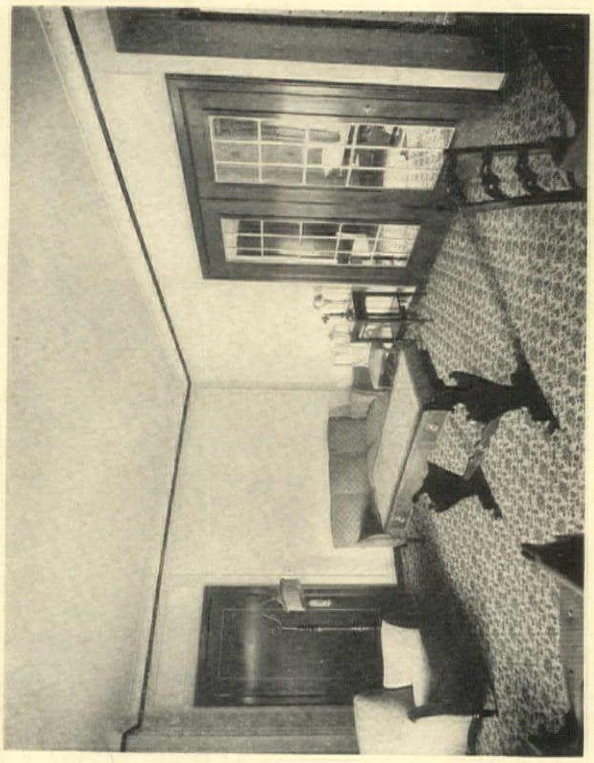
BALLROOM

HOTEL GIBSON, CINCINNATI, OHIO

GUSTAVE W. DRACH, ARCHITECT



TYPICAL BEDROOM



TYPICAL LIVING ROOM

TYPICAL BATHROOM AND WARDROBE

HOTEL GIBSON, CINCINNATI, OHIO

GUSTAVE W. DRACH, ARCHITECT

SOME EARLY DOMESTIC ARCHITECTURE *in and* NEAR SALT LAKE CITY, UTAH

BY G. Y. CANNON, *Architect*

FROM 1830, when the Mormon church was organized, until 1840, when the European immigrants began arriving, most of those people who joined the church were either from New England or the Atlantic states, or from families from these localities, who had settled in Ohio and the neighboring regions. Bringing with them the strong Colonial traditions of building, particularly of the Neo-Grec, they built up Kirtland, Ohio, first, then Nauvoo, Illinois, and moving Westward in 1847 to Utah, still carried with them those same traditions.

Reaching the Salt Lake valley, then a parched desert covered with sagebrush except for a green band of willows along the few creeks, stern necessity modified that tradition, for obtainable materials, poverty and climatic conditions became dominant factors.

THE LION HOUSE

Built 1855-6 by Brigham Young to house his families. The wall, now gone, was built as a protection from wind for the garden

The first shelters were log cabins, built from trees felled in the nearby canyons. The Lund house at Centerville shows three successive stages in its three rooms—log, adobe and stone.

These log houses satisfied the first urgent necessity for shelter, but immediately there began the building of permanent and more ample homes, sound of construction, simple through necessity, but full of local charm and character.

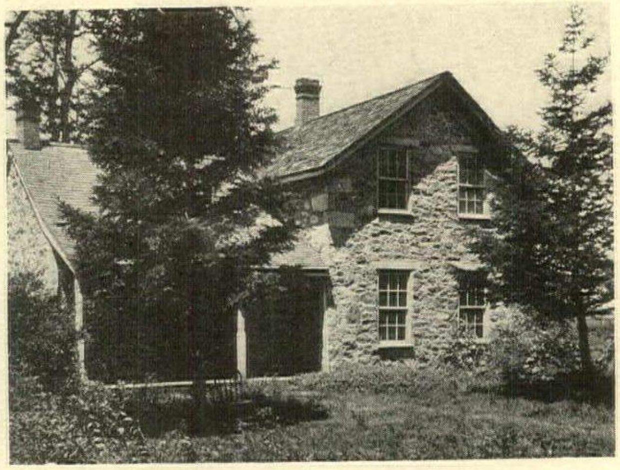
These first houses were Colonial types rendered in adobe and plaster. Erastus Snow wrote in his diary scarcely a week after the arrival of the first band of pioneers, one of the first mentions of adobes. "Brother Henry Sherwood commenced surveying the city, and the public square in the Southwest part was selected for the fortress. This week I was detailed to take charge of herding all our stock, and seven men were selected for herdsmen. Others were set to watering fields and sowing our turnips. Others were to get out timber for log houses and a strong company was organized to make adobes. To those unacquainted with adobe buildings, I will say they are very common in New Mexico and other sparsely timbered countries. Adobes are bricks made of gravel and soil and dried hard in the sun instead of being burned with fuel."

Brigham Young thought so highly of adobes that he said, "If a man should undertake to put me up a stone house, I should wish him to make it of adobe instead, and then I should have a good house. . . . According to my present views, there is not marble in these mountains, or stone of any kind of quality, that I would rather have a building made of than adobes."

Among the loveliest of these early houses, were the homes of Brigham Young, Edwin D. Woolley, and Edward Hunter, all three now torn down. They were all built within five or six years of the arrival of the first band of pioneers.

Brigham Young's house was designed by Truman Angell, a brother-in-law of President Young's, and later architect for the Salt Lake temple. Although at the time it was built, shingles were not obtainable, and a thick dirt roof covered it, the mouldings of the cornice were carefully detailed, full and soft for the searching brilliance of the desert sunshine. Inside, while ornamentation was not possible, all the trim was beautifully moulded, even though it had to be done by hand, and the rooms with their plaster cornices were well proportioned. The large room in the left hand wing had a segmental arched ceiling, in beautiful relation to the room. This house was Brigham Young's residence until the Beehive house was finished in '55.

To the North of the Hunter house, at a little later date, was the house of John W. Young, one of the older sons of Brigham Young. Here was housed a real treasure for those early days, a set of parlor furniture embroidered with peach blossoms, and carted across the plains. Full of awe, the neighboring children were occasionally allowed by John W. Young's children to peek into the parlor, and a marvel it was to those who had only home-made chairs and tables.



AMELIA SMITH HOUSE AT CENTERVILLE. BUILT ABOUT 1860

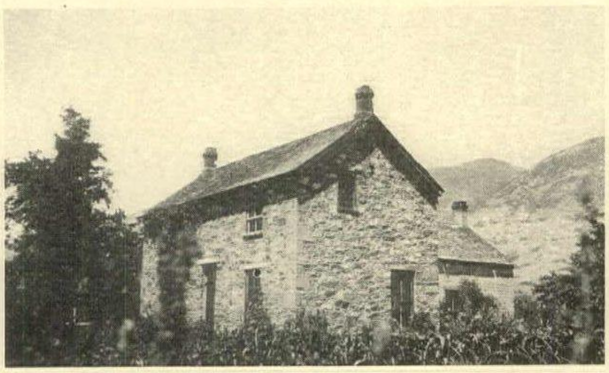
In 1853 the temple was started, and but a few years afterward, the tabernacle and the theatre, the timbers for both of which were cut in City Creek canyon and hauled down into the city by Barnabas L. Adams, the grandfather of Maude Adams the actress. But these cannot be discussed here.

Meanwhile the city was growing and throwing its arms out with a wide gesture. Great lots of one and a quarter acres for each house meant a large area covered by the city. A mile or more from the center of town was not uncommon for many homes, and it was just a mile from the center of town that George Tall built his house in 1868. There was no architect, this Englishman from Devonshire merely deciding for himself what arrangements of rooms he wanted, and leaving it to the workmen to carry out. Great foundation walls of red sandstone, three feet across, carry thick walls of plaster adobes, which were made in the nearby adobe yard. The floor joists are huge thick members like railroad ties.

Of course, such heavy construction was unusual, but City Creek flowed past the North side of the house, and in times past it had overflowed and seriously damaged some of the houses along it. Some one reported to President Young that Tall was building a house close to the creek, thereby endangering life. President Young himself,—who, by the way, had been a builder,—made a personal visit to the house, examined the foundation walls carefully, and told those who had complained, "to leave the little man alone, his house is all right." And to Tall he said, "The Lord bless you, Brother Tall, your house will never fall down."

By this time immigrants were pouring into Utah from all the European countries, and masons from Scotland, carpenters from England and Scandinavia, and other workers in the building crafts were becoming more available. In its building and its history, the Tall house is typical of those houses of early Utah days. Of history, worth setting down, these houses had none, for it was the history of the family's life only.

Yet an interesting commentary on the sociability of those days comes to light in the history of this



ONE OF THE HOMES OF PEREGRINE SESSIONS, AT CENTERVILLE

THE BROWN HOUSE, OGDEN. A DEPARTURE FROM THE EARLIER TYPES house, for the only floor that is not in its original condition is that of the large dining room. This floor has had to be renewed, for in this room for years, all the parties of the ecclesiastical 16th Ward were held, it being the largest room in the Ward.

John Isaacs, and his father-in-law who came from Wales, did the masonry work; George Price, who was born here, and Harry Nichols from London, England, did most of the carpentry. Harry Nichols did the fine staircase, whose more elegant and delicate counterpart can be found often enough in New England.

KNUD ANDERSEN HOUSE, PROVO

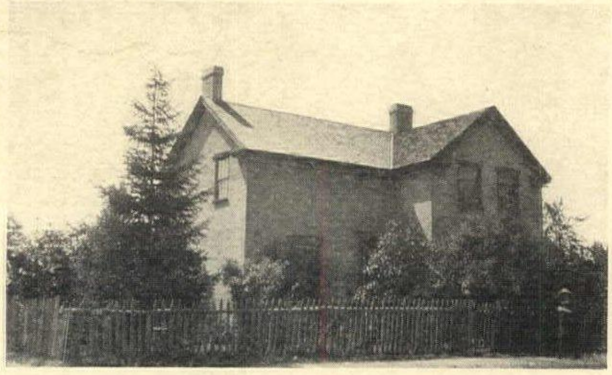
Built near railroad tracks with sheet iron roof as protection from sparks

In fact, Harry Nichols, who was born in London in 1837, came to America in his early twenties, and worked in Boston and New York as a joiner, at the same time studying some architecture. He returned to England after three or four years, married, and emigrated to Utah.

SUMMER KITCHEN OF THE MERRITT HOUSE, PLEASANT GROVE

Two other staircases from his hand were in the William Godbe home, known as the Octagon House. This house was built in 1864 by Mr. Godbe for his second and third wives. The wing at the right formed the dining room and kitchen for one of the families. Its octagonal shape arose from the desire to catch the sun on all sides, and to command a finer view from each room, of the wide reaching valley to the South and West, or of the mountains to the East.

The house was designed by E. L. T. Harrison, who was born in Brighton, near London, England, in 1830. Harrison was educated at the Woolwich Technical Schools, from which he was graduated as an architect. Most of his work, some of it very fine, shows strong Victorian Gothic tendencies, doubtless imbibed while at school, so that the Godbe house was probably a concession to the prevailing style in Salt Lake City at that time.



THE CALEB H. DAVIS HOUSE, PROVO

Brickmaking did not start in Salt Lake for a number of years, and those first made were of a very poor quality. By the time they were usable, the Victorian Gothic with its coarseness, had been brought into Salt Lake, and the simplicity and charm of the early work passed. In the outlying districts, though, the early tradition persisted, and some very splendid things were done in brick.

To the North of Salt Lake particularly, though occurring all around, rock houses and barns and meeting houses followed close upon the adobe construction. This rock work, which is worthy of an article by itself, was of field stones, gathered in clearing off the land. These field stones show a wide range of colors, slaty blues, purples, reds, greens, deep tawny yellows, white, but blending beautifully, and beautifully laid up. Such houses and barns are those from Bountiful and Centerville, and the Shurtliff barn.

This barn, with its sheds, is worth noting. It is built of this lovely rock, with huge handhewn posts and girders inside, supporting the hayloft floor. Its grouping on the side of a hill, with the salt marshes and Great Salt Lake beyond, particularly at sunset when the whole Western sky and water are lush with color, makes a picture one can never forget.

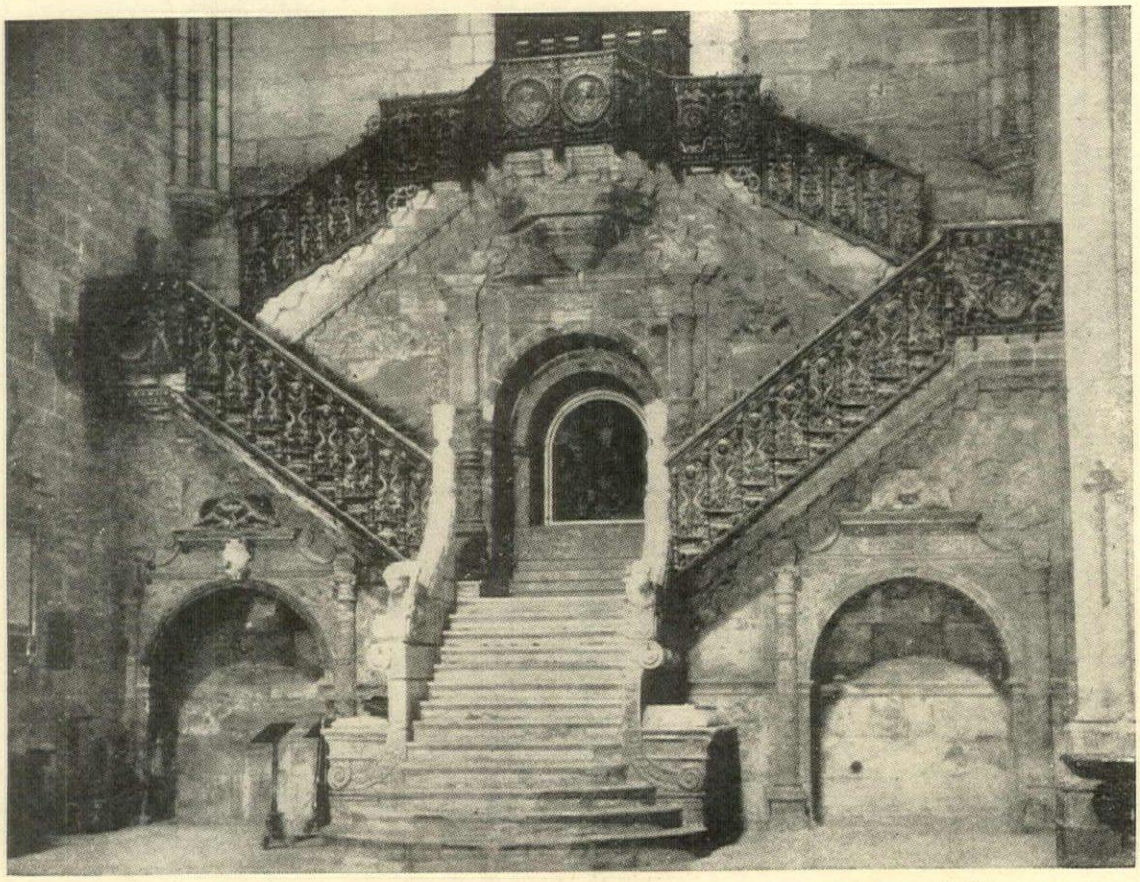
To the South of Salt Lake City the stone was generally quarried from the hills. Some of it was

MERRITT HOUSE, PLEASANT GROVE

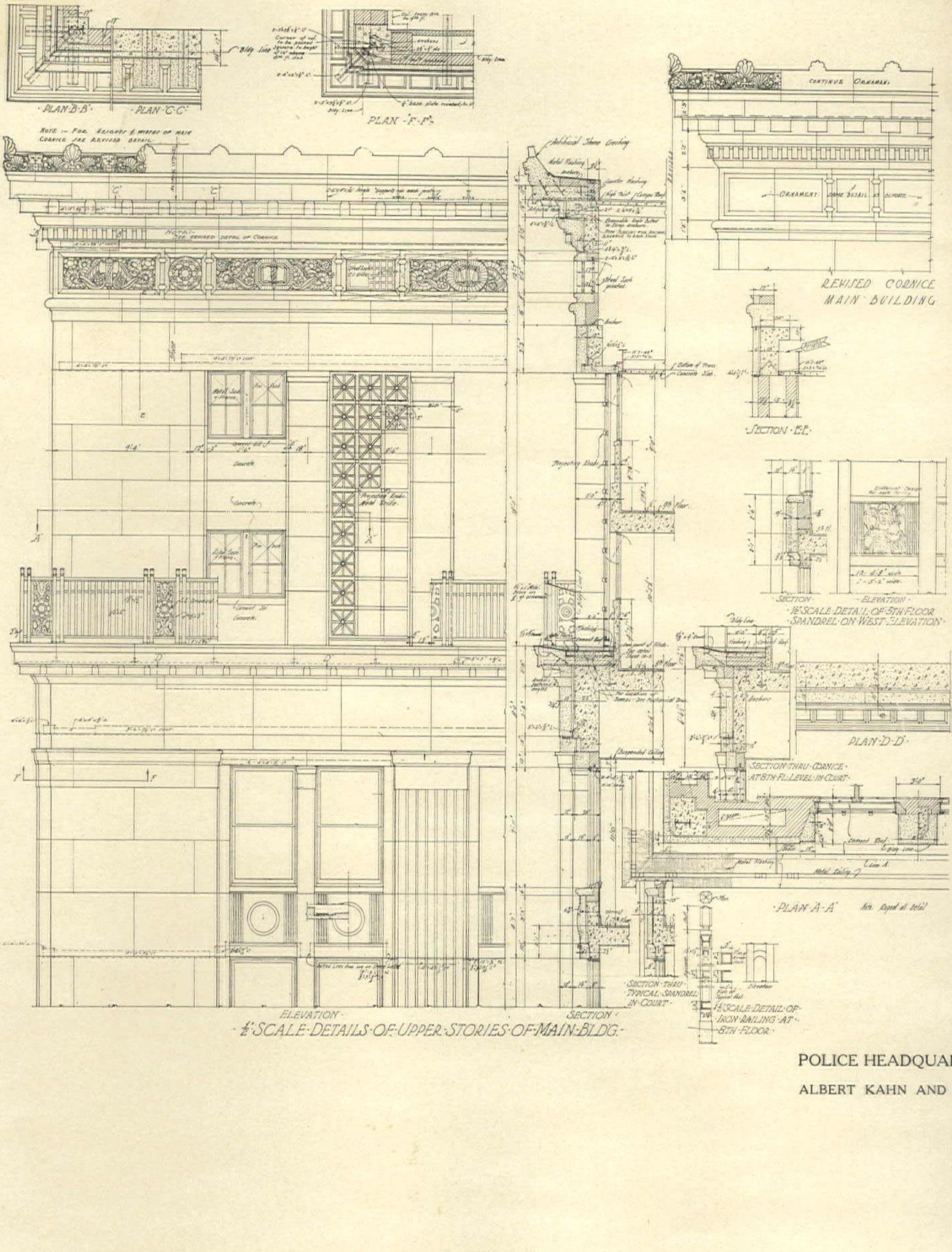
a dirty brown, spongy looking rock, which cut too regularly, and due to its lack of color variation, laid up very monotonously. But at Pleasant Grove a very beautiful stone was quarried and is the stone used in the Merritt house. This stone contains considerable quartz, which gives a lambency and sparkle to the generally amber colored stone, that is very fine.

This Merritt house illustrates again how little history surrounded these homes, except the usual happenings of a pioneer family. No outside events seem to have disturbed the smooth flow of the life here, except the constant addition of children until fourteen were housed and cared for by the father and mother, in these four rooms. One can well imagine that the Summer kitchen was a necessity to escape the heat of cooking for such a group. Moreover it was convenient to the table which must have been spread under the apple tree at the corner of the house.

And so these homes were built, year after year, from 1847 till late in the eighties, keeping rather close to the original tradition, sometimes seeming almost to transplant the local type of the builder's original habitat, as in the Knud Andersen house at Provo, whose builder came from Denmark. Of this house, the last portion was built as late as 1909, the owner having returned from a visit to Denmark in the previous year. His results, happy both in color and form, he secured from such simple things as plaster and brown-rusted sheet iron.



THE GOLDEN STAIRS IN NORTH TRANSEPT OF BURGOS CATHEDRAL



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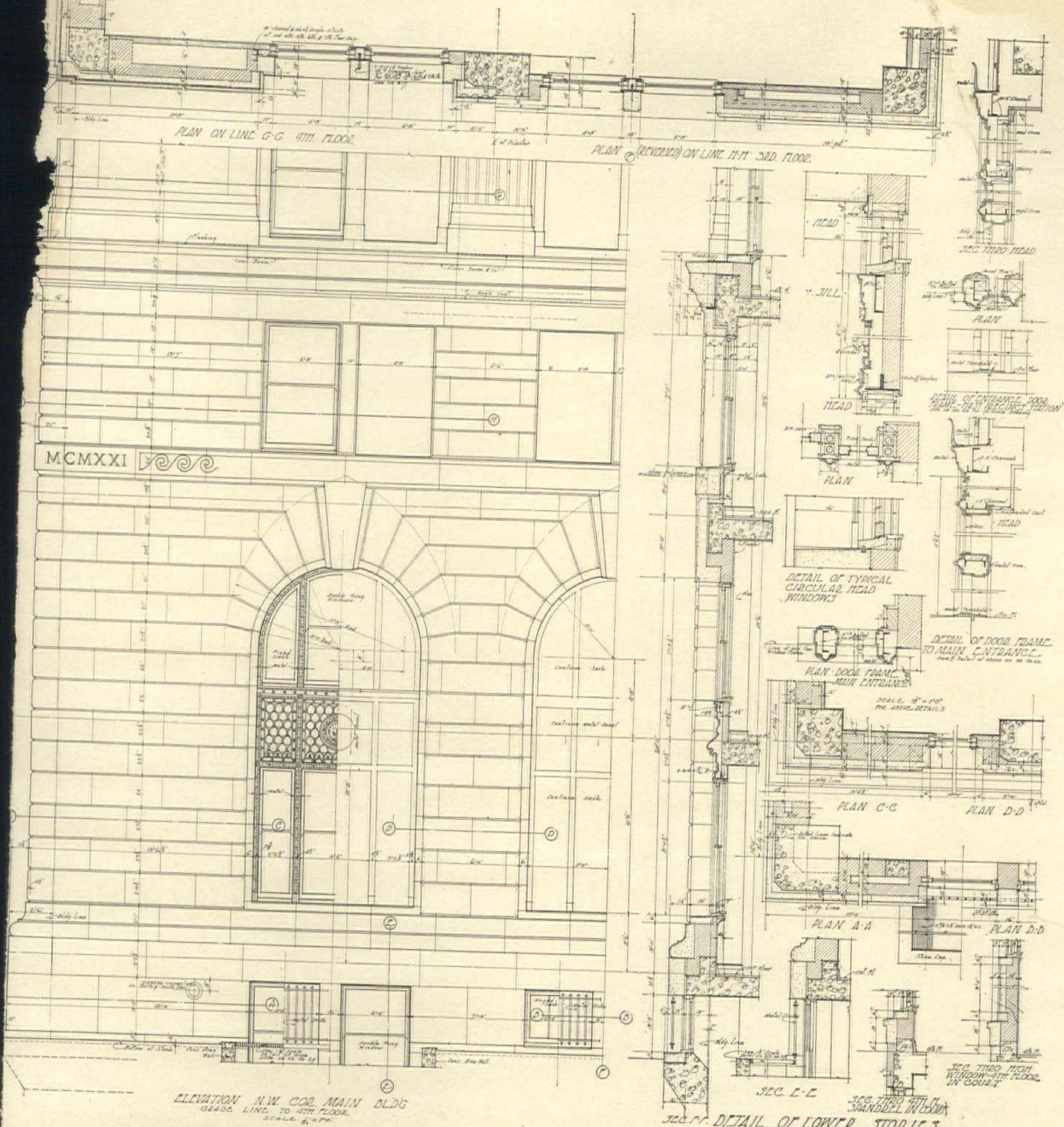

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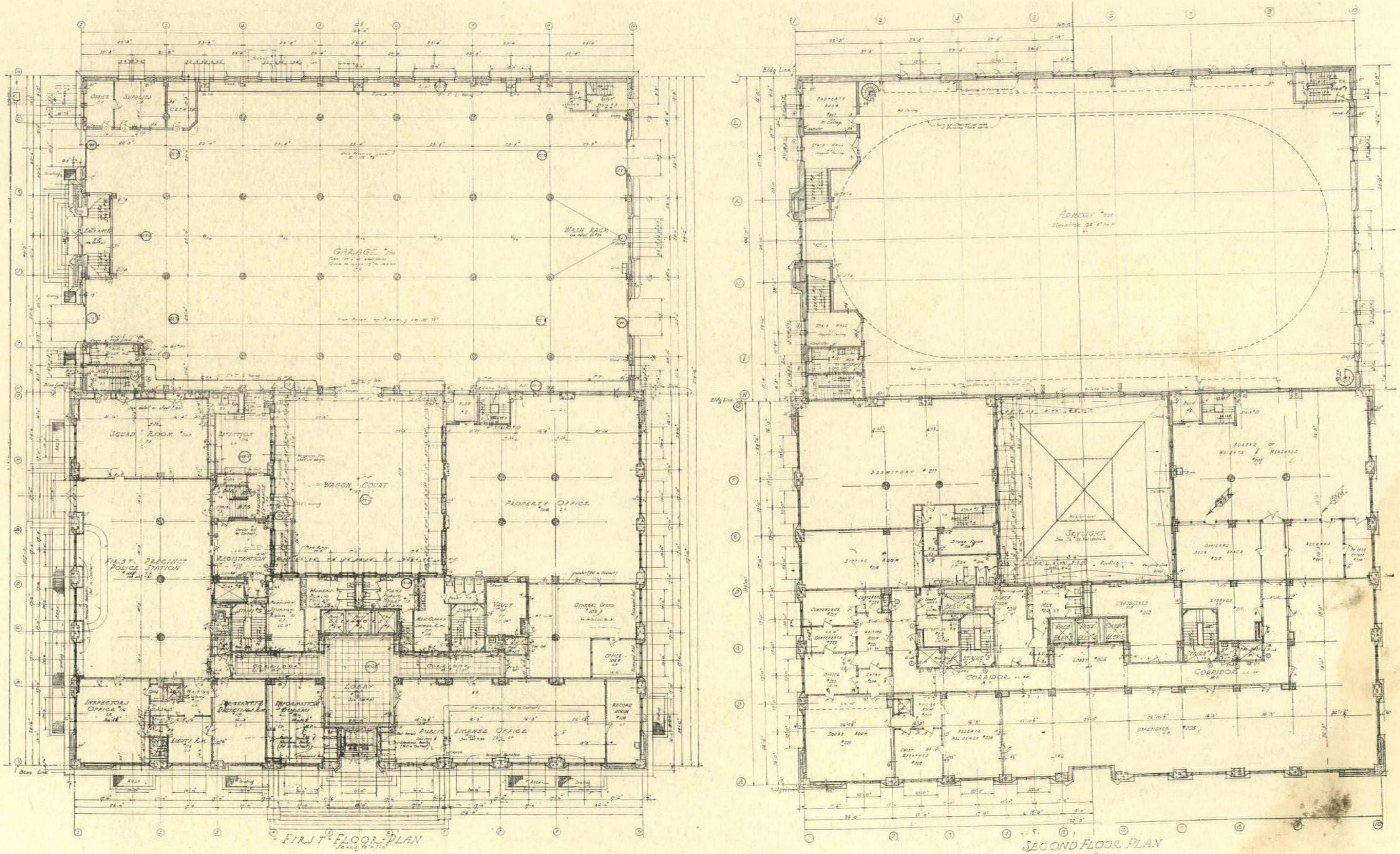

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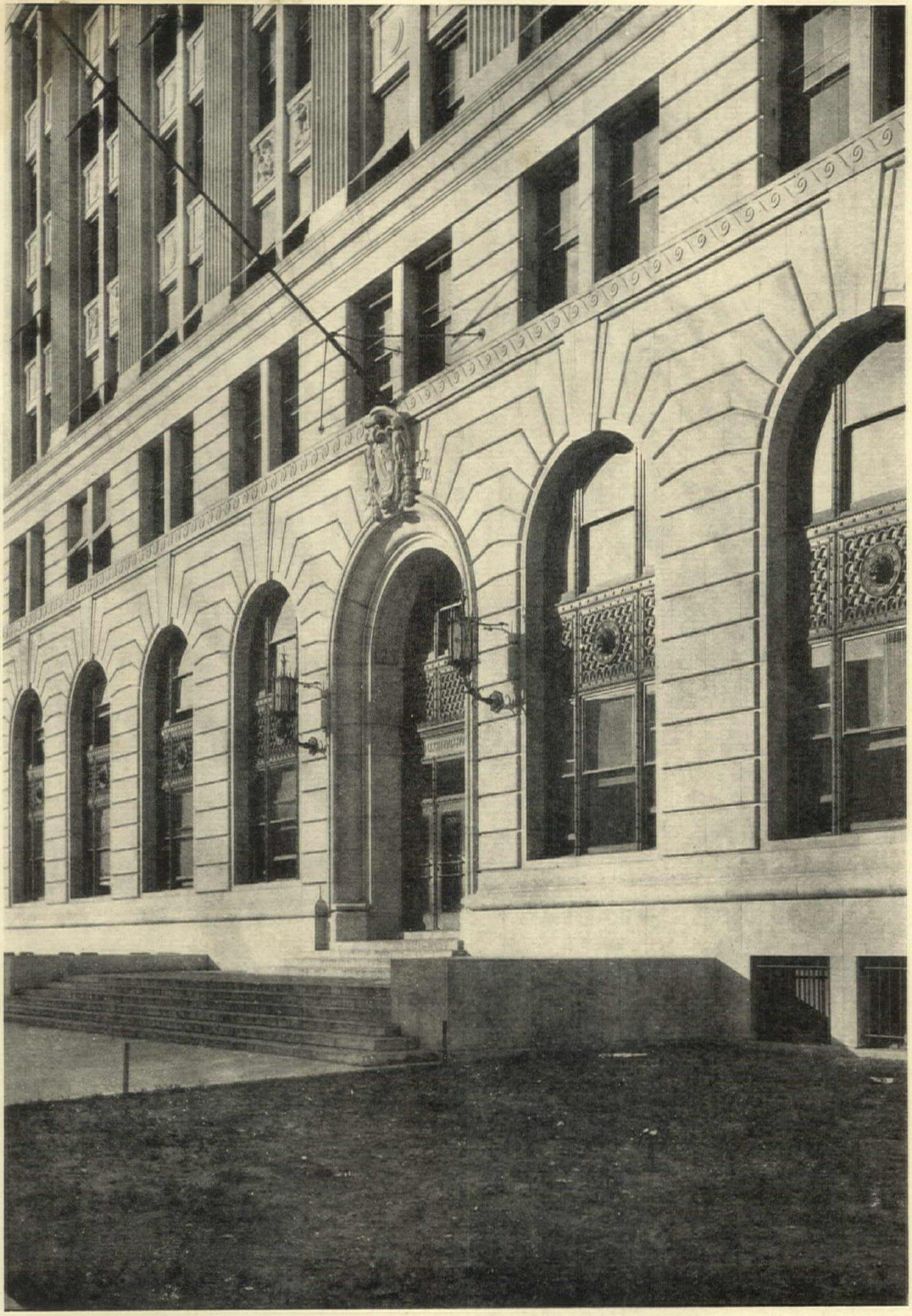

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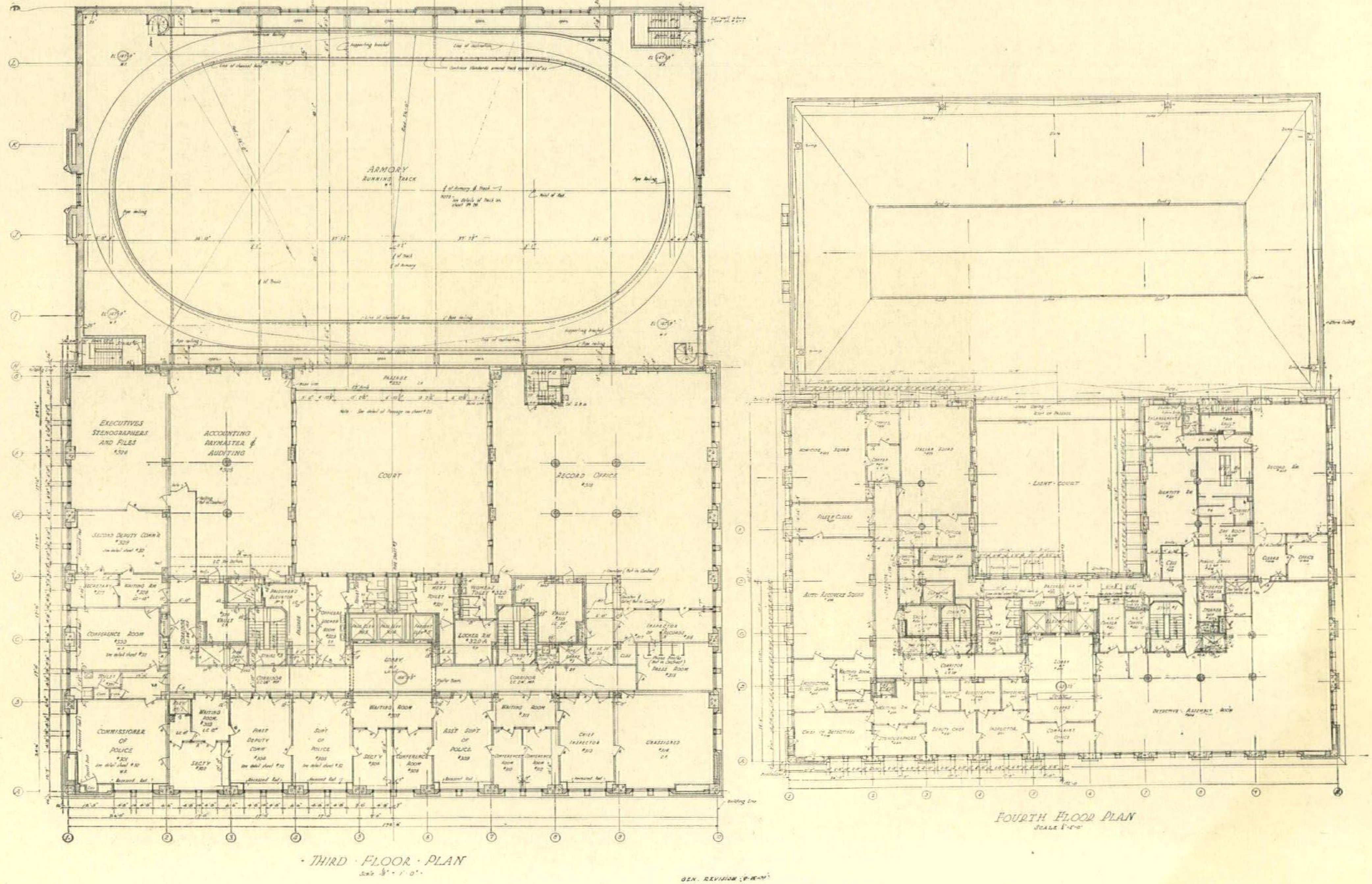

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ALBERT KAHN AND ASSOCIATES, ARCHITECTS

BERTRAM GROSVENOR GOODHUE, F. A. I. A.

An appreciation *by* Donn Barber, F. A. I. A.

THE death of Bertram Grosvenor Goodhue suddenly terminated a most distinguished career, one of great usefulness and productive power. He was an epoch making artist. Just prior to his death he had been chosen to design several important monumental buildings now being contemplated in connection with ecclesiastical and university developments. Studies for these buildings, in various stages of completion, remain unfinished on his drafting board. Some of these even in the sketch form of their inception show the imprint of his personal attitude of mind and the unmistakable mark of his characteristic autography.

Goodhue occupied a position unique among architects, and at the time of his death had carved for himself a niche in his profession. His methods were entirely original. Fortunately he lived long enough to produce many important buildings whose phases and qualities are distinctly his own. He imbued the men in his office with his knowledge and conviction to a degree that they now find themselves trained to carry on his traditions and complete the work he had in hand.

His many sided genius is perhaps more notably illustrated in his design for the Nebraska State Capitol. That startling departure from accepted standards of state house design, is now under construction and if finished according to his designs now practically completed, will undoubtedly become his monument. He won this important commission in competition and it is generally recognized by the profession and the public to be as original in conception as it is fine in its possibilities of execution. It is to the exacting demands of this work that he probably owes his untimely death, for during the past year or more he had been under great physical and mental strain.


BERTRAM GROSVENOR GOODHUE, D.Sc.

Goodhue's art was above all things his religion. He was unable to comprehend or combat scheming or baseness of motive. He could not cope with intrigue. Underlying all his strength and courage was a keen yet childlike sensitiveness to adverse criticism. To criticise his beliefs or motives or the justice of his intuitions or acts, was to him an aspersion of his honesty. If what he did was capable of misinterpretation, he was ready and willing to clarify and explain to the extent of his power. Brute force in making his point, studied indifference, flippancy or cajoling were, to him, inconceivable methods. His vision of duty possessed the clarity that is ever present in a mind set on honesty of purpose. Temperamental and impulsive by nature, quick to act, fearless and at times blunt in emphasis of what he conceived to be right—these qualities stamped him as a man of unusually strong character, one who with the courage of conviction, was willing, if need be, to die for his ideals. He dreamed of things he longed to accomplish. He strove unceasingly to produce what to him might possibly become his everlasting masterpiece.

To the very end he appeared to be in good health, but he was suddenly stricken on the very eve of his greatest fulfillment. No artist could have left a more complete contribution to the art of his generation than did Goodhue.

The dignity of any profession is determined by the composite character of the men who competently represent it. The distinction of the profession of architecture is maintained by the dependability of convincing leaders, men in whom the profession as a whole has confidence. Goodhue, I am sure, was one of these. His fine character, his sincerity, his contagious devotion to the integrity of the most comprehensive of all the arts, were to those who knew him a delight and an inspiration.

While in his work he employed every good interpretation of the ages, he added a freely personal modern interpretation of past glories to our current building requirements. He was a very great architect and his passing is a loss to the whole country.

His latest completed building, the National Academy of Sciences at Washington, was dedicated with elaborate ceremonies less than a week after he died. The ceremony was attended by high officials, including the President of the United States. This building is simple in its masses and decorated in an unusual manner. It is typically Goodhue in its treatment and expression and breathes the true American spirit in its architecture.

To those who knew Goodhue well, his death is little less than a calamity. They have lost a sympathetic companion, a trusted and beloved friend.

* * *

BERTRAM GOODHUE

"BERTRAM GOODHUE was an architect; and architecture, next to literature, is the most manifest and decisive expression of civilization. 'By their fruits ye shall know them,' is a Scriptural injunction. By their architectural works, public and private, do we know the character, culture, and aspirations of a people. The temples of Egypt, the Acropolis of Greece, the Colosseum of Rome, the Taj Mahal of India, the Gothic cathedrals of England, the Chateaux of France, the mansions of Colonial New England, and the monumental skyscrapers of modern industrial America are almost exact measures of the progress and spiritual attainments of their periods and their creators.

"Bertram Goodhue made an important and notable contribution to this unfailing test of American culture.

"A wise old New York merchant of my acquaintance used to say, 'When you want to find somebody with leisure to do things, go to a busy man.' By which, I suppose, he meant that the man of creative power is usually calm and collected, and not the slave of work. It is the putterer who is so driven and harassed by unimportant details that he has no time for the amenities. With all that he accomplished in his too short life, Bertram Goodhue had leisure time to spend with his friends. He could play as well as work. Even those who, like myself, knew him only slightly and saw him only occasionally in his moments of leisure or relaxation will miss him because of his modest and cheerful friendliness and his fine standards of taste and human relationship."

LAWRENCE F. ABBOTT in *The Outlook*.

COPY OF PRESIDENT FAVILLE'S TELEGRAM TO THE NEW YORK CHAPTER

D. EVERETT WAID, President,
New York Chapter, A.I.A.

TO this country the genius of Bertram Grosvenor Goodhue gave many buildings of distinguished architectural beauty. In them is enduringly written not only his own exceptional vision but by them is worthily written the aesthetic history of our epoch. The entire profession joins the New York Chapter in its expression of deep loss in the passing of one of the Institute's eminently illustrious members.

W. B. FAVILLE, *President*
The American Institute of Architects.

LOUIS HOLMES BOYNTON

1867-1924

LOUIS HOLMES BOYNTON died in Chicago on Saturday, April 19. Professor Boynton was born in 1867 at Guilford, Conn., and studied architecture at the Massachusetts Institute of Technology. After leaving that school he entered the office of Peabody and Stearns, of Boston. He won the Rotch Travelling Scholarship in Architecture in 1896 which gave him two years of study in Europe. Part of this time was spent in Italy where in 1897 he was married. After his return to this country he was for a time with Shepley, Rutan and Coolidge, and subsequently with McKim, Mead and White and with Cass Gilbert of New York City. From 1908 to 1912 he practiced his profession as an architect in New York City, coming to the University of Michigan at the end of that period. His teaching there was in the field of architectural design, in which his training and experience on important undertakings were of great value.

As a practitioner, he was very active and has done some of Ann Arbor's most beautiful buildings, including the new South University Avenue public school and many residences and several fraternity houses.

He is survived by his wife and three children.

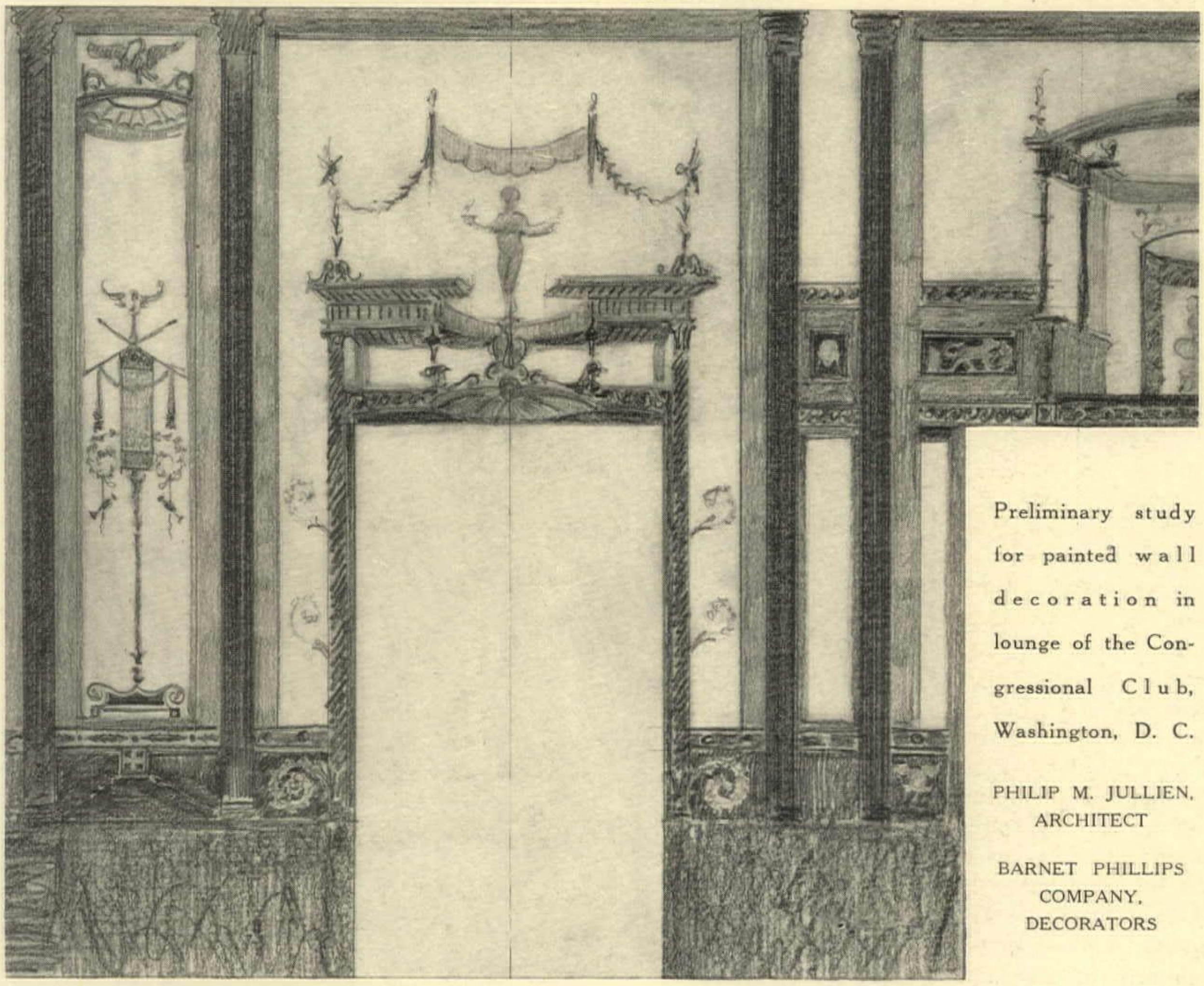
Professor Boynton was a member of the Board of Directors of the Ann Arbor Art Association beginning with 1917, being president of the Association in 1920-21. His loss will be keenly felt by all who had the privilege of knowing him as a friend, associate or student.

INTERIOR ARCHITECTURE

Wall Treatments

THAT the walls of a room of a house of moderate cost offer the only place for distinctive originality in a scheme of decoration is undoubtedly a fact. The furniture, its covering, the drapery materials, the lighting fixtures and most of the decorative accessories, as mirror frames and table covers, are all, as a rule, selected from manufactured stock designs and apt to be seen in any house one enters. But the wall spaces, in that they are developed from the floor plan of that particular house, are original in shape, size and proportion peculiar to the plan, and their treatment, therefore, must be specially designed to suit. The list of materials from which various wall treatments are selected is an extensive one, and by using them in various combinations and in varying proportions, originality may be easily obtained. Such a list would include, for example, plain painted and rough plaster, wood panelling, wood mouldings on plaster, wall papers, wall fabrics, effects of stone and painted ornament. It is, however, in the design or form which these materials take—all stock materials, too, in the true sense of the word—which stamps the mark of originality on a wall treatment, and, as such designs are entirely governed by the original floor plan of the room, the result, even though formed by stock details, would be original in mass and proportion.

The type of room, style of furniture, upholstery and drapery materials and even the temperament and preferences of the client all have a direct bearing on the choice of the materials with which the wall treatment is to be designed. It is not the object of this article to approve of certain materials for certain types of rooms or temperaments, but rather to suggest some pleasing and



Preliminary study for painted wall decoration in lounge of the Congressional Club, Washington, D. C.

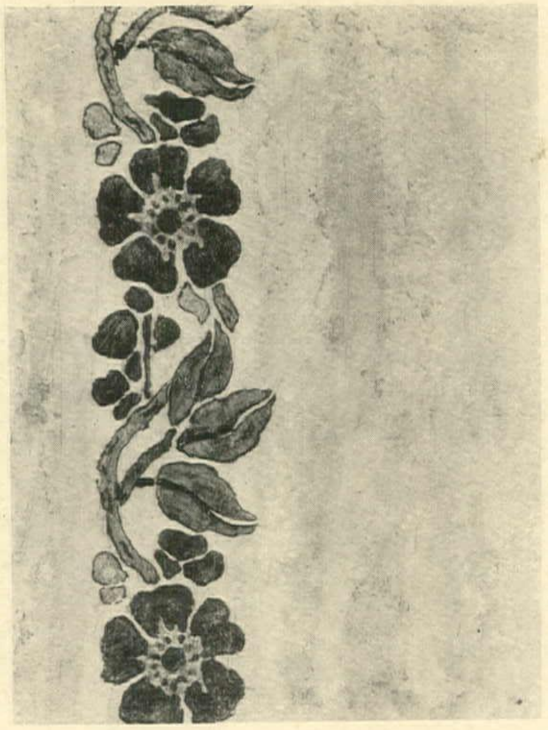
PHILIP M. JULLIEN, ARCHITECT

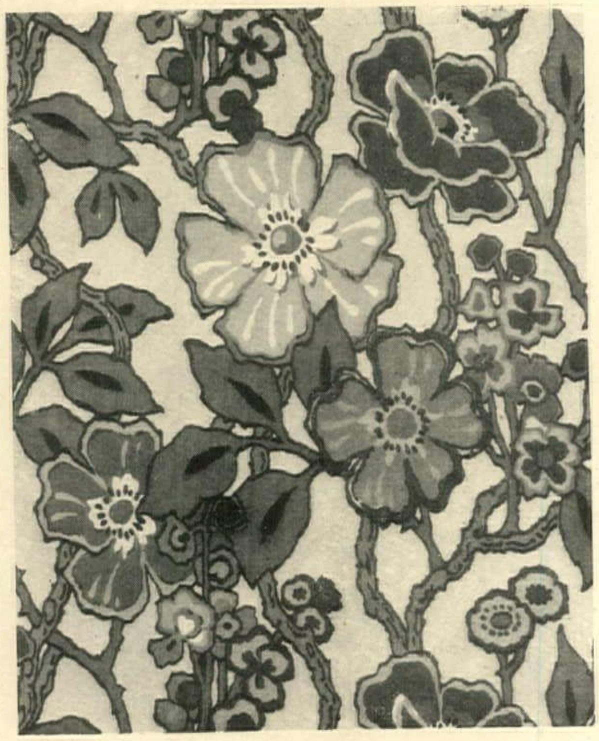
BARNET PHILLIPS COMPANY, DECORATORS

even original combinations, along with some ideas in design for their use.

While many architects and clients are alike satisfied with the slight degree of originality in their designs which is brought about by the proportion of the wall spaces, and resort to conventional schemes for their treatment, it is becoming more evident that such stereotyped ideas must be discarded and supplanted by schemes which show both the individuality and personality of the designer and the owner. Wood panelled walls, designed in the manner of the Tudor and Stuart periods of English architecture and used so originally and successfully by many architects since, are not really a consideration in the type of house now under discussion on account of their expense. So far as materials go, the scope seems to be limited to plaster and paint or some wall fabric or paper. The secret of originality in each, lies in color. A plaster wall may lose all its familiar appearance by the application to its surface of a stencil pattern in color. Allover repeating patterns after the manner of the old Italian, often in a very free and open design, can be made from some motive in the stock furniture covering or drapery fabric and will create a distinctly original wall, while the unity in the entire scheme thus effected will be extremely satisfying. Borders forming panels, chair rails and even window and door trims may be applied with a stencil in color, to carry out the painted decoration on the furniture, or some fabric. (See below.) Treatments of this kind are generally seen on finished plaster, but the accu-

Illustrating a wall fabric with pattern applied in color. The heavy texture of the fabric gives the pattern a subdued effect, which is very pleasant on the wall. This fabric may be purchased either plain or with pattern applied, as shown herewith





Design the painted wall decoration to include some feature of the pattern of the drapery material or furniture covering. This will give a unity to the decorative scheme which cannot be otherwise obtained. For this illustration, a stencil pattern was applied to a panel treated with a product which affects rough plaster, and the crude result, although in this sample somewhat exaggerated, is unusual and interesting racy of the repeating stencil together with the flatness and smoothness of the plaster surface tend to suggest a mechanical result. The application of the same stencil to a rough plaster surface breaks this stereotyped effect. In these days, when the market offers materials which produce such pleasing effects of rough plaster in any desired texture at a price within reach of all, schemes of this kind are strongly recommended.

Desiring to do away with the mechanical effect of the cut stencil, the research department of a very well known house has been making successful experiments in using lace as a stencil. By stretching the lace on a small wood frame and applying a coat of shellac to it, an ordinary piece of lace or net makes a durable stencil, free from the mechanical qualities of cut paper, and of sufficient flexibility to give a decidedly artistic character. (See page 483.) This makes possible

Wall fabric with pattern in relief. This same material is manufactured with repeating patterns, is very durable and takes paint nicely

to a great extent a unity of design between the curtains and wall decoration, as was shown to be so necessary in a recent article in this department. Any piece of lace or net of suitable design could be used as a wall decoration and repeated on a plain material for the curtains. Or even a new lace stencil for the wall pattern could easily be made (by the cross stitch method, perhaps) in a design in keeping with the figured stock curtain or furniture covering or the decoration painted on the furniture. The absence of bulky tie-bands, which are always conspicuous in a cut stencil, is a point in great favor of the lace idea, where the ties are actually a part of the design.

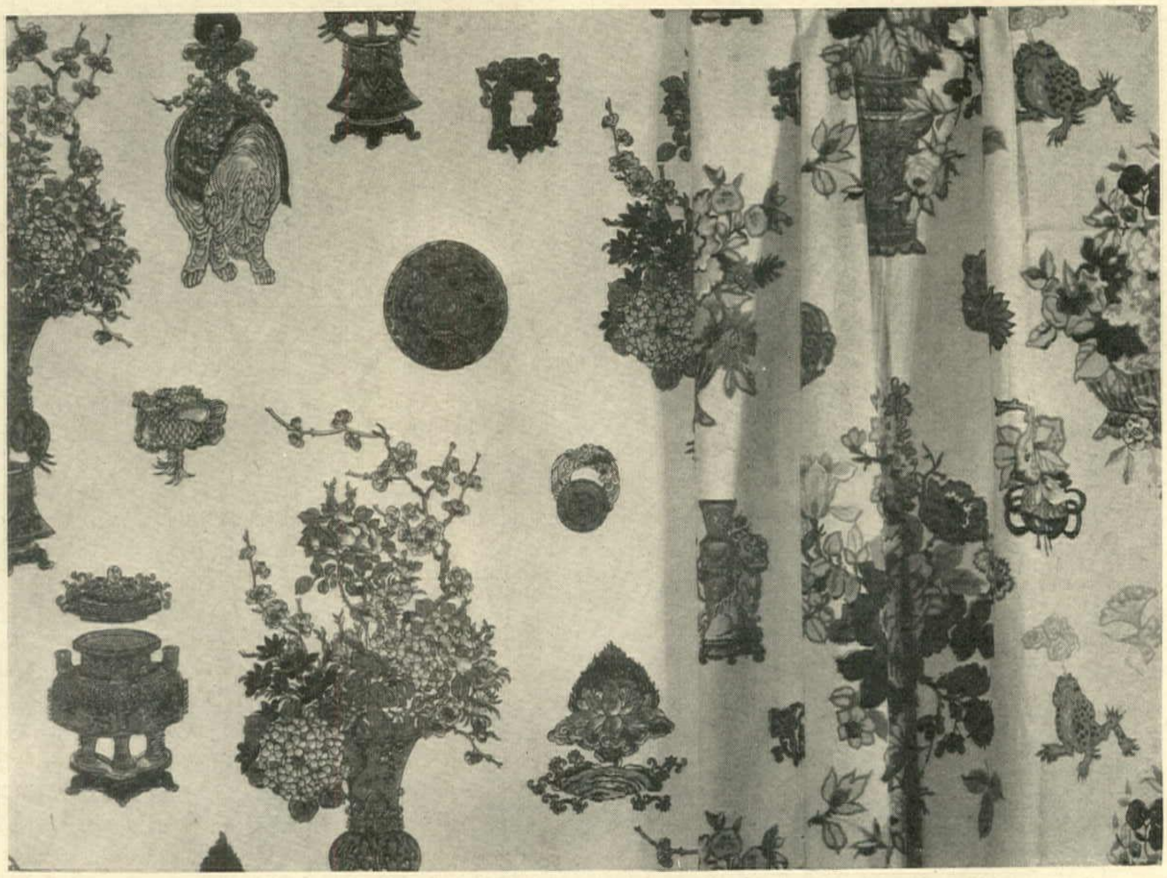
To a large extent, wall papers and fabrics take the place of painted wall patterns, some being designed to give that effect, while others even go

Wall paper which could be called a real wall hanging. No imitation of the texture of silk is evident, but the type of design and the manner of its application make it attractive as a paper

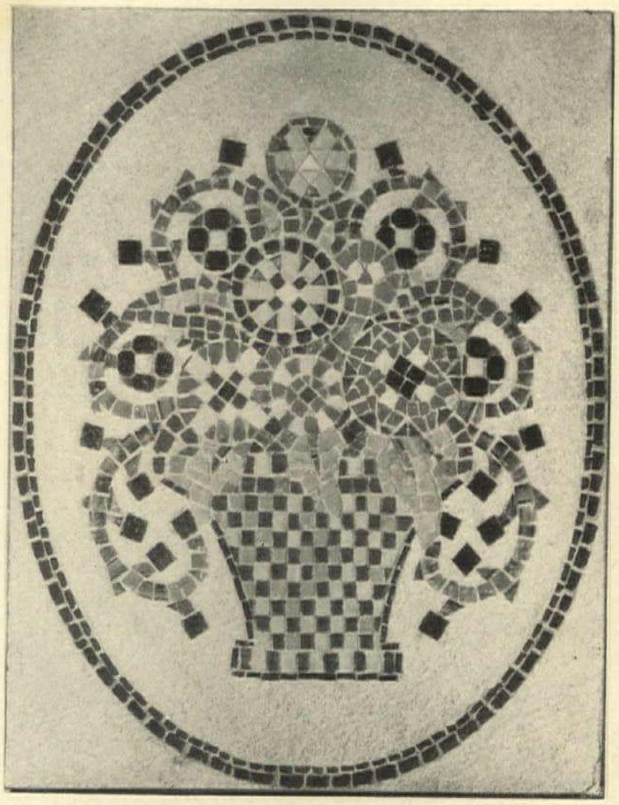
so far as to produce the effect of embroideries and brocades, from which wall coverings originally grew. (See above.) Their use may occasion a lack of unity between wall and draperies, in which case it will be necessary to tie the two together in some way. A "flat shaped" valance, for instance, may be inserted, made either of a canvas with painted ornament, or a specially embroidered material, the design of which will serve the purpose of tying the two patterns together.

In many inexpensive houses wall papers are used in the field of panels formed by wood rails and mouldings. This suggests that wood could not be afforded to complete the panelling, plaster would too freely admit of that fact, so wall paper was used to decorate the space to conceal the absence of wood. The selection of wall paper so used, either makes or breaks the scheme. The paper must give the effect of being better than wood. The paper, then, must suggest a wall hanging. This should not be taken to mean an imitation of a fabric. Wall papers are frequently made and used which are designed to imitate silk fabrics. Certain lights affect silk so that the figure or pattern appears darker than the background, while other lights from a different angle will cause the background to appear darker. Wall papers of this type can never be anything but imitations, for the beauty of the real silk is in its changing lights, while that is entirely missing in the paper substitute. Papers designed in patterns and colorings which could be made up in silk are more suitable and effective for wall hangings. This leads us directly to the interest in wall fabrics. Certain ones are made of a prepared burlap on which is printed a repeating pattern in color. (See page 480.) The heavy texture of the background is such that the design is subdued and not clearly distinguishable, tending to give a most pleasing effect when hung on the wall. Other fabrics are made so that the pattern is brought out in relief (page 481), and still others where the background is like a closely woven material or canvas. (See cut at left.) There is no evidence or quality of imitation in any of these. Wall paper can be and is made to serve just as well in

Another wall fabric with pattern applied. One of the practical advantages of a wall fabric is the possibility of changing its color and design by painting over the entire surface without losing its texture or sanitary qualities. The illustration shows a stock pattern



The difference in the patterns of this wall paper and the printed linen is so slight that it seems to vary only by the difference in the type of materials. The curtain material, always hanging in folds, nevertheless appears entirely different from the flat wall paper, but the unity of design is striking its own way. The old papers used for wall hangings in China in the sixteenth century were only decorated paper panels, hung for their beauty of design and texture alone. Wall papers today should be hung for this same reason.



Glass mosaic used as a decorative panel may be embedded in stucco or plaster walls. The bright colors of the glass and the uneven surface which is produced make the panel a feature of any scheme

In certain examples of Early American architecture of the sixteenth century, there are to be seen rooms which are decidedly interesting in their combined use of papered and wood panelled walls. The three outside or exterior walls were papered and the frame partition between it and the next room was made of wood panels from floor to ceiling. There are also examples of rooms where two walls are of rough plaster and the other two of upright planks, similarly following the construction. Such effects are free of stiffness and formality, and therefore worthy of consideration in certain rooms. The fact that the design evolves so naturally from the constructive plan is a sure sign of its success and it may hold some suggestion for another original idea.

The use of a chair rail of some sort, allowing a line against which to stop a darker color for the lower walls, is a practical proposition in rooms where chairs and other pieces of furniture are apt to be crowded against the walls. This scheme further affects a low ceiling and a larger room, for the floor seems to continue beyond the line of its actual meeting with the wall, and, in perspective, to extend to the line of the chair rail. The common use today of applying a small wood moulding to plaster walls to form panels and painting both wood and plaster in one color to affect wall panelling, cannot be called architecture for it has no connection whatever with the constructive plan. Very seldom, in fact, is it even decorative. Panels in their earliest use in architectural design were employed as a frame for decorative ornament, as well illustrated in the Pompeiian designs. (See sketch of painted decoration on page 479.) The Louis XV and XVI designers and the Adam brothers used panels for a similar purpose. The wall panelling of the Queen Anne and William and Mary periods of England were constructed entirely of wood and a great part of their beauty was in the grain and figure of the wood used for the panel fields, and also in the effect obtained from the different projections of stiles, panels and

Illustrating the use of lace as a stencil. A coat of orange shellac makes the lace strong enough for use as a stencil, and yet allows a flexibility which departs from the mechanical effect of the cut paper stencil. The lack of wide tie-bands is a relief in this type of decoration

mouldings. But a panel construction would be difficult that permitted stile and panel field to be on the same level or projection even if the decorative value of the wood panels had been smeared with paint. Such a scheme is purely an imita-

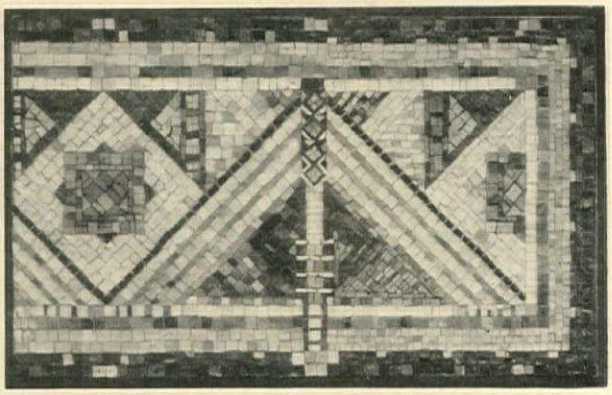
Manufactured product which has all the qualities of stone in texture, color, durability and method of construction

tion and a very poor one at that, and cannot be seriously considered. Furthermore, the stiff, formal aspect of such an arrangement of panels, with no decorative interest beyond their lines and proportions, is entirely out of keeping with the elements of simple informality which the average person today desires to have his home suggest.

A wood moulding framing in a piece of tapestry, a picture or even a piece of some wall fabric makes a decorative overmantel treatment, even if other walls of the room are not treated in panels of any kind. Should the proportion of the wall space above the mantel be such that a panel would be too wide for its height to be in good proportion, two small panels, one on each side, would solve this problem, and the two smaller panels might be used as backgrounds for wall brackets. In cases like this, the important thing is to make the panels real, for imitation of construction seldom attains good results. Thus, use a piece of composition board for the panel itself, which will project, according to its thickness, in front of the plaster surface, and make the moulding cover this discrepancy. It is important, too, that the entire breast be so constructed of panels, for real wood panel construction would always apply to the whole breast, or would not appear at all. If it is desired to have only one panel which does not cover the whole breast, it should be hung on the wall as a picture frame.

An interesting scheme for adding color to a wall without the use of frames or panels is suggested by glass mosaics. (See page 483 and below.) Designs may be made of it to carry out some note in the furnishings and the panel may be embedded in the plaster wall. The texture of the finished work, of especial interest on account of its unevenness and lack of mechanical symmetry, and the brilliancy of its colorings make a combination which is not possible to attain with paint. While its expense might prohibit the use of entire walls treated in this way, a small panel or a running border forming a panel placed correctly in a room would lend much to the decorative scheme. (See page 483 and below.) Walls in most any treatment are greatly enhanced by a piece of good tapestry when hung so as not to detract from the architectural setting, but to emphasize it. So do good pictures add to almost any wall, if properly selected and hung, in spite of all that is said to the contrary. The gross inability of the average client to select correct pictures for his rooms and to hang them properly makes it necessary for the architect to give his assistance in supplying this touch of individuality which can make a room either so homelike or so stifling.

Somewhat along these same lines is the use of relief ornamental panels for breaking plain wall surfaces and adding interest to them. The close relation of the two fine arts—sculpture and architecture—is too little heeded. A panel in relief ornament placed in the wall over the mantel gives an interest to the walls which can be at the same time individual and decorative. The Adam brothers used modelled ornament in their decorative schemes to good advantage, and the Italians and Spaniards obtained beautiful results in their adaptation of sculptured form. Small panels



Glass mosaic may be used as borders for wall decorations. The lack of mechanical symmetry, by which this work is typified, as well as its unlimited field of color, gives it a decorative value which none can deny spotted at irregular intervals in the walls, of different designs and shapes, placed so as to create balance without accurate symmetry, are a relief from the flat plaster or stereotyped allover pattern.

In certain types of interiors it is often found desirable to use stone wall treatments. Plaster walls painted to imitate the texture of stone and lined off in paint to represent the joints, or wall paper or fabrics made in similar effects, fail entirely of good results. Here again constructive imitation fails to impress. There are, however, products on the market made to imitate, more or less, stone in texture and color which are applied to the walls in blocks, exactly as stone would be, and these are capable of producing extremely good results. (See page 484.) The product represents something that may have been inspired by stone, and gives an effect similar to stone, but does not make any attempt to imitate it in construction.

In short, this article appeals for more originality in wall treatments, more color and form in its decoration and thereby more unity of design and color in the entire decorative scheme. Put the background on speaking terms with the foreground, introduce the foreground to the background, and the consequent intimacy of the two will result in harmony and unity. This was the secret of the success of the rooms of the French period and is that charm that made the Davanzati Palace a model for all future decorative efforts. The ornament of the wall panels was sometimes actually repeated in the tapestry chair coverings and draperies. The same idea is marked in the original Adam rooms. Characteristic ornament of the period formed the basis for the designs of the textiles. A striking feature of the design of most church interiors, and the cause of much of their quiet interest, is the unity of design which flows throughout walls, ceiling and furniture. It may be said that this brings about a lack of "punch" and "pep" which is not desirable in the rooms of a home, and, to a certain extent, that is true. But it does not need to be carried to such an extreme. There can still be plenty of opportunity for strong contrasts in both design and color.

Architects are invited to correspond with the editor of this department in regard to any problems of interior design or the availability of materials. Acknowledgment is made to the following firms for their courtesy in supplying illustrative material: Henry Bosch Co., Craftex Co., Elms & Sellon, F. J. Emmerich Co., Framerican Industrial Development Corp., Lincrusta-Walton Co., New Jersey Zinc Co., Ravenna Mosaic, Inc., F. Schumacher & Co., Standard Textile Products Co., H. B. Wiggins Sons, Zenitherm Co.

Booth at the French Exposition of especial interest to architects. The iron radiator cover at the extreme left is a fine specimen of modern French craftsmanship and design

(*See page 486 for article on the French Exposition*)

THE GOBELIN TAPESTRY TO BE PRESENTED TO THE CITY OF PHILADELPHIA BY THE FRENCH GOVERNMENT WHICH WAS EXHIBITED FOR THE FIRST TIME IN THIS COUNTRY AT THE FRENCH EXPOSITION RECENTLY HELD AT THE GRAND CENTRAL PALACE, NEW YORK CITY

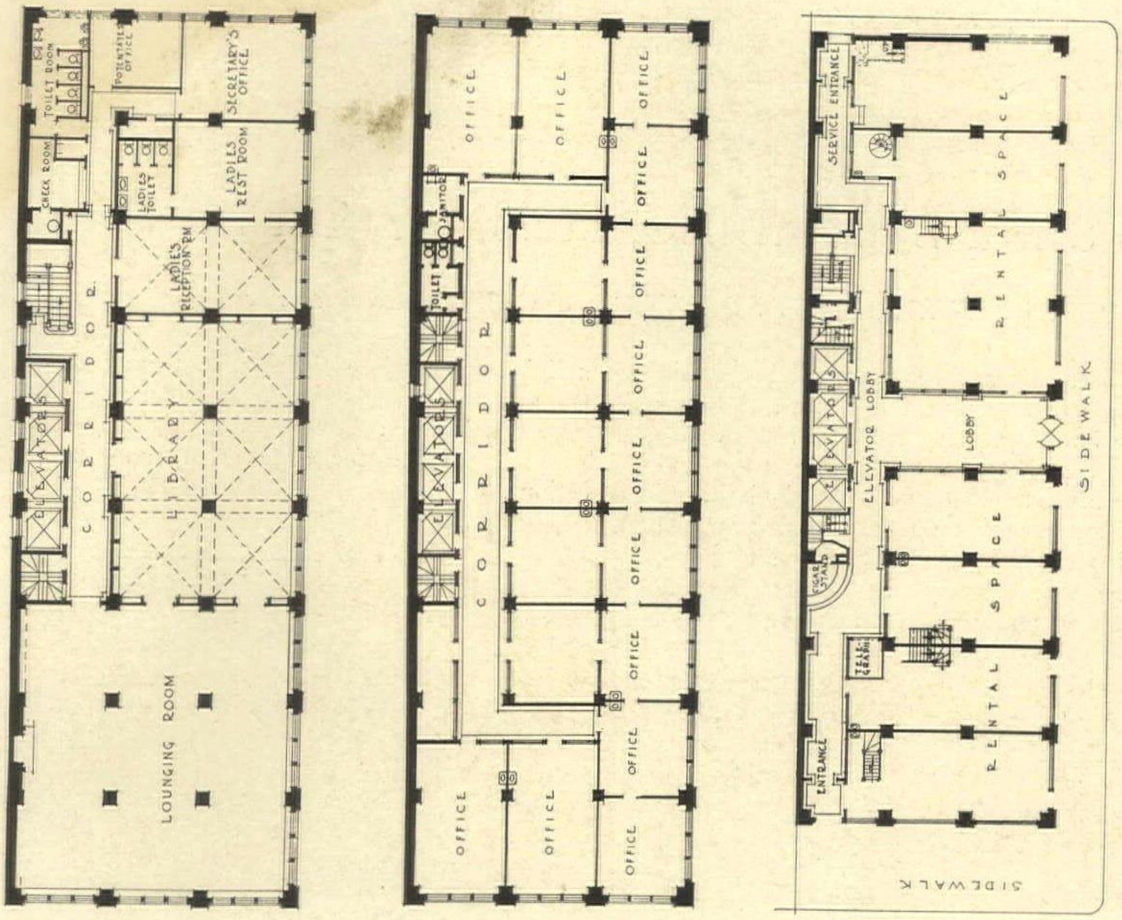
The FRENCH EXPOSITION *in* NEW YORK

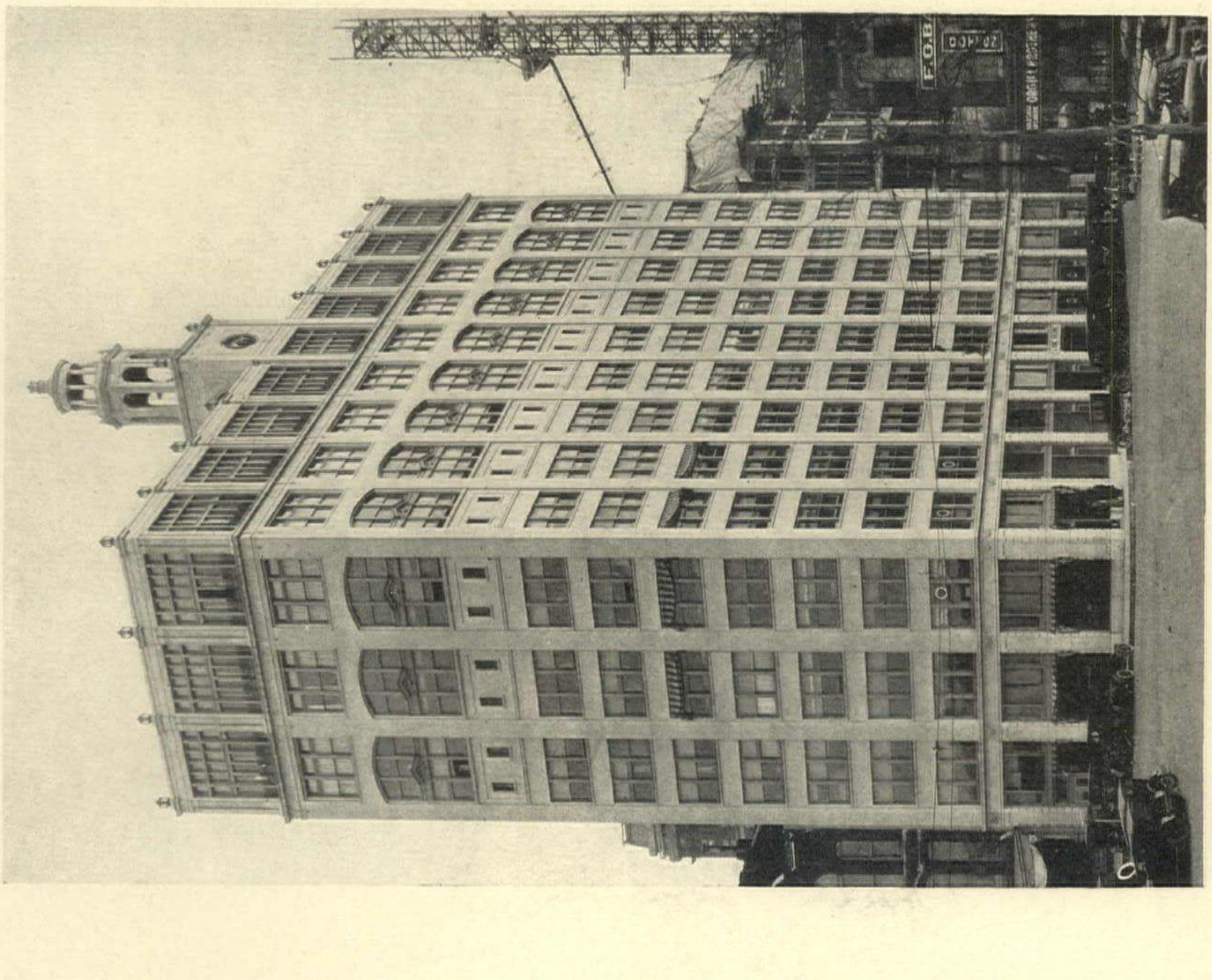
FROM an architect's standpoint, at least, the feature of the French Exposition, which was held at the Grand Central Palace, New York City, from April 23 to May 3, was the original tapestry panel which is soon formally to be presented to the City of Philadelphia by the French Government to commemorate the departure of American troops for France in the Great War. The panel, measuring approximately fifteen by twenty feet, was designed by C. L. Jaulmes and was woven at the Gobelin Tapestry Works in France. Its design represents Troops of the American Expeditionary Forces marching past Independence Hall, Philadelphia, on the way to embark on American battleships, the mastheads and smokestacks of which are seen in the distance. The heads of Washington and Lafayette are intertwined in the decorative design of the border, as are the dates 1776 and 1917. The quality of the workmanship is up to the standard which has made Gobelin tapestries world-famous. The colorings of the design are rich throughout, although the contrasts are more striking than we are accustomed to see in Gobelin tapestry.

The industries relating to architecture and decoration represented in the Exposition were rather overshadowed by those which interest the feminine whims, but the few that had space there were well worth beholding. Two French decorators had complete rooms erected as their booths, and they were both pleasing specimens of French decorative ideas. In other booths were many interesting odd pieces, somewhat hidden to be sure amongst their surroundings of perfume and powder, as radiator covers, mirror frames, wall brackets and furniture. One particular radiator cover of hand wrought iron was of very pleasing design, illustrative of the modern tendency of French art.

Something entirely new in a drapery material was shown as "transparent tapestry," and, although probably very expensive, as it is all hand work, its decorative possibilities might be adaptable to less expensive methods.

The arrangement of the various booths was handled in an interesting manner, which showed in its minutest details the hand of an architect-supervisor. This important part of the Exposition was under the careful direction of one of our own architects, a member of the A.I.A., Howard Greenley, and he may well be proud of his share in making the exhibition a success.





SHRINE BUILDING, MEMPHIS, TENN.

JONES & FURBRINGER AND HANKER & CAIRNS, ASSOCIATED ARCHITECTS

SHRINE BUILDING, MEMPHIS, TENN.

JONES & FURBRINGER AND HANKER & CAIRNS, *Associated Architects*

THIS building was erected by Al Chymia Temple, of Memphis, Tenn., for a club and office building. The first seven stories including the ground floor are used for stores and offices. Separating the club portion of the building from the office portion is an attic story from which all piping is distributed to the upper and lower stories. The floor directly above the attic contains a large assembly room extending through

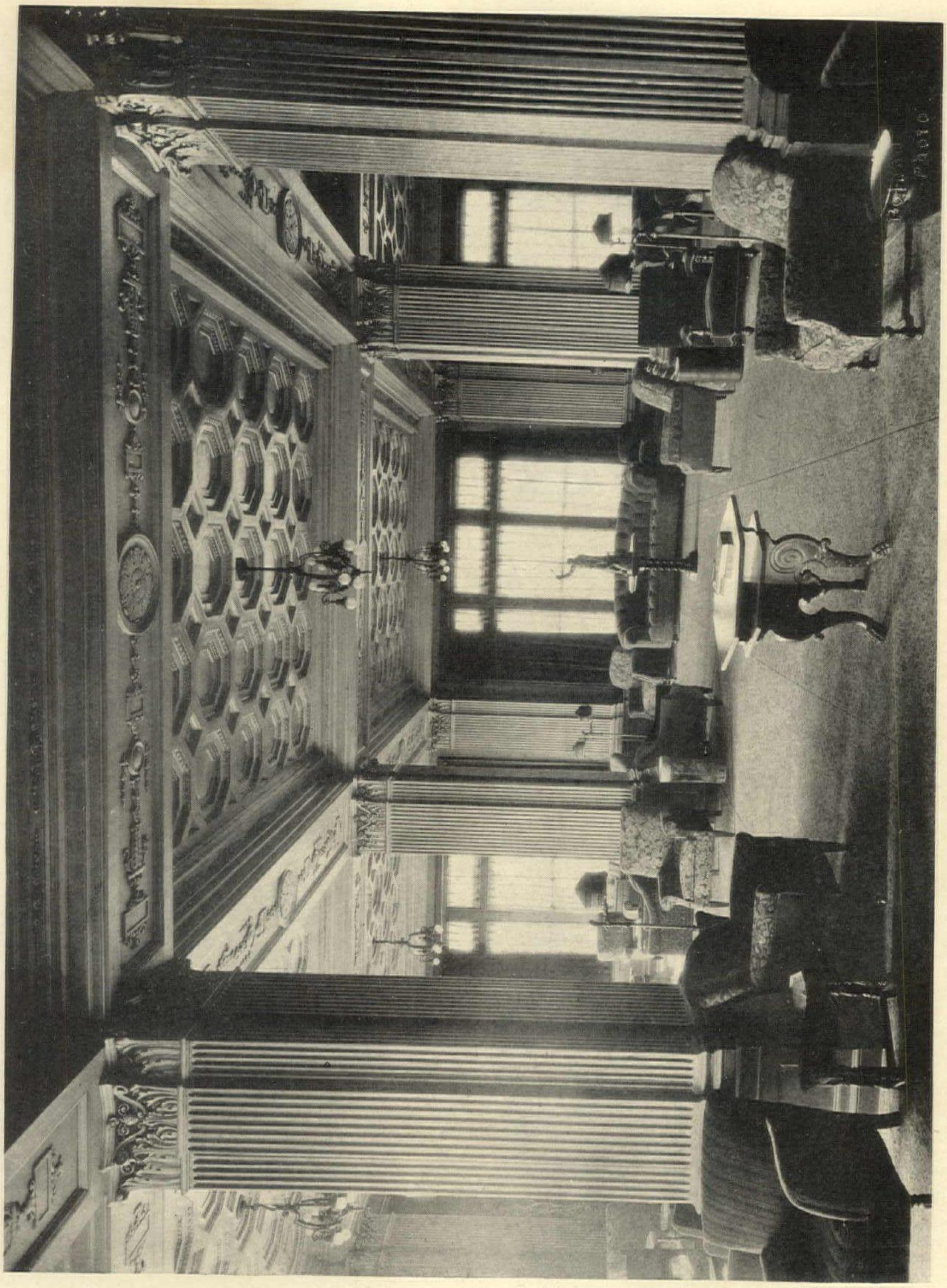
LOUNGE

two stories, with the remainder of the floor occupied by billiard rooms and card rooms and the potentate's offices. The next floor contains the lounging room and library and ladies' reception room, while the entire top floor is a roof garden and restaurant. The basement contains a large swimming pool, boiler and fuel rooms.

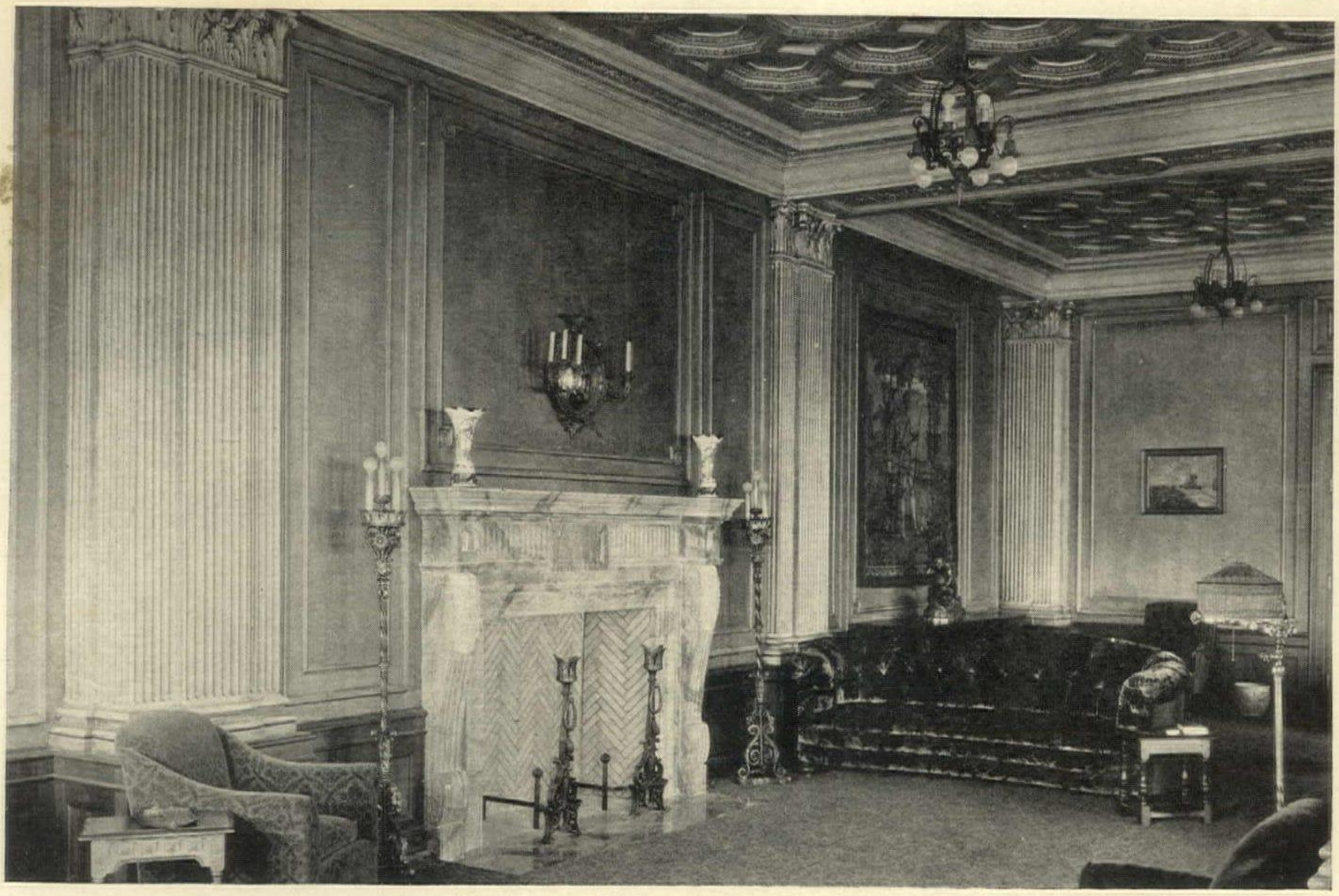
The structure is of reinforced concrete with cement floors in all the offices which are covered with linoleum, except the roof garden which has a terrazzo floor and the lounging room and library, which are carpeted. The exterior walls are built of a light cream colored brick with terra cotta to match and the whole building is surmounted by a tower which, when illuminated at night by flood lighting, is visible for a great distance in all directions.

LOBBY

The building contains 1,222,114 cubic feet. The cost per cubic foot is about fifty-seven cents, making the building cost seven hundred and nine thousand dollars ($709,000.00). This, however, does not include the furnishings or decorating of the club rooms.



PARLOR
SHRINE BUILDING, MEMPHIS, TENN.
JONES & FURBRINGER AND HANKER & CAIRNS, ASSOCIATED ARCHITECTS



LOUNGE

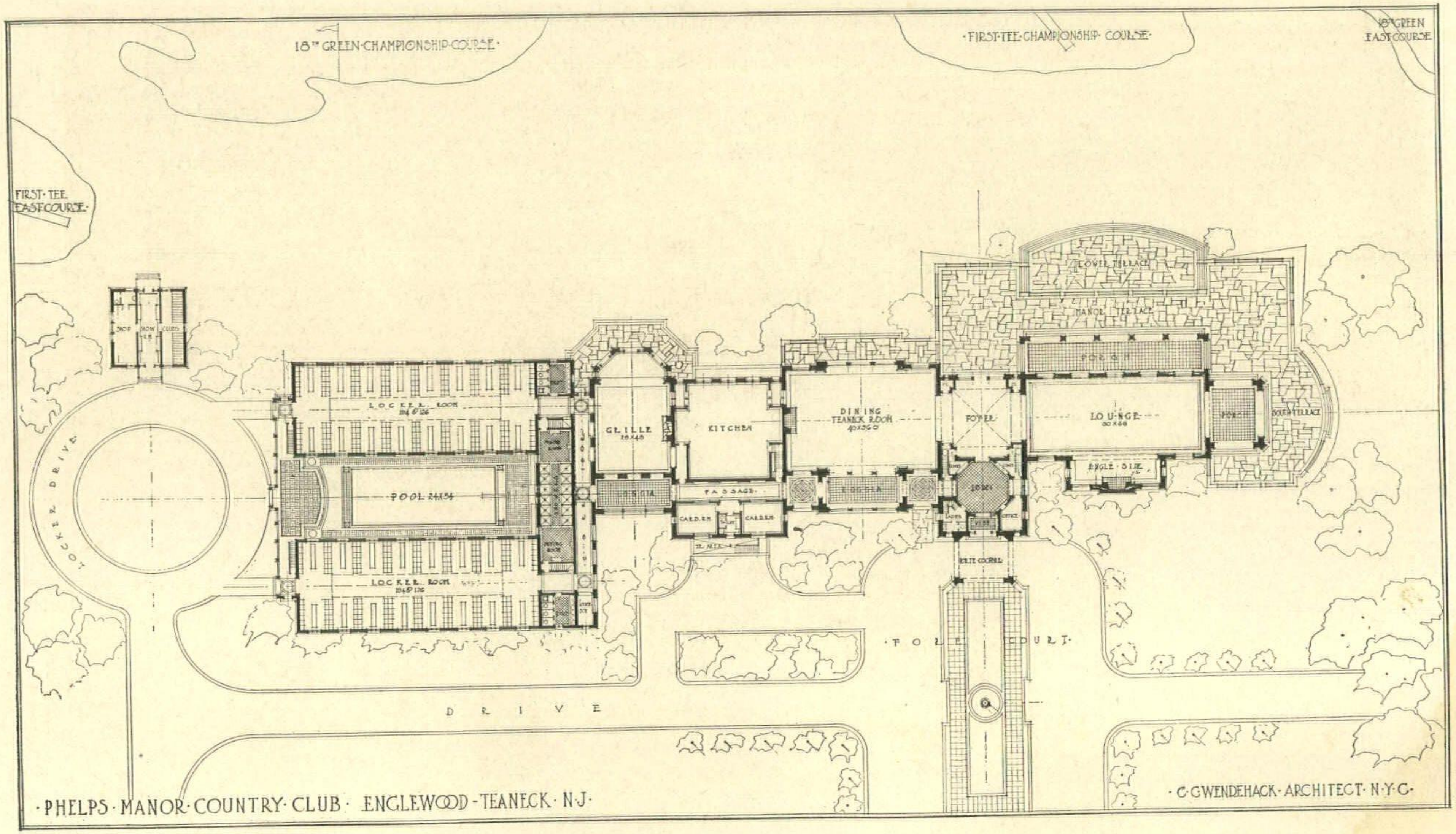
LADIES' PARLOR

SHRINE BUILDING, MEMPHIS, TENN.

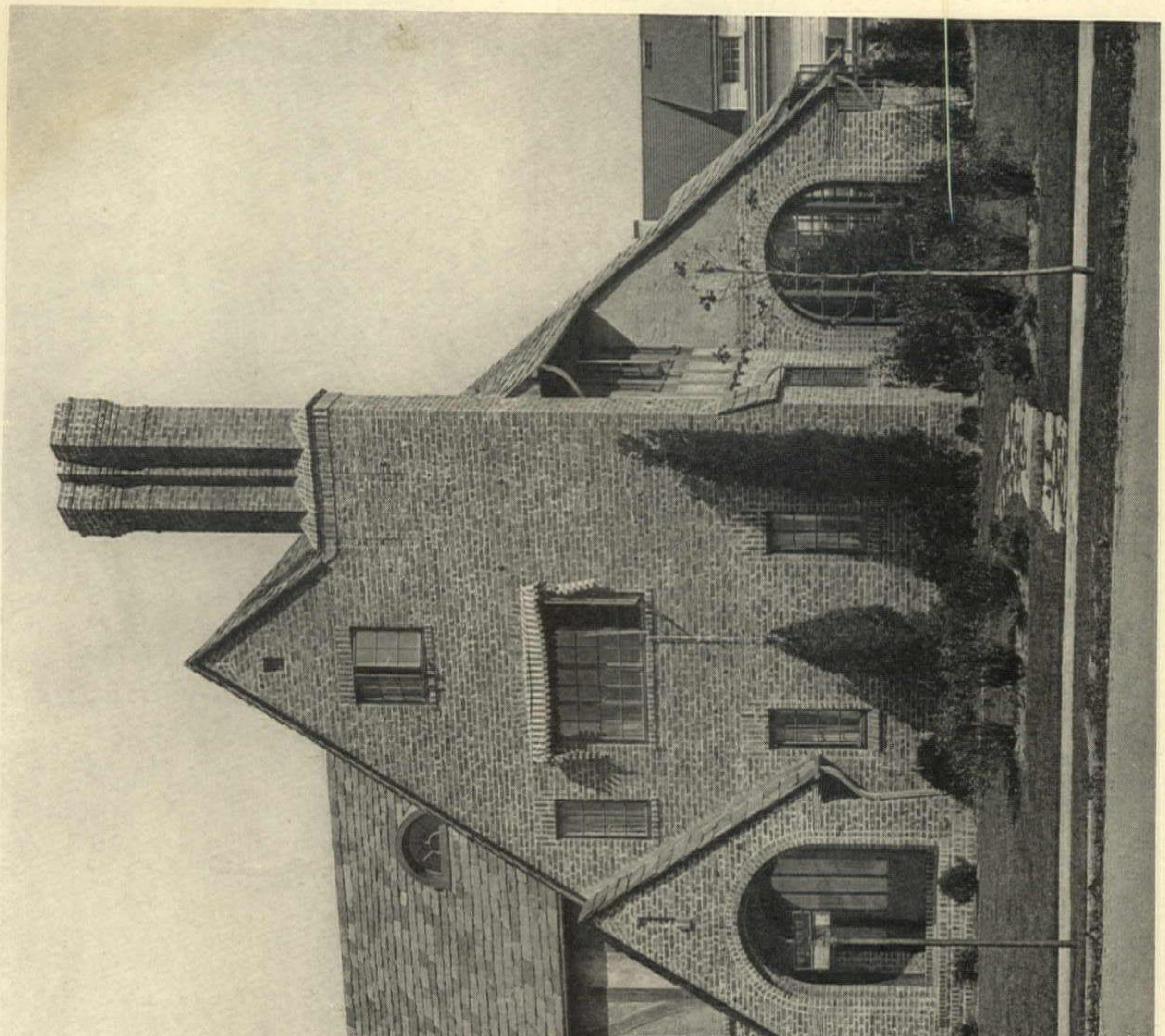
JONES & FURBRINGER AND HANKER & CAIRNS, ASSOCIATED ARCHITECTS

PHELPS MANOR COUNTRY CLUB, ENGLEWOOD-TEANECK, N. J.

C. C. WENDEHACK, ARCHITECT

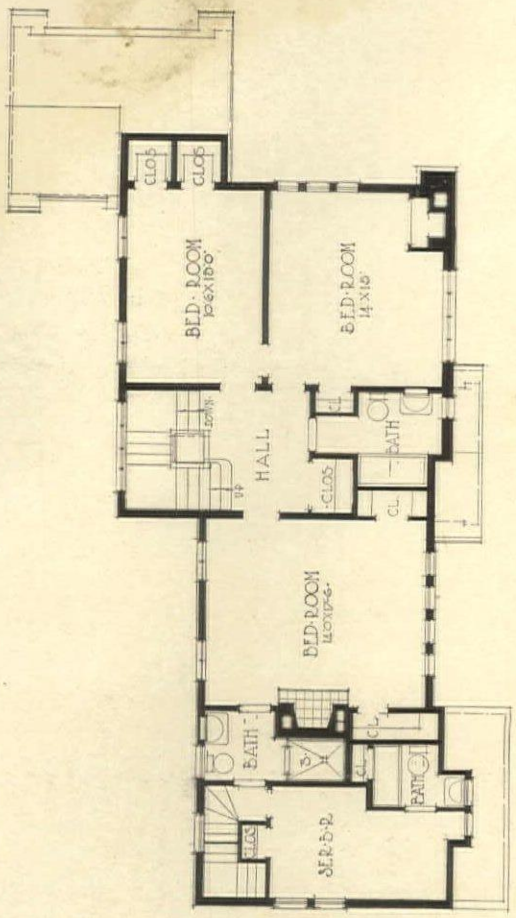


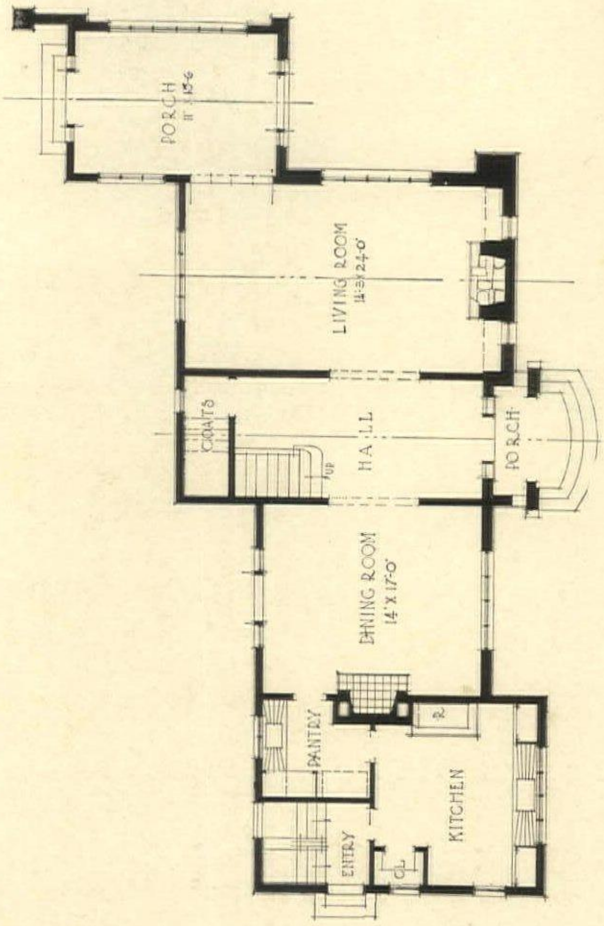
C. C. WENDEHACK, ARCHITECT

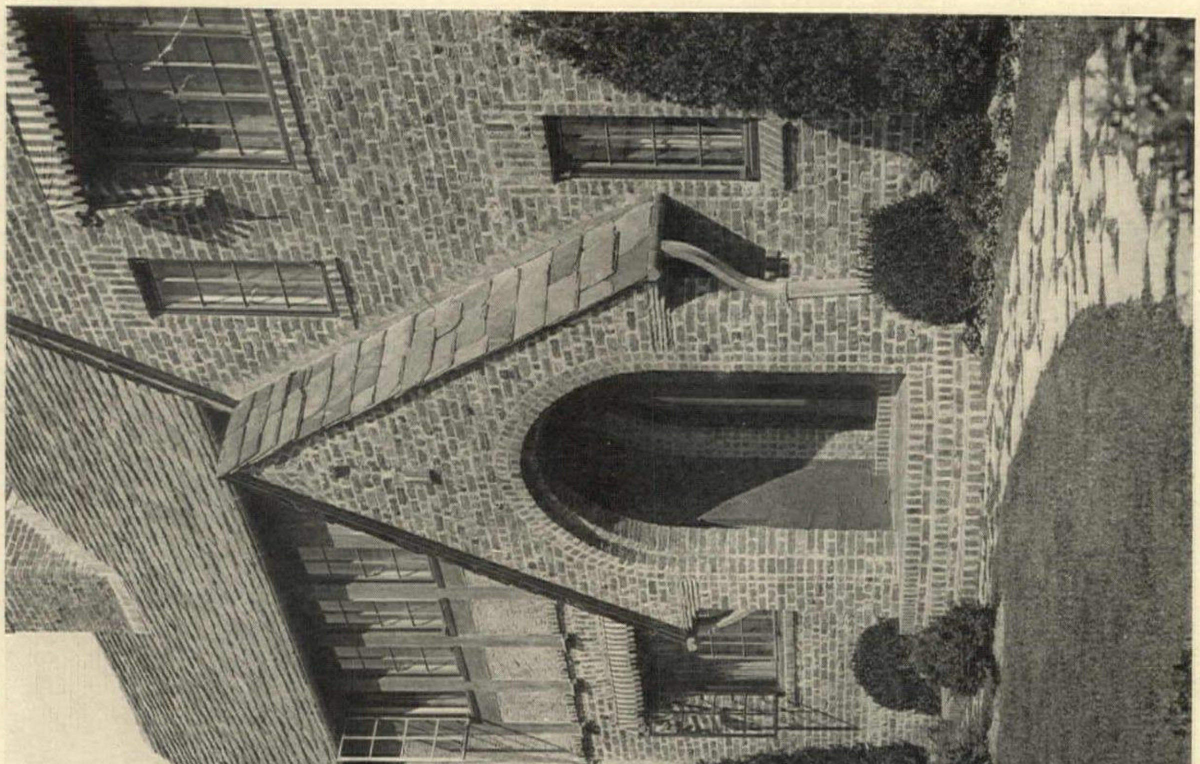


HOUSE OF FRANCIS NOBBE, ST. ALBANS, L. I., N. Y.

C. C. WENDEHACK, ARCHITECT





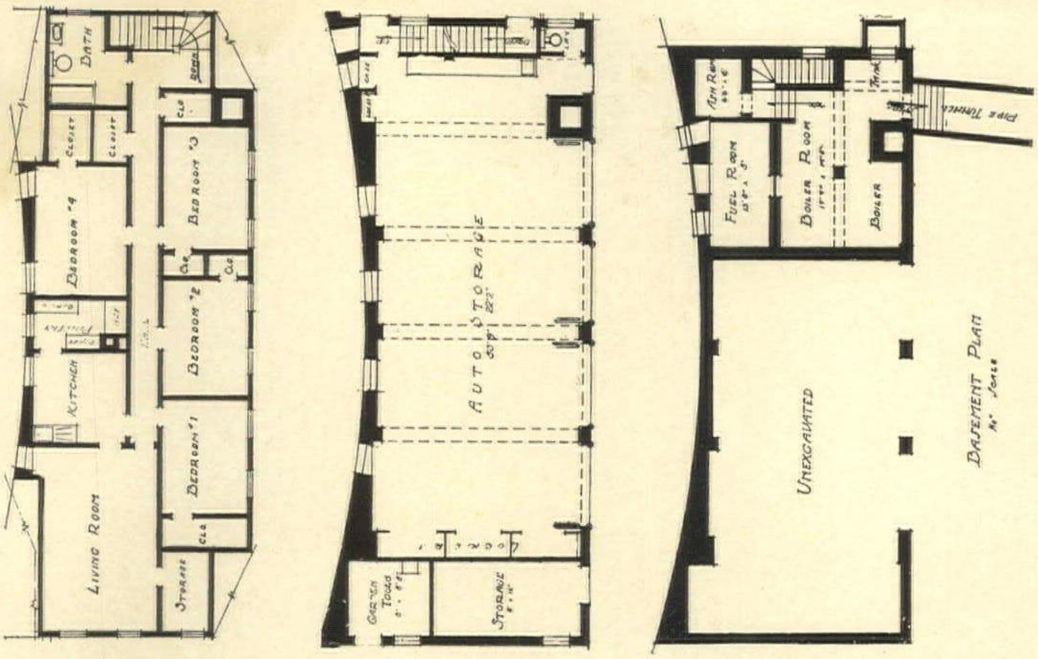


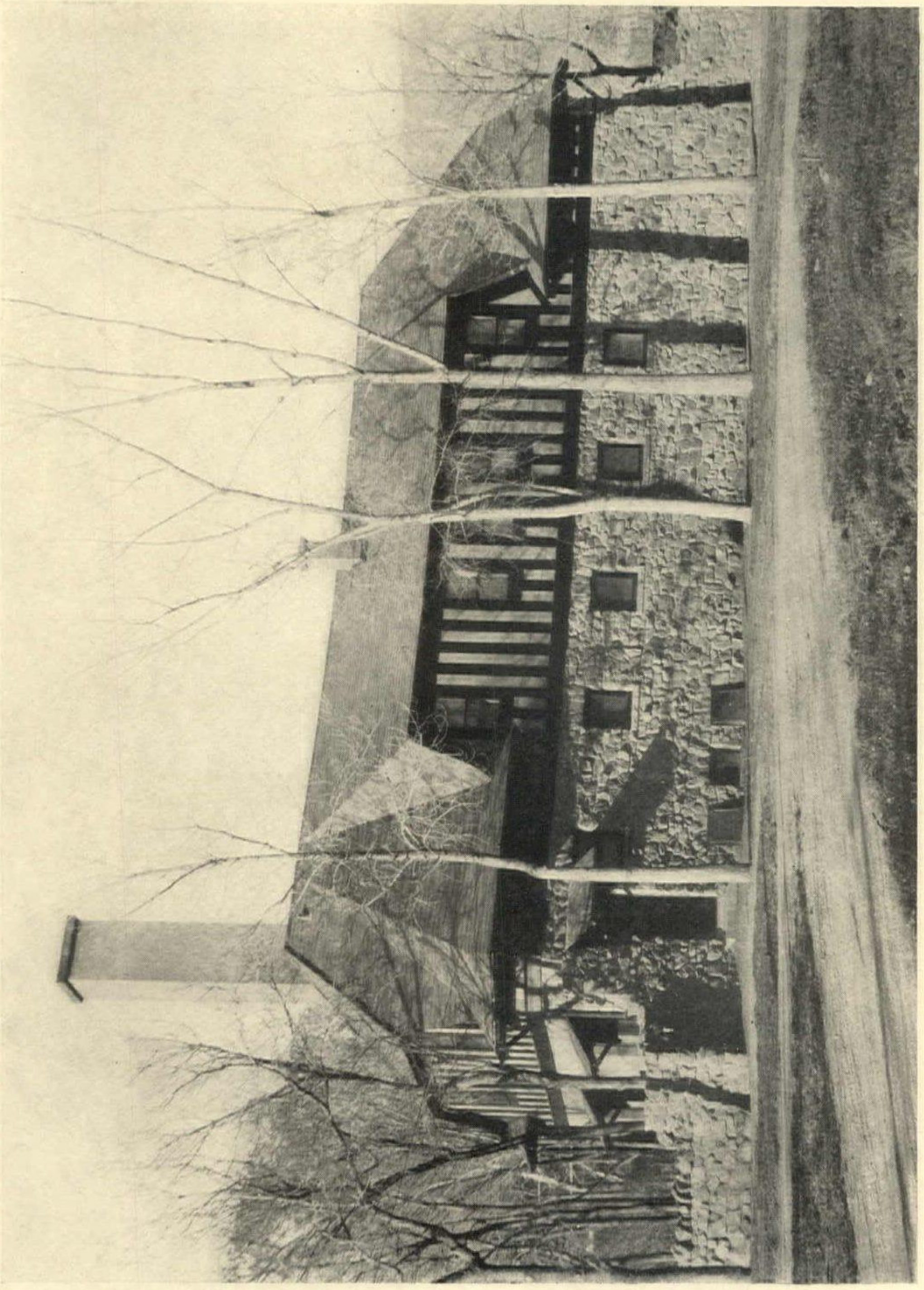
HOUSE OF FRANCIS NOBBE, ST. ALBANS, L. I., N. Y.

C. C. WENDEHACK, ARCHITECT

BOILER HOUSE AND GARAGE FOR THOMAS HARRIS POWERS, COLORADO SPRINGS, COL.

MacLAREN & HETHERINGTON, ARCHITECTS

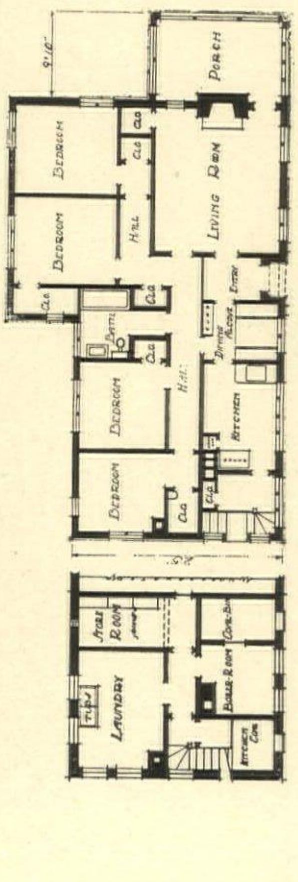




REAR VIEW

BOILER HOUSE AND GARAGE FOR THOMAS HARRIS POWERS, COLORADO SPRINGS, COL.

MacLAREN & HETHERINGTON, ARCHITECTS



COTTAGE FOR THOMAS HARRIS POWERS, COLORADO SPRINGS, COL.

MacLAREN & HETHERINGTON, ARCHITECTS

ARCHITECTURAL ENGINEERING

The DESIGN *of* SEATING AREAS *for* VISIBILITY

A Mathematical Method *of* Section Design

BY ALEXANDER B. RANDALL AND EDWIN S. CRAWLEY***

IT is of the utmost importance that seating areas be designed in such a way as to insure good visibility to all of the spectators. This problem has been solved by using graphical and mathematical methods. The mathematical methods now in use involve laborious calculations in order to obtain an accurate result. To apply the graphical method in designing the section of a seating area, it is necessary to determine the elevation of the eye of each row of spectators in relation to a point or place to be observed. Accuracy cannot be obtained by the graphical method unless the drawing is very carefully made. Regardless of the care which might be taken there are numerous opportunities for error. When this is accomplished, it results in a curved floor for the seating area which could have been as accurately established had the designer been able to determine the correct elevation of certain significant and critical points.

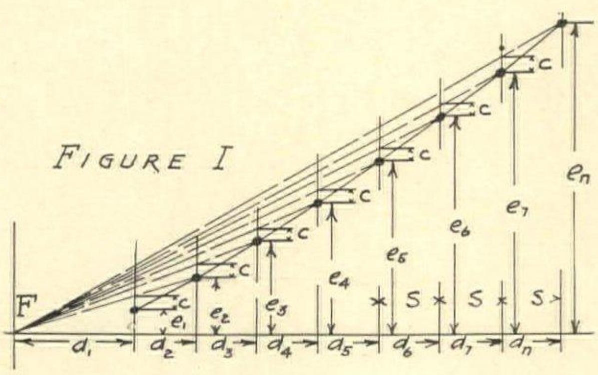
It is the aim of the writers to offer a simple and accurate solution which will embrace the usual problems met in design. It has for its basis the usual graphical method. In the proposed method, as well as in the graphical methods in considerable use at the present time, the problem is solved by selecting the point in the field of vision that is closest to the spectators. In a grand stand this is often the edge of an athletic field or a race track, or in a theatre it is generally assumed to be the footlights of the stage. When this point is visible to every spectator, it follows that all points of the field can also be seen. This point can be called the focus and in the diagrams will be designated by the letter F. In solving a problem of this kind there are two factors involved. One of these is the horizontal distance between the focus and a vertical line through the eye of the spectator in the first row of seats. The other is the elevation of the eye of this spectator above the focus.

Considering the results found for several assumed conditions, the one best suited to the general design can be selected. When a correct design for a seating area is made, it is found that its curvature is fairly flat and that it closely approximates a hyperbola, and as it becomes more distant from the focus, the curvature becomes less.

It is, therefore, possible to attain a close agreement with a true curve in space if the critical points are judiciously chosen and connected with chords. It is apparent that it is necessary to have the shortest chords used in the part of greatest curvature, which is nearest the focus.

Figure I represents a curve connecting the eye points. It is noted that F is the focus; S is the distance from back to back of the seats; d_1 is the distance from the focus to the first row of spectators and $d_2, d_3 \ldots\ldots d_n$ are the distances from the focus to the second, third and nth rows respectively; c is the sight clearance between successive sight lines and is measured vertically in the plane of the preceding spectator. The vertical distances $e_1, e_2 \ldots\ldots e_n$ are the respective elevations of the eyes of the spectators above the focus under the given conditions of $d_1 \ldots\ldots d$,

FIGURE I



c and S. There are an infinite number of possible curves since they are dependent on these four conditions and also on the distance e_1. The elevation of any chosen row is designated as e_n and its horizontal distance from the focus is designated as d_n.

Figure II shows a section of the eye curve. As indicated, a long chord will not be accurate enough but if additional points are taken a very accurate approximation of the true curve is very readily

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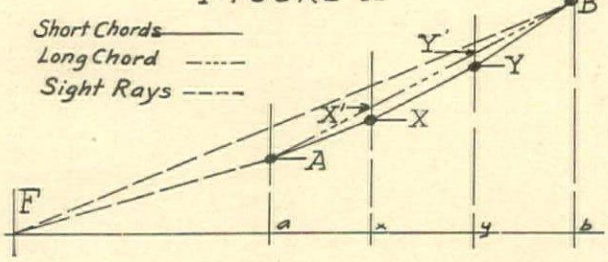
obtained. The long chord AB is not accurate enough but if intermediate points are determined, as at X and Y, a close approximation of the true curve is obtained and these points will be lower than the points X^1 and Y^1 in the chord AB.

In order not to complicate the working formula, no account has been taken of the conditions that will occasionally arise in the design of lower floors wherein it is planned to have the level of the eye

FIGURE II



of the first row spectator below the level of the footlights or other focal points. In such a case it is possible to arrange for two foci, one of them level with the eye of the first row spectator and the other at any assumed level. The first few rows will be designed by using the low focus until the eye of a spectator becomes level with or above the second focus. From this latter point the seating will be planned with reference to the second focus. Another method would be, as suggested in Figure III, where but one focus is used. The elevation of the first few points of sight will be determined by the graphical method until the eye of the spectator becomes level with or above the focus, when the method proposed in this article can be used as above described. This would be the most simple method to use and it obviates many complexities which would be introduced in a formula devised to apply to this condition.

The method of designing here proposed is based on a formula devised by Mr. Crawley. The purpose of the formula is to establish the elevation of the eye of the spectator in any row of seats that may be selected. The formula is as follows:

$$e_n = \left[\frac{e_1}{d_1} + c\left(\frac{1}{d_1}+\frac{1}{d_2}+\frac{1}{d_3}\cdots+\frac{1}{d_{n-1}}\right)\right] d_n \quad (1)$$

The various factors are those as shown in Figure I and noted in the description thereof. It is apparent that all of the factors in this formula are easily determined by the assumed conditions except the summation of the reciprocals of the various row distances from the focus. To make such a summation of reciprocals is a tedious process and to render the formula usable, Tables A and B have been prepared on a basis of seat spacing, back to back, of 2.5′ and 2.67′, respectively. In a number of instances it is desirable and permissible to space the seats 2.5′, back to back, but in some cities ordinances require that this spacing be 2.67′. It is in conformity with these conditions that the two tables have been prepared: Table A is computed for the reciprocal of distances between the values of 20.0′ and 355.0′ which should embrace all of the conditions usually met in designing, including the deepest stadia or out-of-door music amphitheatres. Table B is computed for the reciprocals of distances from 16.0′ to 160.0′.

To further the convenience in solving these problems, let (1) be reduced to the following form:

$$e_n = \left[\frac{e_1}{d_1} + c\,(J)\right] d_n \quad (2)$$

In this it is seen that the sum of the reciprocals is designated by the factor J and this is the value of the sum of the reciprocals between that of the first and next to the last rows of spectators, inclusive. These can be taken from the tables here published.

In the tables and formula all of the measure-

FIGURE III

Special Case:— Focus above first Eye.

Graphical Solution for Rows 1 to 8
Formula and Tables for remainder of Section.

ments are in feet. The first column contains the distances between the focus and the row of spectators to be considered. These distances, for convenience, are multiples of S, the distance from back to back of seats, and are designated by d. The second column contains a value which is the ratio of d/s and is designated, for convenience, in the examples as K. The third column is the value of the sum of the reciprocals between the lower limit of the table and the distance immediately preceding that distance which is under consideration and is designated as R.

It must be remembered that the elevations are those of the eye of the spectator which is generally assumed to be a uniform distance above the floor and that the curve of the floor would be parallel to the eye level curve of the spectators. Assuming the factors which enter into the design of a seating area, the elevation of the last seat row is found; the next step is then to calculate the

Table A

$S = 30'' = 2.5'$

d in feet	K d/s	*R*
20.00	8	0.000000
22.50	9	.050000
25.00	10	.094444
27.50	11	.134444
30.00	12	.170808
32.50	13	.204141
35.00	14	.234910
37.50	15	.263481
40.00	16	.290148
42.50	17	.315148
45.00	18	.338677
47.50	19	.360899
50.00	20	.381952
52.50	21	.401952
55.00	22	.421000
57.50	23	.439182
60.00	24	.456573
62.50	25	.473240
65.00	26	.489240
67.50	27	.504625
70.00	28	.519440
72.50	29	.533726
75.00	30	.547519
77.50	31	.560852
80.00	32	.573755
82.50	33	.586255
85.00	34	.598376
87.50	35	.610141
90.00	36	.621570
92.50	37	.632681
95.00	38	.643492
97.50	39	.654018
100.00	40	.664274

d in feet	K d/s	*R*
102.50	41	.674274
105.00	42	.684030
107.50	43	.693554
110.00	44	.702856
112.50	45	.711947
115.00	46	.720836
117.50	47	.729532
120.00	48	.738043
122.50	49	.746376
125.00	50	.754539
127.50	51	.762539
130.00	52	.770382
132.50	53	.778074
135.00	54	.785621
137.50	55	.793028
140.00	56	.800301
142.50	57	.807444
145.00	58	.814462
147.50	59	.821359
150.00	60	.828139
152.50	61	.834806
155.00	62	.847363
157.50	63	.847815
160.00	64	.854164
162.50	65	.860414
165.00	66	.866568
167.50	67	.872629
170.00	68	.878599
172.50	69	.884481
175.00	70	.890278
177.50	71	.895992
180.00	72	.901636
182.50	73	.907182

d in feet	K d/s	*R*
185.00	74	.912661
187.50	75	.918065
190.00	76	.923399
192.50	77	.928662
195.00	78	.933857
197.50	79	.938985
200.00	80	.944048
202.50	81	.949048
205.00	82	.953986
207.50	83	.958864
210.00	84	.963683
212.50	85	.968445
215.00	86	.973150
217.50	87	.977801
220.00	88	.982399
222.50	89	.986944
225.00	90	.971438
227.50	91	.995882
230.00	92	1.000278
232.50	93	1.004676
235.00	94	1.008927
237.50	95	1.013182
240.00	96	1.017393
242.50	97	1.021560
245.00	98	1.025684
247.50	99	1.029766
250.00	100	1.033806
252.50	101	1.037806
255.00	102	1.041766
257.00	103	1.045688
260.00	104	1.049572
262.50	105	1.053418
265.00	106	1.057228
267.50	107	1.061002
270.00	108	1.064740

d in feet	K d/s	*R*
272.50	109	1.068444
275.00	110	1.072114
277.50	111	1.075750
280.00	112	1.079354
282.50	113	1.082925
285.00	114	1.086465
287.50	115	1.089974
290.00	116	1.093452
292.50	117	1.096900
295.00	118	1.100319
297.50	119	1.103709
300.00	120	1.107070
302.50	121	1.110403
305.00	122	1.113709
307.50	123	1.116988
310.00	124	1.120240
312.50	125	1.123466
315.00	126	1.126666
317.50	127	1.129841
320.00	128	1.132991
322.50	129	1.136116
325.00	130	1.139217
327.50	131	1.142294
330.00	132	1.145347
332.50	133	1.148377
335.00	134	1.151385
337.50	135	1.154370
340.00	136	1.157333
342.50	137	1.160274
345.00	138	1.163194
347.50	139	1.166093
350.00	140	1.168971
352.50	141	1.171828
355.00	142	1.174665

Table B

$S = 32'' = 2.67'$

d in feet	K d/s	*R*
16.00	6	0.000000
18.67	7	.062500
21.33	8	.116062
24.00	9	.162944
26.67	10	.204611
29.33	11	.242106
32.00	12	.276201
34.67	13	.307451
37.33	14	.336294
40.00	15	.363082
42.67	16	.388082
45.33	17	.411518
48.00	18	.433578
50.67	19	.454411
53.33	20	.474147

d in feet	K d/s	*R*
56.00	21	.492898
58.67	22	.510755
61.33	23	.527799
64.00	24	.544104
66.67	25	.559729
69.33	26	.574725
72.00	27	.589149
74.67	28	.603037
77.33	29	.616429
80.00	30	.629361
82.67	31	.641861
85.33	32	.653957
88.00	33	.665676

d in feet	K d/s	*R*
90.67	34	.677040
93.33	35	.688069
96.00	36	.698784
98.67	37	.709201
101.33	38	.719336
104.00	39	.729205
106.67	40	.738820
109.33	41	.748195
112.00	42	.757342
114.67	43	.766271
117.33	44	.774991
120.00	45	.783513
122.67	46	.791846
125.33	47	.799998

d in feet	K d/s	*R*
128.00	48	.807977
130.67	49	.815790
133.33	50	.823443
136.00	51	.830943
138.67	52	.838296
141.33	53	.845507
144.00	54	.852583
146.67	55	.859527
149.33	56	.866345
152.00	57	.873042
154.67	58	.879621
157.33	59	.886087
160.00	60	.892443

pitch of the floor between the first and last seat rows. Possibly the pitch will not be considered desirable or safe, or it may be one that is prohibited by building code requirements. In this case it will be necessary to make an approximate re-design with different values of d_1, e_1, n or c, as the case may be, n indicating the number of seat rows. It is not desirable that the value of c, the sight clearance per spectator or per row, be less than about 3″ or 4″ except in the lower floors of theatres or auditoriums where a sight clearance of about 1″ only is habitually used.

If d_1 or S be increased, it will result in the value of e_n being decreased. To increase S above the minimum allowed by law would be an unusual thing to do, while to decrease the value of c would be poor policy. The best move would be to increase d_1 and to decrease n. Possibly only one of the two would be necessary and it would be preferable to decrease n.

It is desirable for good visibility, as well as simplicity of the application of the formula and tables, that any cross or circulating aisle be neglected in the figuring of the section and eye curves for spectators and an assumption applied as considering the eye and section curve to be continuous across the aisle. This will result in raising somewhat the elevation of all the eyes in the section immediately behind the aisle. This is, of course, on the side of safety in good visibility. In other words, instead of having a break in the curve across the aisle due to the fact that no spectators are located in the aisle, it is best and simplest to design the curve of the eyes as though there were no cross aisle and the entire seating area were filled with spectators.

A desirable general condition of design is that the first row of spectators, wherever located, be as low as possible with reference to the focus without conflicting with the other elements of the design.

As an explanation of the use of the tables for obtaining the proper values of $\triangle$ as designated in the formula (2) several details will be set forth here in full so that there will be no misunderstanding of the manner in which the use of the next to last term of the reciprocal series is included in the tables.

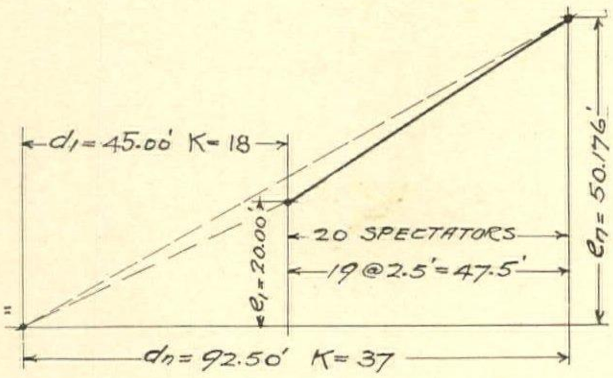
It should be clearly understood that the only difference between formula (1) and (2) lies in the fact that the summation of the reciprocal series is designated as $\triangle$ in formula (2). Further that this sum up to and including the distance of the row before the last is included and taken care of in the table, so that a sum for use in the formula can be taken out of the table directly opposite the d or the k that is under consideration.

Let the shortest distance that is tabulated be designated b. In Table A this b is 20.00′. In Table B this b is 16.00′. Let the sum of the reciprocal distances between b and the distance $(x - s)$ be designated as Rx. In a similar manner let the sum of the reciprocal distances between and including b and $(y - s)$ be designated as Ry. Then we have as given below.*

This can be seen to be a slightly different way of expressing the sum of the reciprocal distances as used in formula (1), as here d_1 is x and d_2 is $(x + s)$ and d_{n-1} is $(y - s)$.

Thus it is shown that the value of the sum of the reciprocals, or the desired value of $\triangle$ can be obtained by subtracting the value of R for the first or the nearest row, from the value of R for the farthest row or the rear row. And it can be seen that these are tabulated directly in the third column, under the heading R and immediately opposite their proper values d_1 and d_n respectively, as tabulated in the first column.

The use of this formula is illustrated in the following examples. Example I: a balcony in which the first row of spectators is 45.0′ distant from the focus with an elevation of 20.0′ above the focus level, the balcony to contain 20 rows of spectators, the distance from back to back of seats being 2.5′ and the constant sight line clearance c is 4″.



EXAMPLE I

$$* \quad Ry = \frac{1}{b} + \frac{1}{b+s} + \frac{1}{b+2s} + \frac{1}{b+3s} + \frac{1}{b+4s} \cdots\cdots + \frac{1}{x-s} + \frac{1}{x} + \frac{1}{x+s} \cdots + \frac{1}{y-2s} + \frac{1}{y-s}$$

$$Rx = \frac{1}{b} + \frac{1}{b+s} + \frac{1}{b+2s} + \frac{1}{b+3s} + \frac{1}{b+4s} \cdots\cdots + \frac{1}{x-s}$$

$$\triangle = Ry - Rx = \cdots\cdots\cdots\cdots \frac{1}{x} + \frac{1}{x+s} \cdots + \frac{1}{y-2s} + \frac{1}{y-s}$$

Formula

$$e_n = \left[\frac{e_1}{d_1} + c\,(\triangle) \right] d_n \qquad (2)$$

Where $d_1 = 45.00'$ ($K = 18$) $\quad c = 4'' = 1/3'$
$e_1 = 20.00'$ $\quad S = 30'' = 2.5'$
$d_n = 92.50'$ ($K = 37$) $\quad n = 20$

$$R^{92.50} = \sum_{20.00}^{90.00} \text{Reciprocals} = 0.632681 \qquad \text{(from table A)}$$

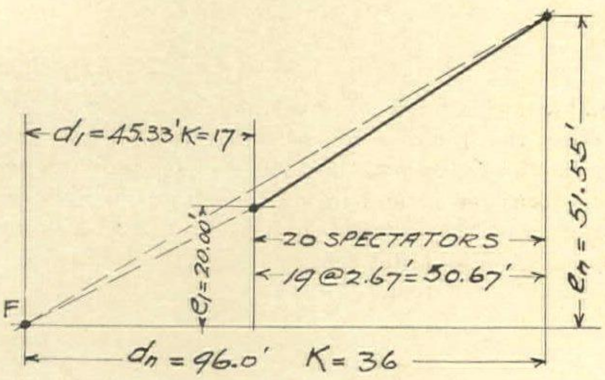
$$R^{45.00} = \sum_{20.00}^{42.50} \text{Reciprocals} = \underline{0.338677} \qquad \text{(from table A)}$$

$$\triangle = \sum_{45.00}^{90.00} \text{Reciprocals} = 0.294004 \qquad \text{(by subtraction)}$$

$$e_n = \left[\frac{20.00}{45.00} + \frac{1}{3}\,(0.294004) \right] 92.50 \qquad (2)$$

$$= (0.444444 + 0.098001)\ 92.50$$
$$e_n = 50.176'$$

Example II is practically the same as example I except that S is $2.67'$.



EXAMPLE II

Formula as in Example I

Where $d_1 = 45.33'$ ($K = 17$) $\quad c = 4'' = 1/3'$
$e_1 = 20.00'$ $\quad S = 32'' = 2.67'$
$d_n = 96.00'$ ($K = 36$) $\quad n = 20$

$$R^{96.00} = \sum_{16.00}^{93.33} \text{Reciprocals} = 0.698784 \qquad \text{(from table B)}$$

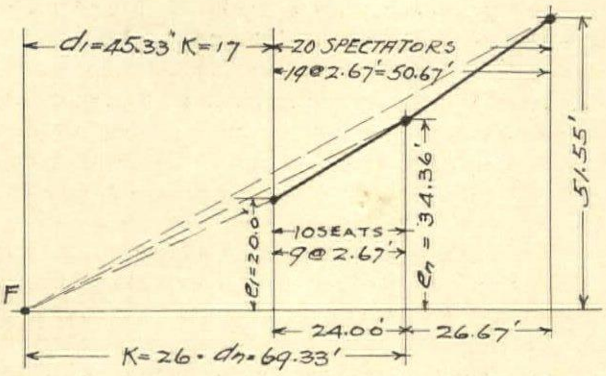
$$R^{45.33} = \sum_{16.00}^{42.67} \text{Reciprocals} = \underline{0.411518} \qquad \text{(from table B)}$$

$$\triangle = \sum_{45.33}^{93.33} \text{Reciprocals} = 0.287266 \qquad \text{(by subtraction)}$$

$$e_n = \left[\frac{20.00}{45.33} + \frac{1}{3}\,(0.287266) \right] 96.00 \qquad (2)$$

$$= (0.441209 + 0.095755)\ 96.00$$
$$e_n = 51.548'$$

Example IIa illustrates the method employed in determining the elevation of a seat row between the first and last rows of the balcony.



EXAMPLE IIa

Formula as in Example I

Where $d_1 = 45.33'$ ($K = 17$) $\quad c = 4'' = 1/3'$
$e_1 = 20.00'$ $\quad S = 32'' = 2.67'$
$d_n = 69.33'$ ($K = 26$) $\quad n = 10$

$$R^{69.33} = \sum_{16.00}^{66.67} \text{Reciprocals} = 0.574725$$

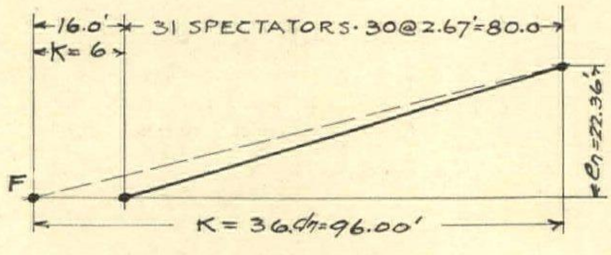
$$R^{45.33} = \sum_{16.00}^{42.67} \text{Reciprocals} = \underline{0.411518}$$

$$\triangle = \sum_{45.33}^{66.67} \text{Reciprocals} = 0.163207$$

$$e_n = \left[\frac{20.00}{45.33} + \frac{1}{3}\,(0.163207) \right] 69.33 \qquad (2)$$

$$= (0.441209 + 0.054402)\ 69.33$$
$$e_n = 34.361'$$

Example III is a preliminary design of an orchestra floor of a theatre. The first row of spectators to which the formula applies is $16.0'$ from the footlights or F and level with it and the last row of spectators is $96.0'$ from F, which would allow for 30 seat spaces of $2.67'$ each, accommodating 31 rows of spectators. The space between F and the first row of spectators here designated will contain several rows of seats which will be designed by the graphic method.



EXAMPLE III

Formula as in Example I.

Where $d_1 = 16.00'$ ($K = 6$) $\quad c = 4'' = 1/3'$
$e_1 = 0.000'$ $\quad S = 32'' = 2.67'$
$d_n = 96.00'$ ($K = 36$) $\quad n = 31.$

$$R^{96.00} = \sum_{16.00}^{93.33} \text{Reciprocals} = 0.698784$$

$$R^{16.00} = \sum_{16.00}^{16.00} \text{Reciprocals} = \underline{0.000000}$$

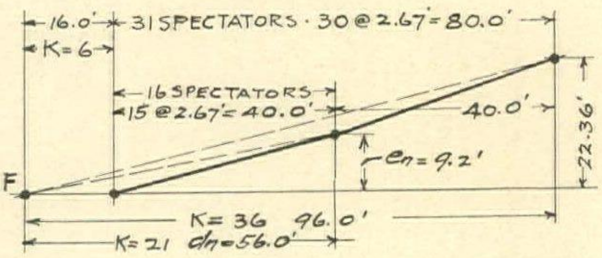
$$\triangle = \sum_{16.00}^{93.33} \text{Reciprocals} = 0.698784$$

$$e_n = \left[\frac{0.000}{16.00} + \frac{1}{3} (0.698784) \right] 96.00 \qquad (2)$$

$$= 0.232928 \times 96.00$$

$$e_n = 22.361'$$

Example IIIa illustrates a method of determining the elevation of a seat row between the first and last rows of the orchestra floor.



EXAMPLE IIIa

Formula as in Example I.

Where $d_1 = 16.00'$ ($K = 6$) $\quad c = 4'' = 1/3'$
$e_1 = 0.000'$ $\quad S = 32'' = 2.67'$
$d_n = 56.00'$ ($K = 21$) $\quad n = 16.$

$$R^{56.00} = \sum_{16.00}^{53.33} \text{Reciprocals} = 0.492898$$

$$R^{16.00} = \sum_{16.00}^{16.00} \text{Reciprocals} = \underline{0.000000}$$

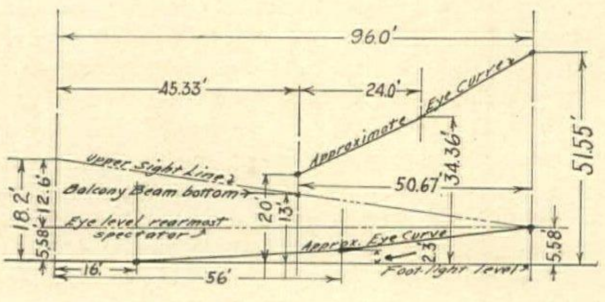
$$\triangle = \sum_{16.00}^{53.33} \text{Reciprocals} = 0.492898$$

$$e_n = \left[\frac{0.000}{16.00} + \frac{1}{3} (0.492898) \right] 56.00 \qquad (2)$$

$$= 0.164299 \times 56.00$$

$$e_n = 9.2'$$

Example IIIb. Conditions as in Examples III-IIIa except that $c = 1''$ and using the balcony of Example II.



EXAMPLE IIIb

Formula as in Example I.

Where $d_1 = 16.00'$ ($K = 6$) $\quad c = 1'' = 1/12'$
$e_1 = 0.000'$ $\quad S = 32'' = 2.67'$
$d_n = 96.00'$ ($K = 36$) $\quad n = 31$

$$R^{96.00} = \sum_{16.00}^{93.33} \text{Reciprocals} = 0.698784$$

$$R^{16.00} = \sum_{16.00}^{16.00} \text{Reciprocals} = \underline{0.000000}$$

$$\triangle = \sum_{16.00}^{93.33} \text{Reciprocals} = 0.698784$$

$$e_n = \left[\frac{0.000}{16.00} + \frac{1}{12} (0.698784) \right] 96.00 \qquad (2)$$

$$= 0.058232 \times 96.00$$

$$e_n = 5.58'$$

Substituting $c = 1'' = \frac{1}{12}'$ in Example IIIa, the elevation of the eye of the sixteenth spectator is found to be one-quarter of the value previously found or 2.3′, the values $d_n = 56.0'$ ($K = 21$) remaining the same.

As a check on the upper sight line—that is to determine how high above the footlights the rearmost spectator is able to see before the overhang of the balcony above interferes—assume the beam and floor depth of the balcony to be 3.0′ and the distance of the floor below the spectator's eye to be 4.0′. Then using the balcony of Example II, it is found that the balcony is 45.33′ from the footlights and 13.0′ above them. The rear spectator is then 5.58′ above the footlights. Hence the balcony is 7.42′ above him (13.0′ — 5.58′) and is at a distance of 50.67′ from this rear spectator. The footlights are 96.0′ distant. Hence by proportion he can see 12.6′ above his own elevation at the footlights, or 12.6′ + 5.58′ = 18.2′ above the footlights.

To conclude the subject without some discussion of the matter of oblique sections would leave the matter open to a charge of incompletion, as well as doubt as to the usefulness of the method proposed. If a spectator can see adequately to the fore and along sections normal to the lines of the structure, it is, in many cases, in error to assume that he can see equally as well and adequately on other sections. That a spectator is required to see on other sections is common in both theatres and in grand stands. In a theatre balcony towards the ends of the horseshoe and nearest the sides, a spectator must needs look obliquely across the lines of the rows of successive seats in order to see the stage. In a grand stand, a spectator is often required to do the same thing when the center of interest in the course of the game, sport or spectacle shifts to the far end of the field of view.

Design of the oblique section is an important matter, and a matter wherein success or failure will very often lie. The effect of an oblique section will, by its nature, cause the seat spacing to be other than the seat spacing on a normal section.

It will become longer since the oblique spacing is on a diagonal and one of the legs of its triangle is the normal spacing. For a diagonal or oblique section of any seating area, the values of d_1 and d_n will be changed, and with them the values of S, the seat spacing, since the number of rows will remain the same. The values of the summation of the reciprocal distances also will be changed. Thus if the values of e_1 *and* e_n remain the same it can be seen that the value of c, the sight clearance, will be diminished. It is, therefore, necessary to have some representative tables of assorted values of S in order to fully investigate any problem. These will range between 3.0′ and 4.0′ when the seat spacing normal to the plan curve of the seating area is either 2.5′ or 2.67′.

In Part II, concluding this discussion, will be printed six additional tables for various values of S and d with the corresponding summation of the reciprocal distances. Their use will be explained in an example illustrating the design of oblique sections.

HOLLOW BUILDING TILE STANDARDS

THE movement to simplify the production of building materials and thus eliminate waste, was instituted by Secretary Hoover of the U. S. Department of Commerce with the co-operation of the Bureau of Standards. This has resulted in the adoption of Simplified Practice Recommendation No. 12 governing the production of hollow building tile. The recommendation is approved by sixteen leading manufacturing companies and the national associations of architects, contractors, supply dealers and real estate boards.

In accordance with the unanimous action of the joint conference, the United States Department of Commerce, through the Bureau of Standards, recommends that the number of sizes of hollow building tile be reduced to the following:

TABLE I

STANDARD LOAD BEARING WALL TILE

	Number of cells	Weight, each
End construction:		*Pounds*
3¾ by 12 by 12	3	20
6 by 12 by 12	6	30
8 by 12 by 12	6	36
10 by 12 by 12	6	42
12 by 12 by 12	6	48
Side construction:		
3¾ by 5 by 12	1	9
8 by 5 by 12	2	16
8 by 5 by 12 ("L" shaped)	......	16
8 by 6¼ by 12 ("T" shaped)	4	16
8 by 7¾ by 12 (square)	6	24
8 by 10¾ by 12 ("H" shaped)	7	32
STANDARD PARTITION TILE		
3 by 12 by 12	3	15
4 by 12 by 12	3	16
6 by 12 by 12	3	22
8 by 12 by 12	4	30
10 by 12 by 12	4	35
12 by 12 by 12	4	40
STANDARD SPLIT FURRING TILE		
2 by 12 by 12	.....	9
STANDARD BOOK TILE		
		Pound per sq. foot.
3 by 12 by 18 to 24	......	18

Not more than 5 per cent tolerance over or under allowable for weights and 3 per cent over or under for dimensions covering length, width, and height.

GEORGE K. BURGESS,
Director, Bureau of Standards.

Approved January 1, 1924, subject to regular annual revision by similar conference.

HERBERT HOOVER,
Secretary of Commerce.

It was understood that the last four units of tile as listed under "Standard Partition Tile" should remain in this classification until a course of tests now in process at the Bureau of Standards should determine whether they would be classed as floor tile of standard weights.

The conference offered the recommendation to become effective January 1, 1924, and be subject to revision one year from that date, the simplification thus to be kept abreast of advances in practice, while it progressively eliminates the waste of needless or obsolescent varieties.

GOVERNMENT ROOFING SPECIFICATIONS

THE Federal Specification Board prepares specifications for the use of the departments and independent establishments of the Government in purchasing materials. These specifications are printed in circulars issued by the Bureau of Standards. Two of these have been issued recently. One is for Coal-tar Saturated Rag Felt for Roofing and Waterproofing (Circular No. 156, Specification No. 81) and the other is for Asphalt Saturated Rag Felt for Roofing and Waterproofing (Circular No. 161, Specification No. 86).

These specifications are condensed and cover the physical characteristics of the material. Directions are given for sampling and determination of weight and width and the process of laboratory examination. Copies can be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C. Price 5 cents each.

WALL PLASTER DATA

THE importance of correct practice in selecting the kind and methods of applying wall plaster is shown in Circular of the Bureau of Standards, No. 151, entitled Wall Plaster—Its Ingredients, Preparation and Properties.* This circular is the result of the joint efforts of manufacturers, plastering contractors, independent interests and the Bureau of Standards. The art of plastering is intimately connected with the comfort and safety of the occupancy of buildings. Yet few outside of the trade understand the nature of the material and the details of the work required to produce the desired results. The recently aroused interest in building has carried with it an interest in plastering. Much information about the factors which enter into successful plastering was found available in the trade. This paper represents an attempt to collect and correlate this information for the public benefit. There is much in this circular of value to architects and engineers and it is well worth reading.

**Sold by Superintendent of Documents, Government Printing Office, Washington, D. C. Price 15 cents.*

CHANGE HOUSES

IT is only within recent years that employers have seriously considered the physical welfare and comfort of their employees. Good health of employees, both physical and mental, is now recognized as concomitant to efficiency. Good physical condition is effected by the prompt and free elimination of body wastes through the skin, kidneys, bowels and lungs. To accomplish these wastes properly, aside from good ventilation affecting the work of the lungs, certain sanitary appliances must be provided. These arrangements naturally vary with the nature of the occupational processes and comprise a wide range. The underlying principles are, however, common to all cases and it is with interest and profit that architects can read Technical Paper 289, Bureau of Mines, entitled Change Houses in the Lake Superior Region,* by Clive E. Kendall, Mine Car Surgeon, U. S. Public Health Service. This publication illustrates a considerable number of change houses and presents a critical analysis of the problem.

While the demand for this particular type of change houses may be limited in number, many points developed therein are entirely applicable to other problems. These change houses provide for the safe and sanitary storage of street and working garments in lockers, drying appliances particular to mining and other wet occupations, water closets, urinals, lavatories, shower baths, sanitary drinking fountains, laundry, first aid room and other things that complete the equipment necessary for this service to employees. The maintenance of these places is a matter of importance and while it is not within the province of architects to direct it, it is their duty so to plan that it is possible to do so in a sanitary and satisfactory manner.

THE AMERICAN ARCHITECT has published data on this subject in the issues of October 23, 1918, and November 27, 1918. These articles are entitled Wash and Locker Rooms by Harold L. Krum, Works Director Claim and Safety, Deering Works of International Harvester Company, Chicago; and Industrial Sanitary Standards, a specification prepared by C. E. Hicks of the Standard Oil Company of New Jersey, respectively. The publication first above referred to will be a valuable addition to these articles.

**34 pp. Ill. Superintendent of Documents, Government Printing Office, Washington, D. C. Price 15 cents.*

SANDSTONE IMPREGNATED WITH SULPHUR

A LIMITED series of tests has been conducted by the Bureau of Standards to determine the effect of sulphur impregnation on the absorption and strength of sandstone. Three textures of stone were selected and soaked in molten sulphur. Tests on specimens of the different stones before and after treatment indicated a remarkable increase in compressive strength due to this impregnation. The treated specimens gave an average strength nearly three times as great as the untreated ones, and the absorption values of the stones were reduced from over 4% to a fraction of 1%. These tests indicate that by a rather simple and comparatively inexpensive method a weak and porous stone can be rendered as strong as granite. Weathering tests are in progress on treated specimens of the sandstone to determine if there is any disintegrating effect or progressive discoloration due to exposure.

PHOTOGRAPHING CORRODED PIPE

FOR some time the Bureau of Standards has been carrying on an investigation of the corrosion of pipe. It is important to secure photographs of the specimens and a camera has recently been designed for this purpose in the Bureau's photographic laboratory. To date several pieces of corroded pipe have been photographed and very fine negatives obtained. These show the entire surface of the pipe in one continuous piece. It is expected that the camera will play an important part in the corrosion work now being carried on.

REVIEW *of* RECENT ARCHITECTURAL MAGAZINES

BY EGERTON SWARTWOUT, F.A.I.A.

LONDON Bridge is falling down, or rather, not London Bridge but one of London's bridges, and unfortunately the best one, Waterloo Bridge. "The noblest bridge in the world, Canova called it," says *The Architects' Journal,* London, April 2, "worth coming from Rome to see." "A colossal monument worthy of Sesostris and the Cæsars," said Dupin, the famous French engineer. Even Ruskin could scarce forbear to pay tribute to the great curve across the Embankment—"as vast as the Rialto at Venice, and scarcely less seemly in proportion." Everyone who has been in London remembers this bridge

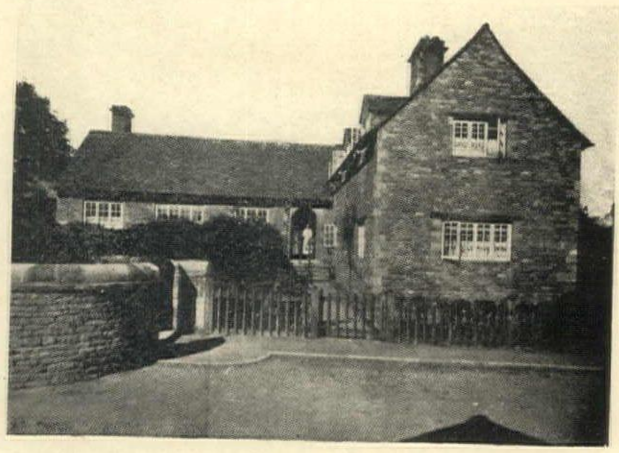
From "The Architectural Review," London

THE CLERK OF WORKS' HOUSE
APETHORPE, NORTHAMPTONSHIRE

crossing the Thames just above Somerset House, with its nine great granite arches and the curiously proportioned stubby little Doric columns on its abutments, and the unusual but effective semicircular stair, connecting the two levels at the bridgehead. It was built about a century ago by John Rennie and was designed by that clever engineer to accommodate the kind of traffic that then existed. "The light, slow-moving vehicles, phaetons, cabriolets, and coaches, of Rennie's day gave no clue to the heavy conveyances that, in greatly increased numbers, would hurl themselves across the bridge a century later." The great bridge is apparently another victim of the automobile; the granite piers rest on a pile foundation and these piles, driven through a shallow gravel bed have sunk down in the soft clay below, there being a very considerable settlement in one pier, the fourth from the Surrey side. Something will have to be done and done soon. The proposition that meets most favor is to put down new foundations and to widen the bridge, but otherwise to adhere to the present design. Of course, it's much better to do it this way than to scrap Rennie's bridge entirely and build a new one with only three arches as suggested by the Port of London Authority, but if the widening is material the effect of the bridge will be injured, as the increased depth of the arches will take away much of the grace of the design.

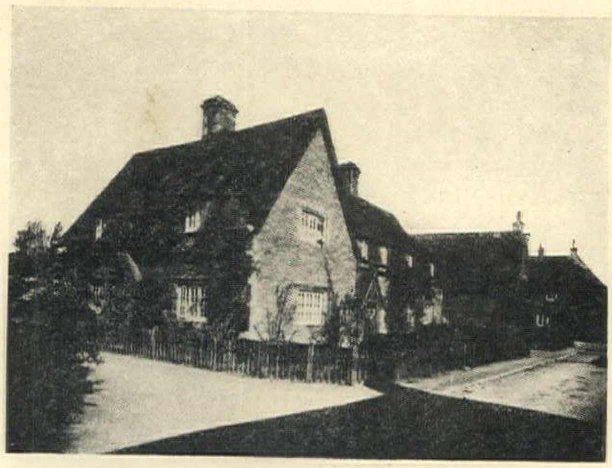
There has been a great deal of discussion in all the English magazines lately about this bridge, and about the other new bridges that are proposed, and a good part of this discussion has had to do with the expression of structure, the expression of material, and the honesty and logic of

From "The Architectural Review," London



THE HALL LAUNDRY
APETHORPE, NORTHAMPTONSHIRE

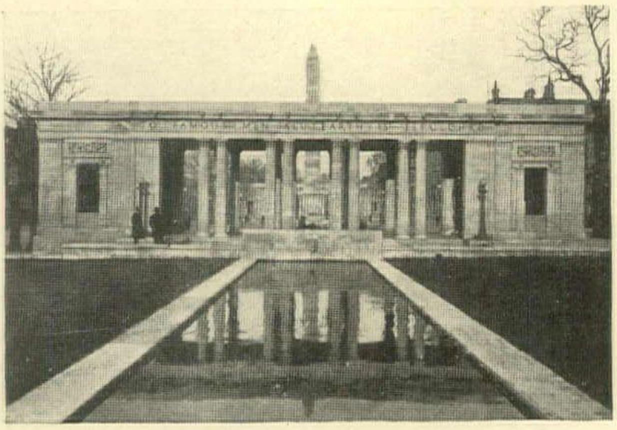
From "The Architectural Review," London



THE BOTHY COTTAGES
APETHORPE, NORTHAMPTONSHIRE

design. All of these points capitalized and italicized, have been written about and lectured about, and taken up quite seriously by advanced thinkers. On the one side there are those who hold that modern architecture will never amount to anything until it is modern, and expresses the spirit of the age, whatever that may mean; that plan is form, and that in some way which does not appear, reinforced concrete is the material of the future; all very advanced, in fact so far advanced that it's all very hazy. The gentlemen on

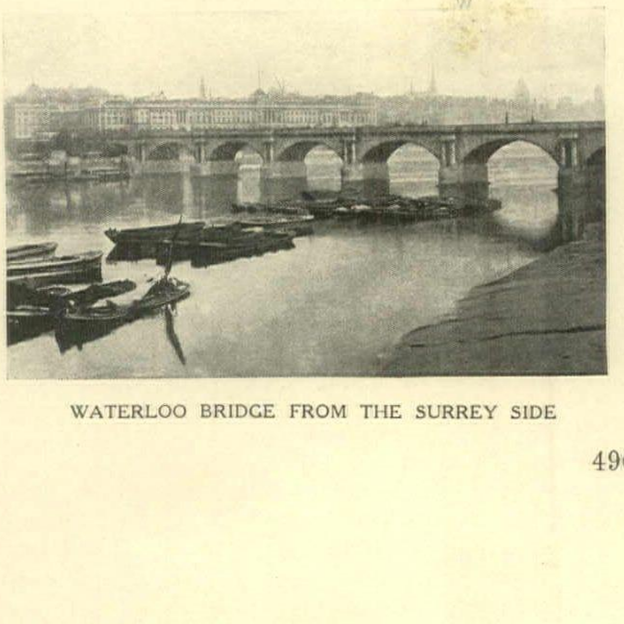
From "The Architects' Journal," London



WAR MEMORIAL, SOUTHPORT

this side of the fence have many divergent views. In fact, they differ among themselves almost as much as they differ with those on the other side. They are in positive accord only on one point and that is that what is done, and is being done, is wrong. They talk about it, and theorize about it, but do very little about it, that is, very little in the way of actual construction, and very little that is positive in the way of advice. On the other side of the fence are those who are more conservative, reactionary they are sometimes called, and anti-revolutionary, who believe in profiting by the experience of the past, and many of these gentlemen feel quite as strongly and express their feelings quite as freely as those across the

From "The Architects' Journal," London

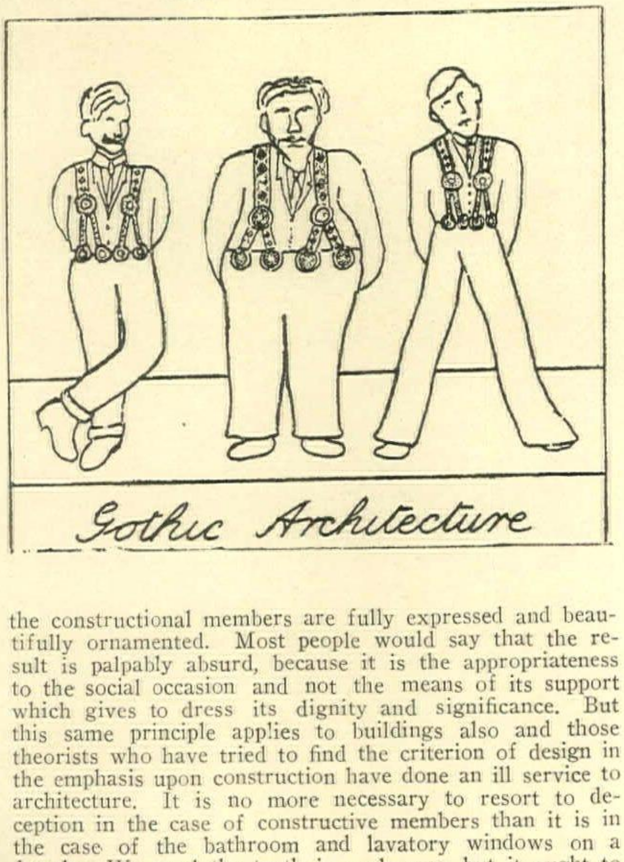


WATERLOO BRIDGE FROM THE SURREY SIDE

fence, and it must be confessed that they express themselves more clearly. For example, A. Trystan Edwards, writing in *Architecture,* London, in the April issue in an article headed "Constructional Truth" says:

In the last century a famous writer upon architecture popularized the view that truthfulness of construction was the chief desideratum in a building, and if this condition were fulfilled, and the constructional members duly ornamented, great architecture would result. This theory has done much to persuade engineers in the belief that they are the true architects, for it is their business to be experts in construction. Not only does the propagation of such a view inflict a vital injury upon the architectural profession inasmuch as it is a direct encouragement to a rival body of practitioners to assume control of building, but it leads to the neglect of important aesthetic factors which should influence our architectural judgment. A single building with vaults upheld by flying buttresses may be tolerable and even admired, but one could not regard with favor a whole street of such buildings, for instead of thinking of their social function and their harmonious interrelationship one's attention would be directed to the particular manner in which the roof is upheld. Let us apply this constructional criterion to the art of dress in which the nature of social values is more clearly understood. Here are three men dressed according to the strictest Ruskinian principles. It will be observed that

From "Architecture," London



Gothic Architecture

the constructional members are fully expressed and beautifully ornamented. Most people would say that the result is palpably absurd, because it is the appropriateness to the social occasion and not the means of its support which gives to dress its dignity and significance. But this same principle applies to buildings also and those theorists who have tried to find the criterion of design in the emphasis upon construction have done an ill service to architecture. It is no more necessary to resort to deception in the case of constructive members than it is in the case of the bathroom and lavatory windows on a façade. We need the truth in each case, but it ought to be the urbane truth, the larger truth which has for its subject the whole function of architecture, and not merely a subordinate and instrumental part of this function. There are numerous occasions when the constructive members may with perfect propriety be concealed, as for instance when a steel truss is used to support a roof. From the outside we see the simple ridge line and the orderly rows of slates, while from the inside our view of the truss is obstructed by a plaster ceiling. Can it be seriously contended that there is anything wrong with such an arrangement? Some truths are best unuttered not because they are unimportant but because they are trite. Everybody knows that the roof has inside support in the shape of a truss, but how unpleasant it would be if all roof coverings were transparent so that we could see the constructive members underneath! The building would present a picture like an X-ray photograph in which we see the bones through the flesh.

Also, in *The Architectural Review*, London, April, there is a most excellent article by W. G. N. on the Expression of Structure, which is part III of his series on the Bases of Criticism, from which we quote:

If plan-expression is to be a matter of intention and choice, rather than a law from which there is no appeal, this is even more true of expression of structure. By this phrase it is generally meant that the method and material of construction should be obvious and emphasized. Without this nothing can be right, it is said, while with honesty in this particular you cannot go far wrong. And yet we are always hoping for the removal of Charing Cross Bridge, a deplorably honest structure. That it happens to be unsafe is irrelevant. What we dislike is its appearance, not its insecurity, which is indeed the only thing about it we like. There is apparently a confusion of thought on this matter. In our valuation of mediæval architecture we have noted for ourselves, and again and again our fathers have told us, that in its most admired periods the design arises essentially and obviously out of the method and material of construction; the stone vaults of Chartres, for example, poised against their precipitous stone buttresses. Whence we have constructed a sort of syllogism: Chartres is the finest of architecture. The architecture of Chartres is simply and solely construction. Therefore the finest architecture is simply and solely construction—and (in parenthesis) the finer the construction the finer the architecture. Those who hold this view elaborate it further by explaining that what the old French builder was aiming at was a stone roof, the largest area of glass available, economy of material. Now these, the purely material problems, are more efficiently solved in St. George's, Windsor, where the buttresses are thinner and the windows larger. But they are unwilling to admit that St. George's, Windsor, is finer than Chartres. And of course they are right, but their argument has gone astray. Chartres is not finer because it is the more efficient solution of the constructional problem, but because it is the more imaginative. The great stepped counterforts of the one are architecture, the thin buttresses of the other are engineering.

Also, in *The Architect*, London, March 28, there is an article on Archæology and Architecture by P. W. Hubbard, in which he says:

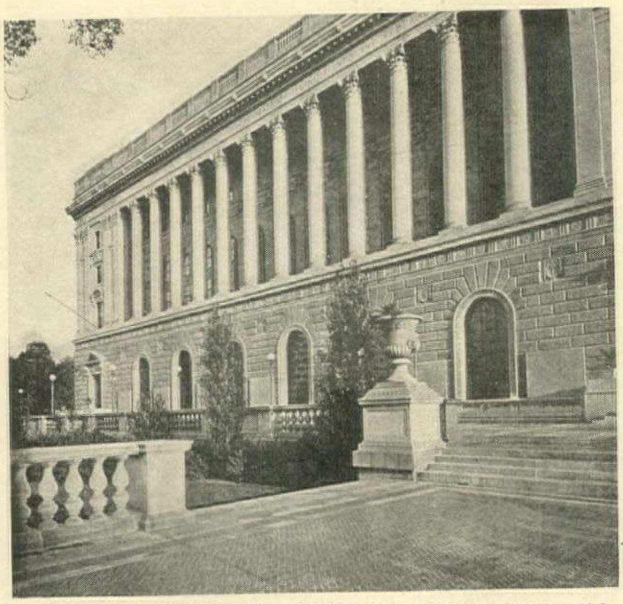
As I pointed out in the Foreword to "Architectural Thought, 1924," no new style can be suddenly invented, each succeeding age develops from the past. As we know, the Georgian and Queen Anne evolved from the Jacobean and Elizabethan, which in turn were inspired by the Italian Renaissance. The Italians had discovered the architecture of Rome, which had been largely derived from the Greek; and even the Egyptians knew how to support a lintel on a column. Thus throughout history we can never quite dissociate ourselves from tradition. Though we may find that the employment of new materials occasions new forms and fresh methods of treatment, yet these do not alter our standards of taste or cause us to propound new theories of art.

If that be granted, then the question of clothing becomes more of a secondary consideration, but it is none the less of great importance. In this connection certain architectural detail culled from the past has been constantly repeated, not necessarily because it is academic or archæological, but because experience has shown that certain forms or lines are most appropriate when used for certain purposes and in certain positions. Suppose, for example, in a steel frame building it were necessary to support a beam on a series of uprights, should we therefore condemn the design because this steel skeleton were covered with a stone facing, even as our bones by flesh? We could still express the constructional theme by giving the supports the form of Doric columns carrying an entablature. . . . We are aware that an iron girder can span a tremendous width, and the use of that metal is perfectly logical for the purpose, but that does not therefore make the opening more beautiful or more in scale, whereas a correct use of the orders cannot fail to give a satisfying relationship between solids and voids.

Now, while the gentlemen on the pink side of the fence are talking rather loudly and getting quite red about it, and while the gentlemen on the blue side are throwing over an occasional brick in the hope of knocking cold some ardent opponent, there remains perched on the top of the fence most of the men who are doing the actual work. The majority, by far the great majority, are doing their work in a conservative fashion; they are following precedent generally and have little use for radical innovations; they generally approve the blue side but they have also an easy tolerance of the red; they are not enough interested in it all to take an active part; they would rather build than talk about building; and they regard the discussions and disputes as a phase which is recurrent and which will soon wear itself out. This is perhaps a wise course for a busy man, and certainly the easiest course, but its general adoption by the great bulk of the prominent men in the profession only serves to prolong the dispute and encourage the extremists to further and more extreme views, and it also has a bad effect on the laymen, on the clients. They read in the magazines about modern conditions and modern methods and modern thought; they see strange distorted statues and pictures, and are solemnly told that this is the way things really look to the advanced soul; they fall under the spell of the ardent devotees of Grigori Ptuch (pronounced Hoitch) and there is much harm done. Because we have seen so much of what has been done, and because we know that most of the men on the top of the fence also feel the danger of it all but are unwilling or unable to speak against it, we have clambered laboriously down from the fence and have taken a shy with a small brick or two occasionally. This unusual and seemingly undignified attitude on the part of a practicing architect, for really and truly we don't write these things for a living, has caused some indignation in certain quarters; we have been chided by untrammelled ones, and in the last number of the *Journal of The American Institute of Architects* a Mr. or Madame X who writes a letter from London to the *Journal* feels "some disappointment at the expression of some narrow point of view which comes as a shock from a country of modern progress." Mr. or Madame X then alludes particularly to these poor columns and feels that "anything modern in feeling or expression appears to be anathema to this writer. He condemns without reason and with astounding catholicity. Work which he does not like is nonsense." He, or she, says it's interesting to watch the vigorous riding of a hobby but he, or she, expects a little logic in architectural criticism, etc.

Now apparently some small piece of brick which we casually threw over the fence has found a target and has injured, not seriously we hope, someone on the other side. Not knowing the identity of X, and we believe we are not alone in this lack of knowledge, as to the best of our memory no one, not even the man who wrote our Algebra, ever knew who or what X was, although the Algebra man was always asking a lot of silly questions in the hope of discovering his identity, and as a result we at that time lost whatever slight interest we had in the subject; still, to resume, although we don't know, we feel that X cannot be an architect. Being in that profession ourselves we throw few bricks at architects; we have tossed a few at some Germans to be sure, and at a Swede or two, but we have not aimed at any

From "The Architectural Forum"



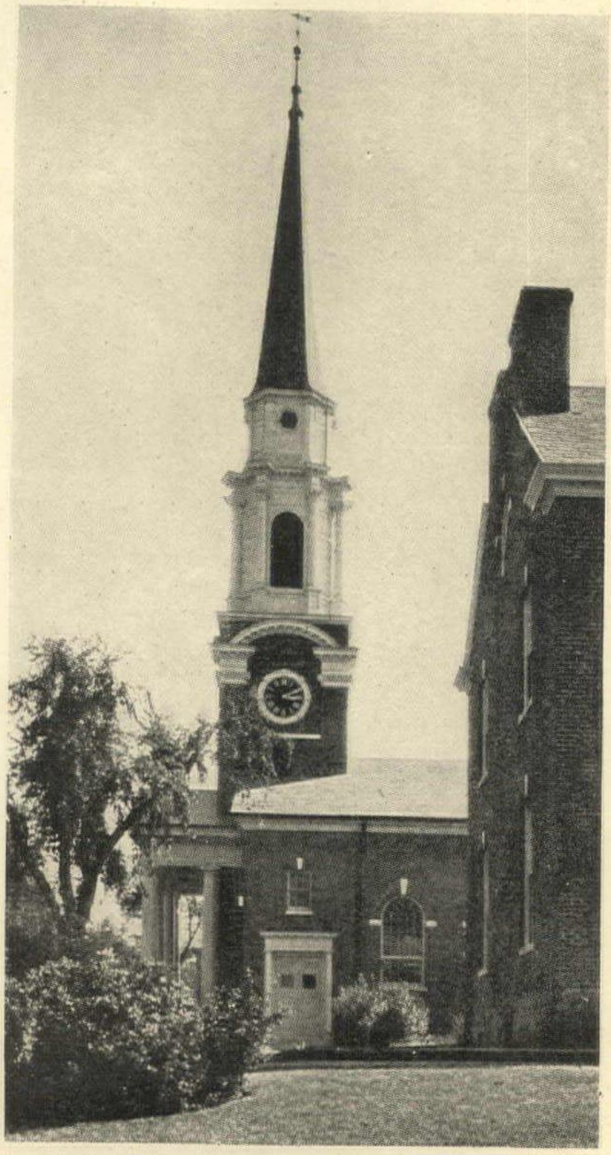
CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.
RICHARD E. SCHMIDT AND HUGH M. G. GARDEN, ARCHITECTS—EDGAR MARTIN, SUPERVISING ARCHITECT

Londoner we know of. But we have expressed ourselves rather strongly about some modern painting and sculpture which have been illustrated in English magazines, and in doing so may have hurt the feelings of X who, in search of a kindred soul, has naturally written the editor of the *Journal*. Now we don't object at all to the implication of hobby riding; we realized all that when we got off the fence; but we can't allow X, whether Mr. or Madame, to get away with the statement that everything modern is anathema to us because it really isn't. It couldn't be. If it were, we would be in the position of being opposed to ourselves, which we aren't. We also like all modern things that are good, but we do not like things just because they are modern. Now some people have a hobby of collecting first editions; we don't; we never collected anything, and a brand new edition of a standard author is just as interesting to us as a first edition. We are really quite open-minded. If any untrammelled one should invent a better order than that of the Parthenon we would hasten to send him a telegram of congratulations and on our next bank we would use the order unblushingly; but if he produced a poor one, one that violated all principles of stability and of proportion and of beauty, and then insisted or got his friends to insist that it was much better than the Parthenon order because it was new, then we confess we would be tempted to grab the first brick that came to hand and let drive. And as to logic and reason, the Lord love you, how can you apply logic and reason to such things; they are beyond all reason. If a painter does a marine and makes the moon square instead of round, as I have seen it done, how can you reason logically about such a thing? Either the moon is actually square and a thousand million people who see it round are suffering from some form of optic debility, or else, as is more probable, the painter is, as we might say, up the pole. As we remember it, an official of the Royal Institute of British Architects, a president or something, said at some dinner or other that he would believe in modernism when painters and sculptors took for their wives and sweethearts the same shaped people that they apparently took for their models.

But see what it is to ride a hobby. We have written about two thousand words and haven't started yet. But just to show our catholicity let us say that in *The Architectural Review*, London, for April, we think the sculpture of Mr. Vernon Blake poor and his architectural forms childish and grotesque. Yet in the same magazine there is an article on Apethorpe Village in Northamptonshire which every town planner should see. It is a little village about nine miles South of Stamford and had much of the picturesque quality of that town but had fallen into great disrepair and decay. The owner of the village, for apparently villages are still owned in England, the owner, Sir Leonard Brassey, decided to repair what he could, and rebuild what was past repair. The views we publish here are all new buildings, but how good they are, and how simple, and how they fit their surroundings! When possible old stone and old slate have been used and the work must have been a labor of love. The architects are Traylen & Lenton and they certainly deserve a medal or ten medals for their work, and a few should go to Sir Leonard for his sense of the fitness of things. We are going to Apethorpe and will stay at that Inn when we are again in England.

Of the American magazines, *The Architectural Forum* for April is the Church Reference Number with many good articles and charming photographs, among them a very good church in Wellesley by Carrere & Hastings, Shreve, Lamb and Blake. The May number of the *Forum* has a good Christian Science Church by Albert Kahn and a very imposing Centennial Memorial building at

From "The Architectural Forum"



CONGREGATIONAL CHURCH AT WELLESLEY, MASS.
CARRERE & HASTINGS, SHREVE, LAMB & BLAKE, ARCHITECTS

Springfield, Ill., by Schmidt, Garden & Martin. It is a very difficult thing to stretch a scheme two motives high into a five story building but these gentlemen have done it well and the building is most interesting on the interior as well as the exterior. In this number is also illustrated Thomas Hastings' War Memorial which is to go in Central Park if the Mayor and the Commission and Mr. Hastings can arrange it. A great many people, including architectural and other societies apparently feel that the park is no place for it. While there can be no doubt that such large buildings as the proposed Art Center have no place in the park, still the scheme of Mr. Hastings is a typical park treatment and would undoubtedly add to the beauty of Central Park, although its appropriateness as a War Memorial may be questioned. It seems to us an extremely ingenious scheme to develop the park, and we would like to see it done by the park department, and a more appropriate site found for a War Memorial which would be simply and solely a War Memorial.

ANCIENT MISSION NOW NATIONAL MONUMENT

ONE of the twenty-nine national monuments established by the President is the Tumacacori in Santa Cruz County, Arizona, and the thing that makes this monument especially interesting is that in it are the ruins of a mission built about 1691 by the Jesuit priest, Father Eusebio Francisco Kino, who was noted as a missionary and an explorer. This mission was operated by Jesuit priests from Spain until after 1769, when priests of the Order of Franciscan Friars took charge of it and repaired its crumbling walls.

A statement by the Department of the Interior says that the monument where this interesting exhibit lies consists of ten acres and is about forty-nine miles South of Tucson and nineteen miles North of Nogales. A bit of the department's description of the old mission reads:

"The walls of the church building are six feet thick, built of adobe and plastered both inside and outside with lime mortar one inch thick. The inside walls of the main church building received two coats of this plaster, a first or inner coat being of a rather coarse character and the finishing coat being of a very fine, hard and lasting character. The dome over the sanctuary and the belfry tower are constructed of burned brick, this being one of the characteristics of the architecture of the mission, in which respect the construction differs from other early Spanish missions.

"Inside, the dimensions of the church are 18 feet wide by 75 feet in length. The part used for the altar is situated at the North end. It is eighteen feet square, surmounted with a circular dome, finished on the inside with white plaster decorated or frescoed in colors. The plaster and decorations are in a good state of preservation, but the altar is entirely gone. On the East of the sanctuary there is a sacristy, 16 by 20 feet and 20 feet high, covered with a barrel-vaulted roof built of burned brick, supported in the center by an arch. The sanctuary and sacristy are the only parts of the mission which are now roofed over.

BOSTON SOCIETY *of* ARCHITECTS

At the recent annual meeting of the Boston Society of Architects, the following officers were elected: President (for two years), Charles D. Maginnis; Treasurer (for two years), Ralph W. Gray.

The report of the Committee on Ethics and Competitions read at the meeting presents in an exceedingly practical manner vital matters that might with advantage receive careful consideration at the forthcoming convention. The report is as follows:

We have recently reviewed the year's work and we are incited to draw a few conclusions from our experiences and to offer some suggestions, rather than to enumerate our activities.

There have been a number of cases in which the Society has been asked to help solve problems of more or less importance. The Governor, the Metropolitan District Commission, the Treasury Department at Washington and a number of municipalities and organizations have sought the co-operation of the Society. Individual architects in towns or cities throughout the State, have requested information in regard to professional practice and have brought their problems to the Society.

This recognition, by public bodies, of the existence of our organization, not to mention the implication that we may have a sphere of usefulness in the community, is gratifying. But the real problems for us to face are the individual cases, and here we must take the initiative.

We believe that the Society and the Institute owe to these individuals a broader service, and that an effort should be made, not only to draw more of these men into the ranks of Institute membership, but to make them realize that there is a real value to the high standards of professional practice. That adherence to these standards does at times work hardships on professional men is indisputable. Every one of us can recall cases when we ourselves have lost a job because we would not lower our professional standards and it is sometimes pretty hard to convince ourselves that the loss of the work and the remuneration is of less value than the satisfaction of doing the right thing. It is hard to hold this conviction and to have faith in these ethical standards when we are working here among a comparatively large body of men who have pledged themselves to keep their practice on a high level. It is many times harder for the Institute member in an environment far removed from the Chapter headquarters to carry on the struggle in comparative loneliness and in competition with men who do not see eye to eye with him as to the right and wrong way of conducting practice.

We believe that the Society and the Institute should reach these men before they are brought to the point of seeking the advice and help from our organization. The Institute should develop activities of its Regional Directors and should make a point to establish lines of communication with these lonely outposts, for the purpose of strengthening the Institute's influence by an increased membership, and by bringing to those architects who are already members, a spirit of support and co-operation.

We also feel that the Institute should make an effort to the end that architects in general shall believe in the principle of the Institute Code as a standard of practice. Many architects seem to have forgotten that they should take a pride in adherence to the principles on which the Code is based. Too often one hears of architects who explain their reason for being unable to enter an indiscriminate scramble, by saying that it is against the Rules of the Society or of the Institute. Instead of standing squarely on their own feet and upholding the principle of practice, which is based on fair play for both owner and architect, they merely offer the Institute and Chapter Regulations as the reason for being unable to present drawings, and they create the impression that against their will they are bound by rules which they have no part in making and with which they are out of sympathy. They arouse a sympathetic antagonism in the public mind, and make it seem that architectural practice is carried on under arbitrary rules, instead of on sound principles of justice.

We believe that most committees, municipalities or organizations get into trouble with the Competition Code and with their relations to architects, through ignorance. Each year throughout this State, and no doubt in other New England States, the annual town meetings are held and easily determined months in advance. It is usually at these meetings that new projects are brought forward, appropriations made and committees appointed to secure plans. We suggest that the Institute, either through its Regional Directors or through some well known and respected individuals in these towns, might easily bring to the proper authorities a simple statement of the Institute's aims in regard to competitions, an outline of the procedure; together with a straightforward explanation of the benefits on the one side, and of the dangers and probable failure to obtain the desired end on the other.

One other thing. Our Committee believes that the Institute should meet the problem of the competition existing between architects and engineers. We think a determined effort should be made, not to exclude engineering firms from architectural practice, but to assure architectural firms an equal opportunity. We believe that individuals, municipalities and organizations contemplating large projects and considering the employment of engineers, should be willing to conduct a competition which would include the engineering firms under consideration and at least an equal number of architects. We urge the Institute to undertake an educational campaign in the interests of fair play towards our profession. There are many business men who will recognize the truth when it is brought home to them.

LOSS BY DUST EXPLOSIONS

Damage done to real estate by dust explosions serves as another warning sent out by the Department of Agriculture to all concerns dealing in products liable to create unusual quantities of dust.

Many serious fires that have been called "mysterious" are believed to have been caused by explosions of dust, and all those engaged in factory enterprises are warned to seek the advice of the department as to the best way of avoiding accidents from such causes. The statement of the department is as follows:

"The Bureau of Chemistry has been conducting special researches to establish the causes of many explosions in industrial plants under a special appropriation of Congress for the purpose. Explosions of this nature may occur in practically all lines of manufacture where combustible dusts are produced during manufacturing or handling, and have caused great losses of life and property in recent years."

BEAUX-ARTS INSTITUTE *of* DESIGN

OFFICIAL NOTIFICATION OF AWARDS

JUDGMENT OF MARCH 11, 1924

CLASS "B"—III ANALYTIQUE

"A FRONTISPIECE"

A memorial that has been erected to the dead of the Great War is such a noteworthy piece of architecture that a monograph on it is to be published. The memorial consists of a circular colonnade, 30'-0" in diameter, in the center of which an altar, a symbol of sacrifice, is placed. The colonnade rests on a simple base.

No scale is given either for the elevation or details.

JURY OF AWARDS:—H. O. Milliken, J. H. Freedlander, E. S. Hewitt, W. E. Shepherd, Jr., E. H. Denby, H. C. Ingalls, A. E. Flanagan and D. D. Ellington.

FIRST MENTION PLACED:—F. Poehler, Atelier Hirons, N. Y. C.; E. R. Roller, Carnegie Inst. of Tech., Pitts.

FIRST MENTION:—N. F. Six, F. C. Boldry, E. B. Milligan, Jr., H. N. Kelly, and E. Love, Carnegie Inst. of Tech., Pitts.; R. Quint, Atelier Corbett-Koyl, N. Y. C.; J. I. Sobol, Columbia Univ., N. Y. C.; C. L. Olschner, Atelier Hirons, N. Y. C.; F. O. Rennison and A. E. Shrimpton, John Huntington, Poly. Inst., Cleveland; W. H. Moses, Pennsylvania State College, State College; A. J. Misita, Atelier Rectagon of Buffalo, Buffalo; H. W. Thomas, J. Wyatt and R. H. Kluppenburg, Univ. of Illinois, Urbana; A. M. Linn and W. F. Young, Atelier N. T. Vorse, Des Moines.

SECOND MENTION:—R. Y. Goo and J. A. Brown, Armour Inst. of Tech., Chicago; R. H. Cummings, Chicago Atelier, Chicago; H. B. Wagoner, Wingold, M. M. Leibowitz, E. M. Butler, H. B. Holt, B. B. Carpenter, M. W. Bastian, M. N. Goodwin, R. Harkless, H. Rosenberg, R. S. Craig, K. Pulmer, A. C. Lackey, J. W. Paul, Carnegie Inst. of Tech., Pittsburgh; J. Megaro, A. Brandinger, Columbia University, N. Y. C.; W. N. Van Powell, Atelier Cairns, Memphis; J. A. Downs, Atelier Cunningham, Wash., D. C.; A. Kanke, L. Stillman, E. F. O'Connell, J. Boehle, H. Kalkin, F. A. Denz, C. A. Smart, Atelier Corbett-Koyl, N. Y. C.; J. R. Musick, Atelier Denver, Denver; K. L. Bonebright, Atelier E. Davis, Lincoln, Neb.; G. H. Riggs, C. N. Wentworth, A. E. Winn, F. Mahlman, George Washington Univ., Wash., D. C.; R. W. Legg, R. T. Leslie, Jr., Atelier Hirons, N. Y. C.; R. B. Aley, Catherine Merry, F. Surre, C. H. Lawrence, R. B. Johns, H. I. Champlin, G. H. Dey, John Huntington Poly. Inst., Cleveland; O. A. Getzlaff, Atelier Kirchhoff, Milwaukee; H. B. Smith, Los Angeles Archtl. Club, Los Angeles; E. Batista, Atelier Morales-Universidad de la Habana, Havana, Cuba; T. H. Nielson, Miami Archtl. Club, Miami; A. F. Bell, 644-8th Avenue, N. Y. C.; C. C. Kenney, N. Fhoenhardt, New Orleans Arts & Crafts Club, New Orleans; S. D. Legge, Ohio State Univ., Columbia; L. E. Ritchie, G. W. Boylan, J. Vinci, H. S. Howe, W. Dunlop, T. Norton, A. Thygeson, J. B. Minott, K. W. Milnes, S. L. Powell, G. C. Platt, H. B. Lindberg, M. J. Hoffmann, M. F. F. Harty, J. Schepis, H. G. Thompson, C. H. Sacks, W. P. Lavallee, Pratt Institute, Brooklyn, N. Y.; E. Herter, J. J. Storey, B. Olson, T. O. Menees, D. S. Nelson, Atelier Parsons-Chicago Archtl. Club, Chicago; R. McMurray, W. N. Reynolds, C. W. Engles, H. Y. Landsheft, C. J. Foyster, S. Pond, Atelier Rectagon of Buffalo, Buffalo; E. J. Parnum, Reading Archtl. Society, Reading, Pa.; H. R. Munday, Seattle Archtl. Club, Seattle; A. N. McAninch, J. A. Scott, South-West Atelier, Little Rock, Ark.; C. F. Cobbledick, R. C. Williams, W. S. Waterman, L. E. Bowen, I. H. Springer, San Francisco Archtl. Club, San Francisco; G. C. Schweizerhof, A. M. Davis, H. P. Beyer, H. A. Schuh, Jr., W. A. Davenport, Jr., "T" Square Club, Phila.; W. Tode, Atelier Toronto Thumbtacks, Toronto; C. M. Valentine, Jr., Thumb Tack Club, Detroit; F. M. Magamine, C. Buckinger, A. Waldo, B. Davis, R. A. Brobeck, A. S. McPhee, W. Wurdeman, I. W. Meyer, G. W. Bentley, University of Washington, Seattle; W. P. Kramer, H. J. McKee, A. Temple, Mary T. Worthen, A. Wupper, D. Norkaitis, F. R. Roberson, E. W. Vollintine, K. Helms, A. F. Ranahan, H. Jacobson, H. Sobel, J. L. Hamilton, Jr., L. C. Hedrick, University of Illinois, Urbana; A. R. Caulstone, Univ. of New Hampshire, Durham; L. E. Plaiss, R. W. Hunn, R. E. Schwab, University of Louisville, Louisville; C. J. White, University of Texas, Austin; J. Adams, Atelier Wynkoop-Seymour, N. Y. C.

H. C.:—P. O. Danforth, Atelier Cunningham, Wash., D. C.

CLASS "B"—III PROJET

"A PUBLISHING HOUSE"

A well established book concern has acquired a piece of property on the corner of an important street in a large city. They intend to improve it with a building for their administrative headquarters and for the sale, distribution and storage of books. This property measures 150'-0" on the principal street, and 100'-0" on the side street; on the other two sides, it adjoins existing buildings.

It is proposed to use the two lower floors for the sales room, executive offices, editorial rooms, reception room, a library for the exhibition of rare volumes, and large open spaces for the clerical force, under the supervision of the department heads. The ground floor should contain the store or sales room, the reception room, the manager's office and a room for his secretary, and three or four small offices (about 150 sq. ft. each) for the editors. There should also be a large shipping and receiving room for the handling of incoming and outgoing books. These two lower floors should be connected by a commodious stairway.

Above these executive offices are to be three floors reserved for the storage and handling of the current and the reserve stock. These are simply open floors, well lighted and with only the necessary equipment for handling the books.

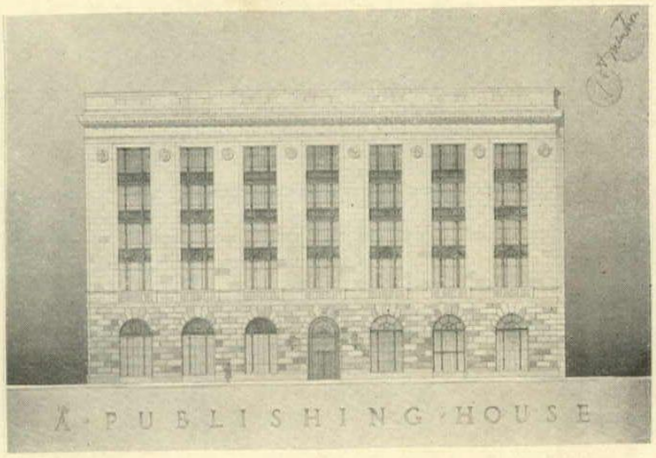
There should be two systems of vertical circulation, one for the two executive floors and another which should consist, beside the necessary stairs, of large elevators and a package chute connecting the upper floors with the receiving room on the ground floor. There should also be provided dumb-waiters to the store for the quick delivery of books out of stock.

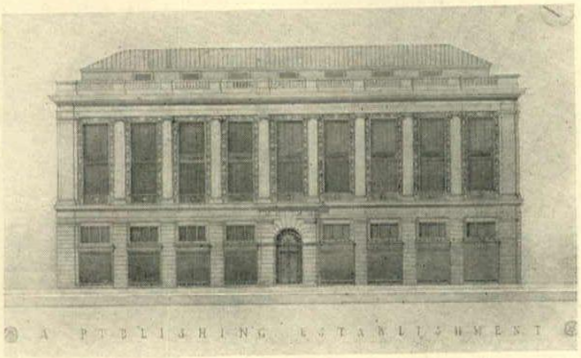
JURY OF AWARDS:—H. O. Milliken, E. S. Hewitt, J. H. Freedlander, W. E. Shepherd, Jr., W. Warren, H. C. Ingalls, H. V. K. Henderson, E. F. Sanford, Jr., H. W. Corbett, F. C. Hirons, D. D. Ellington, G. M. Simon, O. Faelton, E. A. Parks, G. H. Edgell, and J. Hudnut.

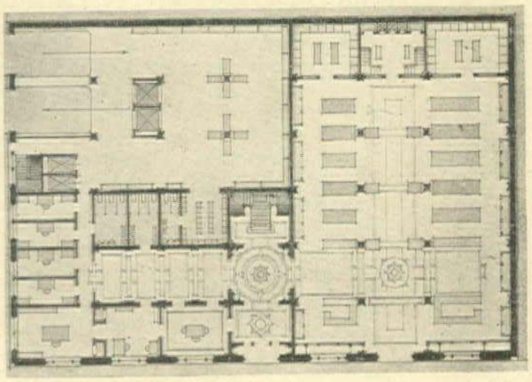
FIRST MENTION:—W. Damon and J. F. Palumbo, Carnegie Inst. of Tech., Pittsburgh; J. J. Black, Columbia University, N. Y. C.; A. W. Butt, Jr., Atelier Denver, Denver; A. O. Angilly, Atelier Hirons, N. Y. C.; I. van der Gracht, Princeton University, Princeton; H. G. Reeve and C. T. Paul, University of Illinois, Urbana; M. L. Nelson, University of Minnesota, Minneapolis; P. M. Duncan and F. C. Johnson, Yale University, New Haven.

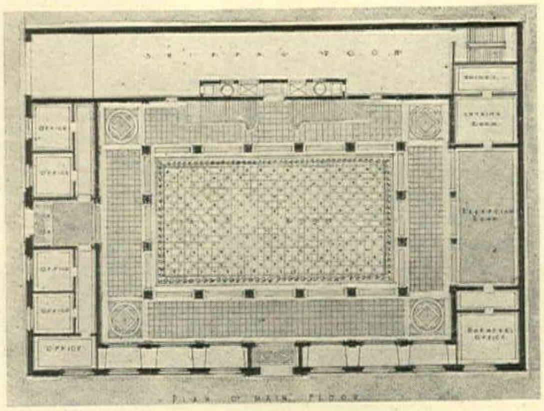
SECOND MENTION:—E. G. Wheeler, G. T. Popiden, J. E. Tillotson, W. F. Koppes, W. B. Simboli, J. A. McGowan, V. G. Tilbrook, D. C. Doig, L. C. Stevens, A. M. Ham, A. K. Goehring, W. L. Suter, A. M. Selstein, F. J. Taylor, R. G. Kredel, H. H. Thayer, C. A. Lundquist, L. E. Swiger, J. P. Crowgey, S. Fierdelise, G. A. Deacon, E. M. McMillin, U. Schoenberger and R. I. Winters, Carnegie Inst. of Tech., Pittsburgh; A. Goodman, K. C. Kruchten, W. H. Deitrick, Jr., L. V. Schelski, E. G. Friedlander, C. H. Jagemann, G. S. Dudley, O. F. Wiggins, A. M. Koch, F. Calamita, M. Grodinsky, P. Trapani, J. Villavicencio, D. E. Milone, Columbia University, N. Y. C.; E. P. Schreier, Catholic University, Wash., D. C.; F. Bellini, Atelier Corbett-Koyl, N. Y. C.; W. E. Munn, Cleveland School of Arts, Cleveland; F. O. Kellman, M. J. Slack, W. G. Jamieson, Atelier Denver, Denver; L. A. Turcotte, J. M. Judge, H. A. Simpson, O. L. Warady, and H. B. Hayes, Atelier Hirons, N. Y. C.; B. Krinsky, John Huntington Poly. Inst., Cleveland; G.

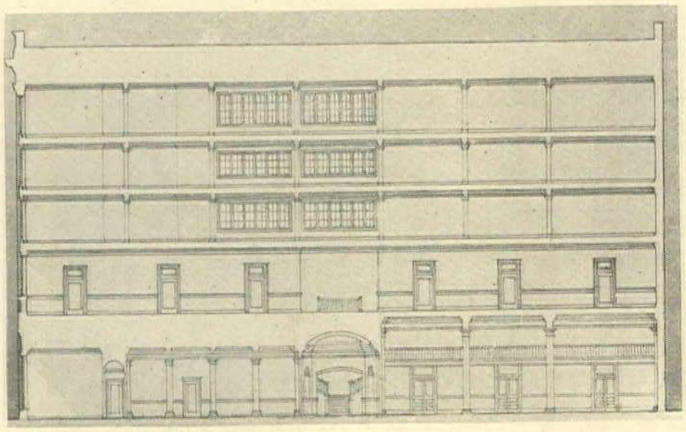
A. Briney, J. R. Daniels, Los Angeles Archtl. Club, Los Angeles; Rose Connor, 526 LaLoma Road, Pasadena; T. Ross, Jr., Patron—J. G. Rogers, N. Y. C.; E. A. Salmon, Patron—J. G. Rogers, N. Y. C.; G. B. Dudley, M. C. Fleming, Princeton Univ., Princeton; F. Eiseman, W. Nevara, F. T. Ahlson, Atelier Parsons—Chicago Archtl. Club, Chicago; G. E. Wells, C. R. Greiner, J. K. Bixler, H. O. Davies, D. E. Kennedy, G. W. Rustay, E. G. Flohr, Pennsylvania State College, State College; H. W. Taylor, San Francisco Archtl. Club, San Francisco; J. C. Ehrlich, Atelier Sibley, Palisade, N. J.; S. Berger, H. E. Johnson, Jr., J. E. Jackson, F. J. Duane, H. G. Rieber, "T" Square Club, Philadelphia; I. W. Silverman, P. E. Nystrom, E. W. Krafft, E. E. Olson, W. Woollett, G. Smith, E. F. C. Backstrom, W. C. Bonsall, A. Johnson, University of Minnesota, Minneapolis; S. K. Kwan, H. F. Pfeiffer, W. E. Fraser, F. H. Naegele, C. T. Miers, W. I. Hamby, W. A. Rolleston, University of Illinois, Urbana; R. G. Gulley, M. Wells, University of Virginia, Charlottesville; C. C. Simmons, W. Kleine, A. H. Howke, G. H. Harker, R. H. H. Hugman, F. W. D. Roberts, A. Fehr, H. S. Gannaway, University of Texas, Austin; R. J. Pearce, J. I. Mattson, L. W. Bindon, University of Washington, Seattle; S. C. Haight, E. Studds, A. B. Stanhope, W. H. Shilling, M. B. Smith, L. B. LaFarge, H. G. Lindsay, C. J. Hill, Yale University, New Haven.

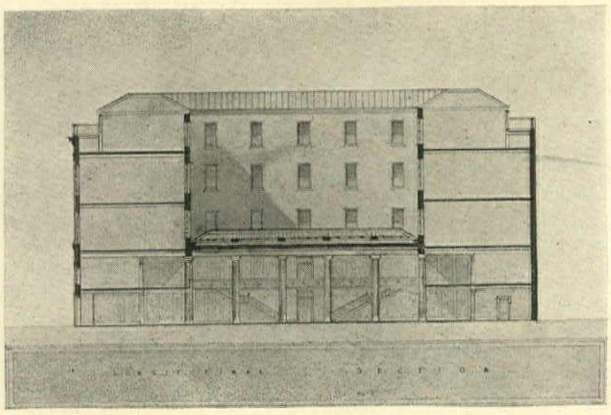










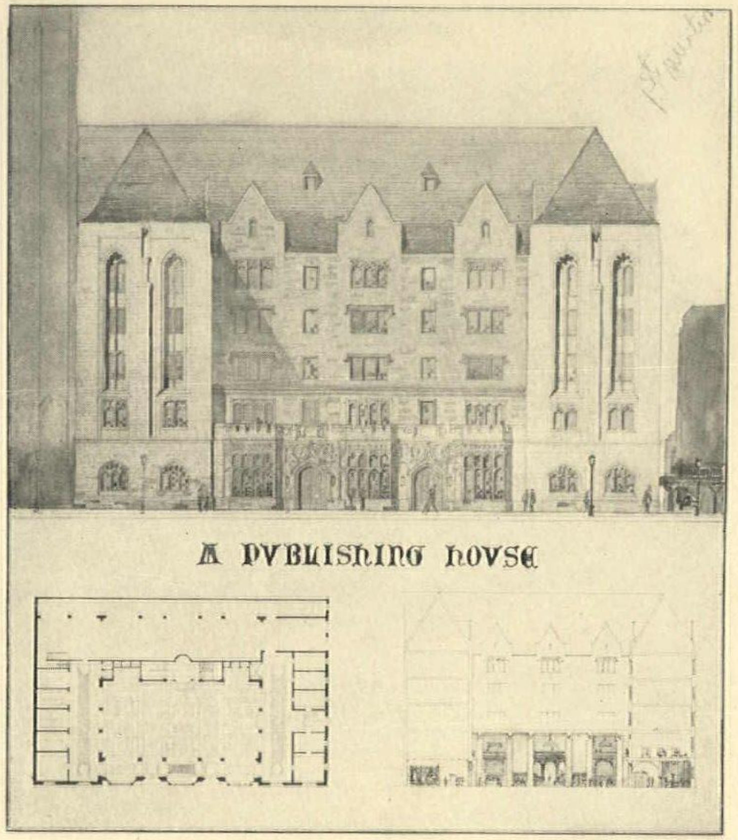


C. T. PAUL FIRST MENTION UNIV. OF ILL.

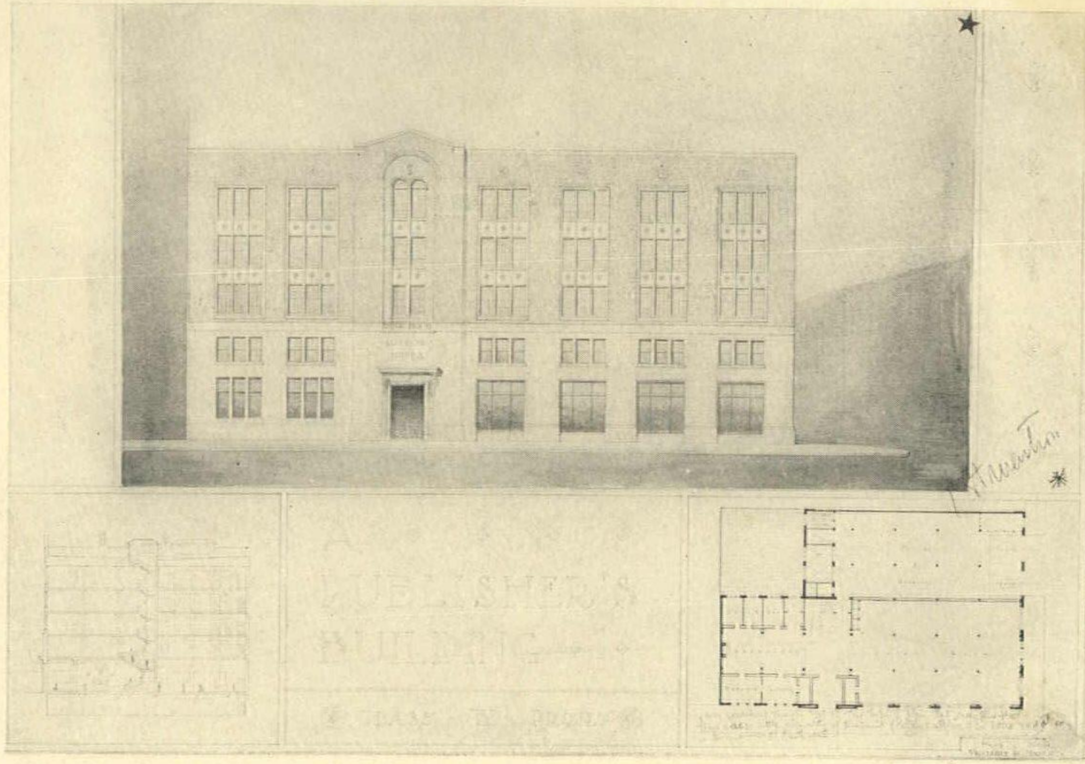
J. J. BLACK FIRST MENTION COLUMBIA UNIV.

CLASS "B"–III PROJET—A PUBLISHING HOUSE

STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



P. M. DUNCAN FIRST MENTION YALE UNIV.



M. L. NELSON FIRST MENTION UNIV. OF MINN.

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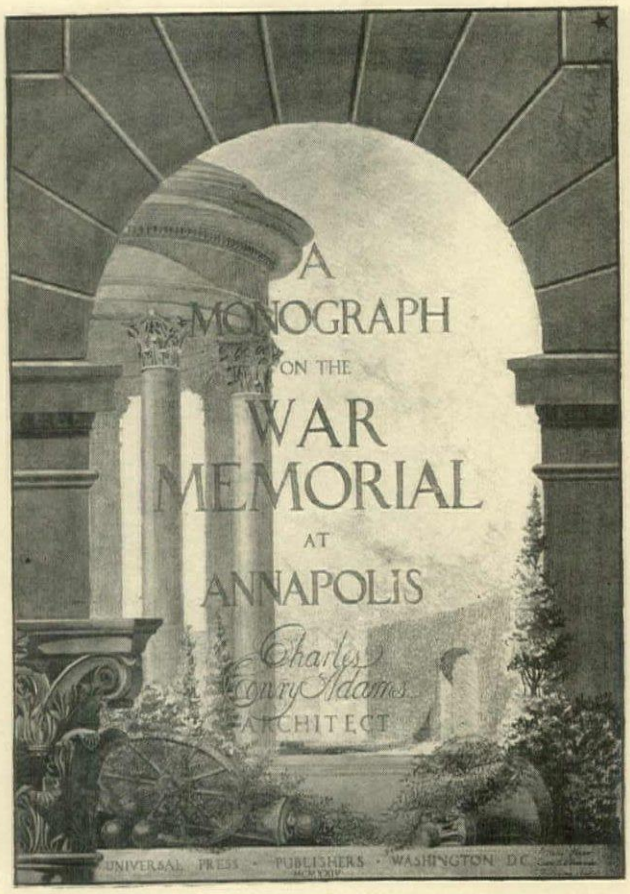
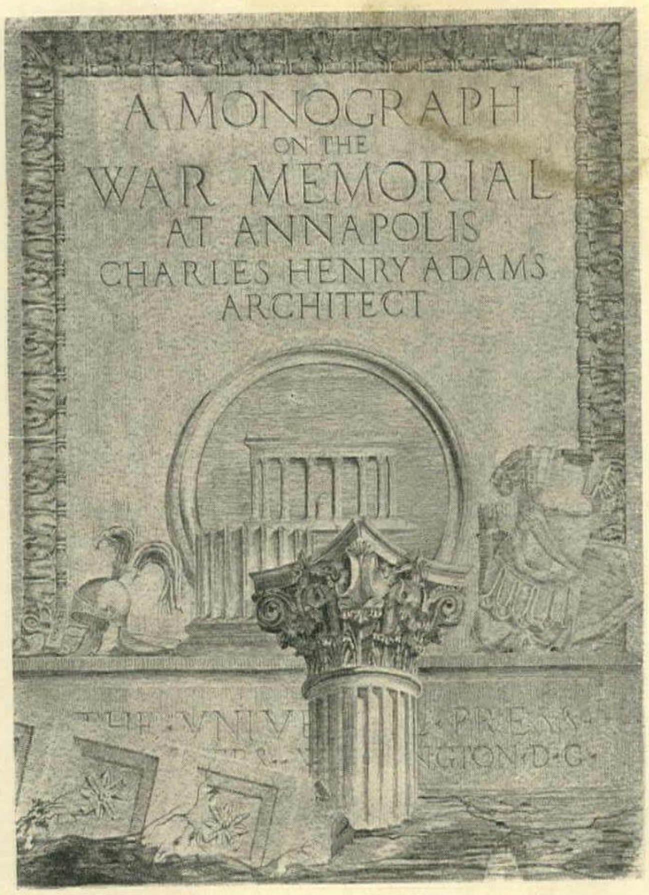
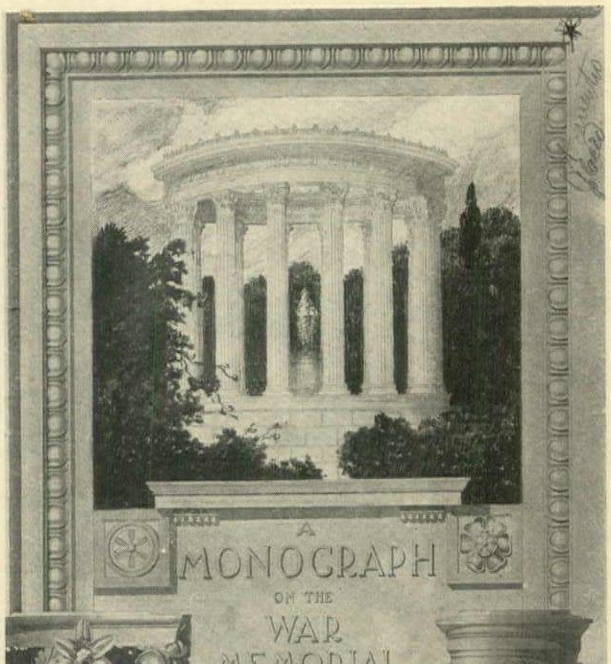


F. POEHLER — FIRST MENTION PLACED — ATELIER HIRONS



W. H. MOSES — FIRST MENTION PLACED — ATELIER PENN. STATE

CLASS "B"–III ANALYTIQUE—A FRONTISPIECE



E. R. ROLLER — FIRST MENTION PLACED — CARNEGIE INST.

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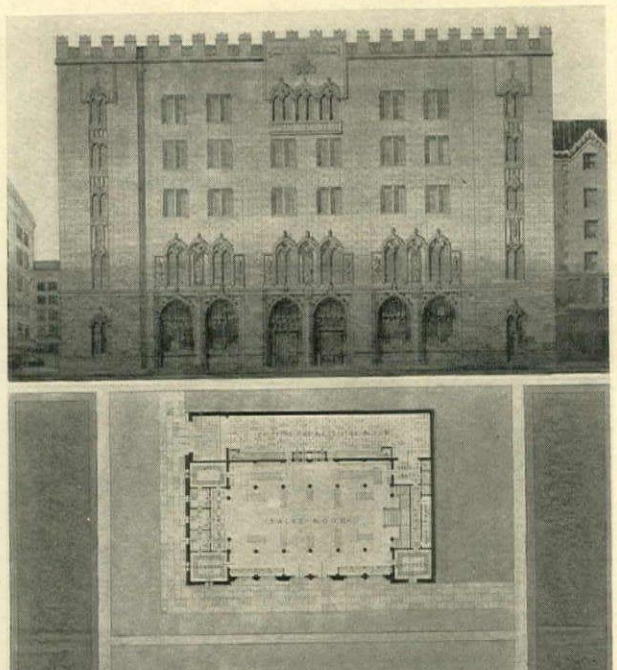

A. W. BUTT, JR. — FIRST MENTION — ATELIER DENVER

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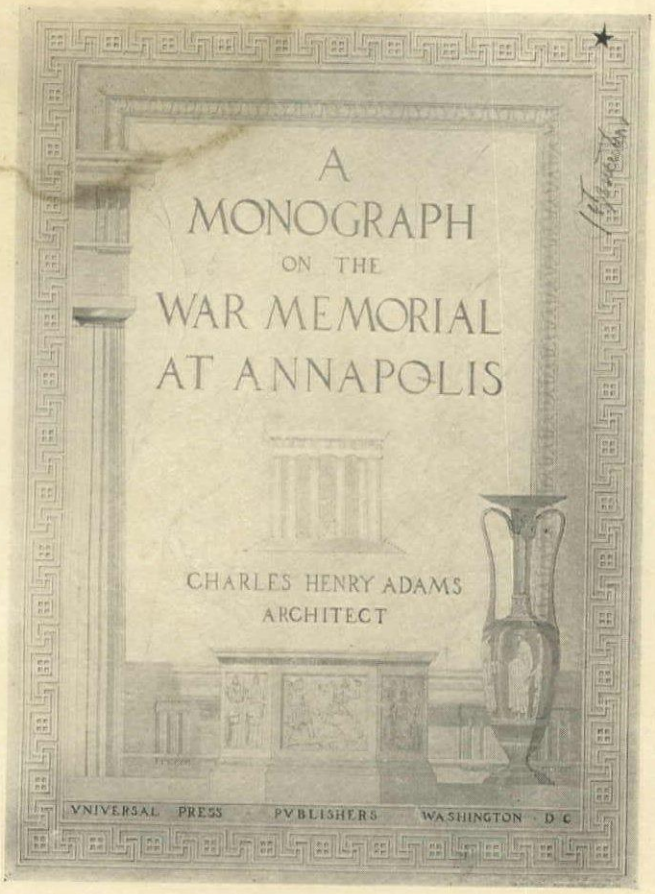
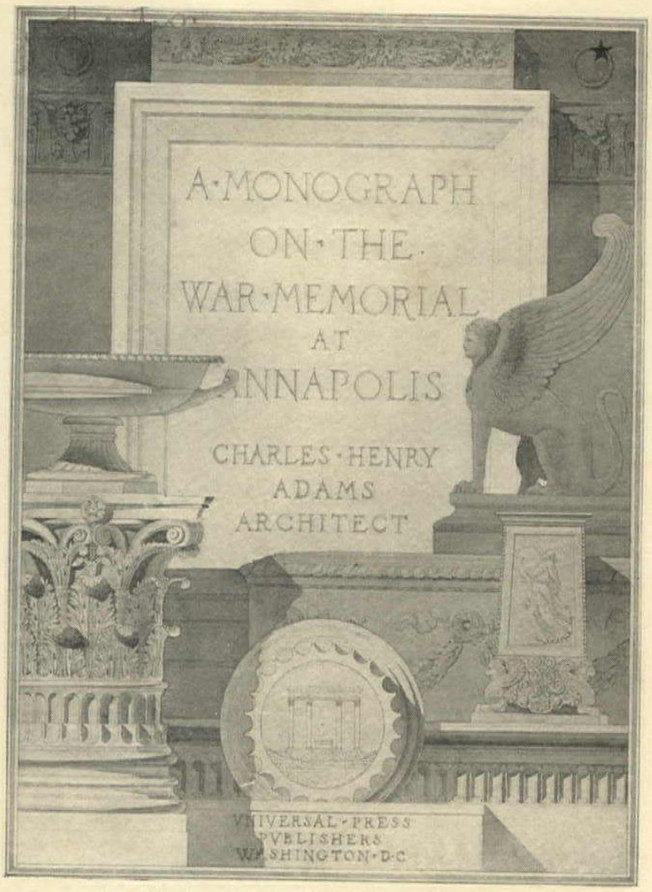
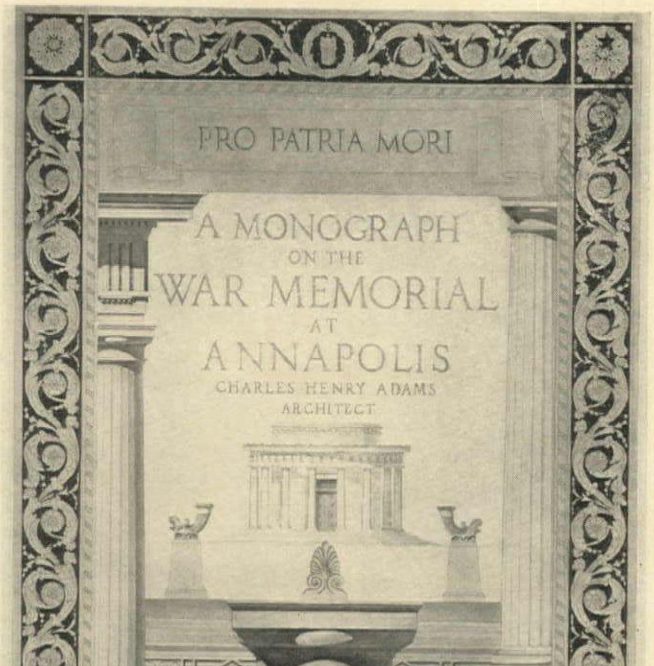
STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



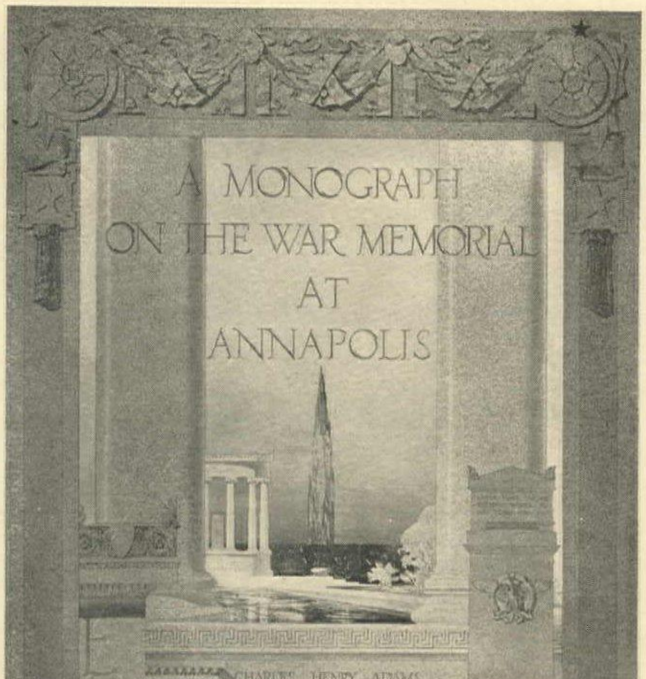
N. F. SIX FIRST MENTION CARNEGIE INST.



F. O. RENNISON FIRST MENTION JOHN HUNTINGTON POLY. INST.

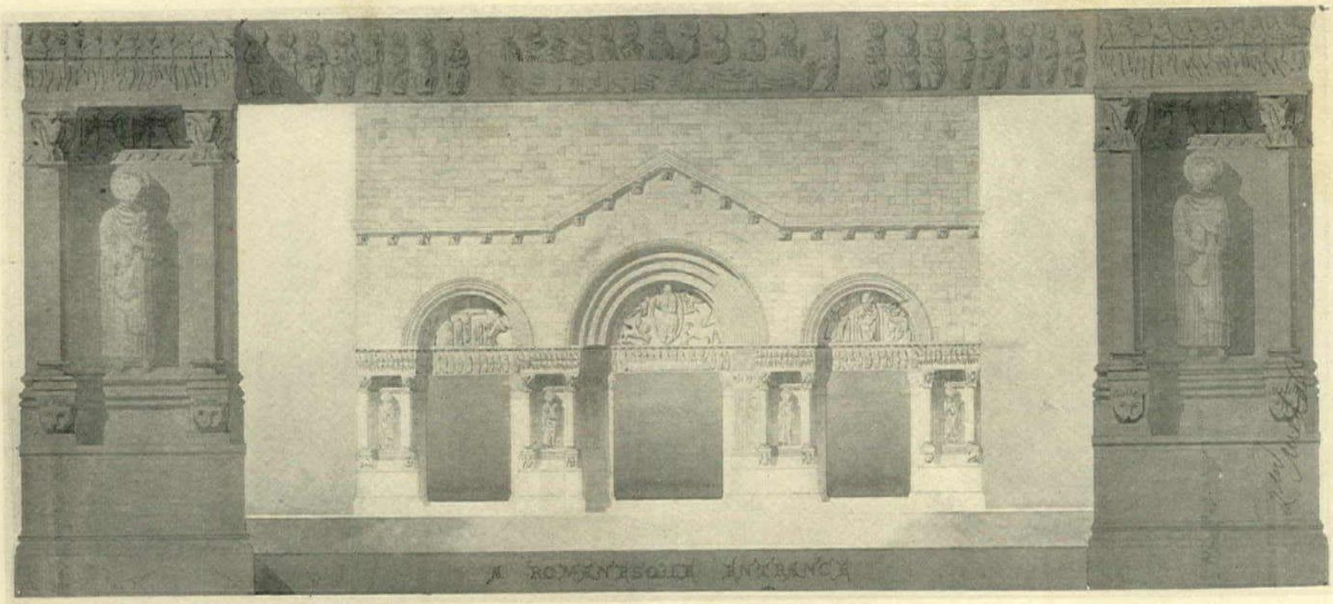


J. I. SOBOL FIRST MENTION COLUMBIA UNIV.

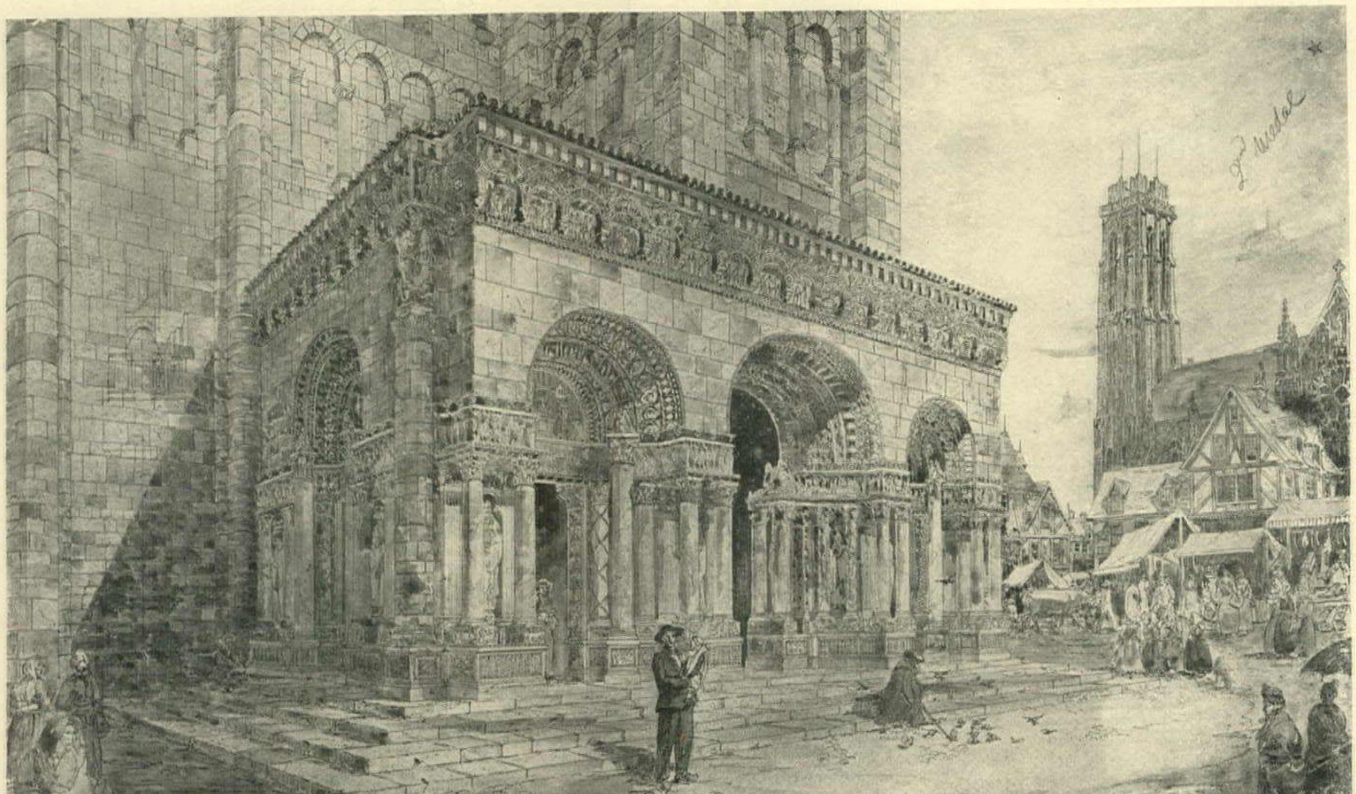


W. F. YOUNG FIRST MENTION ATELIER N. T. VORSE

CLASS "B"—III ANALYTIQUE—A FRONTISPIECE
STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



A. MARSHALL SECOND MEDAL COLUMBIA UNIV.

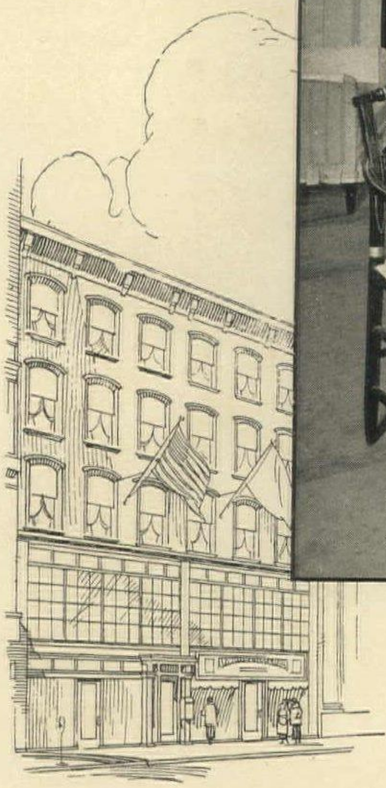


R. C. DANIS SECOND MEDAL CATHOLIC UNIV., WASHINGTON

CLASS "A" AND "B" ARCHAEOLOGY-III PROJET—A PORCH OF A ROMANESQUE CHURCH

STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN

(For program of this Projet see issue of April 23, 1924)



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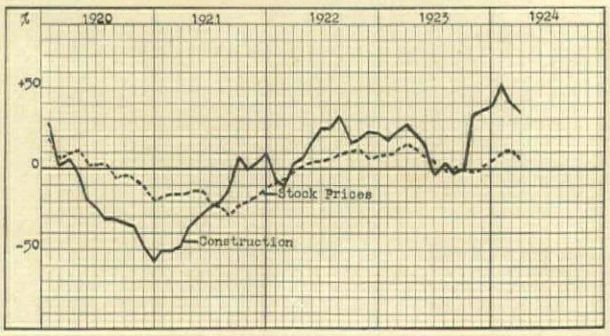
ECONOMICS *as* RELATING *to* ARCHITECTURE

THE enormous amount of speculative construction, that has recently been released in Metropolitan New York, has about succeeded in pushing the building industry off its balance. This intense activity in contracts awarded in March has completely converted into an overwhelming gain what might have been a moderate decline, had building in New York moved in the same direction as building has in the country as a whole. The present situation is deceptive and cloaked in rather severe and dismal possibilities. Conditions are still under control, but the situation is tense and the increased strain has called forth repeated warnings. An exact parallel of what took place last Spring, when demand heaped a staggering burden upon the industry, seems to be crystallizing. Overproduction is gravely threatened.

Costs, which have been moving slightly downward, have been slowly acquiring a stronger outlook as this prodigious amount of new building has asserted itself. As dealers buy to replenish stocks, materials prices are expected to grow firmer. Undoubtedly as the volume of new building draws nearer to completion labor costs will also stiffen. These record Spring undertakings, which of themselves are advancing the date when present requirements will be filled, join with a probable mild advance in costs to create a condition that is sure to bring about a moderate reduction in the volume of building later on. Furthermore, this deluge of new construction is driving ahead at a rapid pace the time when a moderate readjustment in valuations of improved property will be an actuality and not an unmistakable warning.

VOLUME OF CONSTRUCTION AND TREND OF STOCK PRICES



March has been a record month in the building industry, but when the statistics of contracts awarded have been subjected to the usual seasonal correction they reveal a trend that is downward. The elevation of activity, however, is still at a record height for March. Prices of industrial stocks have followed the curve of construction during the past four years, disclosing a distinct lag that is both striking and unusual. The implication is that business will feel the waning support of the building and construction industry although the noticeable effects may not materialize for some months yet. The construction curve is the volume of contracts awarded, expressed in square feet of floor space, in the 27 states covered by the F. W. Dodge Corporation, and the curve of stock prices is the average of 20 industrial stocks published by Dow, Jones & Company. Normal (0) is the average of the past five years

It is only in analyzing the trend of building in March that the full importance of the present movement of the industry is grasped. The most extraordinary contrast exists between the amount of building in the New York district, especially metropolitan New York, and that undertaken by the rest of the country. The dollar value of contracts awarded in the 27 states, which comprise about three-quarters of the country's building, surpassed the value of new jobs begun in February by more than 45 per cent. Construction started in March last year—a record for that month, by the way—was exceeded in March this year by gains of slightly less than 15 per cent. Here, however, lurks the proverbial black boy in the wood pile. Building in metropolitan New York in March broke all previous records, establishing a gain of 83 per cent over February and an increase of 130 per cent over March a year ago. Deducting the value of contracts awarded in the New York district from the value of construction begun in the 27 states, the computation reveals a decline for the rest of the country, when March, 1924, is contrasted with March, 1923, of about 10 per cent. This condition is indeed unusual as well as significant, for between 30 and 40 per cent of the country's building is being done in the New York district. It isolates for observation a feverish and highly speculative state of affairs, localized and concentrated as to its application, and running absolutely counter to the main trend of building in the remaining sections of the country, where the industry's activity is undergoing a moderate decline.

Now valuations and appraisals in the construc-

tion industry are inflated, and when the records of volume are expressed in terms of dollar values the statistical picture is obviously an exaggerated one. The amount of building measured in square feet of floor space, however, confirms the trend portrayed by the dollar value of contracts awarded in the months immediately passed. The first quarter of this year has been a record breaker, to be sure, and has run about 13 per cent heavier than the first three months of last year. Light seasonal trends subtracted from the unusually heavy January and February totals have carried our corrected curve of construction to heights 50, then 40 per cent, respectively, above the average of the past five years. March building has been subjected to much more rigorous seasonal correction, and it shows building to be about 33 per cent above what has been customary in March for the past five years. This achievement, incidentally, is an unprecedented one. The curve has revealed a decline because the intensity of the industry's movement has not been sustained, when allowance is made for the usual seasonal variation. Its underlying trend is, obviously, downward.

The storm center of the prevailing forces of demand seems to be residential building, single family dwellings and the more moderately priced apartment houses. This type of structure cherishes the greatest speculative possibilities today, for it is in this class of construction that the heaviest deficit still lingers. Since early last year there has been a home for almost every family, or social unit, that has sought shelter, but abnormally high wages and steady employment have increased the discontent with "just any kind of a home," particularly among the people of more modest means. This situation—an obvious outgrowth of the good times of the past two years—is one in which the man, who is in the market for a comparatively low priced dwelling or apartment, has the means with which to exercise a choice in the kind of a house he shall live in and he intends to use that privilege. A rising standard of living has in this way enlarged and accentuated the prevailing demand for all kinds of shelter.

It is indeed exceedingly unfortunate that so much construction is being undertaken at this time. It has created a congested state of affairs in which the productive machinery of the building industry is in much the same peril as a gate through which an eager and excited mob is attempting to make its way. Careful planning, patience, some sacrifice, complete co-operation and much effective execution will be needed to save it from breaking down. Until this period of strain has passed architects should counsel clients to refrain from heaping a further burden upon the industry. To attempt to regulate the flow of demand from any other point of view would be to approach the problem from the wrong end. Restraint exercised now will mean insurance to the industry against undermanned jobs, a possible shortage of some materials, and an indefinite delay of important projects later on.

A program—so modified—would be of even greater service to the general public to which the industry must ever turn for its support. A vast number of people are participating in today's building program in the role of owners. A head-over-heels rush to build might not only break down the productive capacity of the industry, but there is a strong possibility that it may also result in somewhat higher costs. If the present and unrestrained plan of construction is steadfastly persisted in, the public will probably be compelled to pay an inordinately high price for the jobs it has in hand. Such a scheme would inevitably lead to higher valuations, thereby intensifying in times of prosperity the severity of the readjustment after the peak of these good times has passed. Stability is not secured in this fashion. Neither is ample provision made for repeated years of reasonable profits and steady employment. Such a misguided and impetuous plan for the fulfillment of present demands obviously has no economic justification. A decline in the curve of the volume of building, carrying the plane of activity somewhat nearer to that which has been normal, say, for the last five years, would indeed be a salubrious signal, indicating a possible development of greater ease and security. Happily, the trend, according to our curve, has been in that direction, although the plane of activity is still at an abnormally high elevation.

While the main factor underlying the present demand for building has been the gradually rising standard of living, other attending influences have aided materially in crystallizing the immediate need for shelter. Rent bills have been rising, and the burden has chafed and irritated tenants. According to the National Industrial Conference Board rents have increased 85 per cent in the last ten years, 9 per cent in the last year, and 3 per cent during the past three months. Rent has equalled, and in many cases has exceeded, the interest upon the amount of money necessary to build newer and more commodious quarters. Furthermore, demand has been stimulated in some instances by lower materials costs; in other cases various but attractive concessions have forced decisions. In New York City the expected expiration of a tax exemption law has been held partly accountable for the mad rush to get building started before April 1. Undoubtedly another very powerful influence has been abundant and comparatively easy money. Where rents have been in excess of the interest on the money necessary to build a home, few people, paying high rents, have been able to resist this most tempting of all indulgences, the use of plentiful and relatively cheap credit for home building. The result has been an

enormous amount of construction in which commercial, educational and other types of structures have contributed to the general increase in building, but have not affected the situation to such a pronounced degree as residential construction has in the month just passed.

This same buying power, which has provided such a stimulus to home building, is the very element that makes possible the erection of larger structures. The good times of the past two years have increased the ease and willingness with which the public withstands heavy levies and assessments for the construction of much needed schools and public buildings. This same prosperity has heightened the readiness with which contributions are made for the erection of hospitals, memorials, clubs and churches. In a period of industrial recuperation succeeding a depression, savings are usually heavy because buying is restricted, and from this source has come the bulk of the funds that provide for the building of hotels, theatres and various other commercial structures. It is this buying ability, this power to make contributions, this capacity on the part of the public to save and conserve its earnings that very largely determine the future of the building industry, and these three faculties are intimately linked with the business situation.

Recessions in business—first noticed in the early part of February—have continued, and the lively exchange of merchandise, which seemed so promising in the earlier months of the year, is a prospect that has lost much of its luster. Confidence is weak and anaemic. The political situation has discouraged business aggressiveness and daring. The delay in the reduction of taxes, the passage of the bonus bill by both the Senate and House, and the consideration of other bills containing disturbing features have caused a great deal of uncertainty, and has resulted in much timid and cautious buying. This steadfast refusal to anticipate future wants is being reflected, first, in the trend of commodity prices, which have dropped, according to Professor Irving Fisher's index, from 152 in the first week in March to 146 in the last week in April; second, in the curtailing of production which, in the 22 basic industries selected by the Federal Reserve Board, fell from 121 in February to 115 in March; and finally, in the trend of confidence, which, when measured by the movement of stock prices, reveals a decline since February of about six points on the average. So long as buying lingers and hesitates one cannot expect unqualified good times in business. The consumption of goods has been very heavy, but the decline in freight traffic, in wholesale trade, and in department store sales all point to the fact that the purchases of the ultimate consumer have been diminishing. Employment has been general and at high wages, but curtailment of production is very quickly reflected in the consumption of goods, for it is in the production of merchandise to sell that purchasing power is created. If the output of materials is depressed, consumption is depressed also. They cannot be considered separately; one is the direct consequence of the other.

Now of all the major industries, building and construction and their dependencies have the brightest immediate outlook. The heaviest contributions to the maintenance of the present movement in general business come from this sector. The chart accompanying this article pictures in a striking way the commanding position that the construction industry has had over the destinies of business during the past four years. In almost every major decline the curve of construction has pointed the way before the signal has been given by the curve of stock prices, which is generally conceded to be a sensitive barometer. Again, in almost every advance the curve of construction has been from one to six months ahead of a similar movement in stock prices. This relationship, which is believed to be unusual, has persisted thus far in 1924. It naturally raises the question as to what will be the reaction in general business to the declining trend that is so evident in building and construction outside of New York today? The suggestion that general business will feel the withdrawal of this industry's support is obvious from our chart. An accurate answer is, of course, quite impossible at this time.

Nevertheless, the building industry, the manufacture of automobiles, the making of steel, motor accessories, railroad equipment and machinery continue to be the high points of the immediate industrial outlook. Profits in almost all of them, however, are diminishing. The volume of sales in only a few lines is falling off abruptly, but costs are at a peak and unyielding, and commodity prices are the lowest they have been since the latter part of 1922. Obviously, profits cannot keep the pace. The election next November will sweep aside a heavy pall of uncertainty. The key to a sounder and more secure situation abroad seems to be contained in the Dawes plan for the rehabilitation of Germany. Its usefulness and feasibility as a plan of restoration of the former economic status of Central Europe are suggested by the fact that it has been generally commended and has been immediately followed by the arrangement of a large loan to the new German Rediscount Bank by a number of banking institutions under the leadership of the International Acceptance Bank, Inc., of New York City. Then again, perhaps the best and truest index of the business situation is the state of credit. Money has been plentiful and interest rates have been easier. There is no immediate outlook for a change in their present trend. Hand-to-mouth buying has kept debts down, and banking and credit resources are very strong. The country has had two good years of active business, and the fact that there has

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(616)

been little expansion of speculation has resulted in an industrial situation fundamentally sound.

The backwardness that has characterized the buying of commodities generally has been the dominant feature of the building materials market up to the time this is written. Prices of steel and some classifications of lumber have been easier, but these concessions have coaxed forth no forward commitments. Materials men have thus far refrained from taking a speculative interest in the market and their attitude is to be highly commended. It has made for a greater degree of stability, and has provided some assurance against shortages. In conservative circles reserve stocks are believed to be adequate for immediate needs, but the heavy program indicated by the record building of the past three months surely will make the replenishment of existing inventories necessary before the Summer. This buying is expected to give the markets a moderately firmer tone.

The weakness in the materials-price components of the *Engineering News-Record's* index of construction costs was responsible for its decline from a relative of 225 in February to 220 in March. The April figure had not appeared at this writing, but its change either one way or the other from the position recorded in March is not expected to be material. The changes in labor costs during that month and effective April 1, according to *The American Contractor,* showed a strong tendency of wages to mount to still higher levels. The gigantic building program points unmistakably to the fact that wages will continue to rise during the next few months. No serious shortages have been reported but in many cities there is a scarcity of bricklayers and plasterers, and where this situation is acute bonuses have been granted. Unskilled and semi-skilled workmen are fully employed. The granting of bonuses is the beginning of a practice of which more is likely to be heard later on. Although agreements already signed govern wages during the coming year, the heavy building program has certainly increased the advantage of organized labor in the industry's councils, and a great deal will depend upon labor's attitude. The situation is such as to call for unmitigated co-operation from everyone, and it is to be hoped that the farsighted union leaders will play their part in protecting the interests of the industry as a whole.

The abundance of funds in the general money market has eased somewhat the aspect of the mortgage money situation. Rates on construction loans are substantially the same as they have been for some months passed, but the supply of funds has lessened the tension materially. Unless building costs again turn upward, inflating valuations still more, there is little in the money situation now that is hostile to continued heavy building for the next few months. Higher costs with their attending increases in valuations, however, should be looked upon as developments distinctly contrary to the best interests of investors, and bankers should take steps to bring the industry back to a saner pace, restraining demand, relieving pressures, and providing against subsequent depreciation in the valuation of improved property in months to come.

A CORRECTION

THE American Brass Company has called attention to an error appearing in their advertisement in our issue of January 16. Credit as architects for the Federal Reserve Bank Building, New York, which should have been given to York & Sawyer, was inadvertently given to another firm.

GARDEN ARCHITECTURE COURSE

THE Institute of International Education, 522 Fifth Avenue, New York, has organized a travel course in landscape and garden architecture for the coming Summer.

The instructor for the course will be Professor Edward Lawson. His instruction will begin with a course of daily lectures on shipping during the Eastbound transatlantic voyage and will continue in a series of field lectures during the nearly two months to be spent in visiting the great landscape works of Italy, France and England.

The field work will include visits to the important Roman villas, the villas and gardens of Florence, the chateaux of the Loire, gardens in and near Paris, and many of the important gardens and estates of the British Isles.

ACKNOWLEDGMENT

MR. BALLARD'S article on page 447 of our issue of May 7, was presented before the 1923 Convention of the National Association of Building Owners and Managers and reprinted by permission.

SUMMER COURSES AT UNIVERSITY OF MICHIGAN

CLASSES will be conducted from June 23 to August 15 at the University of Michigan, Ann Arbor, in architectural design, outdoor sketching and painting, also in industrial arts, the latter primarily for art teachers in public schools.

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5. General Conditions:
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VIII. RESULTS

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ACOUSTICS

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y.

710. *Architectural Acoustics.* A treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places. 24 pp. Ill. 6 x 9 in.

AIR CONDITIONING—See also Heating and Ventilation

The Bayley Manufacturing Company, 732-760 Greenbush St., Milwaukee, Wis.

483. *Bulletin No. 23.* This bulletin is descriptive of the Bayley Turbo-Atomizer, the Bayley Turbo Air-Washer and Air Conditioner, for cleaning, cooling, tempering, humidifying and dehumidifying air. It contains an interesting treatise on air conditioning methods together with useful tables and a set of specifications. 32 pp. Ill. 7¾ x 10½ in.

Midwest Air Filters, Inc., 100 E. 45th St., New York City.

642. *Dust Problems and Their Solution.* A discussion of the problems of supplying clean air for ventilation and industrial purposes, covering the complete line of Midwest Air Filters. Drawings, photographs, installations, sizes, specifications, tables, etc., make it a practical handbook on the subject for architects and specification writers. 48 pp. Ill. 8½ x 11 in.

ARCHITECTURAL IRON WORK—See also Ornamental Metal Work

ASBESTOS—See also Lumber, Roofing

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y.

709. *Johns-Manville Service to Power Users.* A catalog containing valuable data on all forms of asbestos insulation, asbestos packings, steam traps, high temperature cements, asbestos brake blocks and linings, asbestos building materials and general technical data. 260 pp. Ill. 8½ x 11 in.

ASBESTOS ROOFING—See also Roofing

The Philip Carey Co., Lockland, Cincinnati, Ohio.

380. *Asbestos versus Fire.* Booklet in colors. Contains information about asbestos; data on Carey Prepared and Built-up Asbestos Roofing; picture of buildings on which they have been used. 15 pp. Ill. 6 x 9 in.

ASH HOISTS—See also Hoists

Gillis & Geoghegan, 545 West Broadway, New York, N. Y.

329. *General Catalogue.* Contains specifications in two forms, (1) using manufacturer's name, and (2) without using manufacturer's name. Detail in ¼ in. scale for each telescopic model and special material handling section. Fully illustrated with photographs of actual installations and descriptive matter of same. 20 pp. 2 colors. 8½ x 11 in.

BANK VAULTS

The Concrete Reinforcing and Engineering Co., 2735 Prospect Ave., Cleveland, Ohio.

730. *Vault Security.* A booklet treating of the fundamentals of vault masonry design and illustrating the application of the rivet-grip system of reinforcement in concrete vault walls. Typical layouts, details and specifications. 22 pp. Ill. 8½ x 11 in.

BATHROOM EQUIPMENT

A.P.W. Paper Co., Albany, N. Y.

740. *The Onliwon Hygiene.* A file card for reference in specifying cabinets of different kinds to contain toilet papers and paper towels. 2 pp. Ill. 8½ x 11 in.

BRICK

American Face Brick Association, 1754 People's Life Bldg., Chicago, Ill.

103. *The Story of Brick.* Contains the history of, and basic requirements of building brick, artistic, sanitary and economic reasons, comparative costs, and fire safety with photographs and drawings, and illustrates ancient and modern architectural works of note in brick. Size 7 x 9¼ in. 56 pp.

137. *A Manual of Face Brick Construction.* The history of brick making, types of face brick, showing details of construction for walls, chimneys and arches. Details of use of tile and brick construction and different types of bonds are given. A series of plans and elevations of small brick houses, descriptions, useful tables and suggestions are illustrated and described. Size 8½ x 11 in. 116 pp. Price $1.00.

155. *The Home of Beauty.* A booklet containing fifty prize designs for small brick houses submitted in national competition by architects. Texts by Aymar Embury II, Architect. Size 8 x 10 in. 72 pp. Price 50 cents.

371. *Architectural Details in Brickwork. Series One, Two and Three.* Each series consists of an indexed folder case to fit standard vertical letter fire, containing between 30 and 40 half-tones in brown ink on fine quality paper. These collections are inspiring aids to all designers. Sent free to architects who apply on their office stationery; to others, 50 cents for each series.

American Face Brick Association, 1754 People's Life Bldg., Chicago, Ill.

454. *Bungalow and Small House Plans.* Four booklets containing plans for attractive small brick houses, containing 3-4, 5, 6, and 7-8 rooms. 50 pp. Ill. 8½ x 11 in. 25 cents each, $1.00 for the set.

BRICK AND TILE—See also Brick

BUILDING CONSTRUCTION

Cement-Gun Company, Allentown, Pa.

563. *Report on Gunite Walls.* A report of fire tests made by Underwriters' Laboratories on Gunite walls, resulting in giving them a three-hour fire resistance classification. 90 pp. Ill. 6 x 9 in.

Concrete Engineering Co., Omaha, Neb.

347. *Handbook of Fireproof Construction.* An illustrated treatise on the design and construction of reinforced concrete floors with and without suspended ceilings. The Meyer Steel-form Construction is emphasized and tables are given of safe loads for ribbed concrete floors. 40 pp. Ill. 8½ x 11 in.

The Concrete Reinforcing and Engineering Co., 2735 Prospect Ave., Cleveland, Ohio.

FS10. *Rivet-Grip Steel Joists.* Circular describing steel joists fabricated in truss form from specially rolled heavy Rivet-Grip Sections. 4 pp. Ill. 8½ x 11 in.

FS11. *Rivet-Grip Standard "Type G" Floors.* A circular describing a combination Pyrobar Floor Tile, concrete joists and Rivet-Grip rigid shop fabricated frames. Design tables, details and tests. 16 pp. Ill. 8½ x 11 in.

Curtis Companies Service Bureau, Clinton, Iowa.

662. *Better Built Houses.* Vol. XIII. This volume contains floor plans and perspectives of 21 two family houses. The designs were made by Trowbridge & Ackerman, Architects, New York, and illustrations rendered by Schell Lewis. Printed in sepia on heavy cream paper. Sent free to architects, east of the Rockies, requesting it on business stationery, otherwise price $1.00. 24 pp. Ill. 9 x 12 in.

Johns-Manville, Inc., New York City.

752. *Johns-Manville Service to Industry.* A complete catalog of Asbestos Roofings, Heat and Electric Insulations, Waterproofing, Industrial Flooring, etc. Complete details and specifications. Valuable reference book for architects. 260 pp. Ill. 8½ x 11 in.

McKeown Bros. Co., 21 East 40th St., New York, N. Y.

434. *Clear Floor Space.* A folder showing uses and advantages of McKeown "Lattis" and "Bowstring" long span wood roof trusses. 4 pp. Ill. 8½ x 11 in.

Portland Cement Association, 347 Madison Ave., New York City.

595. *Concrete Floors.—Proposed Standard Specifications of the American Concrete Institute.* Specifications with explanatory notes covering materials, proportions, mixing and curing. Plain and reinforced slabs are covered as well as one and two course floors and wearing courses. 18 pp. 6 x 9 in.

Truscon Steel Company, Youngstown, Ohio.

317. *Truscon Floortyle Construction. Form D-352.* Contains complete data and illustrations of Floortyle installations. 16 pp. Ill. 8½ x 11 in.

318. *Truscon Standard Buildings. Form D-398.* Describes Truscon Standard Steel Buildings, with diagrams, illustrations of installations, descriptive matter and list of users. 48 pp. Ill. 8½ x 11 in.

319. *Truscon Building Products. Form D-376.* Contains a brief description of each of the Truscon Products. 112 pp. Ill. 8½ x 11 in.

320. *Modern School Construction. Form D-396.* Contains illustrations of schools, with typical elevations, showing advantages of Truscon Products for this construction. 16 pp. Ill. 8½ x 11 in.

United States Gypsum Co., 205 W. Monroe St., Chicago, Ill.

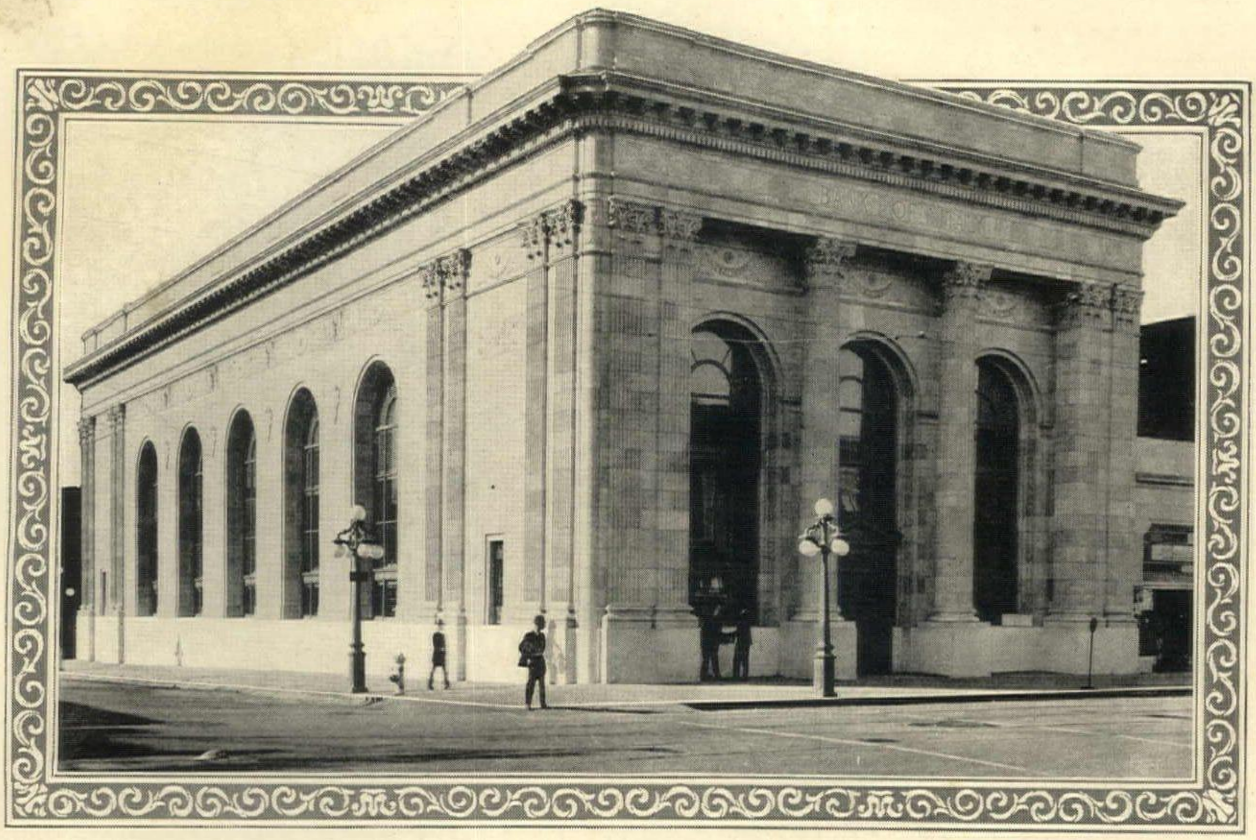
FS12. *Pyrobar Gypsum Tile.* A manual describing the physical properties of Pyrobar Gypsum Tile, specifications for laying and plastering, fire and sound proof tests, details, etc. 24 pp. Ill. 8½ x 11 in.

BUILDING DIRECTORIES

The Tablet & Ticket Co., 1015 West Adams St., Chicago, Ill.

517. *Office Building Directory.* Bulletin illustrating and describing directories made by this company providing for any required number of names. Frames of wood or metal with glass cover or doors. Name strips with one-quarter inch white letters furnished. Size 7 x 10 in. 4 pp.

BUILDING HARDWARE—See Hardware



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IN 1921 San Francisco architects specified Carey Built-up Roofing for the main building of one of the greatest banking institutions in the country — The Bank of Italy with branches at that time in eighteen cities.

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REFERENCE LIST OF BUSINESS LITERATURE—Continued

BULLETIN BOARDS

R. W. Clark Mfg. Co., 1774 Wilson Ave., Chicago, Ill.

588. *Clark Directories and Clark Changeable Bulletin Boards.* Two pamphlets describing the Clark Changeable Bulletin Board and Directories for Office Buildings, Hotels, Business Buildings, etc. 8 pp. and 4 pp. Ill. 6¼ x 9 in.

The Tablet & Ticket Co., 1015-1021 West Adams Street, Chicago, Ill.

516. *T. & T. Changeable Bulletin Display Boards.* Describes Bulletin Boards with changeable type which has a self-spacing device so the lettering always looks neat and regular. 24 pp. Ill. 6 x 9 in.

BUILT-IN FURNITURE

Built-in-Furniture Co., 2608 San Pablo Ave., Berkeley, Calif.

FS32. *Peerless Built-in Furniture.* A portfolio of loose leaf details of breakfast nooks, kitchen cabinets, wall tables, ironing boards, etc. 22 pp. Ill. 8½ x 11 in.

CABINETS

Hess Warming & Ventilating Co., 1204-7 Tacoma Building, Chicago, Ill.

386. *The Hess Sanitary Medicine Cabinet Lockers and Mirrors.* Description with details of an enamelled steel medicine cabinet for bathrooms. 20 pp. Ill. 4 x 6.

CASEMENTS—See Doors and Windows

CEDAR LINING—See Lumber

CELLAR SASH—See Doors and Windows

CEMENT

The Carney Co., Mankato, Minn.

448. *The Bond That Guarantees the Wall.* Attractive catalog for architects, engineers, contractors, and dealers. Describes fully the characteristics, durability and economy of this nature-mixed cement that requires no lime. Contains simple formula for mixing and illustrations of Carney-laid buildings. 24 pp. Ill. 8½ x 11 in.

711. *A Perfected Cement.* An attractive circular describing late improvements in manufacturing Carney, cost comparisons, physical tests, specifications and testimonials. List of Carney-built buildings with architect's and contractor's names. 8 pp. Ill. 8½ x 11 in.

Louisville Cement Co., Inc., Louisville, Ky.

694. *Brixment for Perfect Mortar.* A description of the chemical and physical properties of Brixment, advantages of its use in mortars for brick and stone masonry, tests of strength and directions for use. In cover for filing. 16 pp. Ill. 8½ x 11 in.

Portland Cement Association, 111 West Washington St., Chicago, Ill.

636. *Concrete Data for Engineers and Architects.* A valuable booklet containing the reports of the Structural Materials Research Laboratories at Lewis Institute, Chicago, in abbreviated form. It is of great value to writers of specifications. 18 pp. Ill. 8½ x 11 in.

CHAIRS—See Furniture

The B. L. Marble Chair Co., Bedford, Ohio.

587. *Office Chairs, Catalog No. 31.* Describes a complete line of seating fixtures, for offices, directors' rooms and other places consisting of stationary and swivel chairs, settees and couches, both plain and leather upholstered. Also stenographer's chairs, stools, waste baskets, coat trees and accessories. 75 pp. Ill. 9 x 12 in.

CHUTES—See also Laundry Equipment

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.

171. Booklet showing general construction and size of chutes to receive coal. Two types are built into the foundation wall with glass panel in place of cellar window; another type is placed flush with the ground, and is placed adjacent to wall, or can be placed near the street curb. Size 3½ x 6¼ in. 16 pp.

CLOCKS

Landis Engineering and Manufacturing Co., Waynesboro, Penna.

469. *Landis Electric Time and Program System.* A collection of bulletins No. 100, 110, 120, 130, 150, and 160, dealing with master and secondary clocks, equipment, time stamps, etc. Bound in expansible filing cover of tough paper. 48 pp. Ill. 8½ x 11 in.

COLUMNS

Lally Column Co. of New York, 334 Calyer Street, Brooklyn, N. Y.

122. *Lally Columns. Handbook.* Detailed construction diagrams for various types of steel construction. The text describes advantages of endurance and economy of the column. Various tests, tables of sizes, dimensions, weight, carrying capacities, and data on other structural materials are given. Size 4⅝ x 6⅜ in. 81 pages.

CONCRETE, REINFORCED—See also Reinforcing Steel

CONDUITS—See Pipe

DAMPPROOFING—See also Waterproofing

DOORS AND WINDOWS

Andersen Lumber Company, Bayport, Minn. (formerly South Stillwater).

559. *Complete Catalog for Architects and Builders.* Describes Andersen Standard Window Frames and Cellar Sash Frames, which are in 7 units instead of 57 and may be assembled and nailed in 10 minutes. Shows uses in special construction for it comes in 121 sizes and styles. 24 pp. Ill. 7¾ x 10¾ in.

Crittall Casement Window Co., Detroit, Mich.

672. *Crittall Universal Casement, Catalog No. 22.* Contains complete description, photographs, specifications and details of steel casement windows for banks, schools, residences, churches, hospitals, set directly into masonry and with auxiliary frames. 76 pp. Ill. 9 x 12 in.

695. *Crittall Solid Steel Reversible Windows, Catalog No. 1-24.* A catalog explaining the advantages of reversible metal windows for office buildings, schools, hospitals and other substantial buildings. Details of construction and specifications. 20 pp. Ill. 8½ x 11½ in.

Dahlstrom Metallic Door Co., Jamestown, N. Y.

674. *Architectural Catalog.* Illustrated catalog showing styles and types of Dahlstrom Standard Construction Hollow Metal Doors and Trim, Conduo-Base, etc. Also various types of frames, jamb construction and architectural shapes. 178 pp. Ill. 8½ x 11 in., in loose leaf.

Detroit Steel Products Co., Detroit, Mich.

FS31. *Steel Windows for Schools.* A booklet illustrating the use of Fenestra windows in schools and colleges giving details, sizes and specifications. 32 pp. Ill. 8½ x 11 in.

Field Hardware Mfg. Co., Kansas City, Mo.

FS27. *No Pole Top Sash Operator. Bulletin 7-B.* Describing the window hardware which operates the top sash of double-hung windows without a pole. 12 pp. Ill. 3¾ x 8½ in.

Irving Hamilton, 716 University Place, Evanston, Ill.

735. *The Evanston Sound-Proof Door.* A circular explaining the construction of a sound-proof door hermetically sealed against odors, dust, light, weather and air, especially adapted to music schools, hospitals, etc. 4 pp. 8½ x 11 in.

Henry Hope & Sons, 103 Park Ave., New York.

65. *Hope's Casements and Leaded Glass.* Portfolio. Gives specifications, description and photo-engraving, of Hope Casements in English and American Architecture, full size details of outward and inward opening and pivoted casements, of residential and office types. Size 12¼ x 18½ in. 32 pp.

The Kinnear Manufacturing Company, Columbus, Ohio.

455. *Steel Rolling and Folding Doors and Shutters. Catalog No. 52.* This catalog is devoted to service doors adaptable to buildings of all classes, piers, factories, warehouses, etc. Illustrates their use and contains tables for designers and detailers. 96 pp. Ill. 8 x 11 in.

The A. B. Ormsby Co., Ltd., Toronto, Canada.

FS30. *Ormsby Products.* A catalog of rolling steel shutters, revolving doors and steel factory sash. 30 pp. Ill. 9 x 11¾ in.

S. H. Pomeroy Company, 282 East 134th St., New York, N. Y.

614. *Solid Metal Double Hung Window. Type "A". Bulletin A.* Complete specifications and details of sash, frame, stools and stool and apron. 4 pp. Ill. 8½ x 11 in.

Paine Lumber Co., Ltd., Oshkosh, Wis.

FS14. *Paine Miracle Doors.* A catalog of styles with numerous illustrations in color combinations. Details of construction and specifications for finishing. 56 pp. Ill. 8½ x 11 in.

Truscon Steel Co., Youngstown, Ohio.

315. *Truscon Steel Sash.* A catalog containing designing data, tables and views of Stock Sash installations. 6 pp. Ill. 8½ x 11 in.

348. *Truscon Steel Sash.* This handbook has been prepared for detailers and specification writers. The descriptions are clear and the details are complete. 80 pp. Ill. 8½ x 11 in.

638. *Daylighting Schools.* A treatise on the daylighting and window ventilation of school buildings quoting eminent authorities, illustrated with diagrams of lighting data and details of suitable windows. 28 pp. Ill. 8½ x 11 in.

The Wheeler Osgood Co., Tacoma, Wash.

713. *Laminex Doors, Catalog No. 31.* Doors made of Douglas Fir employing a special laminated and doweled construction. Twenty designs in vertical and flat grain veneers. Sizes and details. 44 pp. Ill. 3⅞ x 9¼ in.

714. *Laminex Doors, A Book for Architects and the Building Trade.* This book fully describes the special features of Douglas Fir Laminex and Woco Doors; strength, water and heat tests; properties of Fir; Woco garage doors and window sash. 24 pp. Ill. 8 x 11 in.

DRAFTING MATERIALS

American Lead Pencil Co., 220 Fifth Ave., New York, N. Y.

268. *Booklet C-20. Venus Pencil in Mechanical Drafting.* An interesting illustrated booklet showing the possibilities of the Venus Drawing Pencil for drafting. 6 x 9 in.

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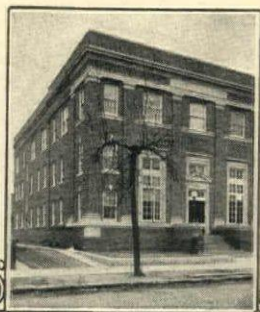
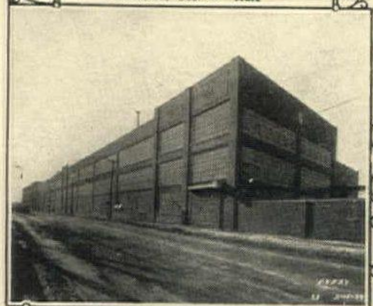
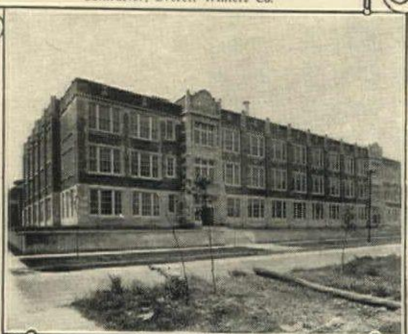
ALCAZAR HOTEL, Cleveland, Ohio
Architect, H. T. Jeffery
Contractor, Geo. W. Hale

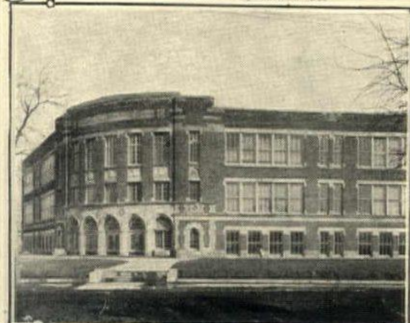

CLINIC BUILDING, Council Bluffs, Ia.
Architects, Anderson & Spooner
Contractor, John E. Wakefield Co.


HUPP MOTOR CAR COMPANY, Detroit, Mich.
Private Plans
Contractor, Everett Winters Co.


UNIVERSITY of VA. GYMNASIUM, Charlottesville, Va.
Architect, Fiske Kimball
Contractor, King Lumber Co.


TOWER BUILDING, Chicago, Ill.
Architects, Holabird & Roche
Contractor, Krahl Construction Co.


NORTH JUNIOR HIGH SCHOOL, Sioux City, Ia.
Architects, Beuttler & Arnold
Contractors, Riesche & Sanborn


JOSEPH G. CANNON SCHOOL BLDG., Danville, Ill.
Architects, Lewis & Dougherty
Contractor, Clark Construction Co.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

DRAFTING MATERIALS

Joseph Dixon Crucible Company. Pencil Department, Jersey City, N. J.

325. *Finding Your Pencil.* A book explaining the various degrees of hardness of the Eldorado pencil and the grade most suitable for every man who uses a pencil be he business or professional man, clerk or draftsman. Accompanied by a color chart of Dixon colored crayons. 16 pp. and 4 pp. in color chart. Ill. in colors. 3¼ x 6 in.

Ruud Manufacturing Co., Pittsburgh, Pa.

732. *Ruud Delineator and Specification Card.* A diagram of vanishing lines over which perspective sketches can be readily and correctly made. 8½ x 11 in.

DRAINS—See also Plumbing Equipment

DUMB-WAITERS—See also Elevators

Kaestner & Hecht Co., 1500 No. Branch St., Chicago, Ill.

598. *Electric Dumb-waiters. Bulletin No. 520.* Illustrated catalog, 8 pp. 8½ x 11 in.

Sedgwick Machine Works, 144 West 15th Street, New York.

60. *Hand Power Elevator and Dumb-waiters in Modern Architectural Construction.* Illustrated catalogue. 4¼ x 8¼ in. 80 pp.

ELECTRICAL EQUIPMENT

Frank Adam Electric Co., St. Louis, Mo.

741. *Panel Board Catalog No. 32.* A complete catalog of standard panel boards, steel cabinets, switches and accessories. 48 pp. Ill. 7¾ x 10¾ in.

The Hart & Hegeman Mfg. Co., 342 Capitol Avenue, Hartford, Conn.

699. *H. & H. Electrical Wiring Devices, Catalog "R."* Catalog of a complete line of switches, sockets, plugs, receptacles, plates, rosettes, cut-outs, elexits and accessories. Two identical catalogs in two sizes. 152 pp. Ill. 5 x 6¼ and 8 x 10½ in.

700. *Gold and Silver Star Switches.* A new type of switch with composition base having a gold star or a silver luminous star in on the button. 4 pp. Ill. 3½ x 6 in.

Harvey Hubbell, Inc., Bridgeport, Conn.

297. *Electrical Specialties. Catalog No. 17, 1921.* This catalog contains descriptions with prices of the thousand and one items connected with electric light, electric alarm and small electric appliance installations in modern buildings. 104 pp. Ill. 8 x 10½ in.

Kohler Co., Kohler, Wis.

756. *Kohler Automatic Power and Light.* A catalog illustrating a complete line of isolated automatic electric plants of 800 to 2500 watts capacity operated by gas or gasolene. Specifications. 48 pp. Ill. 6 x 8½ in.

Minneapolis Heat Regulator Co, Minneapolis, Minn.

570. *The Minneapolis Thermostatic Relay Switch.* Used in connection with any Minneapolis Thermostat, provides a means of temperature control for automatic oil burners, electric refrigerating apparatus, electric heating units and any similar equipment where it is necessary to operate an electric switch in accordance with temperature changes. 4 pp. Ill. 8½ x 11 in.

National Metal Molding Co., Pittsburgh, Pa.

481. *Liberty Rubber Insulated Wires, Cables and Cords.* A descriptive catalog of insulated wires, cables and cords for electric wiring. Contains much special information together with useful tables. 20 pp. Ill. 6 x 9 in.

ELEVATORS—See also Dumb-waiters and Hoists

A. B. See Electric Elevator Co., 52 Vesey St., New York.

169. Photographs and description in detail of elevator equipment manufactured by the A. B. See Electric Elevator Co. Size 6 x 8 in.

Kaestner & Hecht Co., 1500 No. Branch St., Chicago, Ill.

597. *Electric Traction Elevators, Bulletin No. 500.* Illustrated catalog describing gearless traction elevators and worm-geared traction elevators. 31 pp. 8¼ x 11 in.

Kimball Bros., Co., Council Bluffs, Iowa.

742. *Kimball Straight Line Drive Elevators.* A complete catalog of passenger, freight and garage traction elevators, push button elevators, dumbwaiters, sidewalk and ash hoist elevators. 36 pp. Ill. 8½ x 11 in.

Otis Elevator Co., 260 Eleventh Ave., New York City.

651. *Otis Geared and Gearless Traction Elevators.* Leaflets describing all types of geared and gearless traction elevators with details of machines, motors and controllers for these types. Illustrated. 8½ x 11 in.

Richards-Wilcox Mfg. Co., Aurora, Ill.

335. *"Ideal" Elevator Door Equipment.* Catalog showing elevator door hangers for one, two and three speed doors, also doors in pairs and combination swing and slide doors. Door closers and checks. 24 pp. Ill. 8½ x 11 in.

ELEVATOR LOCKS

Elevator Locks Co., 119 No. Washington St., Peoria, Ill.

536. *M-C-K Safety Elevator Locks.* A description of locks for elevators which mechanically lock the power and gate automatically, while gate is open; keep power locked until gate is securely closed; securely lock gate before power can operate; control the landing. Contains several pages of names of contented users. 24 pp. Ill. 4 x 9¼ in.

ESCALATORS

Otis Elevator Co., 260 Eleventh Ave., New York City.

652. *Elevators and Inclined Elevators.* A comprehensive catalog illustrating the use of escalators for transporting people in stores, subways, railroad stations, theatres and mills; also inclined freight elevators for stores, factories, warehouses and docks adjustable to tide levels. 22 pp. Ill. 8½ in.

FENCE

The Stewart Iron Works Company, Cincinnati, Ohio.

458. *Book of Designs "B."* A book of fence designs full of suggestions for architects. All illustrations are from photographs. 80 pp. Ill. 9½ x 12 in.

FILTERS—See Air Filters

FINANCING OF ENTERPRISES

S. W. Straus & Co., 565 Fifth Ave., New York, N. Y.

183R. *The Straus Plan of Finance.* A book describing the methods of S. W. Straus & Co., in helping to finance the erection of the larger class of properties such as office and apartment buildings, hotels, loft buildings and similar structures. A book valuable to the architect who desires to study the business side of the profession. 24 pp. Ill. 7¼ x 10½ in.

753. *What Forty-two Years Without Loss to Any Investor Means to You.* A booklet recording the record of S. W. Straus & Co., explaining the Straus Plan and reasons for its success. 16 pp. 4 x 6½ in.

FIRE DOORS AND SHUTTERS—See Doors and Windows

FIREPLACES AND MANTELS

Colonial Fireplace Co., 4619 Roosevelt Road, Chicago, Ill.

675. *Everything for the Fireplace.* A catalog showing a complete line of well designed andirons in various finishes; portable, club and basket grates; wood holders, firesets and Franklin stoves; folding screens, spark guards and fenders; hoods and set grates; gas logs, electric fires, ash traps, cranes and kettles and head throats and dampers. 24 pp. Ill. 8½ x 11 in.

H. W. Covert Co., 137 East 46th St., New York.

79. *Hints on Fireplace Construction.* Diagrams of construction and installation of Covert "Improved" and "Old Style" dampers and smoke-chambers, and other fireplace accessories. Size 5⅝ x 8½ in. 12 pp.

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.

92. *Dampers, Chutes, Doors and Dumps.* Illustrated catalog. Equipment and appurtenances of various types, construction and installation, data, dimensions and prices.

Peerless Manufacturing Company, Inc., Louisville, Ky.

513. *The Lure of the Fireplace.* This booklet contains information and diagrams for the design and building of fireplaces, together with descriptions of modern domes and dampers so that a fireplace will work effectively at all times. Contains many illustrations of tasteful mantel designs. 24 pp. Ill. 5 x 7 in.

FLOOR COVERING—See Flooring

FLOORING, SUB—See also Stucco Base

FLOORING

Armstrong Cork Co., Linoleum Department, Lancaster, Pa.

222. *Business Floors.* A handy reference on floors for public and semi-public buildings, containing specimen specifications, directions for laying and other helpful data. Illustrated in color. 6 x 9 in.

223. *Armstrong's Linoleum Floors.* A handbook for architects, published in the file form (8½ x 11 in.) recommended by the American Institute of Architects. A technical treatise on Linoleum containing general information, tables of grades, gauges and weight, specimen specifications, and detailed directions for laying linoleum. Profusely illustrated in colors.

The Barber Asphalt Co., Philadelphia, Pa.

659. *Genasco Trinidad Lake Asphalt Mastic.* A book describing its manufacture, uses and methods of application, including application over old floors. Separate specifications for flooring, waterproofing and roofing uses. 34 pp. Ill. 6 x 9 in.

Bonded Floors Co., Inc., 1421 Chestnut St., Philadelphia, Pa.

717. *Hospital Floors.* Descriptions and advantages of using Gold-Seal Battleship Linoleum, Gold-Seal Treadlite Tile and Gold-Seal Rubber Tile in hospital construction, insuring durable, noiseless, sanitary and attractive floors. Illustrated part in color. 8 pp. Ill. 8 x 10¾ in.

719. *Linoleum.* A standard specification of the material, workmanship and guarantee, with valuable comments and suggestions. Also additional clauses for insertion in specifications for Masonry, Heating, etc., Navy Department specification for battleship linoleum and details of installation. 8 pp. Ill. 8½ x 11 in.

The Long-Bell Lumber Co., R. A. Long Building, Kansas City, Mo.

204. *The Perfect Floor.* Tells how to lay finish and care for Oak Flooring. 16 pp. 14 illus. 5⅛ x 7⅝ in.

The Marbleloid Co., 461 Eighth Ave., New York.

61. *The Universal Flooring for Modern Buildings.* Illustrated booklet. Describes uses and contains specifications for Marbleloid flooring, base, wainscoting, etc. Size 6¾ x 9¾ in. 32 pp.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

FLOORING

Franklyn R. Muller Co., Waukegan, Ill.

242. *Asbestone Flooring Composition.* A book describing uses of and giving specifications and directions for Composition Flooring. Base. Wainscoting, etc. 8½ x 11 in. Ill.

Oak Flooring Bureau, 1014 Ashland Block, Chicago, Ill.

493. *Modern Oak Floors.* A book that tells the complete story of Oak Flooring. 24 pp. Ill. 6⅛ x 9¼ in.

The Rodd Co., Century Bldg., Pittsburgh, Pa.

688. *Redwood Block Floor Booklet.* A treatise on the advantages of Redwood Block Floors in factories, warehouses, hotels, office buildings, department stores, hospitals, etc. Details, dimensions and specifications for installing. 14 pp. Ill. 4 x 9 in.

Stedman Products Co., South Braintree, Mass.

585. *Stedman Naturized Reinforced Flooring.* A circular describing a product formulated from rubber reinforced with cotton fibre, made in various colors and used for floors, wainscoting, sanitary base, stair treads, interior decorative units, wall coverings, table and desk tops and drain mats. 6 pp. Ill. 8½ x 11 in.

FLOORS—See Building Construction

FRAMES—See Doors and Windows

FURNACES—See Heating

FURNITURE—See Chairs

Kewaunee Mfg. Co., Kewaunee, Wis.

F828. *Laboratory Furniture, Supplement.* A catalog giving layout for Physics and Chemical Laboratories and description of the Lincoln Physics and Chemistry Desks. 14 pp. Ill. 9 x 12 in.

GARAGE CONSTRUCTION—See also Building Construction

GARBAGE DESTROYERS

Kerner Incinerator Company, 1029 Chestnut St., Milwaukee, Wis.

384. *The Sanitary Elimination of Household Waste, M-3 Folder.* Description of construction, installation and operation of the Kernerator for residences. Illustrated by views of residences in which the Kernerator is installed, with cuts showing all details. 15 pp. Ill. 4 x 9 in.

GARBAGE RECEIVERS

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.

170. Booklet showing general construction and sizes of garbage receivers to be placed underground for suburban use; also types to be built into the wall of city homes and apartments; also types for suburban wall with opening on inside for the maid and outside for the garbage man. Size 3½ x 6¼ in. 16 pp.

GARDENS

Julius Roehrs Company, Rutherford, N. J.

406. The Ten-Ten books issued three times a year—covering nursery stock in general, such things as fruit trees, roses and perennials. Also one general greenhouse catalog, listing orchids and greenhouse plants.

GLASS

Plate Glass Manufacturers of America, First National Bank Bldg., Pittsburgh, Pa.

484. *The Part that Plate Glass Plays in the Life of Every Man.* An illustrated folder describing the many uses of plate glass. Ask also for special circular for work in hand. 6 pp. Ill. in color. 3½ x 6¼ in.

GRANITE—See Stone

GUNITE

Cement Gun Company, Allentown, Pa.

594. *The Cement Gun. Its Application and Uses.* Reprint of a paper by Byron C. Collier, C. Am. Soc. C. E. A description of what the cement gun is and how it works, together with reports on tests. 21 pp. Ill. 6 x 9 in. Ask also for companion pamphlet "Gunite Slabs" containing working tablets for designers and reports on slab tests. 30 pp. Ill. 6 x 9 in.

GUTTERS AND DOWNSPOUTS—See also Roofing

The New Jersey Zinc Co., 160 Front Street, New York, N. Y.

226. *Zinc Spouting.* Describes leaders, gutters, etc. "Made from Horse Head Zinc," giving information concerning their economy and durability. 8 pp. Ill. 6 x 9 in.

HARDWARE

Allith-Prouty Co., Danville, Illinois.

596. *General Catalog No. 90.* This catalog embraces a description of a complete line of door hangers and tracks, garage door hardware, spring hinges, rolling ladders, fire door hardware, overhead carriers, light hardware and hardware specialties. 144 pp. Ill. 7¾ x 10½ in.

The T. J. Callahan Co., Dayton, Ohio.

751. *Callahan Mechanical Sash Operators.* A catalog of sash operators for side wall or saw tooth windows in industrial establishments embodying new principles. Complete details and specifications. 22 pp. Ill. 7½ x 10½ in.

P. & F. Corbin, New Britain, Conn.

540. *Automatic Exit Fixtures.* A catalog of fixtures that provide a ready exit at all times, as a child can operate them with ease. Doors to which they are applied can always be opened from the inside, even when locked against entrance. 4 pp. Ill. 8¾ x 11¾ in.

547. *Locks and Builders' Hardware, Catalog No. 26.* A complete descriptive catalog of all kinds of builders' hardware. 483 pp. Ill. 9¼ x 12½ in. Cloth bound.

Monarch Metal Products Co., 5060 Penrose St., St. Louis, Mo.

438. *Monarch Casement Hardware.* A book describing hardware for casement windows. This Manual and folder comply with all suggestions made by the Structural Service Committee of the A. I. A. 18 pp. Ill. 7½ x 10½ in., in heavy folder for vertical file properly indexed.

Richards-Wilcox Mfg. Co., Aurora, Ill.

336. *Modern Hardware for Your Home.* Catalog of hangers for vanishing French doors; "Air-Way" multifold hardware for sun parlors and sleeping porches; "Slidtite" garage door hardware. 24 pp. Ill. 8½ x 11 in.

435. *Distinctive Garage Door Hardware. Catalog No. A-22.* This is more than a catalog. It is a treatise for architects and builders on the door equipment of garages, covering sliding, folding and combination sliding and folding doors, with their hardware. 94 pp. Ill. 8½ x 11 in.

632. *Distinctive Garage Door Hardware. Catalog A No. 29.* A complete treatise on garage doors of every kind both hand and mechanically operated with description of standard and special hardware and accessories. 66 pp. Ill. 8½ x 11 in.

Russell & Erwin Mfg. Co., New Britain, Conn.

609. *Russwin Period Hardware.* A brochure illustrating hardware trim in twelve architectural styles or periods. 71 pp. Ill. 5 x 8 in.

610. *Catalog of Hardware, Volume Fourteen.* A complete catalog of building hardware, trim, locks, butts and accessories. 359 pp. Ill. 8 x 11 in.

Sargent & Company, New Haven, Conn.

560. *Sargent Locks and Hardware for Architects.* The latest complete catalog of locks and hardware. 762 pp. Ill. 9 x 12 in.

The Stanley Works, New Britain, Conn.

11. *Wrought Hardware.* This catalog describes additions to the Stanley line of Wrought Hardware, as well as the older well known specialties and various styles of butts, hinges, bolts, etc. 376 pp. Ill. 6½ x 9½ in.

12. *Garage Hardware, Booklet, illustrated.* Garages and their equipment, such as hinges, hasps, door holders, latch sets, chain and hand bolts, showing illustrations and text with dimensions of garages, describing the Stanley Works product. Size 6 x 9 in. 24 pp.

127. *The Stanley Works Ball Bearing Butts.* Booklet, illustrated. Description with full size illustrations of many typed butts and their parts, dimensions and finish. Size 5 x 7½ in. 32 pp.

495. *Stanley Detail Manual.* A catalog in loose leaf binder, consisting of five sections on Butts, Bolts, Blinds and Shutter Hardware, Stanley Garage Hardware, Screen and Sash Hardware. Detail drawings are given, showing clearances and other data needed by detailers. 116 pp. Ill. 7½ x 10½ in.

Vonnegut Hardware Co., Indianapolis, Ind.

310. *Prince Self-Releasing Fire Exit Devices. Supplement to Von Duprin Catalog No. 12.* Contains valuable information for architects on the selection, detailing, etc., of Prince devices for doors and windows to insure safety against fire panic. 32 pp. Ill. 8 x 11 in.

747. *Von Duprin Self-Releasing Fire Exit Latches, Reference Book—No. 240.* **A complete catalog with details of the working parts of these latches, handle bars, butts, door holders and accessories. Dimensions and installation directions. 96 pp. Ill. 8½ x 11 in.**

HEATERS—See Water Heaters

HEATING

American Radiator Company, 104-108 W. 42nd St., New York, N. Y.

427. *Ideal-Arcola Heating Outfit.* A book describing a system of hot water heating for small and medium size houses. The boiler is placed in a room and resembles a stove. No cellar required. The ash carrying reduced to a minimum. 24 pp. Ill. 6 x 8½ in.

Crane Company, 836 So. Michigan Ave., Chicago, Ill.

211. *Steam Catalogue.* A book containing full descriptions of the complete line of Crane valves, fittings, etc. 800 pp. Ill. 6 x 9 in.

The Duriron Co., Inc., Dayton, Ohio.

720. *Acid Fume Exhaust Fans.* A specification for exhaust fans where corrosive fumes or vapors are to be removed from chemical hoods, laboratories, etc. 4 pp. Ill. 8½ x 11 in.

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NEW YORK CHICAGO SAN FRANCISCO LONDON

REFERENCE LIST OF BUSINESS LITERATURE—Continued

HEATING

C. A. Dunham Co., 230 East Ohio St., Chicago, Ill.

755. *The Dunham Heating Service Bulletins.* Bulletin No. 101, Radiator Traps; 103, Medium Pressure Traps; 104, Packless Radiator Valves; 105, Oil Separators and Suction Strainers; 106, Reducing Pressure Valves and Vacuum Pump Governors; 107, Air Line Valves; 108, Home Heating System; 110, Vacuum Heating System; 111, Installing Home Heating System. Ill. 8 x 11 in.

Dwyer Equipment Co., 4534 W. North Ave., Chicago, Ill.

F820. *Twinfan System of Heating.* A catalog illustrating the construction and installation of encased heating units containing steam radiation, motor, twinfans and regulating dampers. Especially adapted to industrial plants. 16 pp. Ill. 8½ x 11 in.

The Farquhar Furnace Company, Wilmington, Ohio.

355. *Healthful Helpful Hints.* A discussion of furnace and chimney design and capacity for hot air heating and ventilation. 16 pp. Ill. 4¾ x 9¼ in.

359. *A Plain Presentation to Dealers.* A book of selling talk for dealers in Farquhar Furnaces. Four model heating layouts are shown and there is a page of useful "Do and Don't" advice. 24 pp. Ill. 8½ x 11 in.

General Boilers Company, Waukegan, Ill.

444. *Catalog No. 7* A catalog completely describing the construction and operation of Pacific Steel Boilers. Contains also specifications and price lists. 32 pp. Ill. 6 x 9 in.

The Hart & Cooley Co., New Britain, Conn.

712. *Wrought Steel Registers and Grilles, Catalog No. 24.* A catalog of wrought steel floor, baseboard and wall registers, cold air intakes, lock registers, ventilators, furnace regulators and accessories. Dimensions, details and price lists. 80 pp. Ill. 7¾ x 10 in.

Hess Warming and Ventilating Co., 1209 Tacoma Bldg., Chicago, Ill.

178. *Modern Furnace Heating.* An illustrated book on the Hess Welded Steel Furnaces. Pipe and Pipeless, notes for installation, sectional views, showing parts and operation, dimensions, register designs, pipes and fittings. Size 6 x 9½ in. 48 pp.

Hoffman Specialty Co., Inc., Waterbury, Conn.

745. *The Heat Thief.* A booklet describing the economic advantages of the Hoffman No. 2 Vacuum Valves applied to a one-pipe steam heating system. 16 pp. Ill. 5½ x 7½ in.

746. *Controlled Heat.* A booklet describing the advantages of controlled heat effected by the use of Hoffman Modulating Inlet Valves, Hoffman Return Line Valves and the Hoffman Differential Loop. 28 pp. Ill. 5½ x 7½ in.

Illinois Engineering Co., Racine Ave., at 21st St., Chicago, Ill.

501. *Illinois Heating Systems. Vapor Details Bulletin 20.* This bulletin contains typical plans and elevations of heating systems, with description of details and "Standards for Computing Radiation and Boiler Sizes" of the Chicago Master Steam Fitters' Association. 18 pp. Ill. 8 x 10¾ in.

502. *Illinois Bulletins.* No. 102 contains detailed description with capacities and dimensions of Eclipse Pressure Reducing Valves. 20 pp. Ill. Nos. 202, 302, 452, 502 and 703 describe, with illustrations, Steam Specialties, Back Pressure Valves, Stop and Check Valves, Exhaust Heads, Balanced Valves, Separators, Steam Traps.

Jenkins Bros., 30 White St., New York, N. Y.

235. *Catalog No. 12.* This catalog contains descriptions of all the valves, packing, etc., manufactured by Jenkins Bros. Includes also dimensions and price lists of valves and parts. 271 pp. Ill. 4 x 6¾ in. Stiff paper cover.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

391. *The Regulation of Temperature and Humidity.* A description of the Johnson System of temperature regulation and humidity control for buildings; showing many kinds of thermostatic appliances for automatically maintaining uniform temperatures. 63 pp. Ill. ½ x 11 in.

392. *Johnson Electric Thermostat, Valves and Controllers.* A catalog of devices mentioned in the title. 24 pp. Ill. 3½ x 6 in.

Kewanee Boiler Co., Kewanee, Illinois.

574. *Fire Box Boilers, Catalog No. 76.* A description of smokeless steel firebox boilers with complete data of capacities and dimensions of the brick set and portable types. 35 pp. Ill. 6 x 9 in.

575. *Power Boilers, Catalog No. 73.* A complete description of brick set horizontal tubular power boilers with full and half-front setting. Also smokeless tubular boilers with down draft furnace and steel casing. Also steel portable locomotive boilers, grates, breechings, cast iron fronts, air receivers, storage tanks and accessories. 3 5pp. Ill. 6 x 9 in.

Minneapolis Heat Regulator Co., Minneapolis, Minn.

660. *Minneapolis Dual Control.* This circular describes in detail the No. 65 Hydrostat and No. 70 Pressurestat and their application for the automatic heat control of hot water, steam or vapor systems. 12 pp. Ill. 3¼ x 6 in.

The Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.

722. *Powers Temperature Regulation.* A catalog explaining the principles of thermostatic control of temperature and its application to heating plants. Details of apparatus and applications, installations in important buildings and engineering data. 40 pp. Ill. 8 x 11 in.

723. *Thermostitic Water Controller, Bulletin No. 124.* Describing water temperature control apparatus adapted to shower and tub baths, lavatories and other places where predetermined water temperature is desired. Details of installation, capacities, dimensions and prices. 4 pp. Ill. 6⅜ x 9¼ in.

724. *The No. 11 Regulator, Bulletin No. 129.* Describing a self contained, accurate regulator of liquid temperature in hot water service tanks, steam cookers, pasteurizers, etc. Details, dimensions and prices. 2 pp. Ill. 6¾ x 9¼ in.

Richardson & Boynton Co., New York, N. Y., Chicago, Ill., Philadelphia, Pa., Providence, R. I., Boston, Mass.

290. *The Richardson Vapor Vacuum-Pressure Heating System.* An interesting book which presents in clear non-technical language the principles of Vapor-Vacuum-Pressure heating; the economy over ordinary steam heating, steam and hot-water systems may be altered to use this principle with views of buildings where the V-V-P system is installed. 14 pp. Ill. 8 x 11 in.

291. *Perfect Warm Air Furnaces.* No. 203. Contains a full description of various types of warm air furnaces and parts, with dimensions and necessary data. 24 pp. Ill. 8 x 10½ in.

292. *Perfect Cooking Ranges.* Description and dimensions of the complete line of the new high enamel finish Richardson Perfect ranges, with charts and information regarding combination coal and gas cooking ranges. 40 pp. Ill. 8½ x 11 in.

Thatcher Furnace Co., 131-135 West 35th St., New York City.

748. *Thatcher Boilers and Thatcher Furnaces.* Catalog describing a series of cast iron steam and hot water heating boilers and also one describing a series of cast iron warm air heaters. Accessories, details and dimensions. 80 pp. and 24 pp. Ill. 4½ x 7½ and 8½ x 11 in.

Tuttle & Bailey Mfg. Co., 2 West 45th St., New York, N. Y.

396. *Special Designs. Catalog 66A.* A book of designs for grilles, screens, registers and ventilators to be used in connection with heating installations. Made of bronze, brass, iron and steel. 40 pp. Ill. 6¾ x 9¾ in.

Utica Heater Company, Utica, N. Y.

557. *Utica Imperial Super-Smokeless Boilers.* These boilers burn all fuels and consume soft coal without smoke. The illustrated catalog contains complete technical data with lists of illustrations. 76 pp. Ill. 8½ x 11 in. (Separate bulletins may be had featuring the following buildings: Schools, Churches, Public Buildings, Apartments, Hotels, Residences, Industrial Buildings, Offices and Theatres.)

558. *Warm Air Heating.* A folder featuring warm air heating equipment including *New Idea* pipeless furnaces. Superior pipe furnaces and *Super-Smokeless* furnaces for burning soft coal.

HEATING AND VENTILATION

American Blower Co., Detroit, Mich.

361.—*Sirocco Service.* A quarterly publication containing descriptions of heating and ventilating systems installed by the American Blower Company, together with useful data for architects and engineers. 16 pp. Ill. 8½ x 11 in.

362. *General Catalog "ABC" Products.* A book full of useful data for all men who have to deal with heating and ventilating problems. 132 pp. Ill. 8½ x 11 in.

F825. *Ventura Man Cooling Fan.* A circular describing a portable cooling fan specially adapted to hot places of employment. Ill. 8½ x 11 in.

Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.

215. *Buffalo Fan System of Heating, Ventilating and Humidifying.* Catalog 700. This contains a general discussion of heating and ventilating under four heads. Part 1, Public Buildings. Part 2, Industrial Plants. Part 3, Buffalo Apparatus. Part 4, Fan Engineering.

Garden City Fan Co., McCormick Bldg., Chicago, Ill.

673. *New Sectional Catalog No. 200.* Describing the latest improved cycloidal multivane fans for heating, ventilating and drying, also standard steel plate fans and pipe coil heaters. Details, capacity tables and specifications. 24 pp. Ill. 7½ x 10½ in.

The H. W. Nelson Corporation (formerly Moline Heat), Moline, Ill.

411. *Univent Ventilation. Architects' and Engineers' Edition.* A scientific treatise on ventilation for schools, offices and similar buildings: with 40 pages of engineering data on ventilation for architects and engineers. 72 pp. Also "Supplement A" on Air Conditioning. 12 pp. Ill. with half-tones, line drawings and designing charts. 8½ x 11 in.

HOISTS—See Elevators and Ash Hoists

INCINERATORS—See Garbage Destroyers

INSULATION—See also Stucco Base

Samuel Cabot, Inc., 141 Milk St., Boston, Mass.

639. *Heat Insulation.* A treatise on the methods of securing insulation for various kinds of buildings and conditions by using different insulating quilts. 25 pp. Ill. 7½ x 10⅝ in.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

INSULATION—See also Stucco Base

The Celotex Co., 111 W. Washington St., Chicago, Ill.

701. *Celotex Insulating Lumber.* An insulating material made from cane fibre in form of board of various lengths and thicknesses. Specifications, physical properties and tests. Several catalogs, booklets and leaflets.

Insulite Co., 1100 Builders Exchange Bldg., Minneapolis, Minn.

487. *Universal Insulite in Building Construction.* Describes a clean, sanitary, odorless and vermin proof board made from selected waterproofed wood fibres, felted into light, strong, uniform sheets. Examples are given for use indoors and outdoors together with details and useful data. 37 pp. Ill. 8½ x 11 in.

United States Mineral Wool Co., 280 Madison Ave., New York.

83. *The Uses of Mineral Wool in Architecture.* Illustrated booklet. Properties of insulation against heat, frost, sound, and as a fireproofing, with section drawings and specifications for use. It gives rule for estimate and cost. Size 5¼ x 6⅝ in. 24 pp.

IRON AND STEEL—See also Metals

The American Rolling Mill Co., Middletown, Ohio.

658. *The Story of Commercially Pure Iron.* A most interesting booklet recounting the historical development of iron and its present day manufacture in commercially pure, durable form. 48 pp. Ill. 6 x 9 in.

682. *What's Under the Galvanized Coating?* A booklet describing the process of galvanizing, its protective service and also the necessity for pure iron as a basis for galvanizing. 16 pp. Ill. 3¼ x 6¼ in.

KITCHEN EQUIPMENT—See also Stoves

Bramhall, Deane Co., 261-A West 36th St., New York.

59. *The Heart of the Home.* Booklet, illustrated. Deane's French Ranges (all fuels), cook's tables and plate warmers. Size 6 x 9 in. 32 pp.

Albert Pick & Co., 208 W. Randolph St., Chicago, Ill.

AZ90. *Kitchen Equipment, Book No. F90.* A book devoted to planning and equipping efficient kitchens for hotels, clubs, hospitals and restaurants with typical layout and illustrations of apparatus. 28 pp. Ill. 9 x 6 in.

LATH, METAL

American Steel & Wire Co., Chicago, Ill.

228. *Stucco Houses Reinforced With Triangle Mesh Fabric.* A pamphlet containing valuable data on stucco work with tables of qualities of material and many illustrations of houses covered with stucco applied on Triangle Mesh Fabric. 24 pp. Ill. 6 x 9 in.

Concrete Engineering Co., Omaha, Neb.

346. *How to Use Ceco Lathing Materials.* An illustrated treatise on the use of expanded metal lath. Contains construction details and complete specifications, with sample piece of lath in pocket on cover of book. 16 pp. Ill. 8½ x 11 in.

Truscon Steel Company, Youngstown, Ohio.

316. *Hy-Rib and Metal Lath.* Tables, general data and illustrations of Hy-rib and metal lath construction. 6 pp. Ill. 8½ x 11 in.

LAUNDRY EQUIPMENT

Chicago Dryer Co., 2210 No. Crawford Ave., Chicago, Ill.

66. *Laundry Appliances.* Illustrated catalog. Descriptions of Laundry Dryers, Electric Washing Machines and Ironing Machines, especially adapted for use in residences, apartment buildings and small institutions. Size 8½ x 11 in. 48 pp.

The Pfaudler Company, Rochester, N. Y.

581. *Glass Lined Steel Laundry Chute.* Catalog describing a glass lined steel laundry chute with flushing ring at top and drain connection at bottom, specifications, dimensions and details adapted to hospitals and hotels. 14 pp. Ill. 5⅛ x 7⅜ in.

LIGHTING—See also Electrical Equipment

Frank Adam Electric Co., 3649 Belll Ave., St. Louis, Mo.

629. *The Control of Lighting in Theatres.* A book describing means for complete control of lighting the stage, auditorium, and other parts of the theatres with distribution schedules and specifications. Also applications of control to Masonic buildings, schools and colleges. 32 pp. Ill. 8 x 11 in.

Cooper Hewitt Electric Company, 95 River Street, Hoboken, N. J.

553. *Industrial Lighting Briefs.* No. 1 deals with Industrial Lighting in theory and practice. No. 2 deals with the engineering of illumination with Cooper Hewitt Lamps. No. 3 deals with the quickness of response of the Hand to Eye. Each 4 pp. 8 x 10½ in.

E. Erikson Electric Co., 6 Portland St., Boston, Mass.

613. *Erikson Reflectors, Catalog No. 90.* Description of and details of installing reflectors in show windows, display cases, art galleries, rug racks, banks, churches, and other buildings. 32 pp. Ill. 6¼ x 9½ in.

I. P. Frink, Inc., 24th St. and 10th Ave., New York.

150. *Light Service for Hospitals. Catalogue 421.* A booklet illustrated with photographs and drawings, showing the types of light for use in hospitals, as operating table reflectors, linolite and multilite concentrators, ward reflectors, bed lights and microscopic reflectors, giving sizes and dimensions, explaining their particular fitness for special uses. Size 7 x 10 in. 12 pp.

I. P. Frink, Inc., 24th St. and 10th Ave., New York.

218. *Picture Lighting. Booklet 422.* A pamphlet describing Frink Reflectors for lighting pictures, art galleries, decorated ceilings, cove lighting, the lighting of stained glass, etc., and containing a list of private and public galleries using Frink Reflectors. 24 pp. Ill. 5¼ x 7 in.

219. *Frink Reflectors and Lighting Specialties for Stores. Catalog No. 424.* A catalog containing a description of the Frink Lighting System for Stores; the Synthetic System of Window Illumination; and a number of appliances to produce the most effective lighting of displayed objects. 20 pp. Ill. 8 x 11 in.

220. *Frink Lighting Service for Banks and Insurance Companies. Reflectors. Catalog No. 425.* A very interesting treatise on the lighting of offices; with details of illustrations and description of lamps and reflectors. Contains a list, covering several pages of banks using Frink Desk and Screen Fixtures. 36 pp. Ill. 8¼ x 11 in.

Harvey Hubbell, Inc., Bridgeport, Conn.

401. *Hubbell Flush Door Receptacles.* Description of a safe, convenient and practical wall outlet de luxe for fine residences, clubs, hotels, public buildings and offices. 4 pp. Ill. 8 x 10 in.

Westinghouse Electric & Mfg. Co., Geo. Cutter Works, South Bend, Ind.

754. *Ornamental Brackets, Newels and Lanterns. Circular No. 1674.* A booklet illustrating a fine line of brackets, newels, posts and lanterns for exterior illumination with dimensions. 32 pp. Ill. 8½ x 11 in.

LIME

The Ohio Hydrate & Supply Co., Woodville, Ohio.

494. *A Job That Took a Million Years.* A description of how limestone is formed and how it is later converted into lime. All the processes are shown in detail and the uses of lime are illustrated. 16 pp. Ill. 8½ x 11 in.

LINCRUSTA-WALTON—See also Wall Covering

The Lincrusta-Walton Company, Hackensack, N. J.

519. *Lincrusta-Walton.* This book gives directions for buying caring for and applying Lincrusta-Walton; together with color chart and many pages showing patterns. 67 pp. 8½ x 11 in. Ill. Bound in boards.

LOCKERS, STEEL—See Factory Equipment

LUMBER

E. L. Bruce Co., Memphis, Tenn.

533. *Now the Cedar Clothes Closet.* A book illustrated in colors describing "Bruce Cedaline" for lining clothes closets as a complete protection against moths. 12 pp. Ill. 4¼ x 6 in.

The Long-Bell Lumber Co., R. A. Long Building, Kansas City, Mo.

203. *From Tree to Trade.* This book tells the story of the manufacture of lumber. Gives an idea of the scope of the business and the care and attention given to the manufacture and grading of Long-Bell trade-marked products. 100 illustrations. 48 pp. 8½ x 11 in.

The Pacific Lumber Company of Illinois, 2060 McCormick Bldg., Chicago, Ill.

363. *Construction Digest*—The use of California Redwood in residential and industrial construction. Contains illustrations, grading rules, specifications and other technical data for architects and builders. 16 pp. Ill. 8½ x 11 in.

364. *Engineering Digest*—The use of California Redwood in industrial construction and equipment for factories, railroads, mines and engineering projects. 16 pp. Ill. 8½ x 11 in.

MAIL CHUTES

Cutler Mail Chute Co., Rochester N. Y.

294. *The Cutler Mail Chute. Model F.* Describes the Cutler Mail Chute in its standard form, known as Model F. Contains data for rough floor openings not included in the Mail Chute contract. 16 pp. Ill. 4 x 9¼ in.

MANTELS

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.

90. *Wood Mantels. Portfolio.* Wood mantel designs of various types and openings, giving dimensions, projections and showing fireplace grate designs. Size 9 x 6¼ in. 32 pp.

MARBLE—See Stone

Appalachian Marble Co., Knoxville, Tenn.

715. *Appalachian Tennessee Marble.* A series of six colored plates, description of physical properties, standard sizes of floor tile, specifications for laying floor tiles and for erecting base, wainscoting, bank screens and other standing work. Standard filing folder. 23 pp. Ill. 8½ x 11¼ in.

The Georgia Marble Co., Tate, Pickens Co., Ga., New York Office, 1328 Broadway.

634. *Why Georgia Marble is Better.* Booklet 3⅜ x 6 in. Gives analysis, physical qualities, comparison of absorption with granites, opinions of authorities, etc.

METAL MOLDINGS

National Metal Moulding Co., Pittsburgh, Pa.

152. *Handbook for the Man on the Job.* An illustrated book of fittings and methods with description and instructions for installing National Metal Molding under all conditions; a book meant to be conveniently carried and used on the job. Size 4⅜ x 6 in. 102 pp.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

METALS—See also Iron and Steel—Roofing

American Brass Co., Main Office, Waterbury, Conn.

138. *Price List and Data Book.* Illustrated. Looseleaf Catalog. Covers entire line of Sheets, Wire Rods, Tubes, etc., in various metals. Useful tables. Size 3⅞ x 7 in. 168 pp.

385. *Copper Products.* Illustrated price list and tables of weights. Covers copper for roofing purposes, including strip copper for forming into leaders, gutters, valleys, flashings, etc. 64 pp.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.

452. *Reference Book. Pocket Edition.* Covers the complete line of Sheet and Tin Mill Products. 168 pp. Ill. 2½ x 4½ in.

Bridgeport Brass Co., Bridgeport, Conn.

483. *Seven Centuries of Brass Making.* A brief history of the ancient art of brass making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—covering tubular, rod and ornamental shapes. 80 pp. Ill. 8 x 10½ in.

Rome Brass & Copper Company, Rome, N. Y.

473. *Price List No. 70.* A loose-leaf binder containing full price list of Rome Quality products, together with useful tables. 5⅛ x 7¼ in.

MILLWORK—See also Lumber—Building Construction—Doors and Windows

MORTAR—See also Cement

Louisville Cement Company, Inc., Louisville, Ky.

311. *Brixment, the Perfect Mortar.* The reading of this little book gives one a feeling that definite valuable information has been acquired about one of the oldest building materials. Modern science has given the mason a strong water-resisting mortar with the desirable "feel" of the best rich lime mortar. 16 pp. Ill. in colors. 5½ x 7¾ in.

MORTAR COLORS—See also Paints, Stains, Varnish

Ricketson Mineral Paint Works, Milwaukee, Wis.

376. *Ricketson Mortar Colors.* Two interesting folders with color card for these well known fadeless mortar colors in use for 35 years. 3¼ x 6 in.

PAINTS, STAINS, VARNISHES—See also Waterproofing

Carter White Lead Co., 12042 South Peoria St., Chicago, Ill.

270. *The Carter Paint Calculator.* A valuable book containing answers and solutions to common paint problems; gives sample estimates; data useful to both architect and master painter. Black fabricoid cover. Vest pocket size 2½ x 4½ in. 70 pp. Sent postpaid anywhere on request.

Joseph Dixon Crucible Co., Jersey City, N. J.

324. *Dixon's Silica-Graphite Paint.* A pamphlet describing the physical properties of silica-graphite paint and especially the wide difference between it and other protective paints. Contains also sample color card with specifications. 20 pp. and 6 pp. in color card. Ill. 3¼ x 6¼ in.

E. I. duPont deNemours & Co., Inc., 3500 Gray's Ferry Road, Philadelphia, Pa.

F833. *Architectural Specifications.* Sixty specifications for exterior and interior finishing in paint, varnish and stones. Also color charts and detailed description of products. 55 pp. Ill. 8½ x 11 in.

National Lead Company, 111 Broadway, New York, N. Y.

389. *Color Harmony.* Color card for glass finish and flat finish together with useful notes on painting and a collection of approximate formulas for obtaining the colors shown on the color card. 8 pp. Ill. 3⅝ x 8½ in.

708. *Early American Architecture.* An attractive portfolio of selected sketches and measured drawings showing Colonial and Georgian design containing 34 plates, 8¼ x 10¾ in. Suggested color schemes are included.

The New Jersey Zinc Co., 160 Front St., New York, N. Y.

227. *Painting Specifications.* A booklet full of useful information concerning paint mixtures for application on various surfaces.

Ripolin Co., The, Cleveland, Ohio.

419. *Ripolin Specification Book.* 8 x 10¼ in., 12 pp. Complete architectural specifications and general instructions for the application of Ripolin, the original Holland Enamel Paint. Directions for the proper finishing of wood, metal, plaster, concrete, brick and other surfaces, both interior and exterior, are included in this Specification Book.

Standard Varnish Works, 443 Fourth Ave., New York, N. Y.

566. *Architectural Reference Book, Third Edition.* A readily accessible and concise compilation of practical finishing information from which specifications readily can be written on varnishes, stains, fillers and enamels. 24 pp. Ill. in colors with samples on wood, etc. 8½ x 11 in.

PILES, CONCRETE

Raymond Concrete Pile Co., 140 Cedar St., New York.

156. *Raymond Concrete Piles—Special Concrete Work.* A booklet with data concerning the scope of the Raymond Concrete Pile Co., for special concrete work. It classifies piles, showing by illustration, text and drawings, the relative value of special shape and manufacture of piles. It gives formulæ for working loads, and relative economy. Size 8½ x 11⅛ in. 60 pp.

PIPE—See also Metals

Bridgeport Brass Company, Bridgeport, Conn.

556. *Brass Pipe and Piping; When and How it Should be Used. Bulletin No. 15.* This book contains valuable tables, charts and examples for the design of hot water installations, with illustrations of details and connections. It also discusses the use of pipe of different materials; various processes for preventing rust and corrosion in iron and steel pipes. It is a valuable treatise for all architects and engineers. 47 pp. Ill. 8 x 10½ in.

A. M. Byers Company, Pittsburgh, Pa.

679. *What is Wrought Iron?* Bulletin 26-A. Contains the definition of wrought iron, methods of manufacture, chemical and physical characteristics; advantages of wrought iron as a pipe material; service records from old buildings equipped with Byers Genuine Wrought Iron Pipe. How to tell the difference between iron and steel pipe. 40 pp. Ill. 8 x 10¾ in.

680. *The Installation Cost of Pipe,* Bulletin 38. Contains cost analysis of a variety of plumbing, heating, power and industrial systems, with notes on corrosive effects in different kinds of service. 32 pp. Ill. 8 x 10¾ in.

The Duriron Company, Dayton Ohio.

548. *Duriron Acid-Proof Drain Pipe.* This is a handbook for the architect and engineer on Duriron drain pipe fittings, exhaust fans, sinks, etc. Contains specifications for installations, detail dimensioned drawings, reports on corrosive tests, long partial list of successful installations, etc. 20 pp. Ill. 8 x 10½ in.

National Tube Co., Frick Bldg., Pittsburgh, Pa.

670. *National Bulletin No. 25B. Third Edition.* Devoted to the installation of steel pipe in large buildings, architectural anti-corrosion engineering, gas piping, specificatons, and tables of strength and properties. 74 pp. Ill. 8½ x 10¾ in.

Rome Brass and Copper Company, Rome, N. Y.

509. *Bulletin No. 1. Seamless Brass Pipe.* This bulletin illustrates in colors nine installations of hot water heaters between range boiler, basement furnace, tank and instantaneous heaters for one and two-family houses and larger buildings. Contains also a number of estimating and designing tables, rules and formulas. 22 pp. Ill. 7½ x 11¼ in.

A. Wyckoff & Sons Co., Elmira, N. Y.

397. *Wyckoff Wood Pipe. Catalog No. 42.* A description of machine-made woodstave pipe and Wyckoff's express steam pipe casing. Contains also a number of pages of useful formulas and tables for hydraulic computation. 92 pp. Ill. 6 x 9 in.

PIPE COVERING

The Philip Carey Co., Lockland, Cincinnati, Ohio

379. *Pipe and Boiler Coverings. Catalog* 1362. A catalog and manual pipe and boiler coverings, cements, etc. Contains a number of valuable diagrams and tables. 71 pp. Ill. 6 x 9 in.

PLUMBING EQUIPMENT—See also Drains

Bridgeport Brass Co., Bridgeport, Conn.

461. *Plumbing Supplies.* Catalog of adjustable swivel traps; basin and bath supplies and waste; basin and sink plugs; low tank bends; iron pipe sizes of brass pipe. 20 pp. Ill. 8 x 10½ in.

Crane Company, 836 So. Michigan Ave., Chicago, Ill.

240. *General Plumbing Catalogue.* A very complete and well illustrated booklet describing the complete line of Crane plumbing goods. 80 pp. 8½ x 11 in.

Philip Haas Co., Dayton, Ohio.

750. *Haas Universal Flush Valve.* Insert for Catalog "B." A catalog explaining the operation of this flush valve, details, roughing-in dimensions and application to various types of closets. 20 pp. Ill. 6 x 9 in.

Jenkins Bros., 80 White St., New York, N. Y.

236. *Jenkins Valves for Plumbing Service.* This booklet contains all necessary information about Jenkins Valves commonly used in plumbing work. 16 pp. Ill. 4¼ x 7¼ in. Stiff paper cover.

Kohler Company, Kohler, Wisconsin.

209. *"Kohler of Kohler."* A booklet on enameled plumbing ware describing processes of manufacture and cataloging staple baths, lavatories, kitchen sinks, slop sinks, laundry trays, closet combinations. 48 pp. Ill. 5⅛ x 8 in. Roughing-in Measurement Sheets 5 x 8 in.

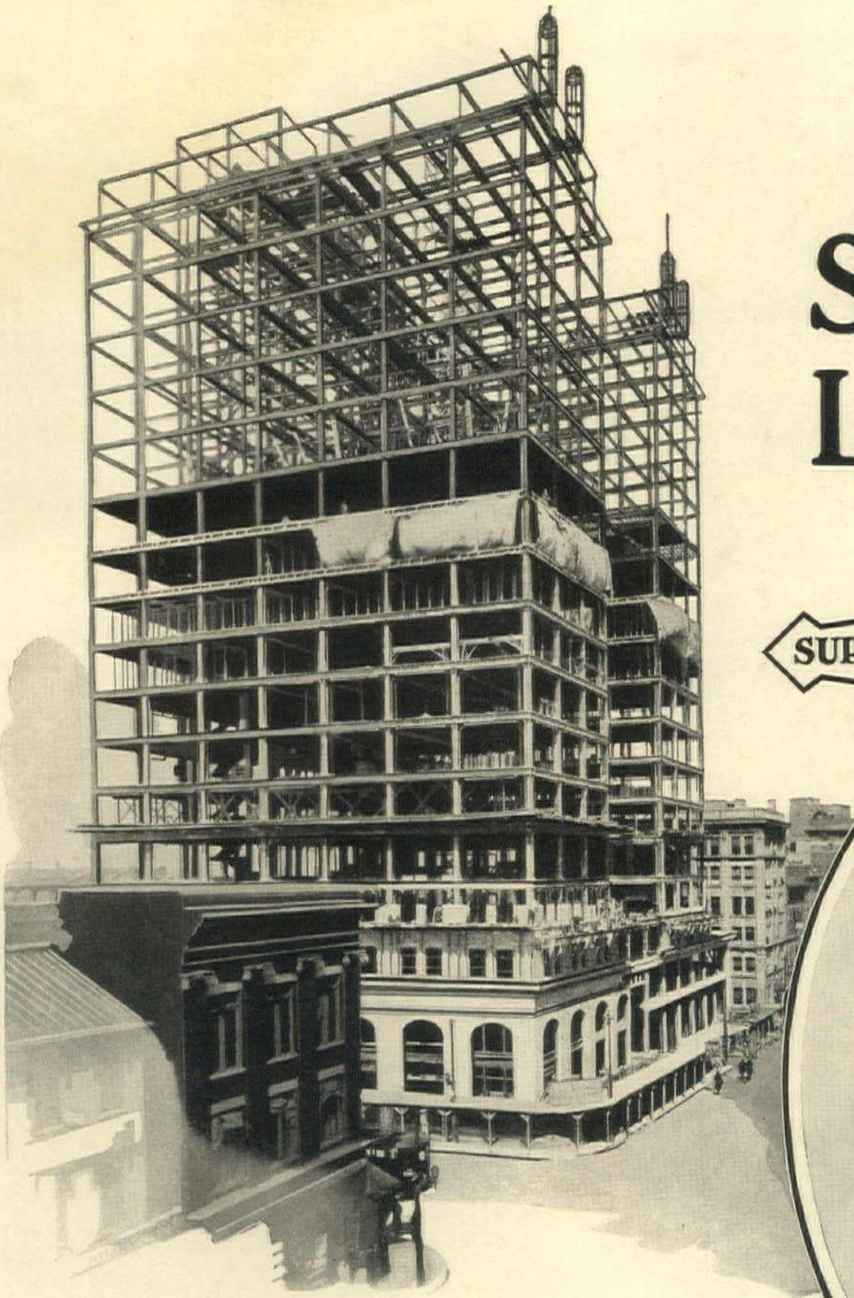
531. *Catalog F.* This is a complete catalog of Kohler enamelled ware for plumbing installations, together with high grade fittings. There is also a brief and interesting description of the manufacture of high grade enamelled ware and a statement of the facts about Kohler village, one of the discussed experiments in modern industrial town building. 215 pp. Cloth bound. Ill. 7½ x 10⅝ in.

Thomas Maddock's Sons Company, Trenton, N. J.

696. *Vitreous China Plumbing Fixtures.* A valuable and complete catalog of vitreous china lavatories, drinking fountains, and laundry trays, also seats, faucets, bathroom fixtures and bidets, water closets, urinals, slop sinks, bathtubs, kitchen sinks accessories. Completely illustrated with roughing in diagrams. 242 pp. Ill. 8 x 11 in.

259. *General Catalog.* Contains complete description of the full line of fixtures styled the "Highest Grade Standardized Plumbing Fixtures for Every Need." 94 pp. Ill. 5 x 7½ in.

260. *Specifications for Plumbing Fixtures.* Contains tables of specifications for industrial buildings, schools, apartments, hotels, etc. 8 pp. Ill. 9 x 12 in.



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REFERENCE LIST OF BUSINESS LITERATURE—Continued

PLUMBING—See also Drains

Speakman Company, Wilmington, Del.

691. *Speakman Showers and Fixtures, Catalog H.* A complete catalog treating of everything pertaining to the mixing and control of water used in all kinds of shower and tub baths, lavatories and sinks, also strainers, drains and traps. Complete roughing-in measurements are included. A valuable catalog. 20 pp. Ill. 4½ x 7½ in.

The Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.

725. *The Powers Shower Mixer, Bulletin No. 154.* Description and details of a shower bath mixer that insures uniform water temperature regardless of disturbance of initial water pressure. 4 pp. Ill. 6⅜ x 9¼ in.

The Vulcan Brass Manufacturing Co., Cleveland, Ohio.

678. *Paragon Brass Goods, Catalog C.* New catalog showing sectional drawings, illustrations and text describing exclusive feature of "Paragon" self closing basin and sink faucets and stops; high pressure ball cocks, vitreous china bubblers, compression and quick-compression work. 60 pp. Ill. 7½ x 10½ in.

PUMPS

The Dayton Pump and Manufacturing Company, Dayton, Ohio.

475. *Electric House Pumps and Water Supply Systems.* A heavy paper binder containing illustrated bulletins 8½ x 11 in. These bulletins describe pumps as well as complete automatic electric and gasoline water supply systems and all accessories, together with specifications, detail drawings and tables of dimensions. 48 pp.

The Goulds Mfg. Co., Seneca Falls, N. Y.

387. *Power Pump Bulletins.* There are 22 of these bulletins treating on piston, plunger, air pressure, vacuum, triplex and centrifugal pumps. Bulletin 112 and Bulletin 122 containing the theory of pumps together with power pump data are of especial value to engineers in the offices of architects. 16 to 36 pp. Ill. 8 x 10 in.

REFRIGERATION

The Automatic Refrigerating Co., Hartford, Conn.

298. *The Mechanics of Automatic Refrigeration and Automatic Refrigeration for Hospitals and Sanatoriums.* Two essential booklets for the library of designers and specification writers. 24 and 28 pp. Ill. 8½ x 11 in.

370. *Automatic Refrigeration for Retail Markets.* A valuable treatise on the subject matter mentioned in the title. 30 pp. Ill. 8½ x 11 in.

Baker Ice Machine Co., Inc., Omaha, Nebraska.

661. *Baker System Refrigeration.* A catalog explaining the application of refrigeration for hotels, hospitals, institutions and restaurants requiring up to 50 tons daily capacity including mechanical details and specifications. 20 pp. Ill. 9 x 12 in.

Jamison Cold Storage Door Co., Hagerstown, Md.

569. *Heavy Duty Cold Storage Doors. Catalog No. 10.* Complete description of both hinged and sliding cold storage doors for every equipment. Also description of cold storage windows and ice chutes. 79 pp. Ill. 5¾ x 9 in.

REFRIGERATORS

Delco-Light Company, Division of General Motors Corp., Dayton, Ohio.

510. *Frigidaire. Important Facts for Architects and Builders.* Frigidaire is an electric refrigerator for houses and apartments. This book describes the construction, installation and operation of this convenient refrigerator. 16 pp. Ill. 8 x 11 in.

The Jewett Refrigerator Company, 27 Chandler Street, Buffalo, N. Y.

655. *Manual of Refrigerators.* This manual completely describes the construction of refrigerators for use in hotels, clubs, hospitals, institutions and residences, with specifications. Numerous plans showing size and arrangement of refrigerators in kitchens, service and lunch rooms are included. 30 pp. Ill. 8½ x 11 in.

698. *Jewett Solid Porcelain Refrigerators.* This improved refrigerator has an interior finish of one-piece solid porcelain ware for both food and ice compartments. Complete line with dimensions, types and prices. 22 pp. Ill. 8¼ x 11 in.

McCray Refrigerator Co., Kendallville, Ind.

472. *Refrigerators and Cooling Rooms. Cat. 53.* A catalog of cooling equipment for hotels, restaurants, hospitals, institutions, colleges and clubs. Catalog No. 96 deals with refrigerators for residences. 52 pp. each. Ill. in colors. 7½ x 10 in.

REINFORCING STEEL—See also Concrete, Reinforced

Rail Steel Products Association, Reinforcing Bar Division, Arcade Bldg., St. Louis, Mo.

582. *Rail Steel for Concrete Reinforcing.* A book describing the manufacturing, fabrication and physical properties of rerolled billet and rail steel bars with specifications for their use. 84 pp. Ill. 8½ x 11 in.

RESTAURANT EQUIPMENT—See Kitchen Equipment

ROOFING—See also Slate—Metals—Shingles

American Brass Company, Main Office, Waterbury, Conn.

515. *Copper Roofing. Service Sheet.* This service sheet contains details for laying copper roofing together with standard specifications. 17 x 22 in. folding to 8½ x 11 in., printed both sides.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.

463. *Copper—its Effect Upon Steel for Roofing Tin.* Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy. 28 pp. Ill. 8½ x 11 in.

The Barber Asphalt Company, Land Title Bldg., Philadelphia, Pa.

422. *Standard Trinidad Built-up Roofing Specifications.* Contains two specifications for applying a built-up roof over boards and two for applying over concrete. Gives quantities of materials and useful data. 8 pp. 8 x 10½ in. Ask at same time for Good Roof Guide Book. 32 pp. Ill. 6 x 9 in.

702. *Specifications.* A pamphlet containing standard specifications for Genasco Standard Trinidad Lake Asphalt Built-up Roofing, Genasco Economy Trinidad Lake Asphalt Built-up Roofing, Genasco Membrane Waterproofing and Genasco Asphalt Flooring. Illustrated with sketches showing construction. 16 pp. Ill. 8 x 11½ in.

The Philip Carey Co., Lockland, Cincinnati, Ohio.

378. *Architects' Specification Book on Built-up Roofing.* A manual for detailers and specification writers. Contains complete details and specifications for each type of Carey Asphalt Built-up Roof. 20 pp. Ill. 8½ x 11 in.

The Edwards Manufacturing Company, Cincinnati, Ohio.

535. *Shingles and Spanish Tile of Copper.* This book, illustrated in colors, describes the forms, sizes, weights and methods of application of roof coverings, gutters, downspouts, etc., of copper. 16 pp. Ill. in special indexed folder for letter size vertical files.

Ludowici-Celadon Co., Chicago, Ill.

120. *Roofing Tile.* A detailed Reference for Architects' Use. Sheets of detailed construction drawings to scale of tile sections of various types and dimensions, giving notes of their uses and positions for various conditions of architectural necessity. Size 9½ x 13½ in. 106 plates.

154. *The Roof Beautiful.* Booklet. Well illustrated with photographs and drawings, giving history and origin of roofing tile, and advantages over other forms of roofing. Types shown by detailed illustrations. Size 8 x 10¼ in. 32 pp.

The Richardson Company, Lockland, Cincinnati, Ohio.

492. *Viskalt Membrane Roofs.* Contains specifications for applying Membrane roof over boards and also for applying over concrete. Illustrated with line drawings of several approved methods of flashings. 3 pp. 8½ x 11 in.

Rising and Nelson Slate Company, 101 Park Ave., New York, N. Y.

496. *Tudor Stone Roofs.* This leaflet discusses colors and sizes of Tudor hand-wrought slates; deals with the service given to architects and tells how the material is quarried for each product after careful drawings and specifications are prepared in co-operation with architects. Special grades are described in detail and illustrations are given of buildings with Tudor slate roofs. Contains also specifications of laying slate. 4 pp. Ill. 8½ x 11 in.

571. *Tudor Stone Roofs.* A brochure describing the 7 special grades of Tudor Stone and the 7 grades of commercial slate produced by this company with illustrations of many structures on which it has been used. 28 pp. Ill. 6 x 9½ in.

Vendor Slate Co., Easton, Pa.

333. Occasional brochures on architecturally pertinent phases of roofing slate sent on request. See also listing under Slate.

ROOF CONSTRUCTION

Porete Mfg. Co., 2 Verona Ave., Newark, N. J.

258. *Porete Roof Decks* An illustrated circular describing Porete (a new light-weight concrete) for use in fireproof roofs for all buildings. 4 pp.

ROOF-LIGHTS—See Glass Construction

ROLLING PARTITIONS

J. G. Wilson Corporation, 11 East 37th St., New York City.

738. *Sectionfold and Rolling Partitions and Hygienic School Wardrobes, Catalog 37.* A catalog explaining the use, construction and installation of sectionfold and rolling partitions also school wardrobes. Details, dimensions and specifications. 40 pp. Ill. 8½ x 11 in.

SAFETY TREADS

American Abrasive Metals Co., 50 Church St., New York City.

736. *Feralun Anti-Slip Treads.* Six plates of details of anti-slip stair treads, door saddles, elevator door sills, floor plates, trench covers and garage ramps. Plates can be traced or blue printed. Also data sheet of sizes, thickness and specifications. 7 pp. Ill. 8½ x 11 in.

SANDSTONE—See Stone

SASH—See Doors and Windows

SASH CHAIN AND CORD

Samson Cordage Works, Boston, Mass.

586. *Samson Sash Cord.* Specifications and condensed descriptions of Samson spot window sash cords, Samson mahogany wire center sash cord and accessories. 24 pp. Ill. 3½ x 6¼ in.

Specifications of most products advertised in THE AMERICAN ARCHITECT appear in the Specification Manual

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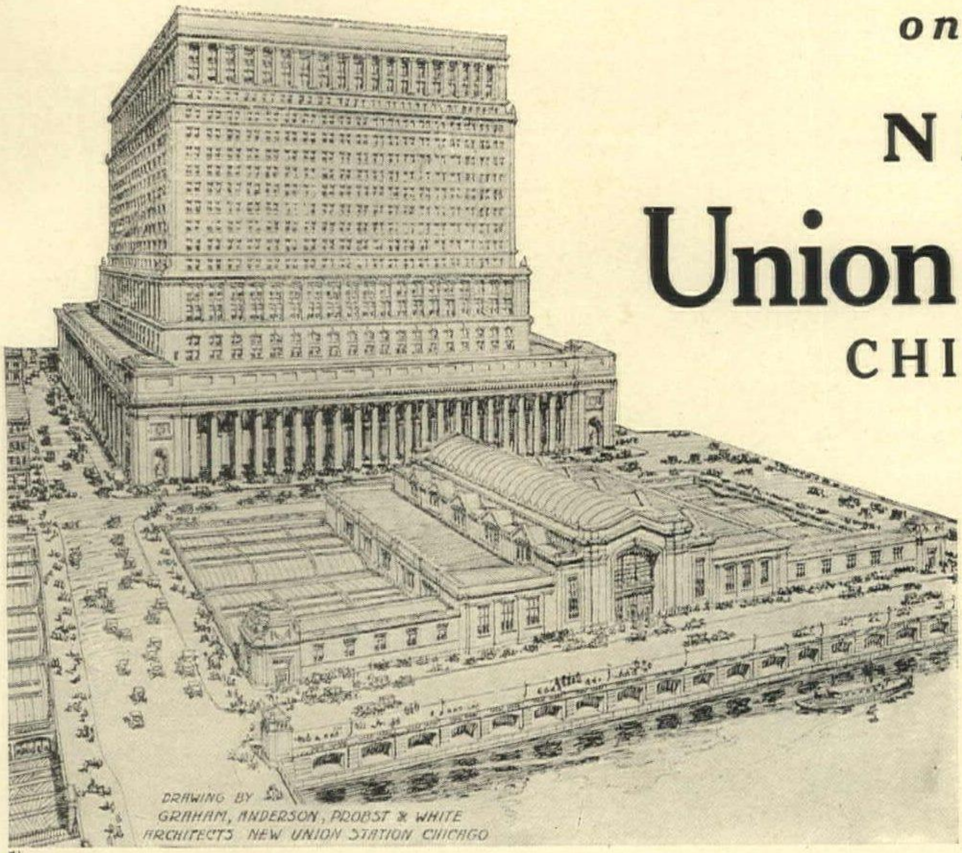

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REFERENCE LIST OF BUSINESS LITERATURE—Continued

SCREENS

American Wire Fabrics Company, 208 So. La Salle St., Chicago, Illinois.

305. *Catalog of Screen Wire Cloth.* A catalog and price list of screen wire cloth, black enamelled, galvanized, aluminoid, copper, bronze. 30 pp. Ill. 3½ x 6¼ in.

The Higgin Manufacturing Co., 5th and Washington Ave., Newport, Ky.

353. *Screen your Home in the Higgin Way.* A description of Higgin door and window screens with practical data. 16 pp. Ill. 8½ x 11½ in.

New Jersey Wire Cloth Company, 614 South Broad St., Trenton, N. J.

409. *A Matter of Health and Comfort. Booklet No. 2331.* A booklet telling all about screens, the durability of copper and its superiority over all other metals for screen purposes. 16 pp. Ill. 5 x 7¾ in.

SHINGLES—See also Roofing

The Philip Carey Co., Lockland, Cincinnati, Ohio.

381. *Carey Asfaltslate Shingles.* Folder containing illustrations of attractive buildings and residences on which Carey Asfaltslate Shingles have been used. Describes this type of shingle, showing its special claims and advantages.

SIDEWALK LIGHTS—See also Vault Lights

SLATE—See also Roofing

Vendor Slate Co., Inc., Easton, Pa.

332. *The Vendor Book of Roofing Slate for Architects.* Contains original information on slate in various architectural uses; history, geology, sundry practical matters; complete descriptive classification; extended treatise on architectural roof design and specifications. 24 pp. Ill. 8½ x 11 in.

STAINS—See also Paints, Stains, Varnishes

STAIRWAYS—MOVABLE

The Bessler Movable Stairway Co., Akron, Ohio.

541. *The Modern Way Up.* A book describing a stairway that helps utilize attic space. It folds up in the ceiling and is concealed when not in use. Letters are given from contented users. 24 pp. Ill. 4¾ x 7¾ in.

STEEL JOIST CONSTRUCTION

Truscon Steel Co., Youngstown, Ohio.

641. *Truscon Steel Joist Data Book.* Complete data of steel joists giving properties, dimensions, safe loads, coefficients of deflection, details of connections, specifications, directions for installations. 32 pp. Ill. 8½ x 11 in.

STONE

The Appalachian Marble Company, Knoxville, Tenn.

503. *Appalachian Tennessee Marble.* A new booklet on the qualities to be demanded in marble and a treatise on Tennessee marble by T. Nelson Dale (Retired Geologist, U.S.G.S.). Contains also illustrations of the plant of the company, buildings in which Appalachian Tennessee Marble has been used and four-color process plates of the six major Appalachian marbles. In tough paper indexed cover. 12 pp. Ill. 8½ x 11 in.

Indiana Limestone Quarrymen's Assn., P. O. Box 503, Bedford, Ind.

265. *Folders, Series D.* Structural detail and data sheets showing methods of detailing cut stone work in connection with modern building construction. 4 pp. each. 8½ x 11 in.

366. *Standard Specifications for Cut Stone Work.* This is Vol. III, Series "A-3." Service publications on Indiana Limestone, containing Specifications and Supplementary Data, relating to best methods of specifying and using this stone for all building purposes. This valuable work is not for general distribution. It can be obtained only from a Field Representative of the Association or through direct request from architect written on his letterhead. 56 pp. Ill. 8½ x 11 in.

693. *Indiana Limestone Homes, Series B, Vol. 5.* A portfolio containing sixteen designs for small and moderate-sized dwellings of different styles of architecture and sizes of lots. Plot plan, floor plans, perspective and description. Free to architects and draftsmen requesting same on employer's business stationery. 84 pp. Ill. 8½ x 11 in.

National Building Granite Quarries Assn., Inc., 31 State Street, Boston, Mass.

416. *Architectural Granite No. 1 of the Granite Series.* This booklet contains descriptions of various granites used for building purposes; surface finishes and how obtained; profiles of moldings and how to estimate cost, typical details; complete specifications and 19 plates in colors of granite from various quarries. 16 pp. Ill. 8½ x 11 in.

STORE FRONTS

Detroit Show Case Co., Detroit, Mich.

77. *Designs.* A booklet. Store fronts and display window designs, giving plans and elevations, and descriptions. Size 9¼ x 12 in. 16 pp.

78. *Details.* Sheets of full size details of "Desco" awning transom bar covers, sill covers, side, head and jamb covers, ventilated hollow metal sash and profile of members. Size 16 x 21½ in. 3 sheets.

STOVES

George M. Clark & Co., Division of American Stove Co., 179 No. Michigan Ave., Chicago, Ill.

458. *Gas Stove Catalog No. 114.* A complete catalog of Clark Jewell gas stoves; water heaters; room heaters; ovens; waffle irons; cake bakers; hot plates; etc. 76 pp. Ill. 6 x 9 in.

Danglar Stove Co., Division of American Stove Co., Cleveland, Ohio.

459. *Measured Heat Cookery, Catalog No. 161.* A catalog of gas cooking stoves, ranges and water heaters; featuring the Lorain Oven Heat Regulator, a device for obtaining uniform heat without constant supervision. 72 pp. Ill. 7½ x 10¾ in.

STUCCO—See also Cement

Portland Cement Association, 347 Madison Ave., N. Y. C.

594. *Portland Cement Stucco.* Illustrated leaflet of recommended practice for Portland Cement Stucco. Contains data on materials, proportions, application and curing. Table of colors for various tints, photographs of surface textures and drawings of construction details also given. 15 pp. Ill. 8½ x 11 in.

STUCCO BASE

The Bishopric Manufacturing Company, Cincinnati, Ohio.

451. *Bishopric for All Time and Clime.* A booklet describing Bishopric materials; giving building data, detailed drawings and specifications. Illustrated with half tones from photographs of houses built of Bishopric materials. 52 pp. Ill. 8 x 10½ in.

TELEPHONES

Automatic Electric Co., 945 W. Van Buren St., Chicago, Ill.

683. *Architect's Specifications for Interior Telephone System.* A complete and short specification for the installation of interior telephone systems adapted to all kinds of buildings and uses. 4 pp. 3½ x 11 in.

684. *The Straight Line.* A booklet devoted to interior communication by use of private automatic exchanges and the P-A-X Code Calls. Description of switchboards, instruments and accessories. 38 pp. Ill. 5 x 8 in.

Stromberg-Carlson Telephone Mfg. Co., Rochester, New York.

304. *Inter-Communicating Telephone Systems. Bulletin No. 1017.* A pamphlet giving just the information required for the installation of intercommunicating systems from 2 to 32 stations capacity. 15 pp. Ill. 7¾ x 10 in.

TERRA COTTA

Atlantic Terra Cotta Company, 350 Madison Avenue, New York, N. Y.

425. *Questions Answered.* A brief but full description of Atlantic Terra Cotta and its use in buildings. 32 pp. Ill. 5¼ x 7 in.

551. *Monthly Magazine, Atlantic Terra Cotta.* The April issue contains illustrations of English Terra Cotta, 16th Century and construction details for rusticated ashlar. 16 pp. Ill. 8½ x 11 in.

National Terra Cotta Society, 19 West 44th St., New York City.

664. *Standard Specifications.* Contains complete detailed specifications for the manufacture, furnishing and setting of terra cotta, a glossary of terms relating to terra cotta and a short form specification for incorporating in architect's specification. 12 pp. 8½ x 11 in.

666. *Color in Architecture.* An illustrated treatise upon the principles of color design and appropriate technique. 38 pages. Ill. 8½ x 11 in.

667. *Present Day Schools.* Illustrating 42 examples of school building architecture with an article on school house design by James O. Betelle, A. I. A. 32 pp. Ill. 8½ x 11 in.

668. *Better Banks.* Illustrating many banking buildings in terra cotta with an article on its use in bank design by Alfred C. Bossom, architect. 32 pp. Ill. 8½ x 11 in.

The Northwestern Terra Cotta Co., 2525 Clybourn Ave., Chicago, Ill.

96. *Architectural Terra Cotta.* A collected set of advertisements in a book, giving examples of architectural terra cotta, ornamental designs and illustratons of examples of façades of moving-picture houses, office buildings, shops, vestibules and corridors in which Northwestern Terra Cotta was used. Size 8½ x 11 in. 78 pp.

TILE—ORNAMENTAL

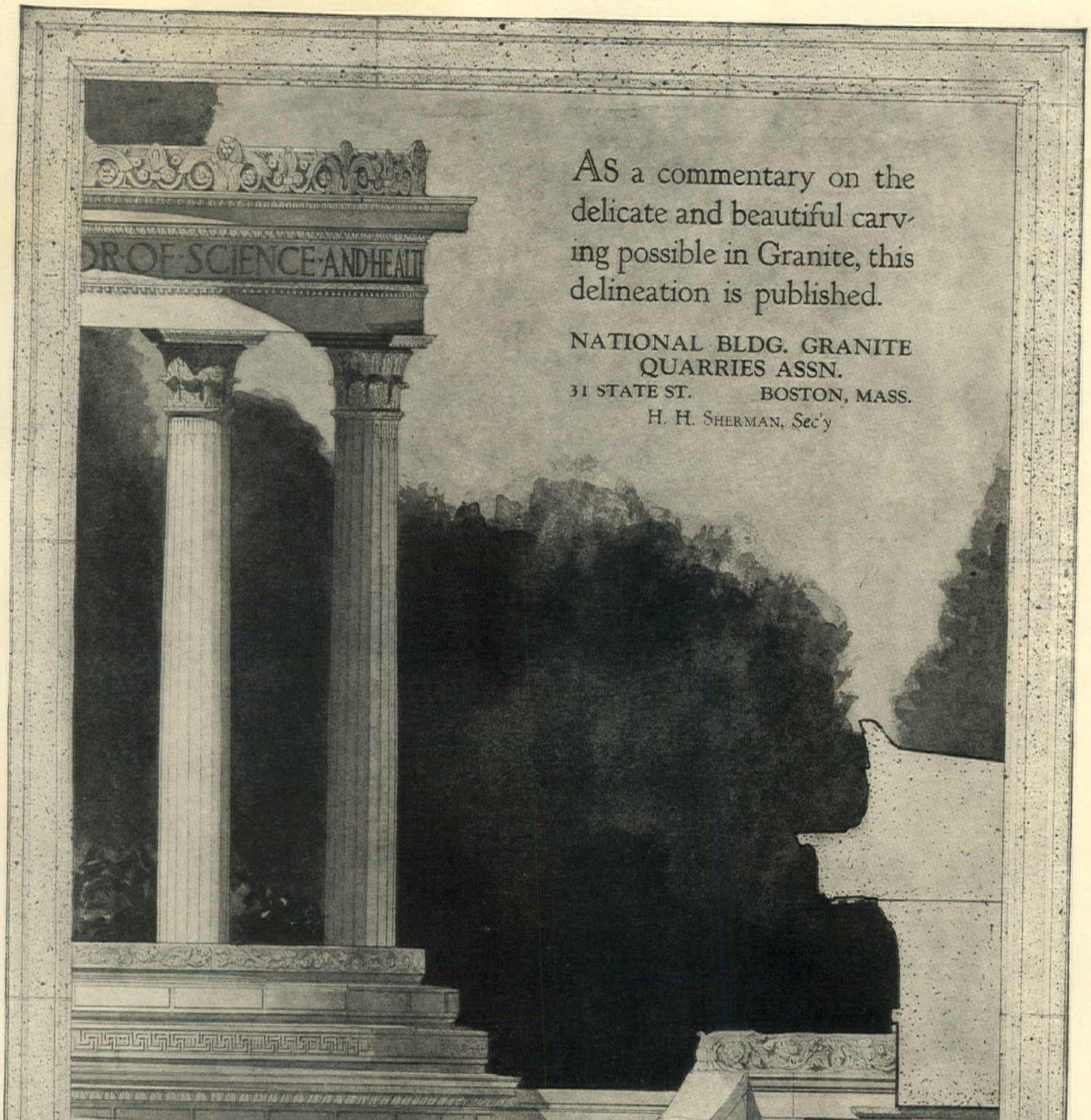
The Associated Tile Manufacturers, Beaver Falls, Pa.

374. *Basic Specifications for Tilework and Related Documents. No. K-300.* This specification is prepared in a very systematic manner for the use of architects and builders. It is printed on one side of a sheet with facing page blank to receive memoranda. Various colored sheets make reference easy and simplify greatly the work of a specification writer in specifying tilework. 38 pp. 7½ x 10⅝ in.

375. *"Work Sheets" for Specification Writers.* To be used in connection with "Basic Specification for Tilework and Related Documents." 16 sheets 7½ x 10⅝ in.

TIME CLOCKS—See Clocks

TOILET PARTITIONS—See Wainscoting



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Granite Studies will be reserved for you.

REFERENCE LIST OF BUSINESS LITERATURE Continued

TRIM—See Doors and Windows

TRUSSES—See Building Construction

VARNISH—SEE PAINTS

VAULT LIGHTS

American Three Way Luxfer Prism Co., 13th Street and 55th Court, Chicago, Ill.

424. *Daylighting. Catalog 21.* A complete catalog on glass prisms for use in transoms, sidewalk and floor lights, skylights, etc., for lighting places inaccessible to direct daylight. Contains also measurements, specifications and other data required by designers. 42 pp. Ill. 8½ x 11 in.

VENTILATION—See Heating and Ventilation

VENTILATORS

The Burt Manufacturing Co., Akron, Ohio.

207. *General Catalogue* covering entire line of Ventilators, Exhaust Heads and Filters. Separate leaflets on each type of ventilator, vent and damper.

WAINSCOTING

The Vitrolite Company, Chamber of Commerce Building, Chicago, Ill.

648. *Toilet Partitions and Wainscoting. Architects' Tile Bulletin No. 7.* Describing the uses of Vitrolite, its physical properties, details of installation and specifications. 32 pp. Ill. 8½ x 11 in.

WALL BOARD

The Compo Board Co., Minneapolis, Minn.

733. *Compo Board.* A booklet describing the combination of heavy paper, wooden core and cement in a five ply wall board, its qualities and uses. 16 pp. Ill. 5 x 7½ in.

734. *Instruction Sheets.* Instructions for correct application of Compo Board and the proper places for its use. 4 pp. and 8 pp. Ill. 3 x 6 in.

WALL COVERING—See also Lincrusta-Walton

Standard Textile Products Co., 320 Broadway, New York, N. Y.

111. *Sanitas, Modern Wall Covering.* Folio. Plates of color renderings of various interiors, with suggestions for the library, living room, dining room, boudoir, kitchen and church wall covering, using Sanitas. Size 11½ x 6 in. 15 plates.

112. *Sanitas, and Its Uses.* Booklet. Text and color illustrations of Sanitas as a wall covering, with tables for wall and ceiling measurements. Notes on sanitary character, cleanliness and durability of Sanitas. Size 5 x 7 in. 28 pp. 6 color plates and 2 sample sheets.

WATER HEATERS

Ruud Manufacturing Co., Pittsburgh, Pa.

567. *Ruud Gas Water Heaters.* Bulletins in filing folder describing instantaneous automatic water heaters for small homes and special uses, multi-coil automatic storage systems, automatic storage systems and tank water heaters. Details for connections, hot water service and specifications. 19 pp. Ill. 8½ x 11 in.

590. *Ruud Multi-Copper-Coil Automatic Storage Systems.* Catalog describing automatic hot water storage systems of large capacity for large residences, apartment buildings, hotels, hospitals, gymnasiums and factories. Details, capacities and dimensions for complete line. 32 pp. Ill. 6 x 9 in.

WATERPROOFING—See also Dampproofing

Security Cement and Lime Co., Hagerstown, Md.

743. *Waterproofing with CAL.* A portfolio of miscellaneous information treating of the integral method of waterproofing concrete, specifications and tests. 24 pp. Ill. 8½ x 11 in.

WATER SOFTENERS

The Permutit Company, 440 Fourth Ave., New York

105. *Permutit (Water Rectification Systems.)* Illustrated booklet. Describes all methods of softening water, including the original Zeolite process. For homes, hotels, apartment houses, swimming pools, laundries and industrial plants. Size 8½ x 11 in. 32 pp.

482. *Bulletin No. 1600.* This bulletin treats of the value of soft water in the house and describes the Wayne Domestic Water Softening Systems. 6 pp. Ill. 8¼ x 10½ in.

Wayne Tank and Pump Co., Fort Wayne, Ind.

687. *Water Softening and Filtration.* A valuable treatise on the subject of slow-acting and quick-acting types of water softeners and their application to commercial, industrial and domestic uses. The construction of and uses for Wayne Pressure Filters are also adequately described. 32 pp. Ill. 8¼ x 10½ in.

WATER SUPPLY—See Pumps

WEATHER STRIPS

The Diamond Metal Weather Strip Co., Columbus, Ohio.

616. *The Diamond Way.* A catalog of full size details showing the application of Diamond metal weather strips to double hung and casement windows and doors with complete specifications. 34 pp. Ill. 8½ x 11 in.

The Higgin Manufacturing Co., 5th and Washington Ave., Newport, Ky.

354. *Higgin Metal Weather Strips.* A booklet of considerable value to architects and builders on the use of weather strips. Ask also for the companion book on "The Reason Why." Each booklet 12 pp. Ill. 6 x 9 in.

Monarch Metal Products Co., 5020 Penrose Street, St. Louis, Mo.

512. *Monarch Metal Weather Strips.* The publication embodies all the suggestions for advertising literature made by the Committee on Structural Service of the American Institute of Architects. It contains a treatise on inleakage around windows together with description of Monarch Metal Weather Strips. Contains many detail working drawings. 48 pp. Ill. 7½ x 10½ in.

WINDOWS—See Doors and Windows

WIRE AND CABLE—See Electric Wire and Cable

WOODWORK—See also doors and Windows—Lumber

Curtis Companies Service Bureau, Clinton, Iowa.

663. *Keeping Down the Cost of Your Woodwork.* A book illustrating Curtis interior woodwork and built-in cabinets and fixtures designed by Trowbridge and Ackerman, Architects, New York. Colored illustrations and details. 16 pp. Ill. 7 x 9¼ in.

Hartmann—Sanders Company, 6 East 39th St., New York, N. Y.

334. *Catalog No. 47.* Illustrating Kell's Patent Lock Joint wood stave columns for exterior and interior use. 48 pp. Ill. 7½ x 10 in.

Residence of B. H. Kroger, Cincinnati, Ohio. G. C. Burroughs and J. H. Deeken, Architects. Equipped with Higgin All-Metal Screens and Weather Strips.

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WINDOW screens are an essential utility to which the architect must give consideration, not only from the standpoint of durability, but also to prevent obtrusiveness and to safeguard his architectural effects. The artistry of screen designing lies in the degree of inconspicuousness attained.

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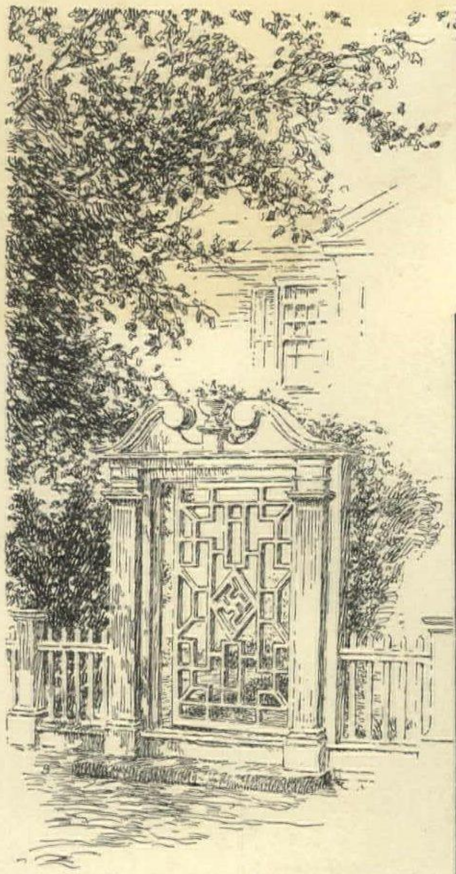

Quaint, carved wood gateway of the Thomas Cowles House

The THOMAS COWLES HOUSE, *Farmington, Conn.*
Courtesy "White Pine Architectural Monographs"

Built by a soldier of fortune

IN 1790, William Spratz, a soldier of many flags, built the Thomas Cowles House at Farmington, Conn. After almost 150 years, it still attracts the eye of all who appreciate beauty born of simplicity and correctly proportioned design.

Upon first glance at this eighteenth-century house, one sees a sloping gambrel roof, pierced by dormers and tall chimneys, the whole comfortably resting on corners made prominent by skilful rustication.

Closer observation reveals a Palladian window, detailed in pilasters and topped by cornice and pediment, which is placed in the center of the second story. This window extends out over the doorway and is supported by two columns from the ground floor. Architects agree that this simple composition forms an entrance which is the embodiment of old-time hospitality.

At the present time, this Colonial house, constructed entirely of white pine, is said to be in perfect condition. The exteriors are painted in light brown with a dark brown trim. The interiors—spacious staircase-hall and rooms decorated with richly moulded cornice and carved mantels—are all finished in white.

Write to us for these measured drawings

C. Bertram French, architect, New York, has accurately measured and drawn the most interesting details of the Thomas Cowles House. These drawings with others have been compiled in a Portfolio of Early American Architecture. It will be sent free to any architect requesting Portfolio No. 9.

The historical notes you have just read will not, however, appear in the Portfolio. So keep this page for reference after you receive your Portfolio.

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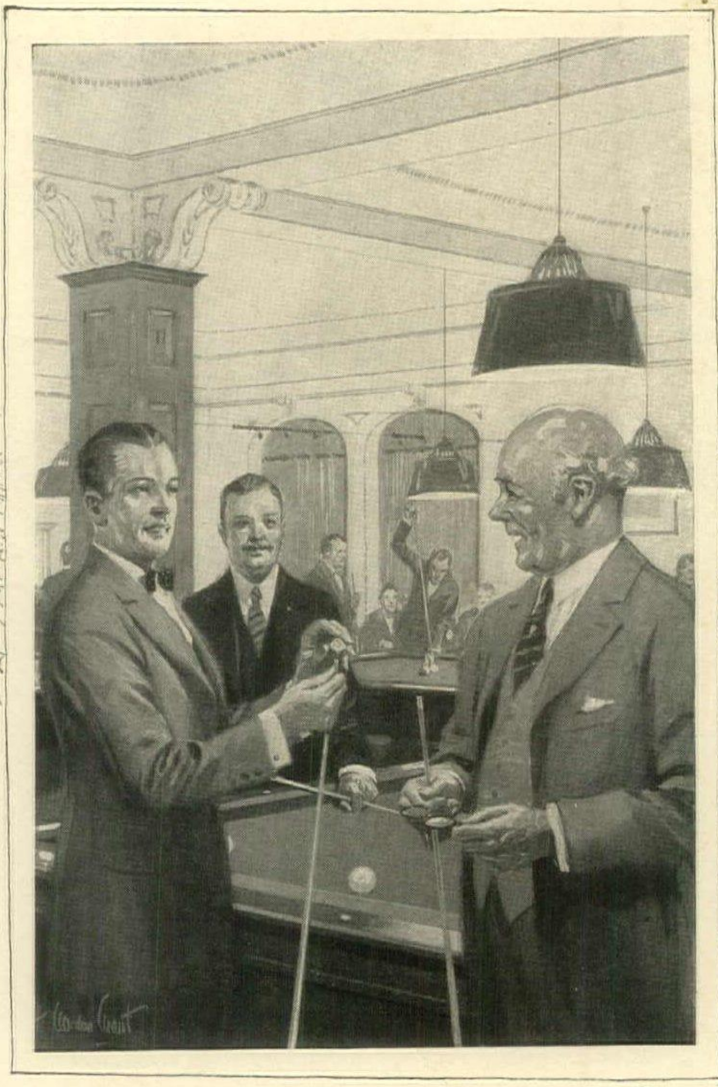
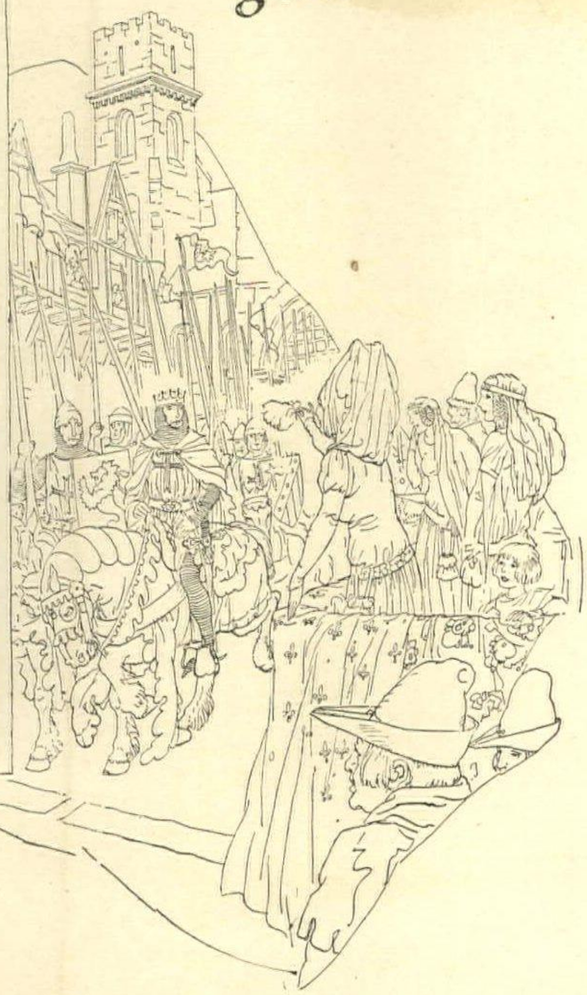


billiards

a gentleman's game



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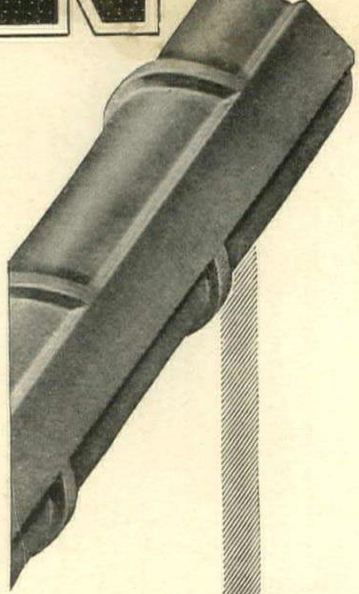

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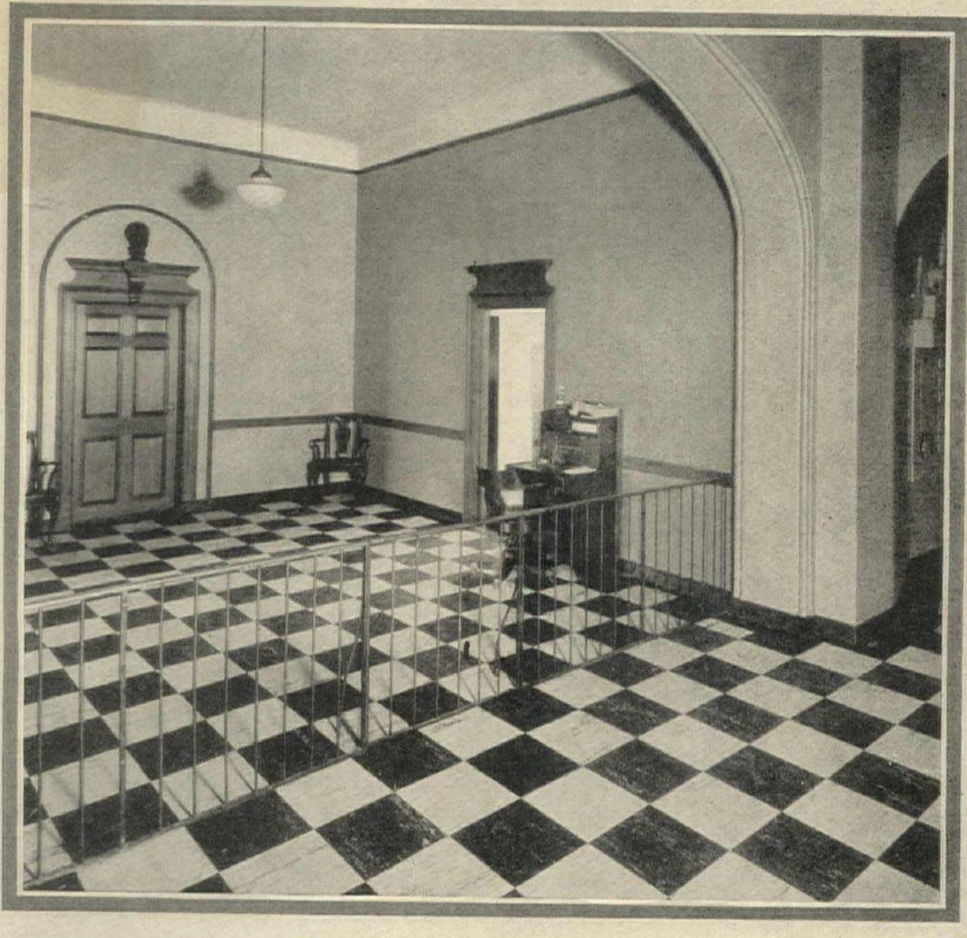

COSDEN OFFICES, HECKSCHER BUILDING, NEW YORK
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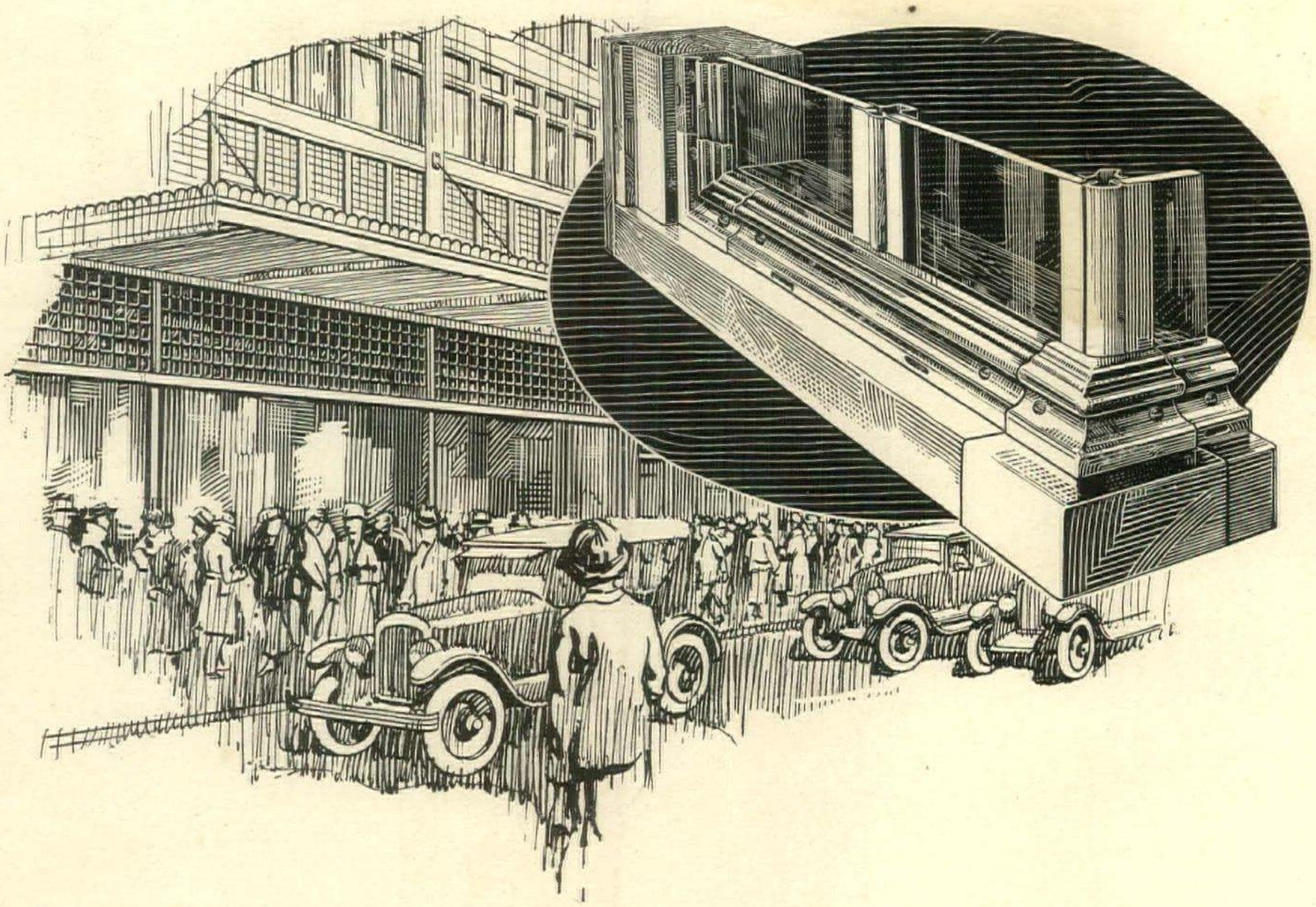

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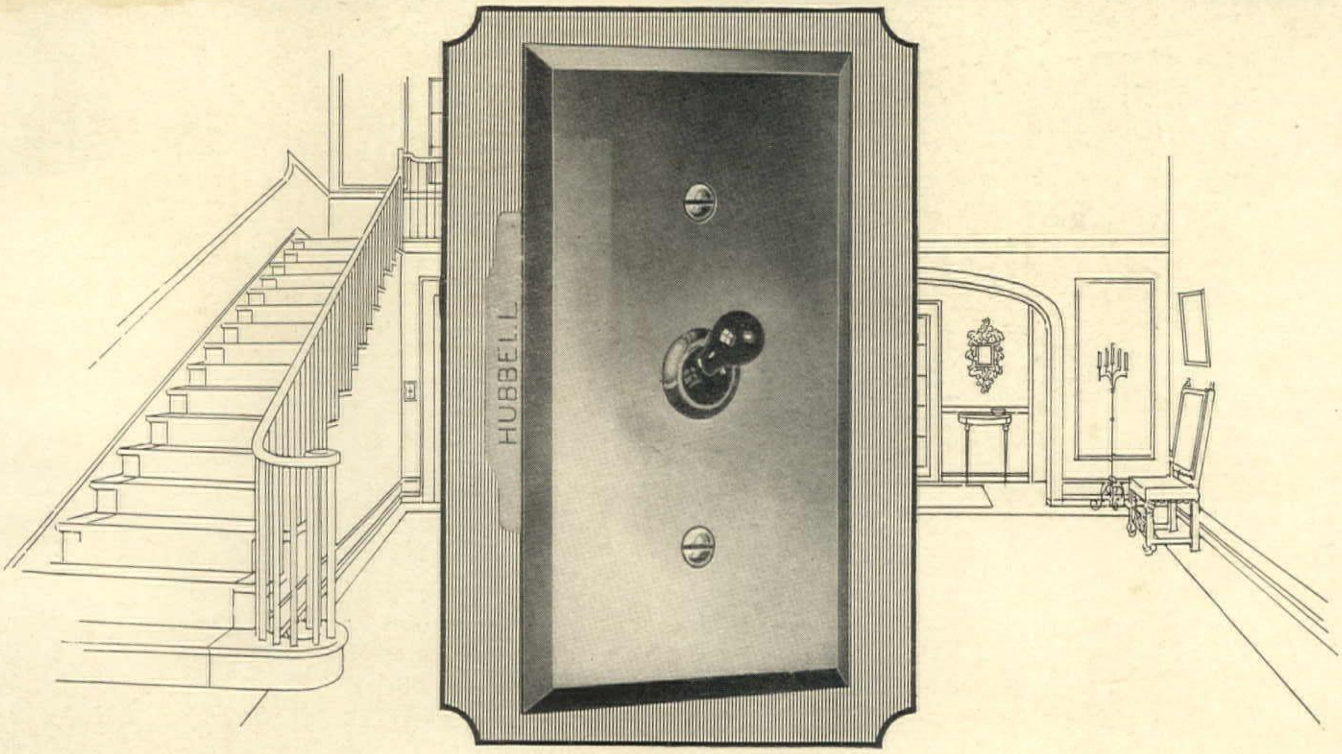

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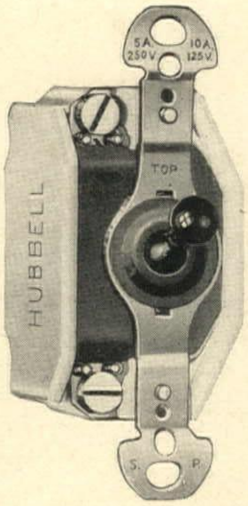

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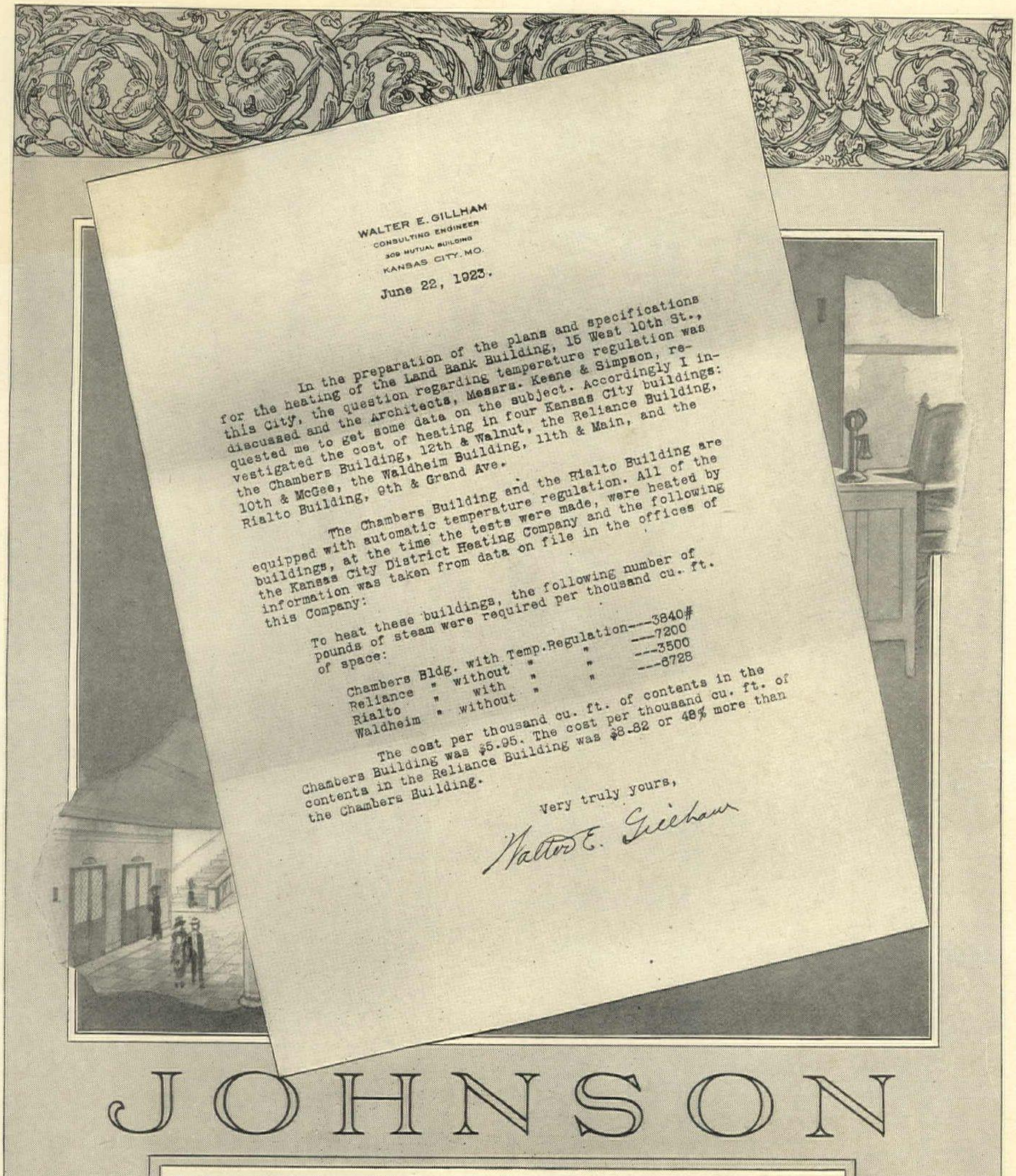

WALTER E. GILLHAM
CONSULTING ENGINEER
308 MUTUAL BUILDING
KANSAS CITY, MO.

June 22, 1923.

In the preparation of the plans and specifications for the heating of the Land Bank Building, 15 West 10th St., this City, the question regarding temperature regulation was discussed and the Architects, Messrs. Keene & Simpson, requested me to get some data on the subject. Accordingly I investigated the cost of heating in four Kansas City buildings: the Chambers Building, 12th & Walnut, the Reliance Building, 10th & McGee, the Waldheim Building, 11th & Main, and the Rialto Building, 9th & Grand Ave.

The Chambers Building and the Rialto Building are equipped with automatic temperature regulation. All of the buildings, at the time the tests were made, were heated by the Kansas City District Heating Company and the following information was taken from data on file in the offices of this Company:

To heat these buildings, the following number of pounds of steam were required per thousand cu. ft. of space:

Chambers Bldg.	with Temp. Regulation	---3840#
Reliance "	without " "	---7200
Rialto "	with " "	---3500
Waldheim "	without " "	---6728

The cost per thousand cu. ft. of contents in the Chambers Building was \$5.95. The cost per thousand cu. ft. of contents in the Reliance Building was \$8.82 or 48% more than the Chambers Building.

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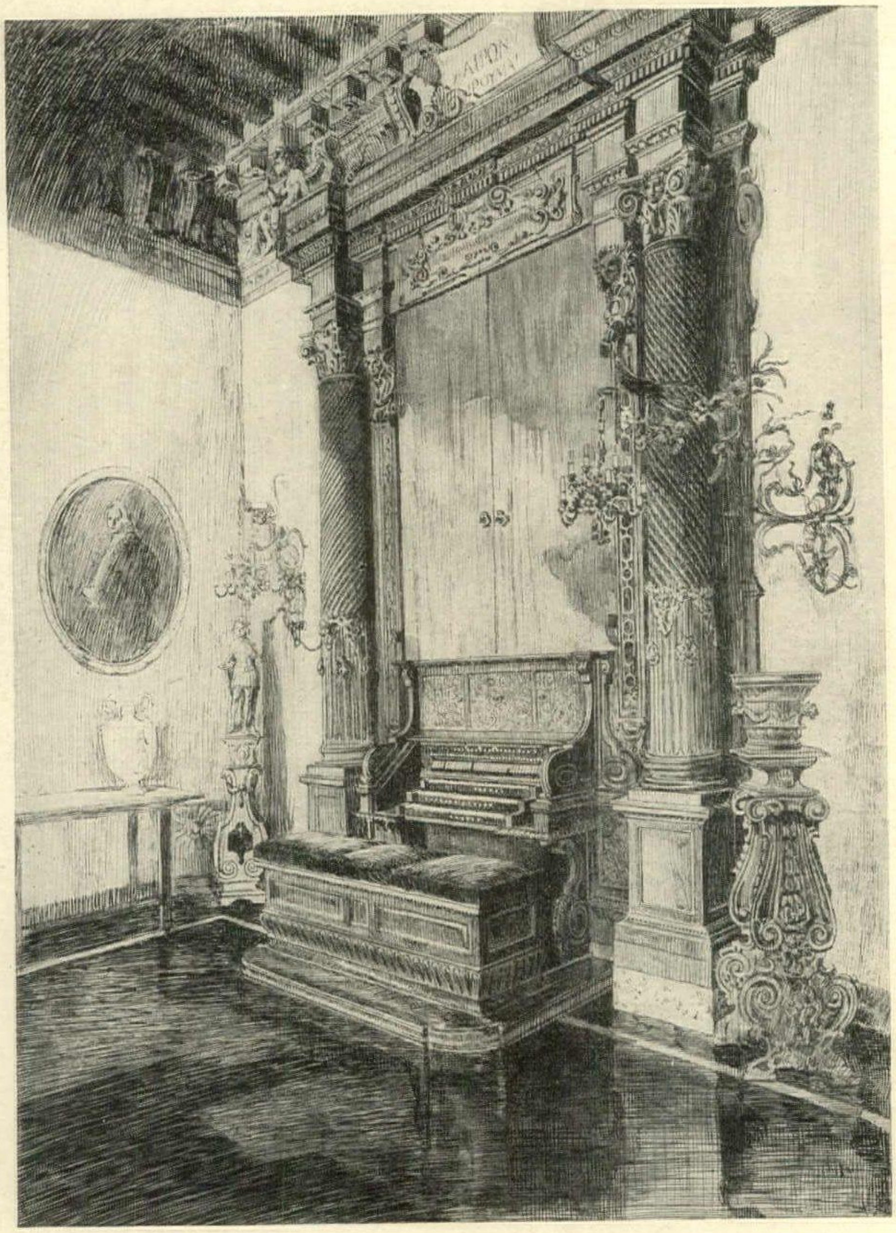

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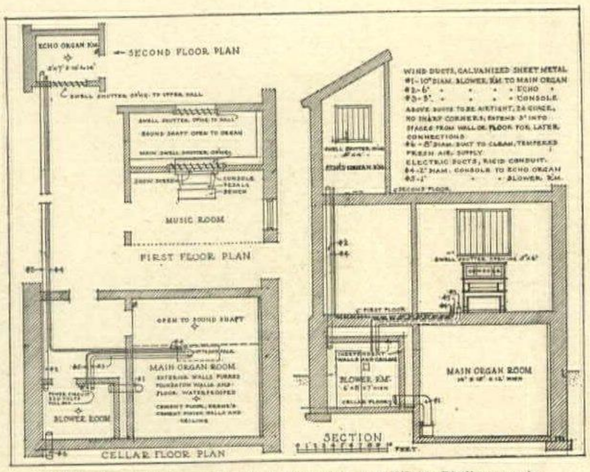

(This plan is designed for the installation of a Welte Philharmonic Pipe Organ in a small country residence)

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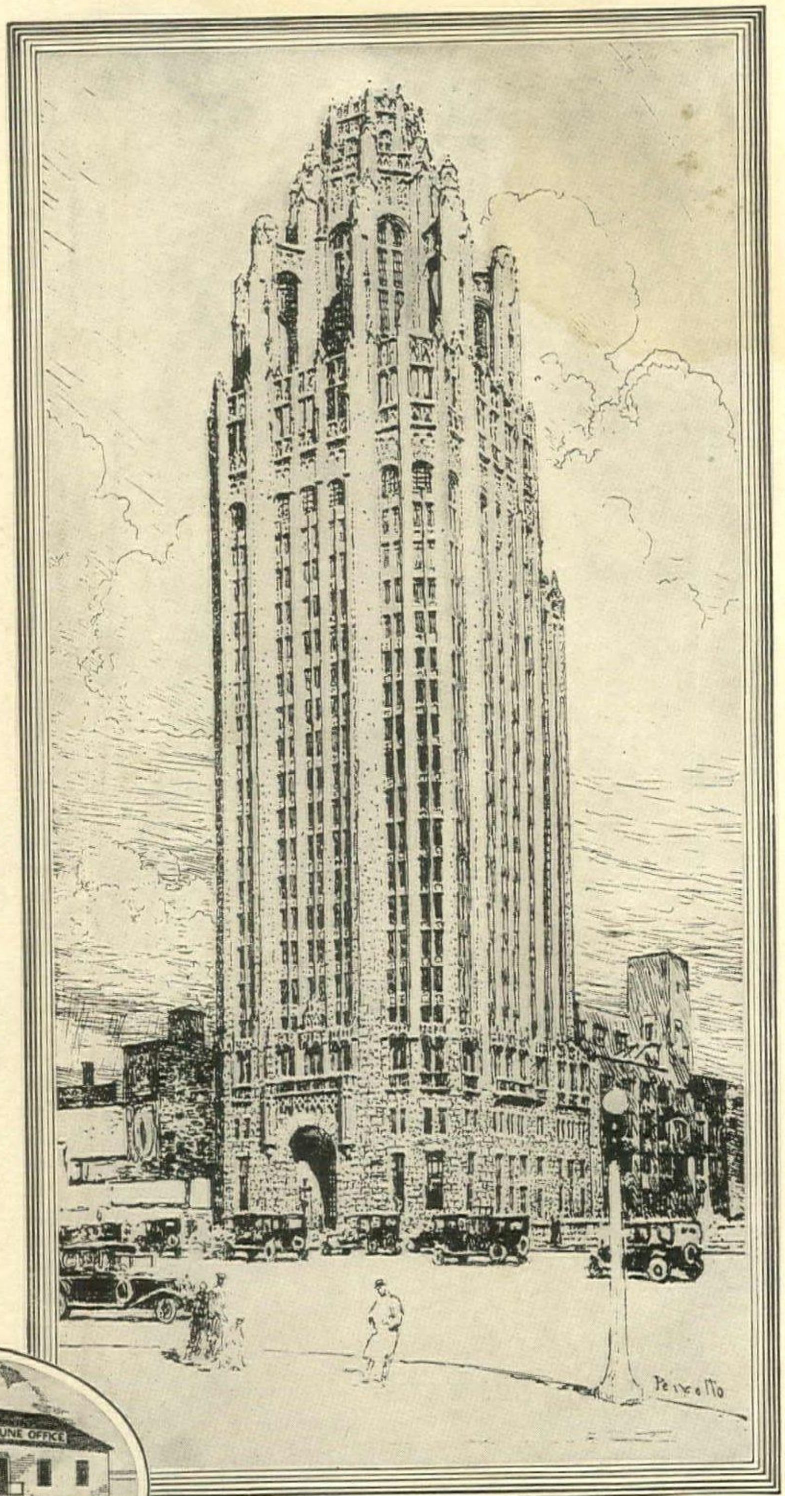
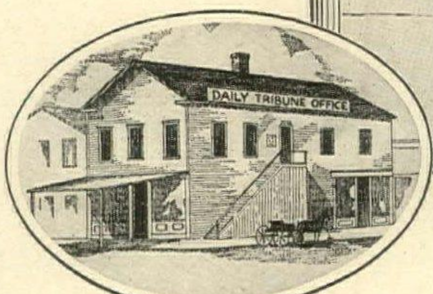
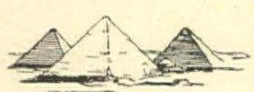


Tribune Tower, Chicago.
John Mead Howells & Raymond M. Hood, Associate Architects, New York City





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Send for our latest catalogs for your files. McCray builds to order to meet any requirement and will gladly co-operate with you in every way possible. *Free Blue Prints* of suggested equipment will be provided—simply send a sketch of your client's requirements.

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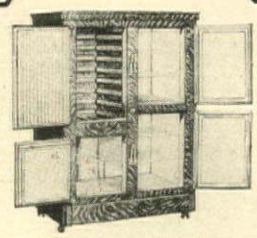

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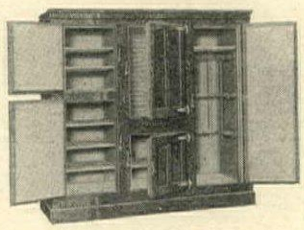

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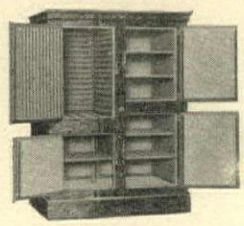

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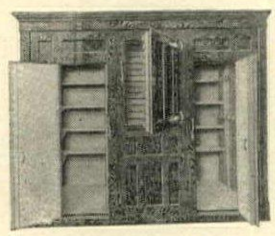

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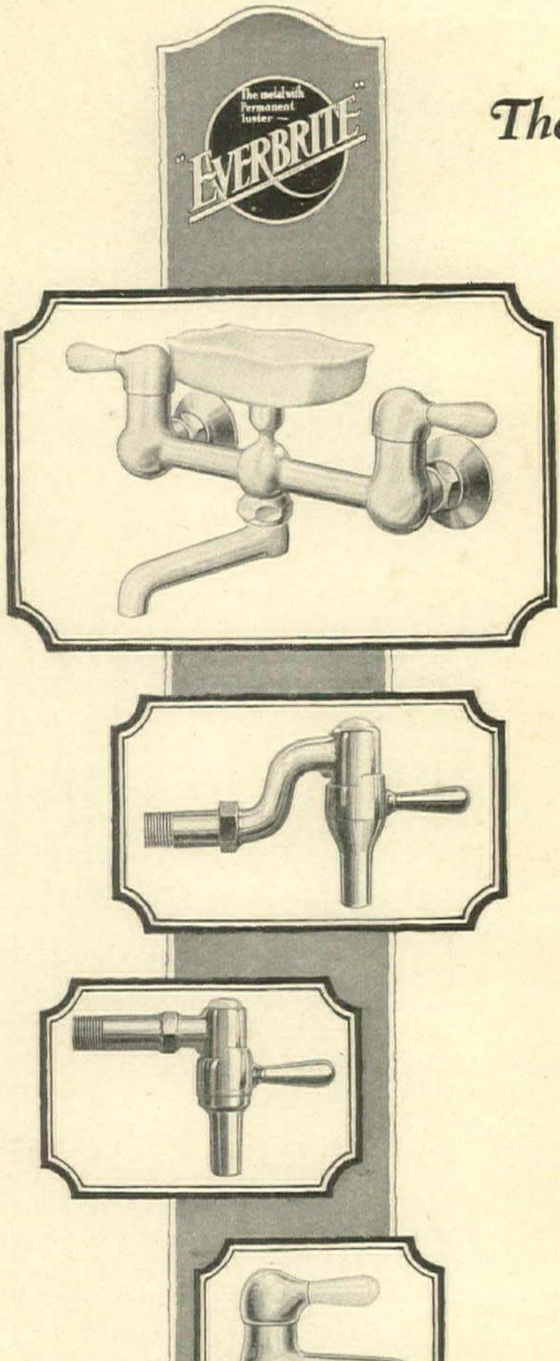

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The "Everbrite" is being enthusiastically received everywhere because it fills a long felt want.

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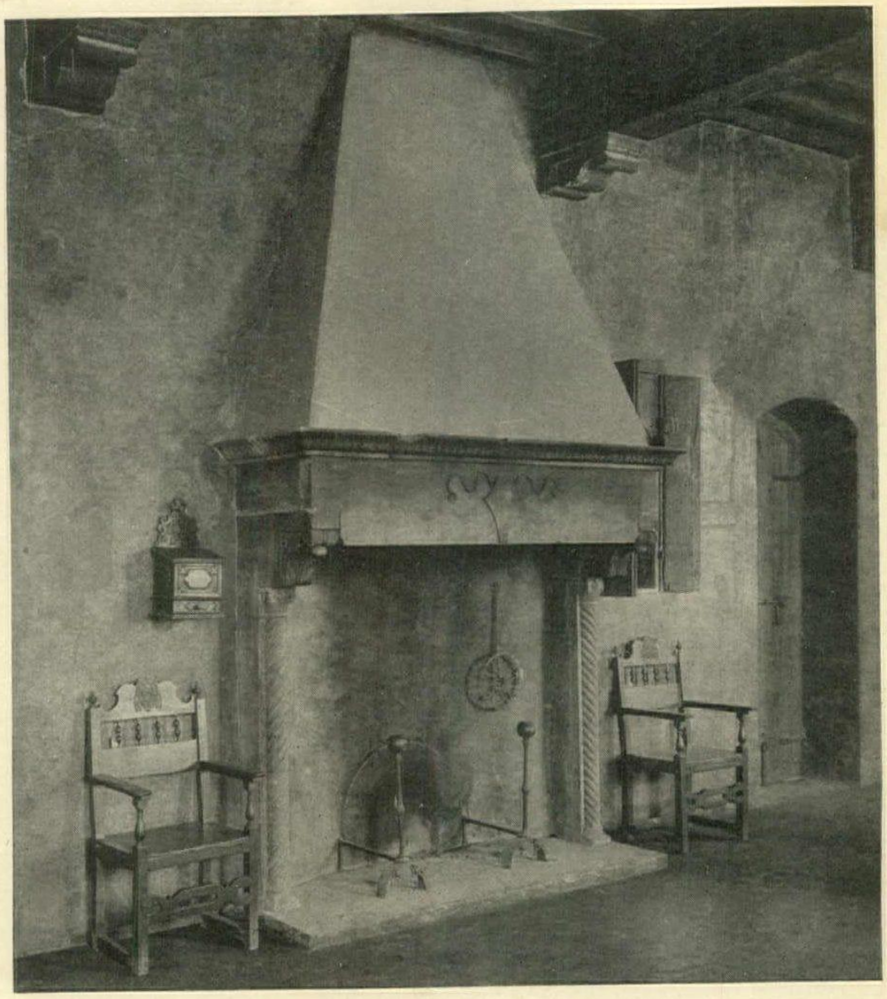

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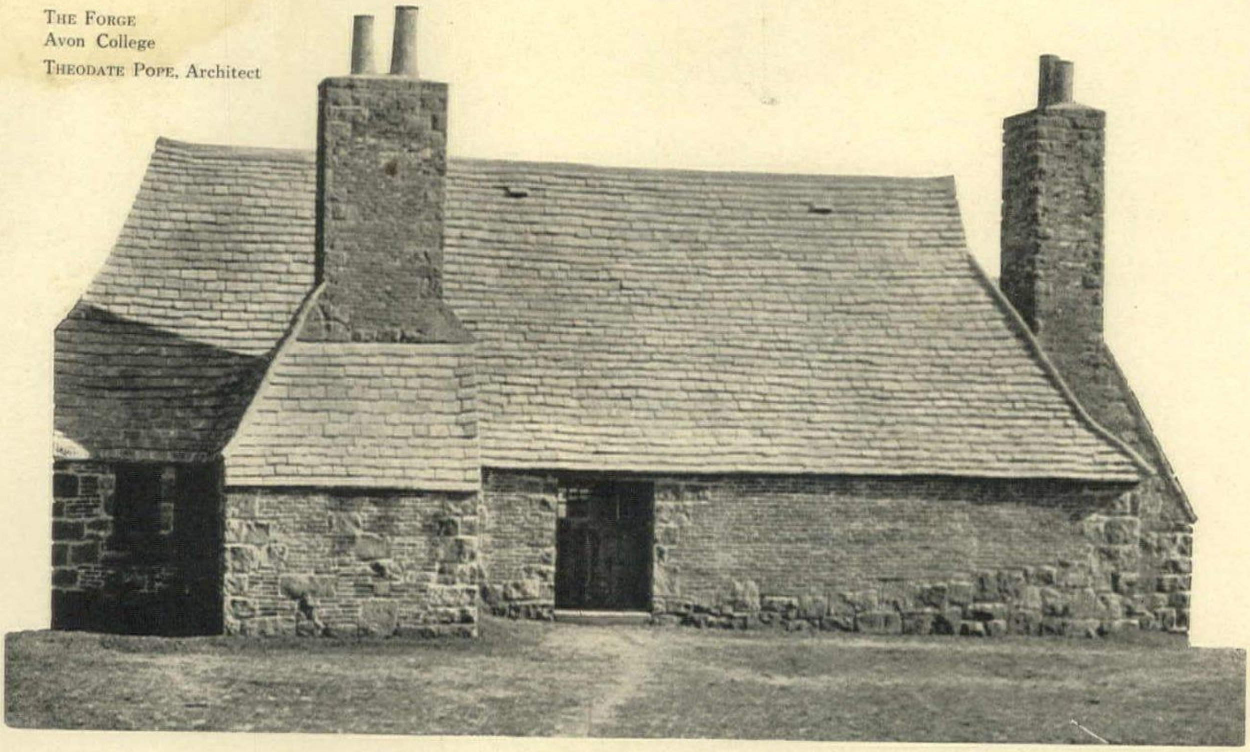
THE FORGE
Avon College
THEODATE POPE, Architect



ONE building of the full Avon College development extending over many acres.

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101 PARK AVENUE, NEW YORK, N. Y.

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for Every Floor in the House

An Ideal Floor at Moderate Cost

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The item of installing linoleum, in particular, is small, because the material comes in big six-foot-wide rolls, and can be cemented directly to the concrete, without special preparation or adaptation of the base. At the same time, linoleum is a long-lived floor, which can be inexpensively maintained by waxing and polishing.

Such a moderate cost permits you to use Armstrong's Linoleum wherever floors should be quiet, comfortably resilient, and nonslippery. By thoughtful selection from the various colorings in plain and jaspé and the many interesting patterns in inlaids, you can go even further, and design special floors in linoleum to harmonize beautifully with your periods and color schemes.

In short, Armstrong's Linoleum affords you design in floors, and with it, the qualities of quietness, resilience, and durability, at a fraction of the cost of the materials you usually associate with those floor characteristics.

Armstrong Cork Company, *Linoleum Division* **Lancaster, Pa.**

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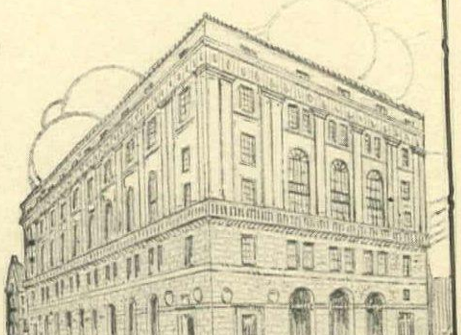

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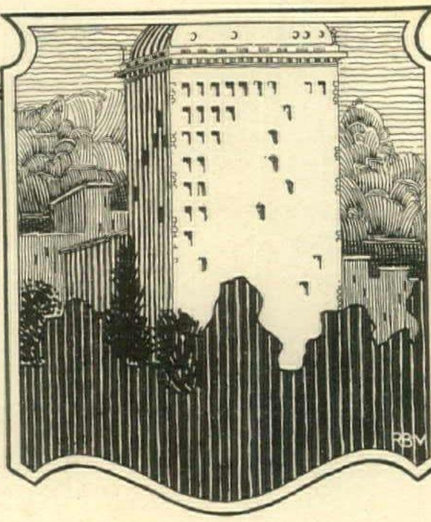
A 22



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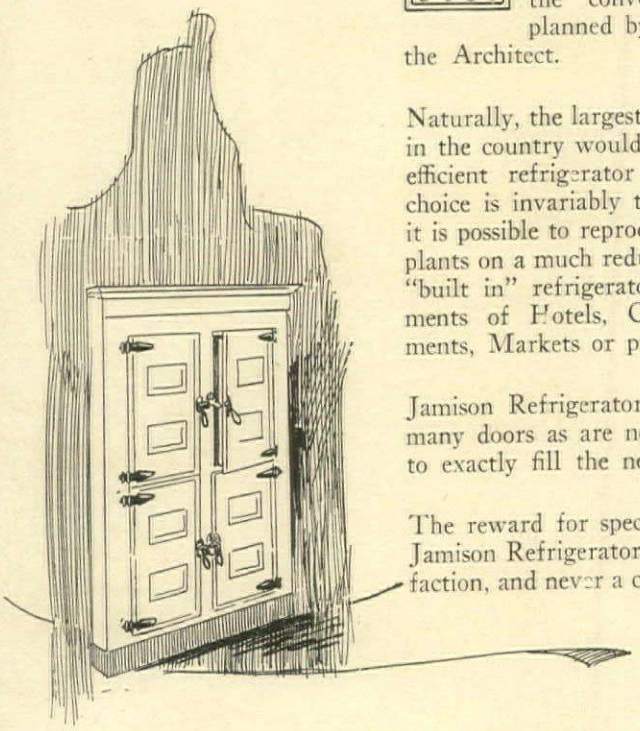

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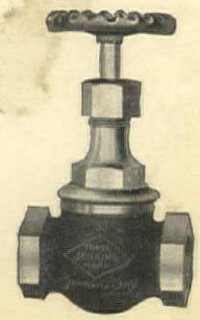
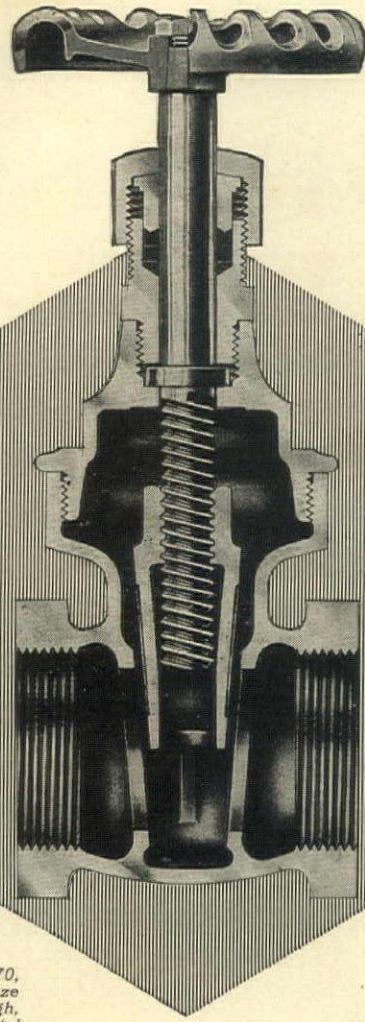


Fig. 106, screwed, Standard Bronze Globe Valve, fitted with Jenkins Renewable Disc.



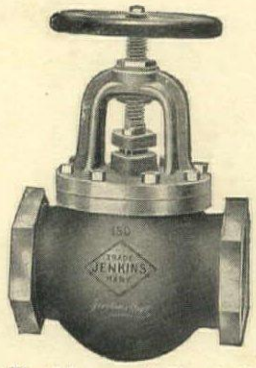


Fig. 141, screwed, Standard Iron Body Globe Valve.

Fig. 352, screwed, Standard Bronze Swing Check Valve.

Sectional view Fig. 370, screwed. Standard Bronze Gate Valve. Note thorough, even distribution of metal throughout.

Fig. 720, Bronze Rapid Action Valve for instantaneous flow—stays open automatically.

Fig. 715, Bronze Fire Line Valve—neither sticks nor corrodes.

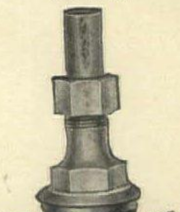


Fig. 169-G, screwed, Standard Bronze Globe Valve with Lock shield.

Fig. 325, screwed, Standard Iron Body Gate Valve.

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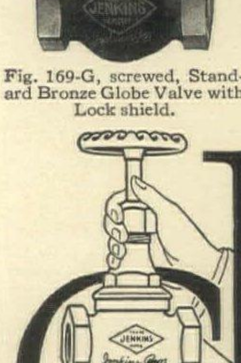

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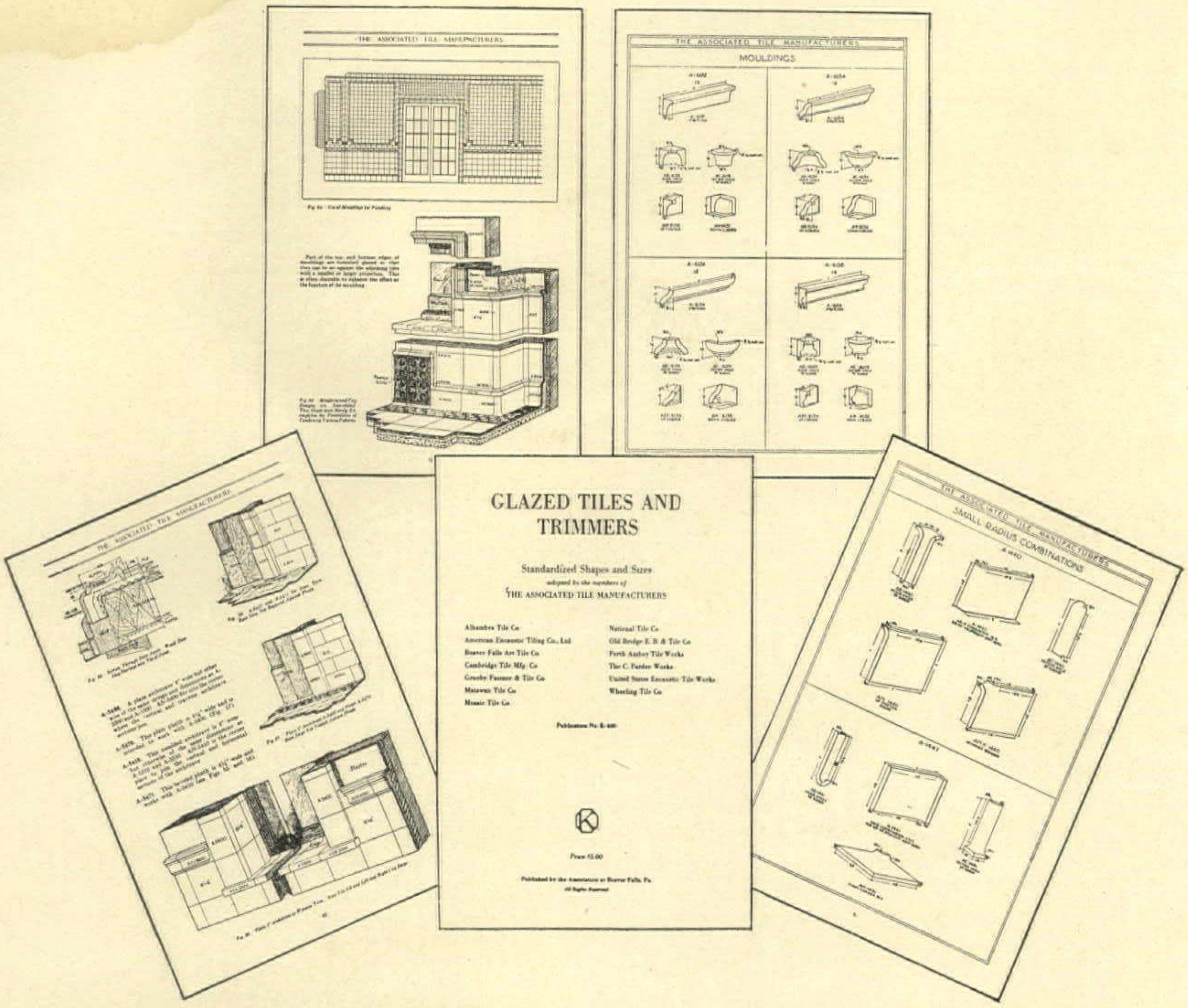
Sample Pages

A Handbook on Tiles



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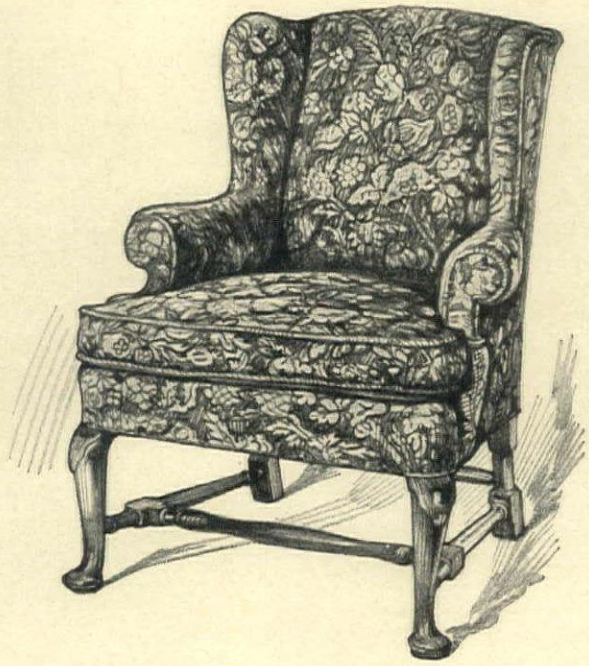

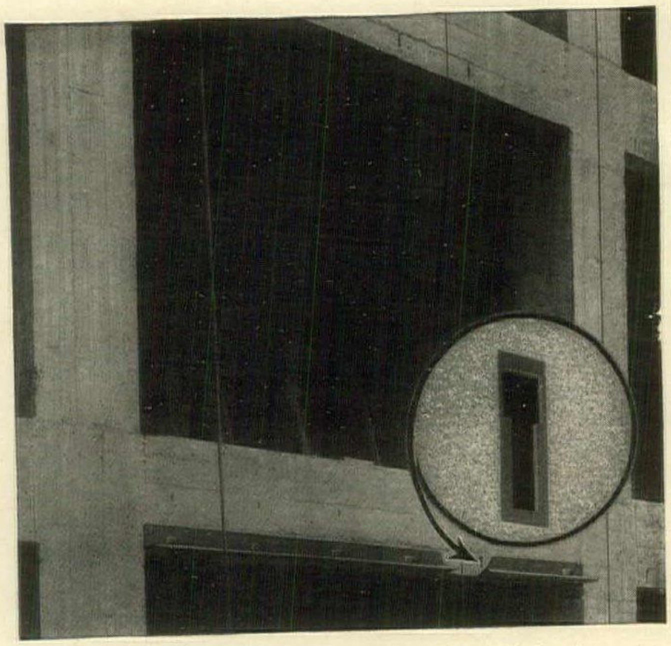

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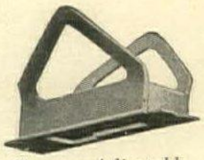

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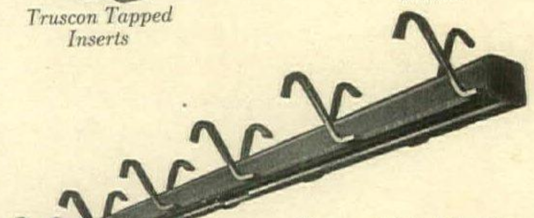

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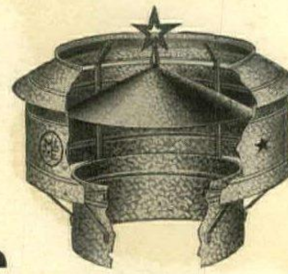

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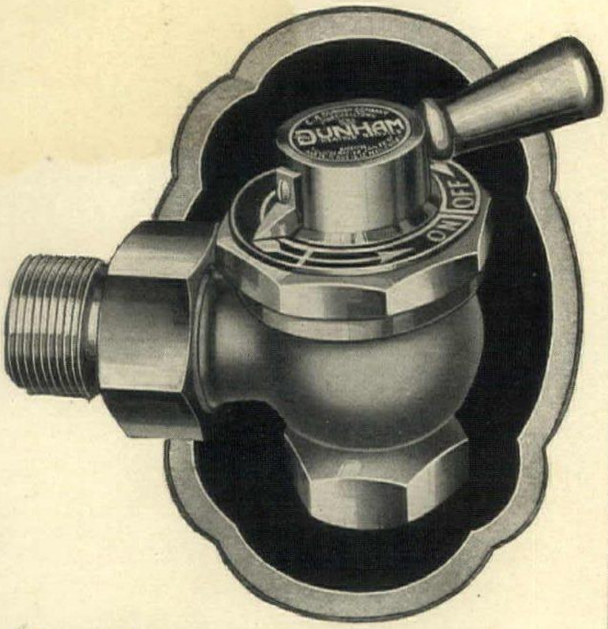

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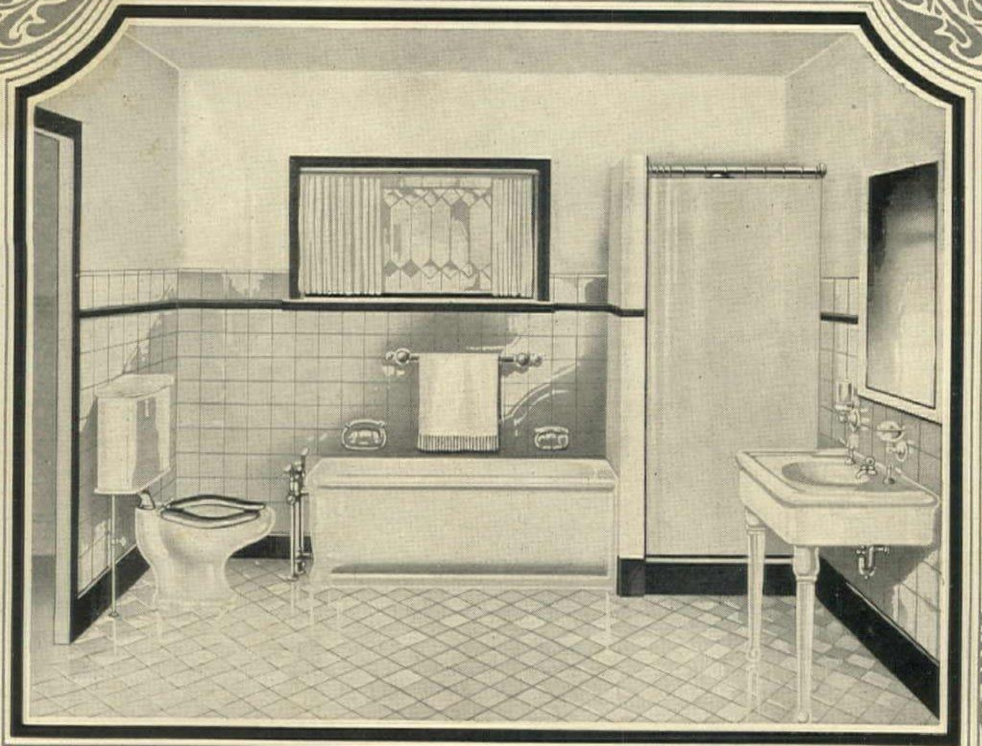

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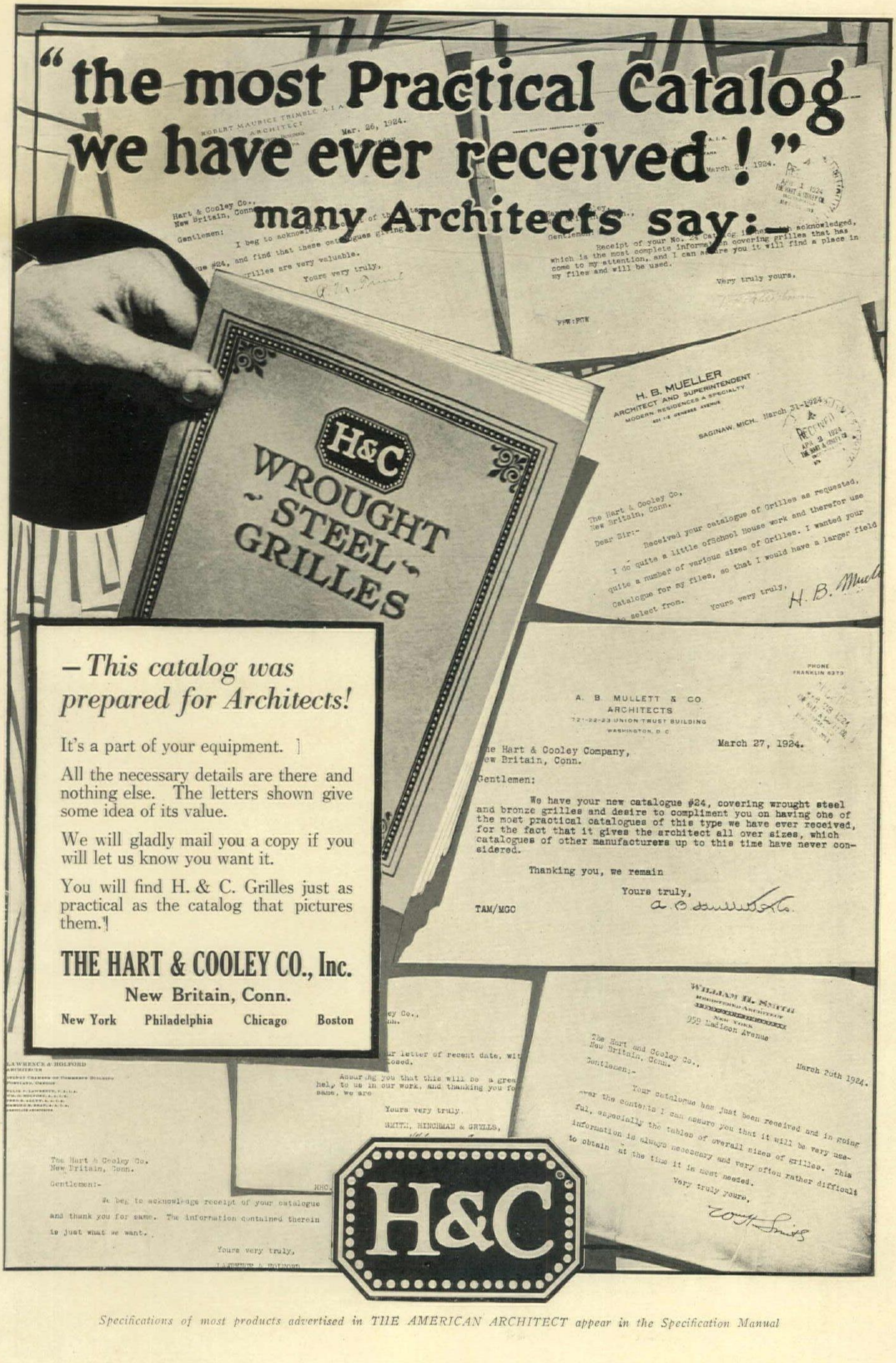

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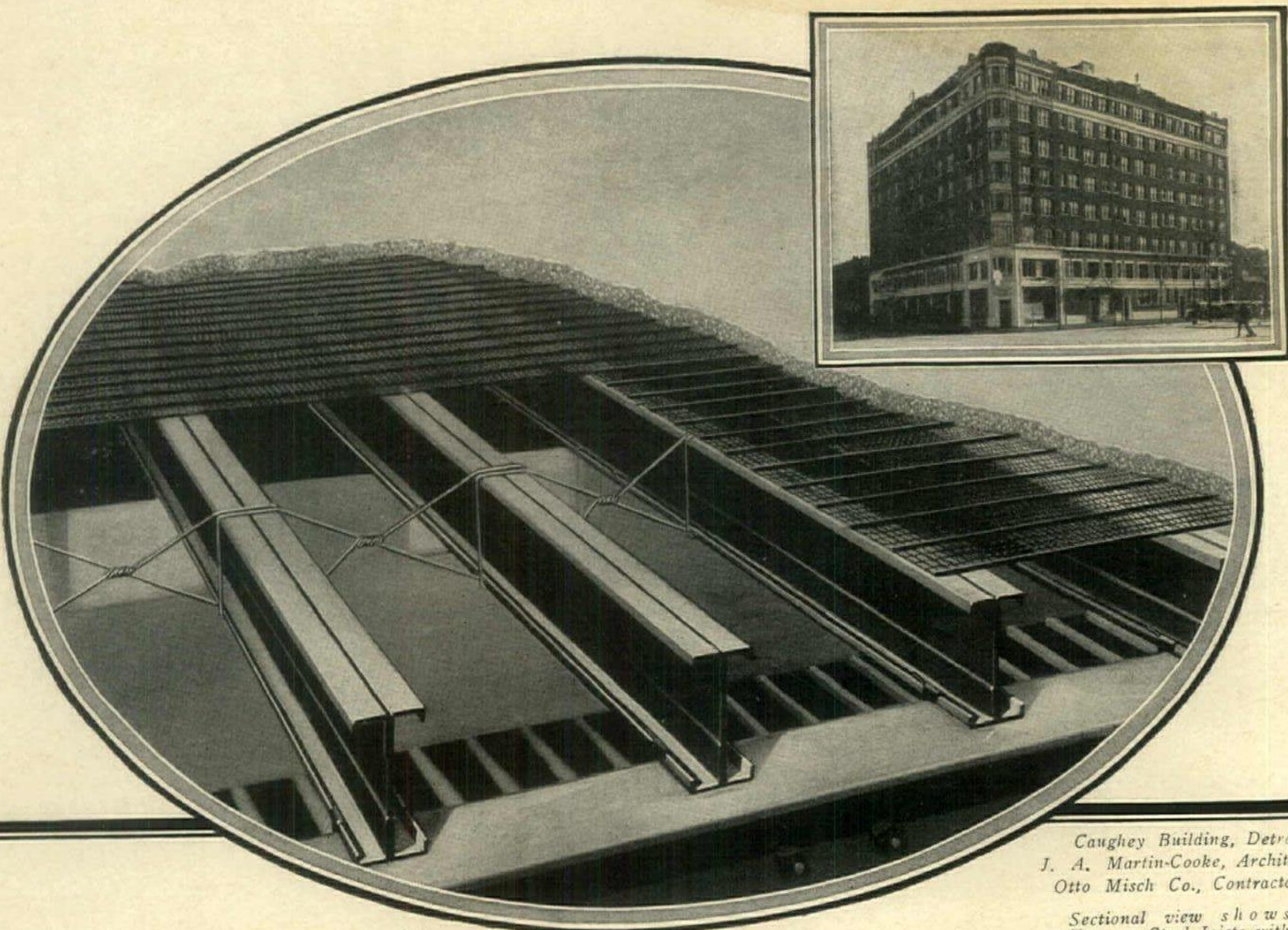

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