THE AMERICAN ARCHITECT AND THE ARCHITECTURAL REVIEW

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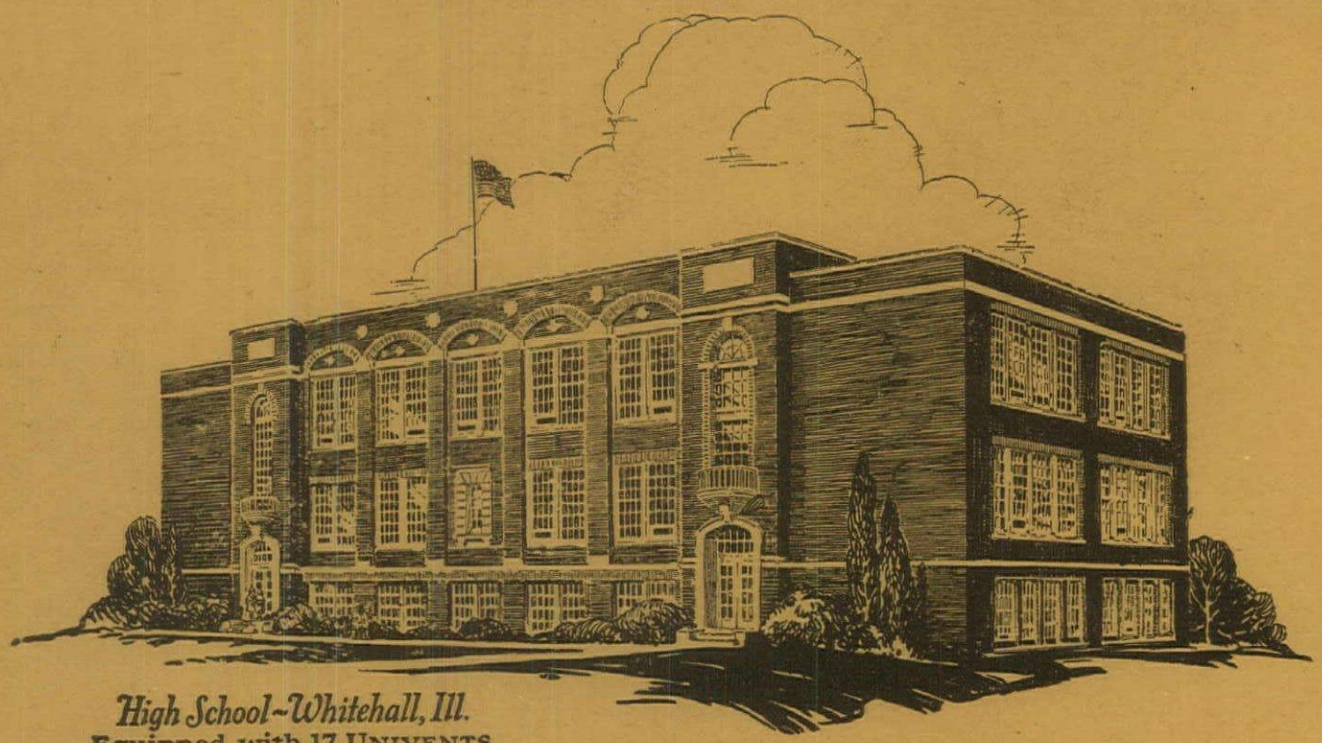

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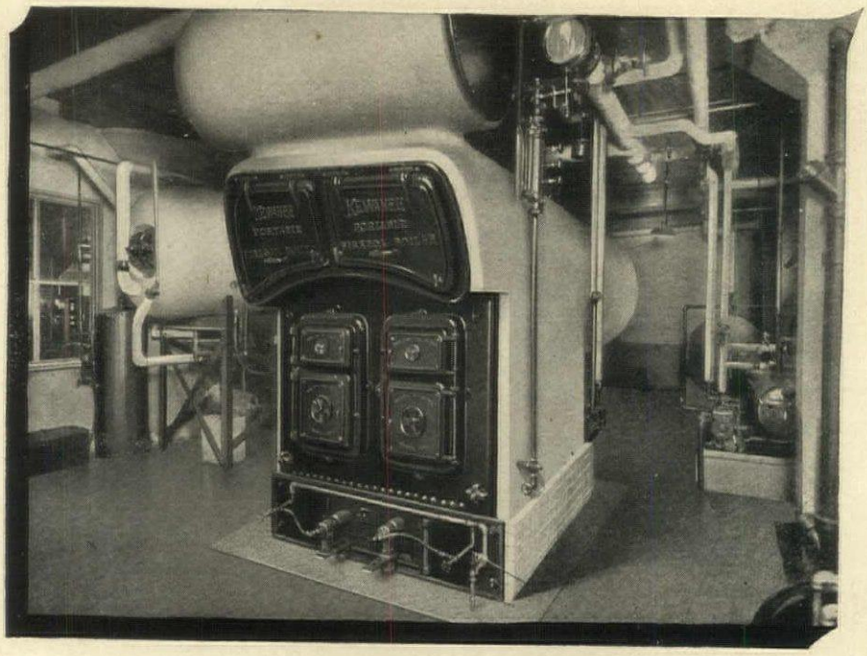
KEWANEE



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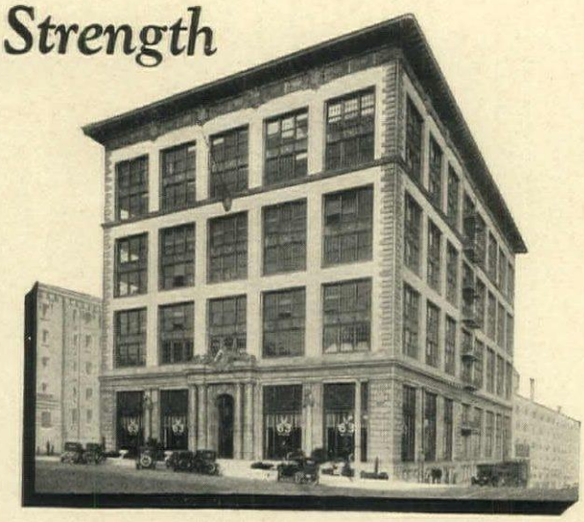

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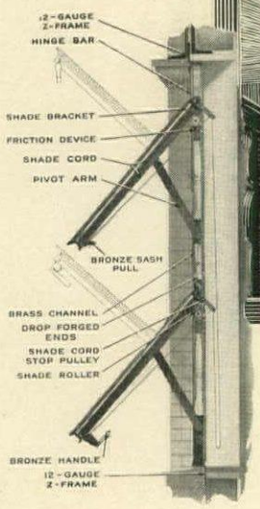

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THE ARCHITECTURAL REVIEW

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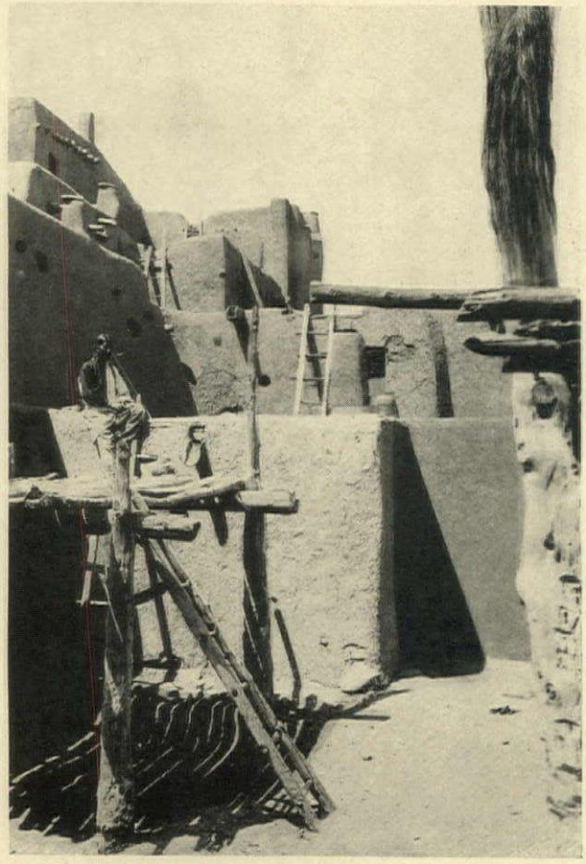
The ARCHITECTURAL REVIEW

VOL. CXXV WEDNESDAY, MAY 7, 1924 NUMBER 2445

ANCIENT *and* MODERN ARCHITECTURE *in* SANTA FE, N. M.

SANTA FE is proud of its age. Before the discovery of America it was the Indian capital of the Southwest. Later, the Spaniards made it the capital of New Spain and from it ruled their wide dominion in North America. It became the seat of government of the new territory when the United States took possession and it was only to be expected that this, the second oldest city in the United States, would be chosen as the capital of New Mexico when that territory became a state. With such a historical background it is not surprising that Santa Fe clings to its traditions and that present day residences have copied the beautiful old Spanish architecture which in turn was inspired by the cliff dwellings of the Indians. But today concrete tile and Portland cement stucco are taking the place of the adobe bricks and mud plastered walls of which the pueblos were built.



AN ADOBE INDIAN PUEBLO AT TAOS, N. M.

The typical Indian pueblo is a many-celled building of several stories, opening on one or more courts or plazas. In its arrangement its value as a defensive structure, besides being a place of habitation, was originally given weighty consideration. When the pueblo enclosed a single court, the outer wall was usually the highest, and was pierced with only small openings or portholes, to afford a view of the surrounding country. A slight elevation was usually preferred, but there are many instances where the site is a lofty mesa or a level plain, while still others were built in natural recesses in the rocky walls of canyons or cliffs, hence their popular designation "cliff dwellings."

Both rounded and polygonal structures were common, while some pueblos are semi-circular in ground plan, with a high rear wall and with the houses arranged in terraces, the tiers of dwellings successively retreating so that the roof of the lower formed the means of access as well as the "front yard" of the tier next above, and so on to the sixth or seventh story.

The ground tier usually contained only small openings, access being gained by a movable ladder to the roof, which was provided with a hatchway.

Most of the pueblos still follow this ancient form, but there are now but few houses whose ground floor is not provided with doors and windows.

The structural materials depended largely on the immediate supply. Slabs of sandstone, being abundant, were commonly used, neatly pecked and laid up in adobe mortar or chinked with

spalls and although the joints in the walls were not "broken," the result was frequently a marvelously straight and strong wall that has stood the ravages of centuries. Molded adobe bricks, now so commonly used, were not made in pre-Spanish times, but balls of mud, mixed with ashes and sage, and dried, were in vogue as a building material in prehistoric times.

THE FRANCISCAN HOTEL, ALBUQUERQUE, N. M.
REINFORCED CONCRETE CONSTRUCTION, EXTERIOR COATED WITH PORTLAND CEMENT STUCCO

The advent of the Spaniards introduced the use of brick-formed units in the so-called "adobe" construction. (Adobe—from the Spanish "adobar," meaning to daub or plaster.) These sun-dried bricks are made from native clays, being molded in roughly rectangular shapes, usually in two principal sizes, 18″ x 9″ x 4″ and 16″ x 12″ x 4″. The larger are used as headers, the smaller as stretchers. The sides of the freshly molded units are turned alternately to the sun day by day for a week or two, stacking them up for use when sufficiently "baked."

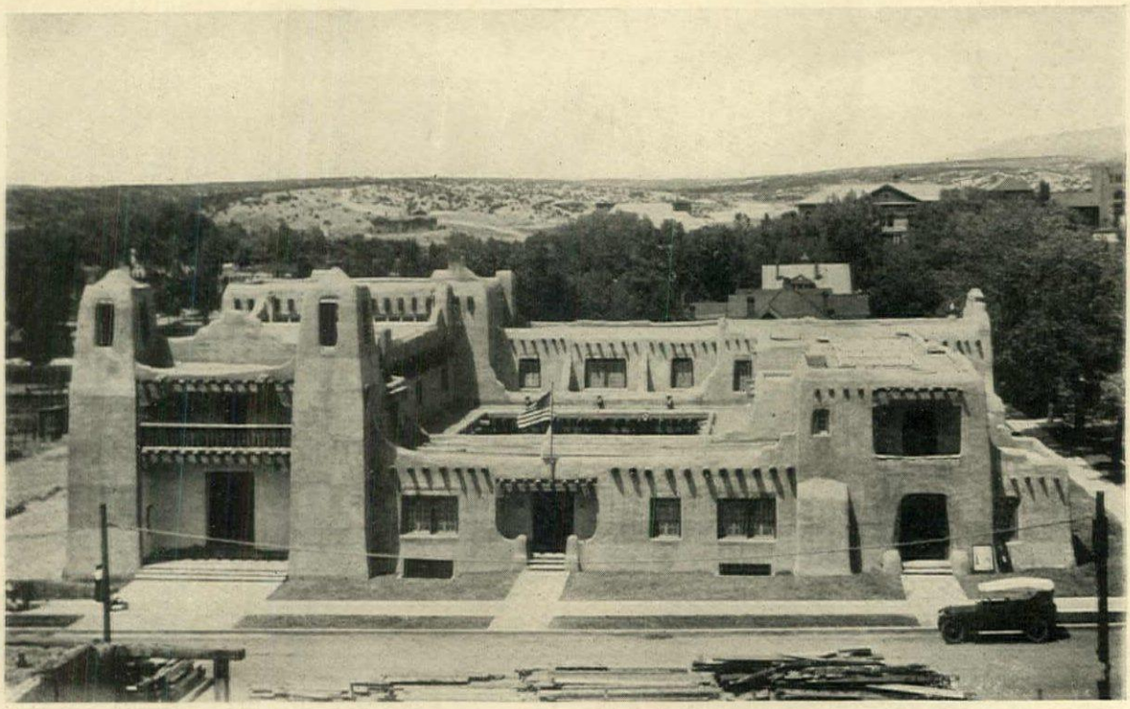
The hardened blocks are then laid up in adobe mortar and the entire exterior surface "stuccoed" with adobe mud, applied and smoothed by hand. The resulting surface finish is rough and streaked with hand prints.

The roof supports of the houses consist chiefly of pine or cottonwood beams, with ends protruding through the exterior walls. Light poles are then laid transversely across the beams, these in turn being covered with brush grass and adobe mud, well tamped.

Windows, at first unknown, gradually found a place in these odd structures as living conditions became more peaceful. Flakes of selenite were pieced together for window panes, but these have given way to stock frames purchased from the white traders.

The corner fireplace and chimney have gradually taken the place of the former central fire-pit with the hatchway furnishing egress for the smoke.

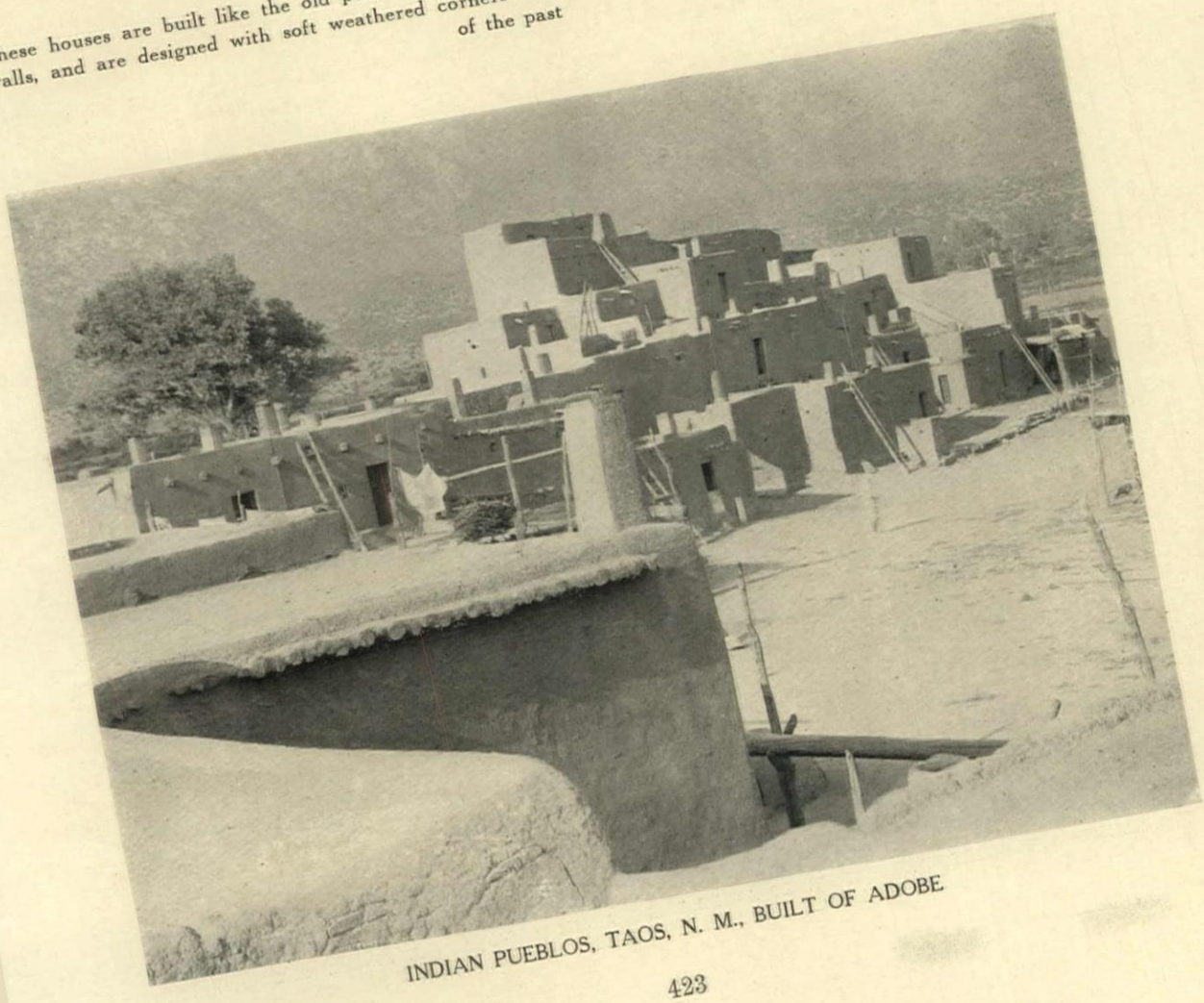
Weathering has its effect on these adobe structures. Adobe soils are very plastic when wet and the finished walls soon show the effects of rain. The surface becomes marked with numerous irregular crevices formed as the dissolving "adobe" streaks its way to the ground. Each year the



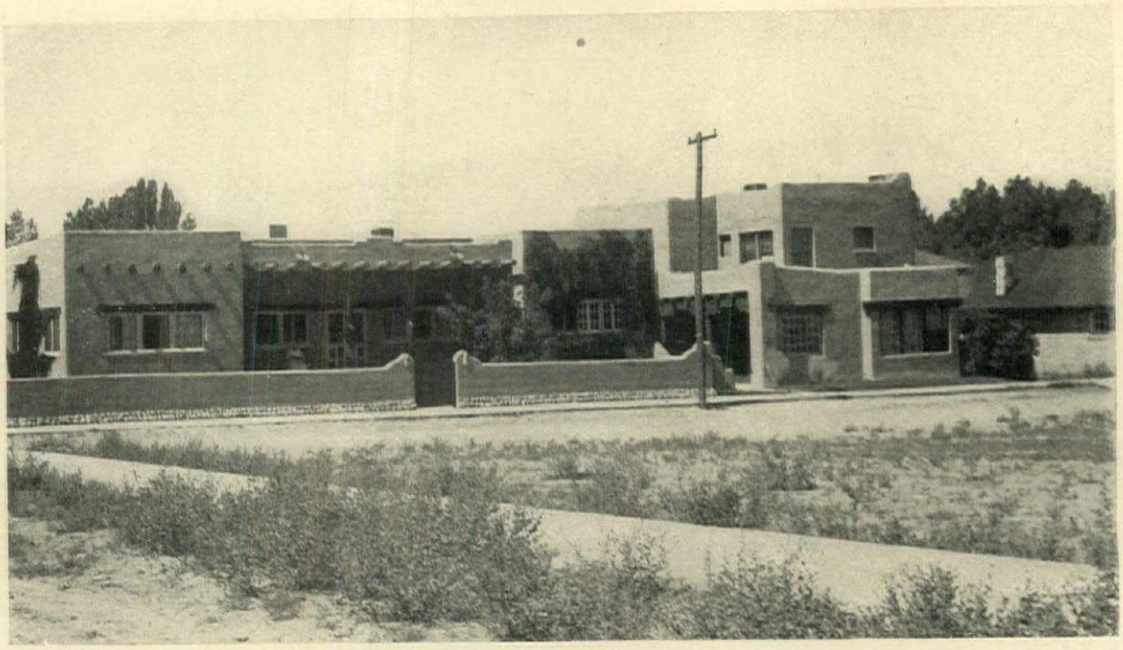
THE MUSEUM OF ART, SANTA FE, N. M.
BRICK AND CONCRETE, PLASTERED ON EXTERIOR

A MODERN HOUSE, BUILT OF ADOBE

These houses are built like the old pueblos and Spanish houses, with corbels, arcades and slightly curved walls, and are designed with soft weathered corners and concrete beams resembling the wooden beams of the past



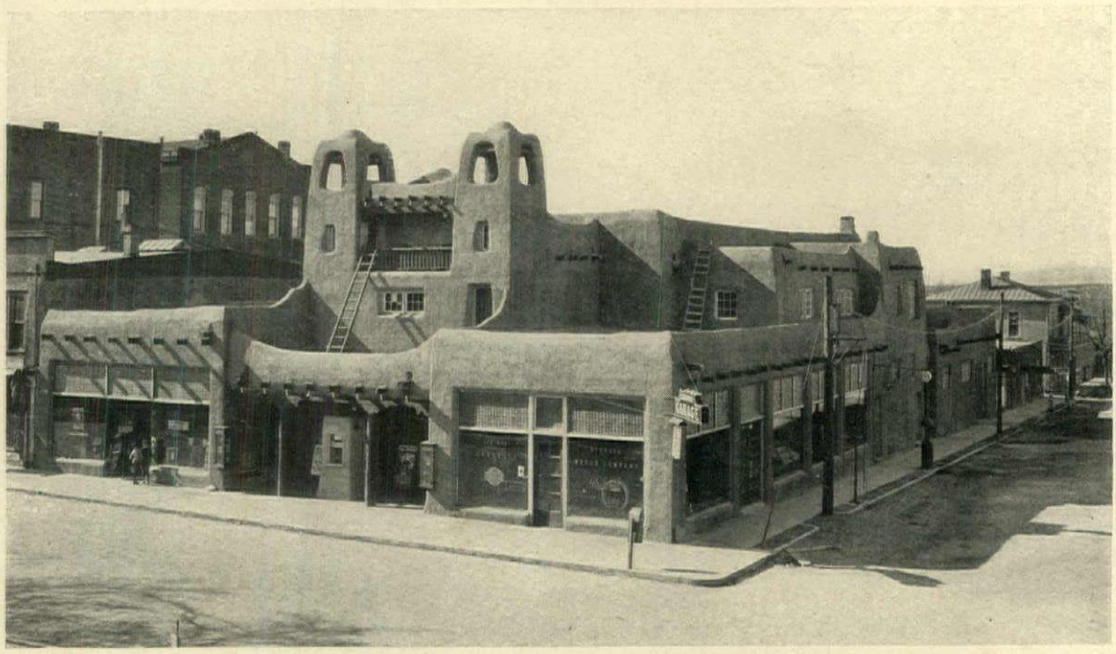
INDIAN PUEBLOS, TAOS, N. M., BUILT OF ADOBE



A SANTA FE RESIDENCE

BUILT OF BRICK AND TILE, STUCCOED ON THE OUTSIDE

Weathering has its effect on the adobe structures. The adobe soils are very plastic when wet and the finished walls soon show the effects of rain. The surface becomes marked with numerous irregular crevices formed as the dissolving adobe streaks its way to the ground



CASSELL BUILDING, SANTA FE, N. M.

THE LARGER STRUCTURES ARE PATTERNED AFTER THE SPANISH MISSIONS. BUILDINGS ARE ORNAMENTED WITH BELFRIES, THE ROUNDED CORNERS OF WHICH IMITATE THE RAIN WASHED BELFRIES OF LONG AGO

rains round off the corners of the walls, washing off some of the mud plaster and carrying it to the ground where it is deposited against the foundation portion of the wall. The mud plaster is renewed annually and, as the years pass, the lower two or three feet of wall become noticeably thicker while the tops of the walls become thinner, more rounded and sometimes uneven in height. The result is a wall which has a noticeable reverse curve—"in" at the top and "out" at the bottom. It is this curved and uneven wall which the present day builders are copying, using tinted cement stucco to imitate the mud plaster. The stucco of today is patted with a special trowel which closely imitates the finger marks on the old adobe walls.

DEAF AND DUMB ASYLUM, SANTA FE, N. M. THIS IS A STATE INSTITUTION BUILT OF HOLLOW TILE AND STUCCO

The larger structures are patterned after the Spanish missions. Garages, hospitals, churches, hotels and government buildings are ornamented with belfries, the rounded corners of which imitate the rain washed belfries of long ago. The wooden roof beams or "corbels" which projected through the mud walls or formed an arcade in the old buildings have been faithfully copied in the structures of today.

The State Museum is an especially fine example of Spanish architecture. The exterior is a copy of the old missions with a mission entrance at each of the corners. Hand carved wooden doors with hand made hinges open into rooms with stone flagged floors and wooden-beamed ceilings. The "corbel" logs do not form the floor above, however, for a concrete slab covers them.

The tuberculosis hospital is another fine example of mission architecture. To preserve the clean appearance wanted for hospitals, the exterior walls were covered with a white rather than a mud colored stucco. Here also, the floors are of stone flags, the doors are hand carved and the hinges hand forged. Square-hewn beams with carved recesses support the floor of the second story while the too modern electric lights are concealed in niches like those which held holy figures in the missions.

Bungalows, and smaller buildings, also, are built like the old pueblos and Spanish houses, with "corbels," arcades and slightly curved walls. Even the concrete bridges are designed with soft weathered corners and concrete beams which resemble the wooden beams of the past, much of the work being done by hand. This feature and the adherence to the old styles of architecture are making Santa Fe one of the most delightfully picturesque cities of our Southwest.

LOUIS HENRY SULLIVAN

1856-1924

SULLIVAN is gone. In the final years of the first half of the world's greatest century of architectural development, a peer among American architects passes on. Four decades ago witnessed the unfolding of his genius, when new constructional methods and new types of buildings were imposed by the uses required by modern social and economic conditions. To him, the world in all of its aspects was a field for investigation, reflection and conclusion. Of his philosophy, it is recorded—

". . . . that in truth it was not simply a matter of form expressing function, but the vital idea was this: that the function *created* or organized its form. . . . . The application of the idea to the architectural art was manifest enough, namely that the function of the building must predetermine and organize its form."

A corollary of the above, he expressed as follows:

"The problem of the tall building had not been solved, because the solution had not been sought within the problem itself—within its inherent nature. And it may here be remarked after years of observation, that the truth most difficult to grasp, especially by the intellectuals, is this truth: That every problem of whatsoever name or nature, contains and suggests its own solution; and, the solution reached, it is invariably found to be simple in nature, basic and clearly allied to common sense."

LOUIS HENRY SULLIVAN
(From the painting by Frank Werner)

This is true of every type of building and in applying this truth to his architectural expression, he necessarily departed from the orthodox architecture of his time because of his inability honestly to apply, as predetermined by the function of a *modern* building, the standardized, identified and cataloged styles, then and now in vogue. Hence our architecture has been enriched by an individual expression by one possessing a fineness of spirit; who would refrain from doing rather than to do badly; who strove for quality rather than quantity; who would rather achieve according to his lights than to seek popular recognition; who hated the cheap, commonplace, vulgar, mean or most easy manner of expression.

His buildings are notable in many respects and while his unusual scheme of ornamentation attracts immediate attention, it is but a component of a logical design. This ornamentation is of low relief, usually confined to one plane, intricate in its detail and extremely beautiful and, withal virile. It is an elaboration of geometrical form and so fashioned that the basic pattern is not readily discernible, resulting in a feeling of texture rather than form which permits of its *incorporation* well *within* the structure as opposed to the standard, inane, methods of *applying* ornamentation *upon* a building.

In association with the late Dankmar Adler, a great constructionist and executive, Mr. Sullivan designed many buildings of note, among them being the Chicago Auditorium, which is, perhaps, unequalled as an American opera house, and the fine Transportation Building, with its glorious Golden Door, at the World's Columbian Exposition in 1893.

Mr. Sullivan's works and words are prophetic of the future of architecture of which it can be said that—

"Days dead are dark; the days to be, a flame
Of wonder and of promise, and great cries
Of travelling people reach me—I must rise."

He has inspired others who have kept alive the spirit of truth. Today we see signs of its recurrence.

Louis Henry Sullivan was born in Boston, September 3, 1856, and died in Chicago, April 14, 1924. He was educated in the public schools and received his technical training at the Massachusetts Institute of Technology and Ecole des Beaux-Arts, Paris. He came to Chicago in 1880 and engaged in the practice of architecture with Dankmar Adler and later alone. He received the Gold Medal, Union Centrale des Arts Decoratifs, Paris, 1894. He was also a writer of distinction and among his last work are "The Autobiography of an Idea" and "A System of Architectural Ornament," the completed proofs of which were shown to him during his last illness.

STADIA—PART III

The Wembley Park Stadium, London, England, *and the* Los Angeles Coliseum

BY ROI L. MORIN

THERE are five stadia, each for a distinct purpose, in and around London, the Tennis Stadium at Wimbledon, Cricket at Lords, Polo at Hurlingham, Olympic Games at Great White City, and Football at Wembley Park. The last, which was completed last Summer, though actually of smaller size than several other stadia (its overall dimensions are less than those of the Yale Bowl), bears the distinction of having held—the term "accommodated" would be out of place—a larger crowd than any other structure in modern history, for at the dedication, the Football Cup Ties Final, on April 28, 1923, a mob estimated from 200,000 to 250,000, broke down the gates and swarmed the field, the playing space being kept clear only by a cordon of police reserves.

This structure, of steel and reinforced concrete, is designed to provide sitting accommodations for 25,000 persons under cover, ringside seats for 10,000 and standing room for 91,500, so that it is only capable of holding 126,500 spectators comfortably. The "standing room" feature, a thing unknown in American stadia, is best illustrated in Fig. 2. Pipe rails, securely anchored into masonry, by means of steel struts, are provided at regular intervals, for the spectators to lean against. This section is comparable to our baseball bleachers.

The arena consists of a grass field surrounded by a ¼ mile track, so that although an English football field is only 225′ by 345′ the track fixes the inner perimeter of the stands. The track also consists of a 220 yd. straightaway, which

FIG. 1. ENTRANCE FRONT, WEMBLEY PARK STADIUM, LONDON, ENGLAND
JOHN W. SIMPSON, P.P.R.I.B.A., AND MAXWELL AYRTON, F.R.I.B.A., ARCHITECTS
E. O. WILLIAMS, A.M.INST.C.E., ENGINEER

was determined upon after building operations were begun, making it necessary to tunnel for a distance of 150′ beneath the stands.* Though a 220 yd. straightaway excites no comment here, as most American stadia have this feature, it is a novel thing in England, and this one is said to be the only straight cinder track of that length in the country. It was thought necessary to include this straightaway as the international meets of Harvard-Yale *vs.* Oxford-Cambridge are to be held at Wembley Park.

The special ring seats along the outer perimeter of the track are arranged in five rows along the parallel sides, and as many as possible along the curve. These seats are wood planks supported by blocks of concrete. The "standees" are ranged in two tiers, the lower of which consists of 48 steps, 1′-2″ wide, the risers varying from 3½″ at the bottom to 4½″ at the top (all this on filled ground). These risers are formed by 5″ x 2″ timbers set on edge, the intervening space cinder filled. Access to these terraces is obtained by 49 openings. See Figs. 2 and 4.

Above these cinder steps is the structure proper, *i.e.*, above filled grade,—a series of 31 terraces of concrete steps, 1′-1″ risers, 2′-2″ treads. See Fig. 4. A reinforced concrete retaining wall was built around the outside perimeter of the cinder steps. As shown in the cross section, the joists in the superstructure bear on this wall at the lower end, on reinforced concrete columns at the upper end, and three latticed steel columns in between. In building the steps on this steel framing the risers were pre-cast reinforced concrete beams, whereas the treads are plain reinforced concrete slabs poured in place.

The parallel sides of the stadium are roofed over for a length of 650′ on each side. In this area, wood slat seats were provided, much similar to those installed in the Yankee Stadium. (See detail in a subsequent article.) The roof is of corrugated asbestos sheets on steel framework.

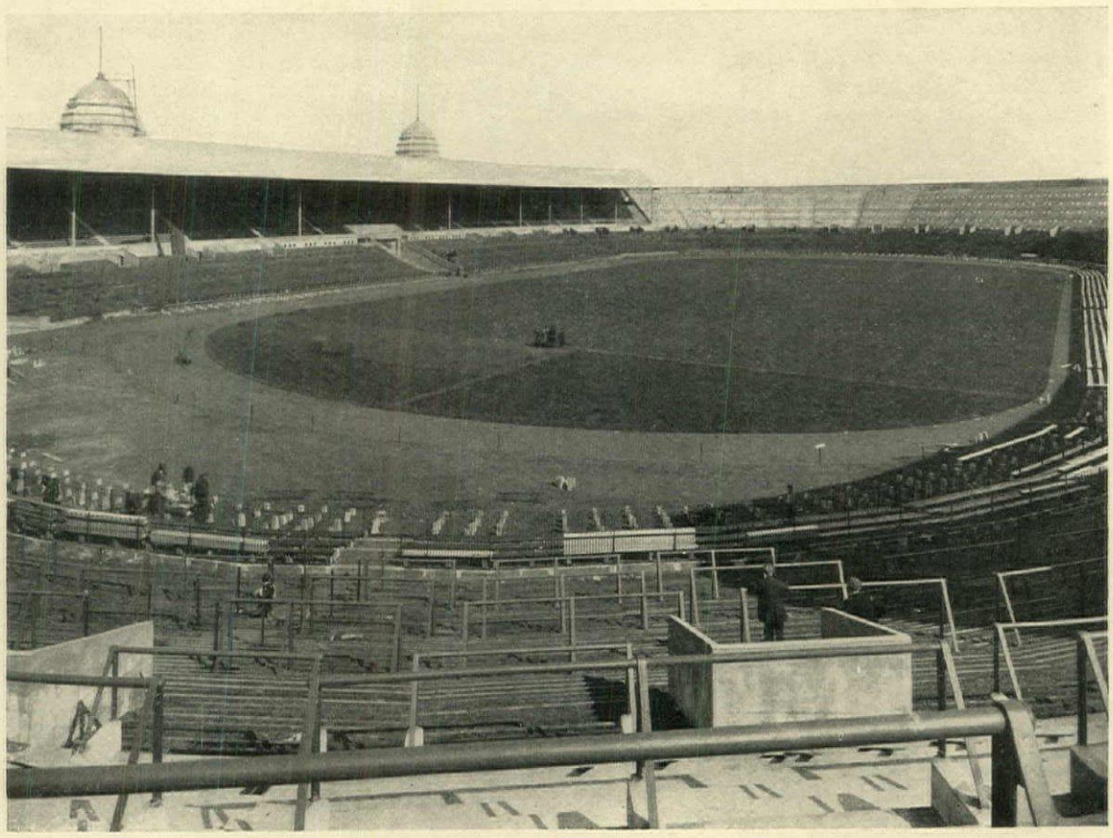


FIG. 2. GENERAL VIEW OF INTERIOR, WEMBLEY PARK STADIUM, LONDON, ENGLAND

The natural contours of the site were taken advantage of as much as possible, though 120,000 cu. yds. of excavation were necessary. See Fig. 3.

The striking feature of the entire work is the dignified and imposing gateway, shown in Figs. 1 and 5, flanked by monumental towers. The masonry effect, though the entire gateway is of reinforced concrete, is one worthy of careful study and emulation. The raked-out stone jointing was achieved by the simple expedient of nailing V-

*The tunnelled straightaway, as illustrated both in the Wembley Park Stadium and the Los Angeles Coliseum following, is an undesirable feature, and should be avoided in stadium design if possible. The runners are subjected to contrasting light and air currents in running from these tunnels out in the open, which is detrimental to the split-second time in this dash. A track of this sort is not always considered "official."

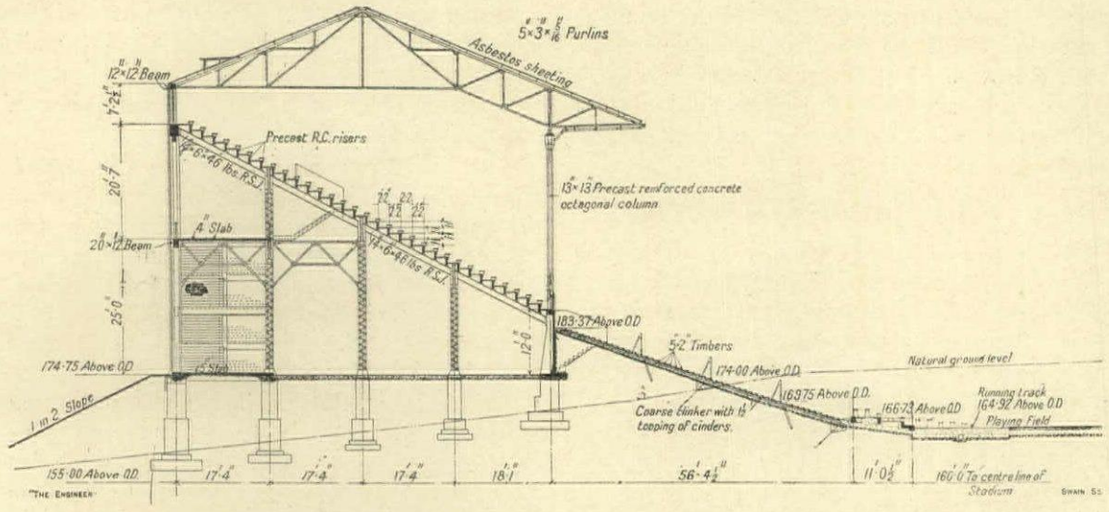


FIG. 4. TYPICAL CROSS SECTION THROUGH STAND, WEMBLEY PARK STADIUM, LONDON, ENGLAND

(Courtesy of The Engineer, London)

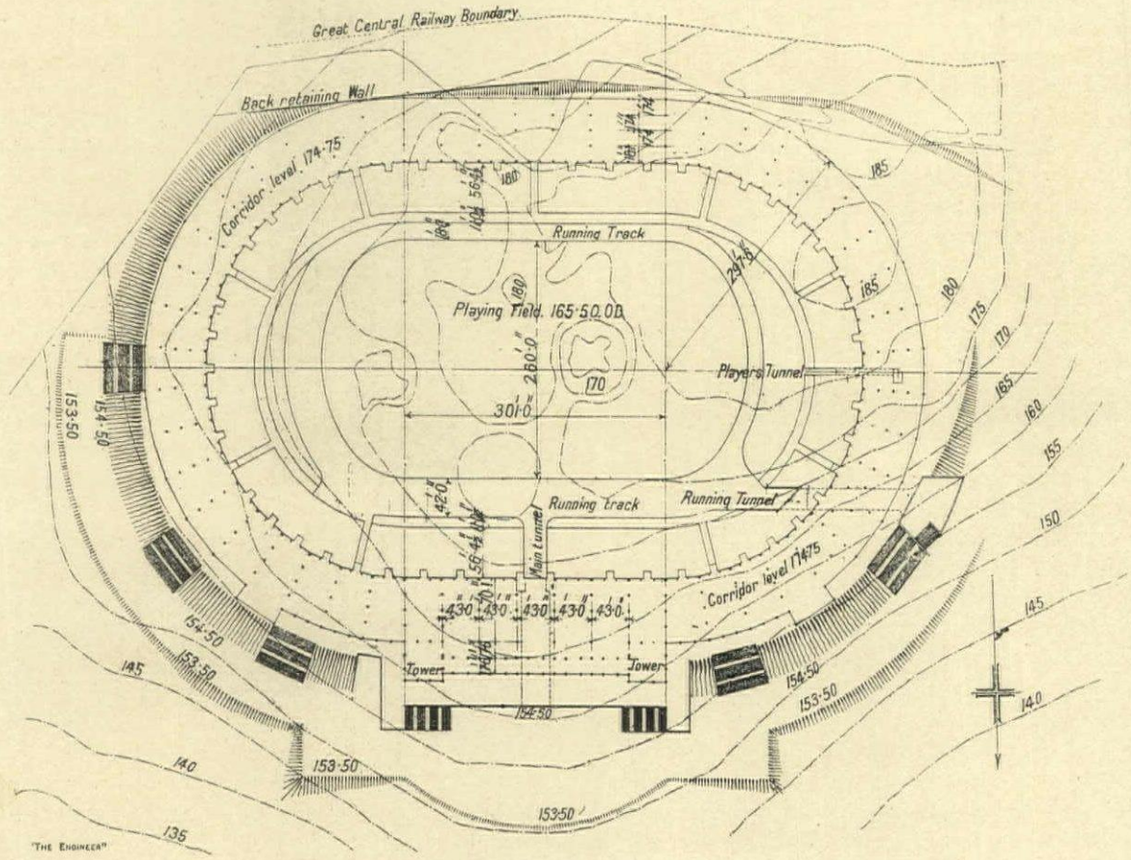


FIG. 3. PLAN SHOWING ORIGINAL CONTOUR LINES, WEMBLEY PARK STADIUM, LONDON, ENGLAND

JOHN W. SIMPSON, P.P.R.I.B.A., AND MAXWELL AYRTON, F.R.I.B.A., ARCHITECTS

E. O. WILLIAMS, A.M.INST.C.E., ENGINEER

(Courtesy of The Engineer, London)

shaped wood strips on the inside of the concrete forms. The flagpoles are of reinforced concrete, apparently an unfortunate choice of material, as it dwarfs the towers to no inconsiderable extent. The end elevation of the tower shown in Fig. 5 is surely a scholarly bit of architectural design, as well as an unusual detail of stadium design, which is, as a rule, so bald.

THE LOS ANGELES COLISEUM

THE new Los Angeles Coliseum, which was opened last Summer, is at present the largest and most imposing municipal stadium in America. The reservation "at present" is introduced because Chicago is building a structure which will far surpass anything now completed,* while new stadia are being proposed for Washington and Kansas City, so it is a fortunate community that can wear these laurels long.

The features of this stadium are its vast scale and simplicity of design (it is larger in actual dimensions than either the Yale Bowl or the Ohio State University Stadium, although it seats less than the former), and the great peristylar gateway at the open end. This gate follows the curve of the bowl in plan, its height being governed by the height of the parapet wall. The central arch is a 20′ span flanked on either side by seven lesser double arches terminating in pylons against the seat banks. Large plinth blocks each side of the main entrance and a stone pyramid at the top will receive sculptures at a later date.

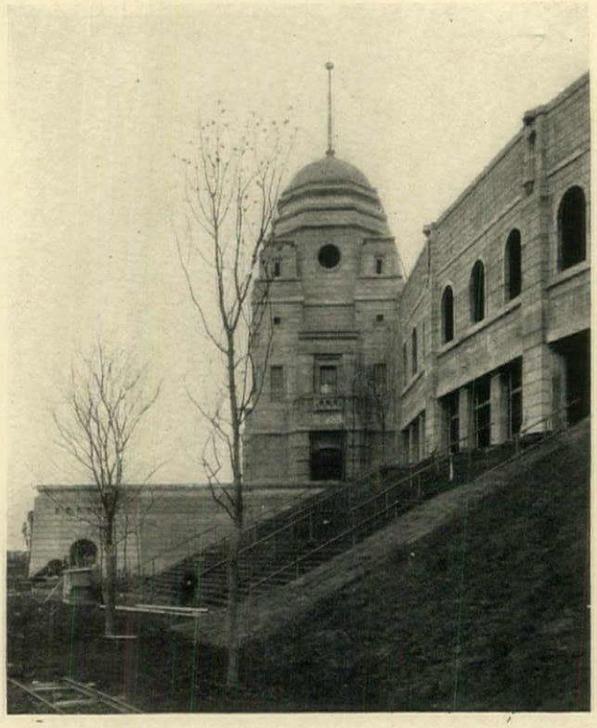


FIG. 5. MAIN ENTRANCE DETAIL, WEMBLEY PARK STADIUM, LONDON, ENGLAND

In laying out the work the question of economy was paramount, therefore the system of excavation and embankment was used. A balance of cut and fill was determined allowing an excavation 32′ below the original ground level and an embankment 32′ above, making the top of the bank 25′ wide and 64′ above the playing field. At one end the embankment is cut off by retaining walls leaving an opening 400′ long in which is built the peristyle or main entrance. The field approximates an ellipse with a major axis of 680′ and a minor axis of 344′. The ends are laid out to a radius of 153′ and the sides 1083′. This layout, together with each seat rise of ⅛″ more than the one in front of it, gives a clear view of the entire field from any seat.

The front row rises 9″ while the upper row rises 15⅝″. The distance from the footway to the edge of each seat is held the same throughout. On top of the embankment there are ten rows of seats built on a wooden framework. The fence behind the top row of seats is 82′-7″ above the playing field. The overall size of the Coliseum is 790′-6″ wide x 1088′ long.

There are 28 pedestrian tunnels at the natural ground level, one athlete terminal leading direct to the playing field and a vehicle tunnel from the street to the playing field. The field is large enough for any athletic event and contains a quarter mile circular track and a 220 yd. straightaway. Reserve player pits and boxes are provided the full length of each side of the field.

The work being entirely dependent on excavation as to progress it was necessary to install some type of excavator that would be rapid and efficient. Therefore a slack line excavator with a 3 yd. bucket was installed. A tower 120′ high was built on iron bark eucalyptus skids, the skids laid on a series of 6″ diameter eucalyptus rollers rolling on two tracks, each consisting of four 3″ x 12″ Oregon pine planks laid on the ground. A machine room was built, on the base of the tower, housing a 300 HP motor driven double drum hoist, a belt driven low speed double drum hoist for traction and a small motor generator set to supply direct current.

An operating cab was built high enough in the tower so that the runner could see the interior of the bowl over the embankment at its highest point. The bucket used weighed 11,000 lbs. and was equipped with a 1¼″ cast steel digging edge. At the rear of the bucket was a pair of sheaves

The Grant Park Stadium, Chicago. Holabird & Roche, Architects.

arranged one over the other through which the slack line passed in a reverse bend so that tightening the slack line threw the cutting edge of the bucket down giving the operator complete control over the depth of cut. The operation consisted of dragging the bucket across the portion to be excavated maintaining a sufficient strain on the slack line to cause the bucket to cut. As soon as the bucket was filled or the edge of the cut was reached the slack line was released and the drag continued to the point of dumping. Dumping was effected by tightening the slack line and releasing the drag line. The slack line was then maintained taut until the bucket had run out to the end. In order to avoid moving a dead man for the anchor end of the slack line at frequent intervals, a 1½" steel cable was laid the entire length of the work and secured to a dead man at each end. This anchor cable carried a sliding clamp to which the slack line was fastened, thus the entire operation was cared for only by four dead men. Traction was effected by lines at each side of the tower wound on the double drum hoist mentioned above. This hoist was controlled from the cab by the runner.

A recording watt meter was placed in the power line, the ribbon of which gave a record of the number of trips per day, the shut downs, moves, and from the power used a measure of the hardness of the ground being dug.

The plant was found to be entirely suited to the work, the only radical change being that when gravel was encountered at a depth of 12′-15′ it was necessary to put teeth on the bucket.

The spoil from the bowl was pulled up in windrows in sufficient quantity to make a layer on top of the embankment 1′ thick. After these windrows had been built up the length of the travel of the tower a heavy timber about 14′ long was fastened under the bucket and dragged over the top of the rows, breaking them down. Then a team and grader finished leveling. The layer was then thoroughly rolled and watered. To date no noticeable shrinkage has been observed.

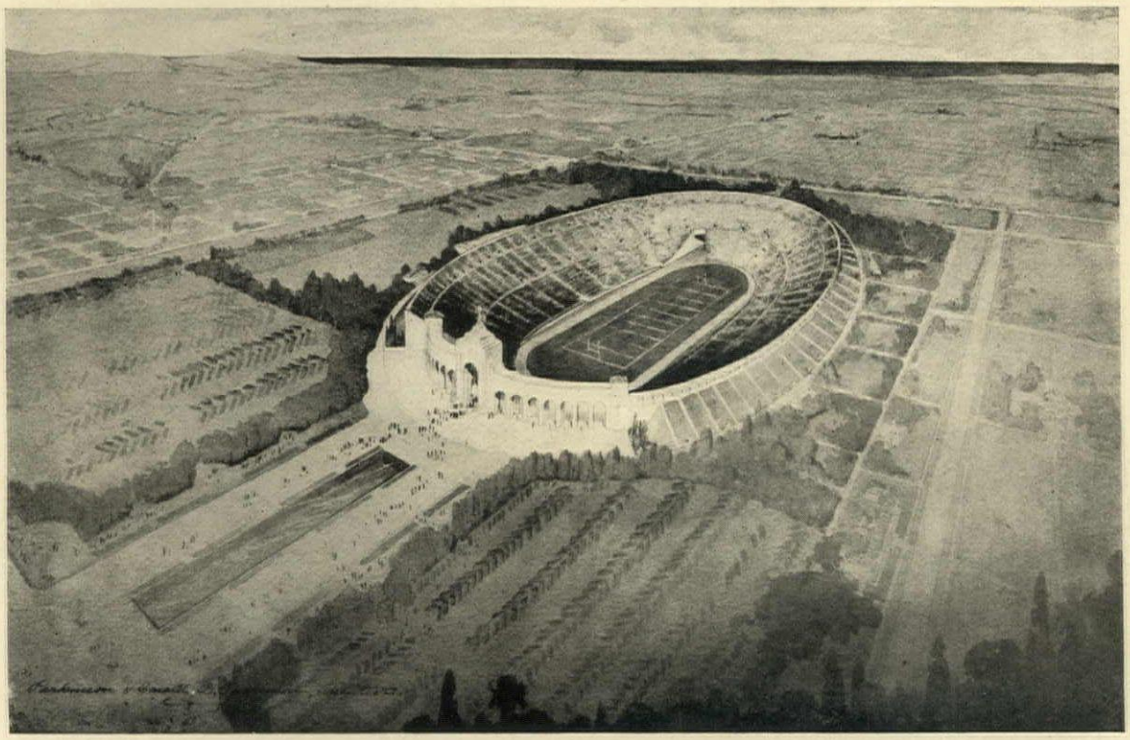


FIG. 6. PERSPECTIVE, LOS ANGELES COLISEUM

JOHN & DONALD B. PARKINSON, ARCHITECTS

Tunnels

Thirty reinforced concrete tunnels give access to the inside of the Coliseum. A vehicle tunnel of two compartments each 20′ x 25′ leads from the street to the playing field. Near the lower end of this tunnel the center wall is omitted at which point is the start of the 220 yd. straightaway running track. The tunnel is designed with vertical slab walls except at the two ends where a cantilever retaining wall 32′ high was used. The footings of the vertical slabs are reinforced as horizontal beams to take the bottom thrust of the walls. Struts are placed at 16′ intervals across the floor of the tunnel from wall to wall so that the wall footings are supported laterally, inde-

pendent of the tunnel floor. The roof is of beam and slab construction. The maximum wall thickness is 41″ with 1¼″ square bars, 5½″ on centers.

The athletes' tunnel is 7′ x 8′ and extends from the main corridor of the dressing rooms to the level of the playing field. The remaining tunnels are at the natural ground level and pass under the embankment giving access to seating near the center. These tunnels are all designed as boxes with struts to take the horizontal thrust at the bottom of the side walls. The walls vary in thickness from 10″-15″. The walls are waterproofed on the outside with a coat of hot asphalt. The roofs are covered with a membrane waterproofing which is protected by a 1″ layer of cement mortar. The tunnels are paved with sand and asphalt.

At the ends of the embankment where the peristyle is located the fill is held by 32′ cantilever retaining walls. The steel was placed in these walls continuous to a point 12′ from the top where the large sizes were dropped and ½″ bars were spliced in. No horizontal joints were used, the entire footing and wall being poured at one operation. In some of the smaller walls keyed horizontal construction joints were used but in no case was the vertical steel spliced at the footing.

Seating

Three systems of supporting the seats are used, *viz.:* The permanent seats on concrete, the temporary seats on embankment and the temporary seats on framework. Below the natural ground level the face of the cut was smoothed off by dragging a land leveler up the slope with the drag line of a portable excavator. Templates were then cut to the profile of the finished concrete and the excess earth was cut out by hand leaving steps 2′-6″ wide The spoil from this operation was carried off in 12″ x 12″ iron chutes in which a stream of water was kept running. Forms were then placed and the concrete was poured.

Each step was separated from the ones above and below with a thickness of waterproof building paper. An expansion joint was made in each step every 16′ by placing a strip of road joint material ⅜″ thick in the forms before pouring. The finished seat platforms are 30″ wide and the rise from the footway to the bottom of the seat bracket is 9″. The variation in rise is obtained by leaving a continuous notch at the edge of each platform above the fourth and increasing the depth of each notch ⅛″ over the one below. The seat brackets consist of iron castings to which is bolted a piece of 1½″ standard steel tee to support the back. The brackets are bolted to the concrete by ⅝″ machine bolts placed in the forms before pouring. The seats are 2″ x 10″ vertical grain Oregon pine surfaced one side and two edges and painted one coat before placing and one after. They are bolted to the brackets with $\frac{5}{16}$″ flat head stove bolts. The backs are of 1″ x 6″ vertical grain Oregon pine.

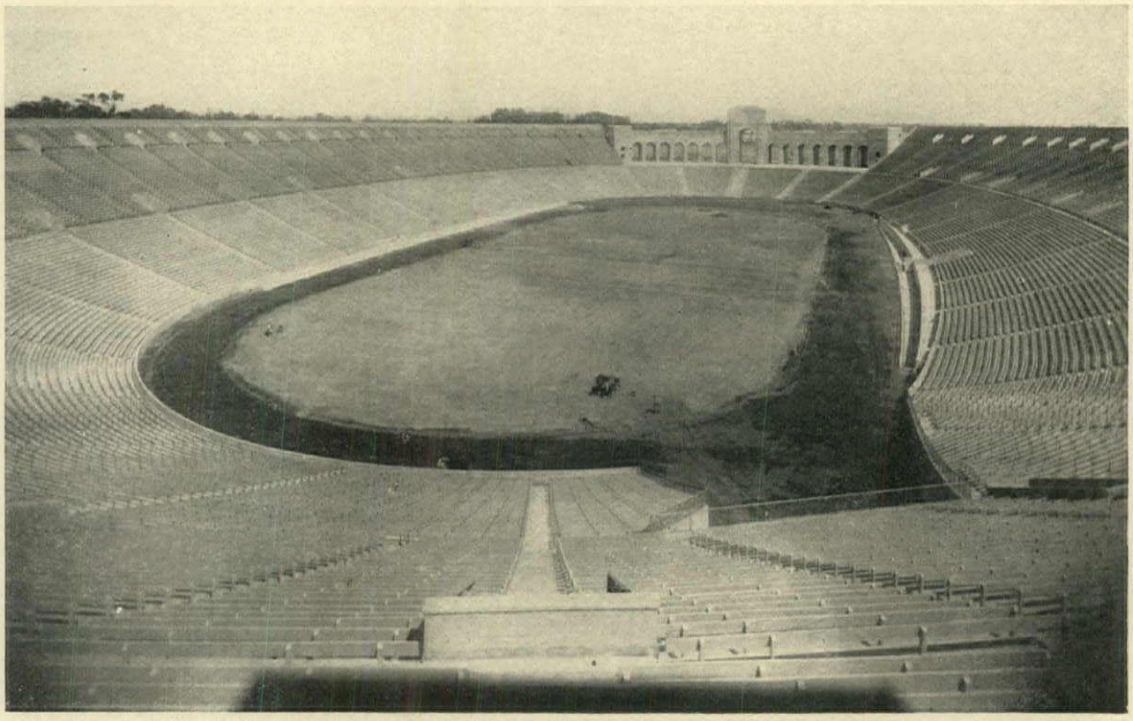


FIG. 7. GENERAL VIEW OF INTERIOR, LOS ANGELES COLISEUM

JOHN & DONALD B. PARKINSON, ARCHITECTS

It was not considered wise to place any concrete on the embankment as there was a probability of settlement for several years. Therefore everything above the natural ground level was of wood —4″ x 6″ creosoted redwood sleepers were laid on the embankment in a radial direction of 5′ intervals. Between these were laid 2″ x 4″ sleepers. All sleepers were carefully bedded and the earth between was smoothed off and left one inch below the tops. The entire bank was then covered with redwood sheathing on which was laid two ply roofing felt. The seat benches and footways were then built. This waterproof covering protects the bank from wash, insures a firm support for the seats and aids greatly in cleaning. The top of the embankment is 28′ wide. A frame grand stand is built on this carrying ten rows of seats. All the seats on the wood structure are made with resawed 3″ x 10″ vertical grain Oregon pine, two seats being cut from each plank and so cut that the front of the seat is thicker than the back. It was thereby possible to nail the seat and the footway to the same bracket and secure a level footway and a sloping seat. The seats are all numbered so that coupon tickets can be used. Including the boxes there are 75,038 seats of an average width of 18″. The present cost of work is approximately $800,000.

The press stand is built at the top of the seating on the South side. It is served with a fifty pan telephone cable and arranged for individual desk lamps for night use.

The playing field was excavated and carefully leveled and an 8″ layer of loam placed on it. The entire area is covered with lines of 4″ open joint tile which conduct rain water to a cistern where it is pumped to the street. The field contains a quarter mile track 28′ wide and a 220 yd. straightaway 33′ wide.

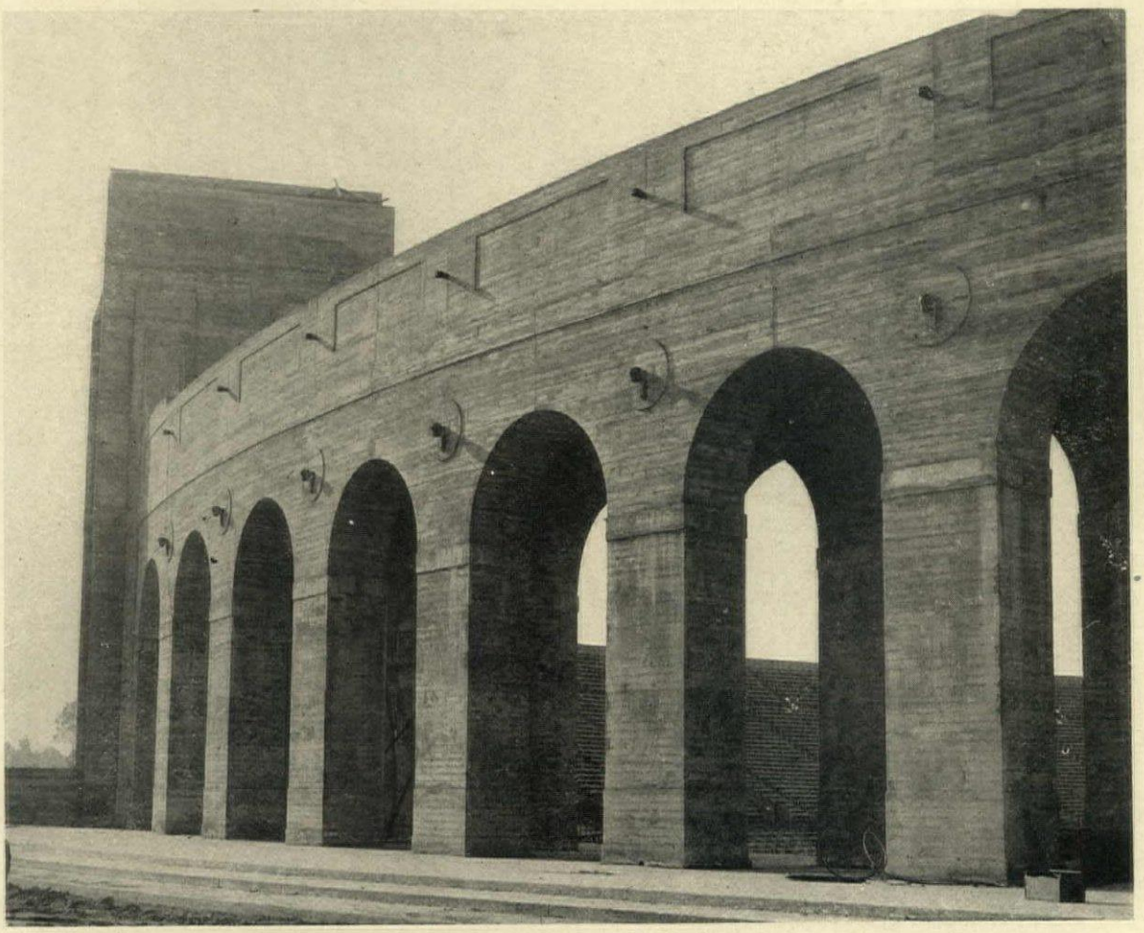


FIG. 8. MAIN ENTRANCE PERISTYLE, LOS ANGELES COLISEUM

JOHN & DONALD B. PARKINSON, ARCHITECTS

Dressing Rooms and Toilets

Four concrete toilet buildings are located at convenient points outside the embankment. Each building contains a room for men and one for women. Two ventilators 3′ high extend the entire length of the building and a series of concrete grills are located in the outside walls at the floor level—no sash are used so that ventilation is

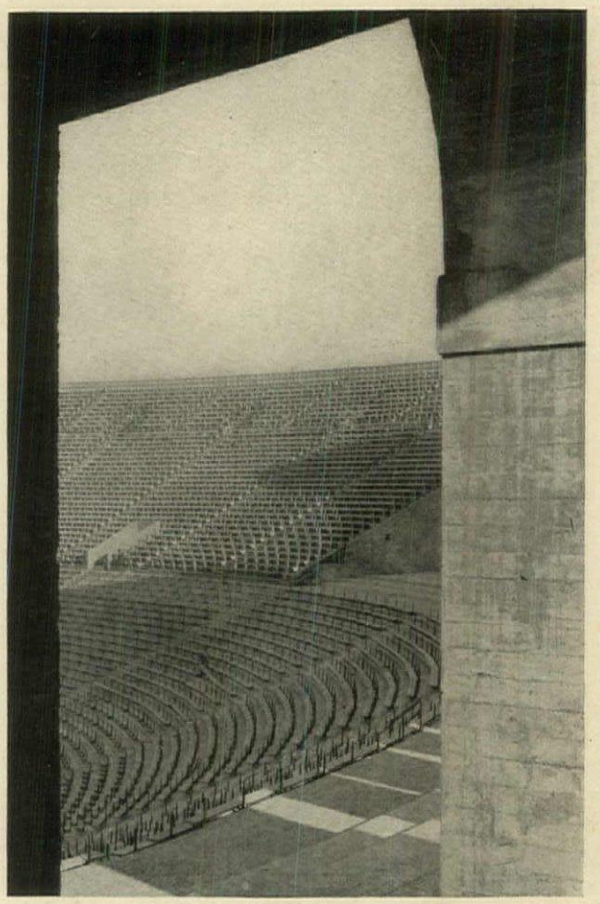


FIG. 9. VIEW OF SEATING THROUGH AN ARCH, LOS ANGELES COLISEUM

JOHN & DONALD B. PARKINSON, ARCHITECTS

assured at all times. The lighting is by means of skylights glazed with corrugated wire glass.

The athletes' building, located on the outside of the embankment, contains 76 private dressing rooms, sixteen being equipped with lavatories, and hot and cold water. There are two large general dressing rooms and complete shower and toilet rooms at each end of the building. It is so arranged that the two halves of the building can be entirely separated when both men and women appear in the same event.

Pump House

The pump house is located under the lower section of the seats and adjacent to the vehicle tunnel. There are two sand traps in connection with the field drains and a cistern of 65,000 gal. capacity. The pumping plant consists of two 500 g.p.m. vertical centrifugal pumps, one 1,000 g.p.m. and one 2,000 gal. horizontal centrifugal pumps all controlled by automatic compensators and float switches and all directly connected. All pumps discharge into a common manifold and the system is so arranged that either 500 gal. pump will prime both horizontal pumps.

The discharge pipe is an 18″ riveted steel pipe which empties into an expanding basin at the street curb, no storm sewer being available.

Lighting

General illumination of the entire interior of the field is secured by using 31 500-watt flood lights arranged around the rim of the Coliseum. Stage pockets are located at frequent intervals around the edge of the field. Power for a 20,000 candle power searchlight is provided on top of the center tower of the peristyle. All tunnels, stairs, exits and buildings are adequately lighted.

NEW YORK CHAPTER, A. I. A.

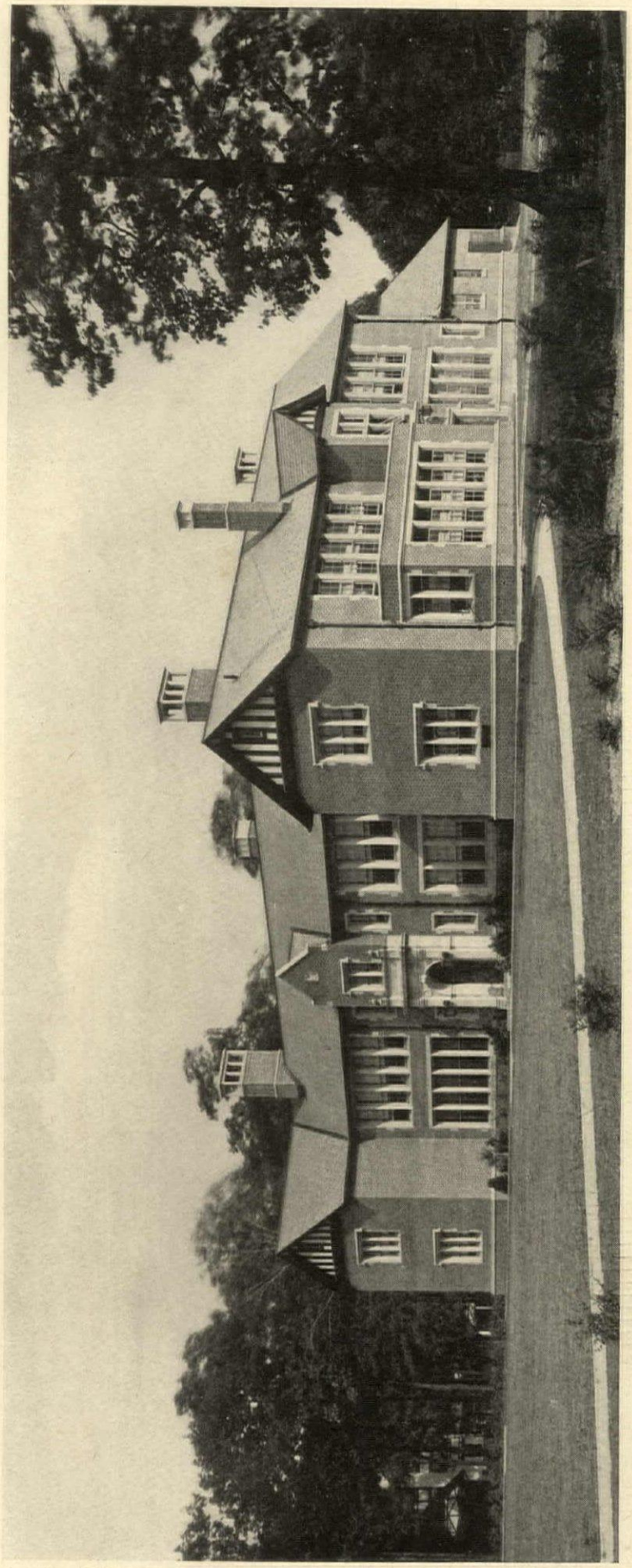
THE last program meeting of the New York Chapter, A. I. A., was held on April 9. The stated address was made by Franklin H. Wentworth, Secretary of the National Fire Protection Association. Mr. Wentworth clearly indicated the relationship to and the responsibility of architects in fire protection. The growth of the Association, its organization and its work were described. No effort was made to discuss methods of rendering buildings fire resisting or other technical matters.

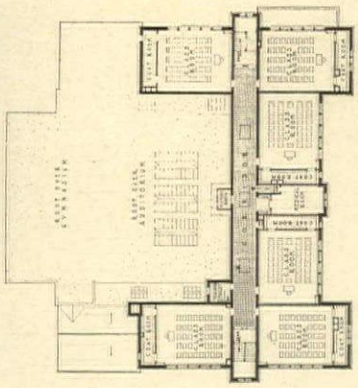
The matter of the War Memorial in Central Park was discussed, but no action taken as the resolution adopted at the previous meeting, opposing the construction of such a structure in Central Park, was thought to be a sufficient expression.

The New York Chapter is to be congratulated on the season's work just closing. The meetings have been of great interest and well attended, the membership has been increased and the high standard of the organization maintained. In conducting the affairs of the Chapter, D. Everett Waid, President, has shown himself to be a forceful executive, always exercising those qualities of fairness and moderation so necessary in that position. This is especially noticeable as several conditions developed that required rare tact and skill on the part of the president. The annual business meeting for the election of officers and the reports of officers and committees, will be held on May 14.

SMALL HOUSE COMPETITION

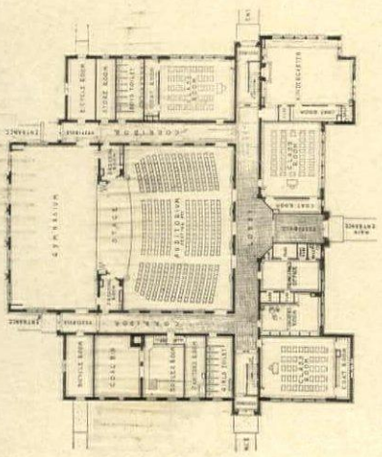
COUNTRY LIFE announces that it offers a prize of $500 for the best design for a country house for a family of moderate means. The judges of the competition are Alexander B. Trowbridge, John Russell Pope and the Editor of *Country Life*. There will be three honorable mentions conferred. The competition will close October 1, 1924. Program may be obtained by addressing *Country Life,* Garden City, N. Y.





MARSHALL SCHOOL, SOUTH ORANGE, N. J.

GUILBERT & BETELLE, ARCHITECTS



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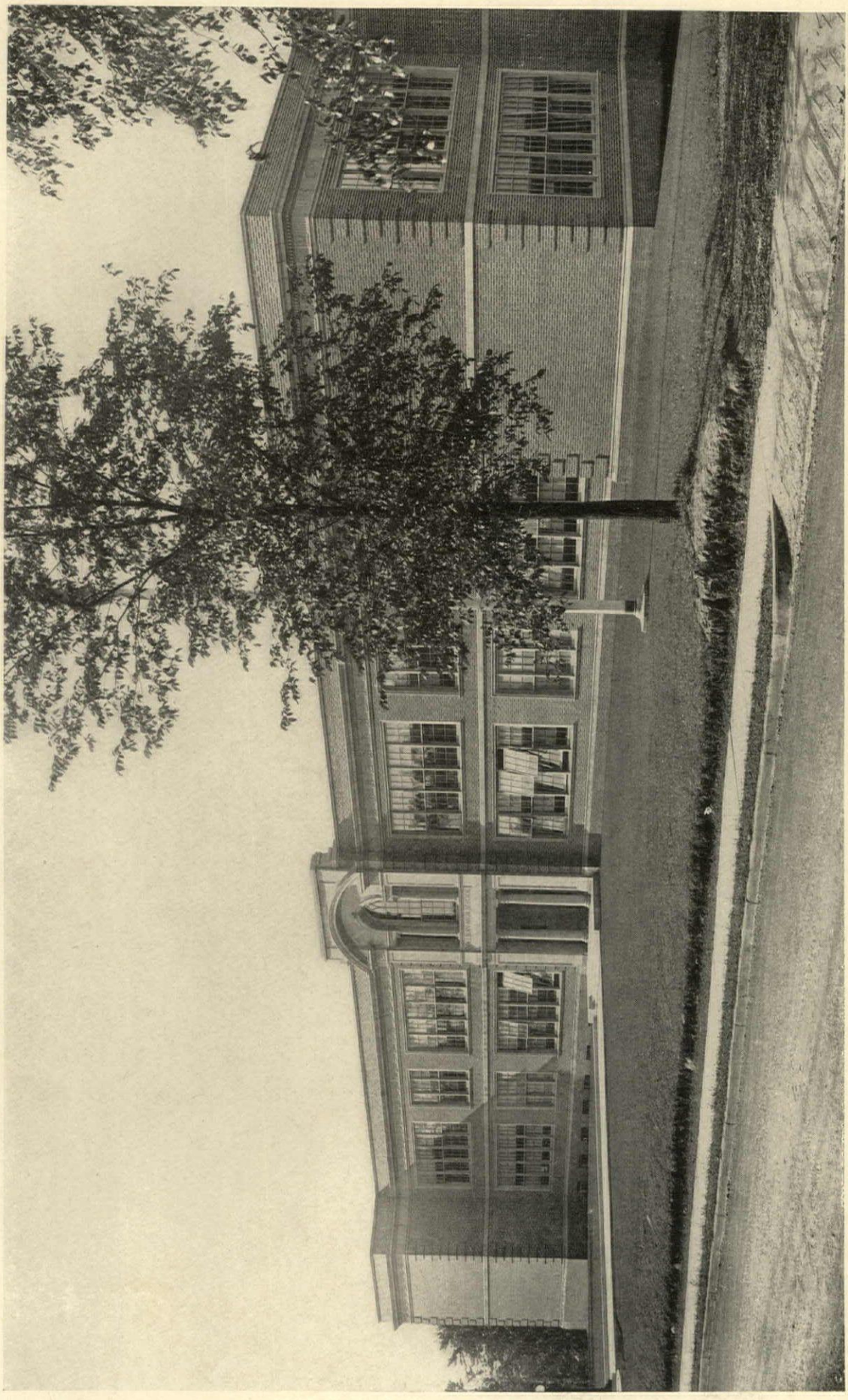
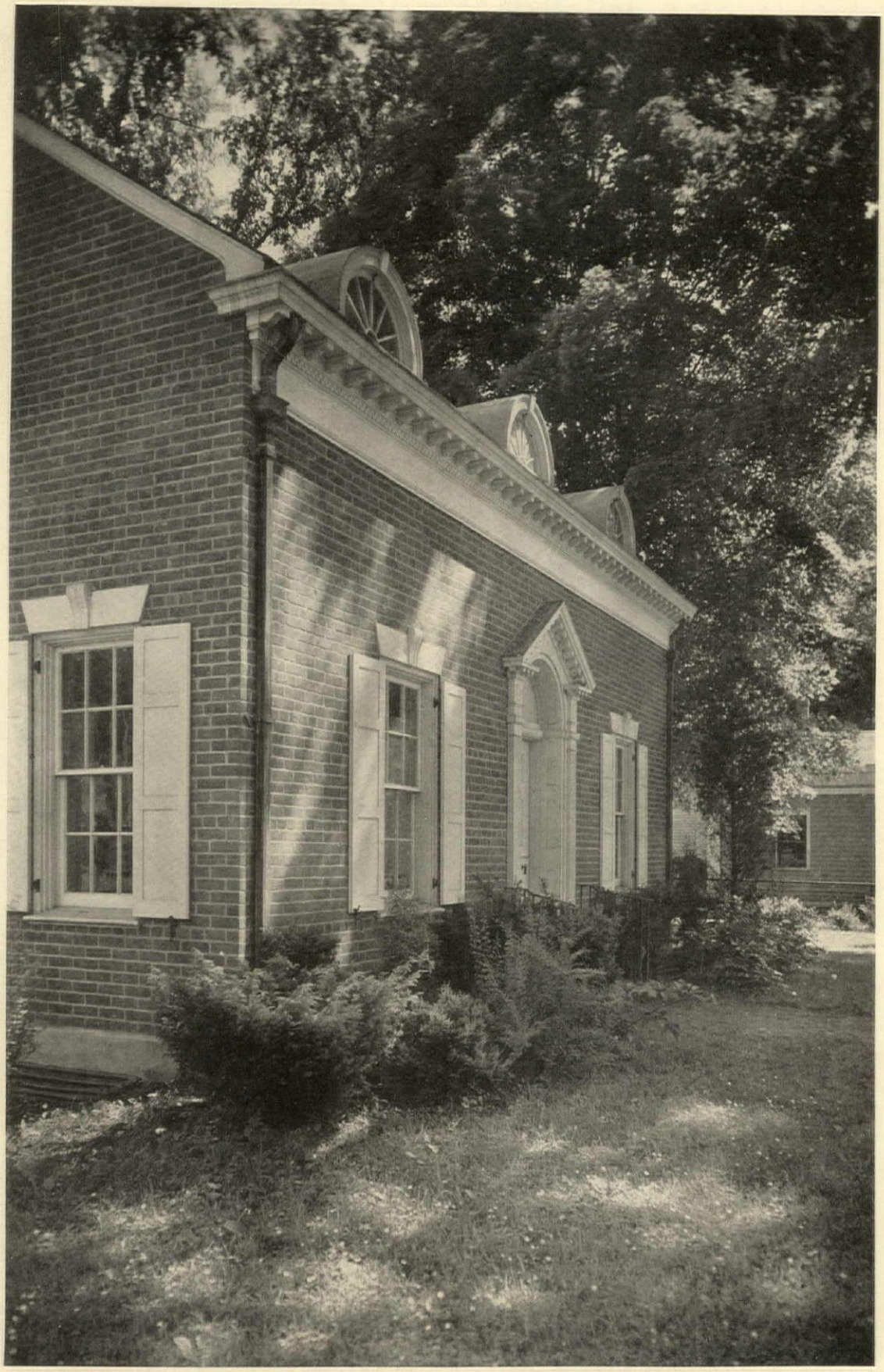


MILLBURN HIGH SCHOOL, MILLBURN, N. J.

GUILBERT & BETELLE, ARCHITECTS

MILLBURN HIGH SCHOOL, MILLBURN, N. J.

GUILBERT & BETELLE, ARCHITECTS



PUBLIC LIBRARY, KENT, CONN.

HEATHCOTE M. WOOLSEY, ARCHITECT

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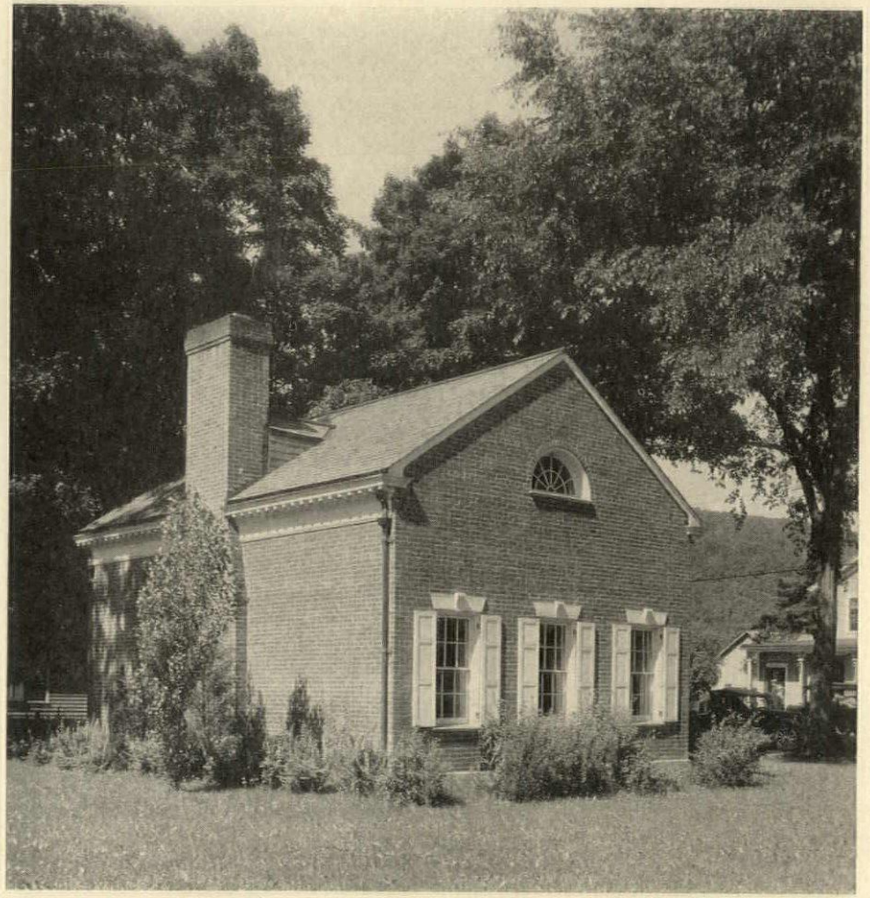
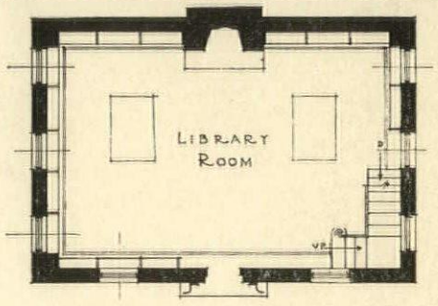
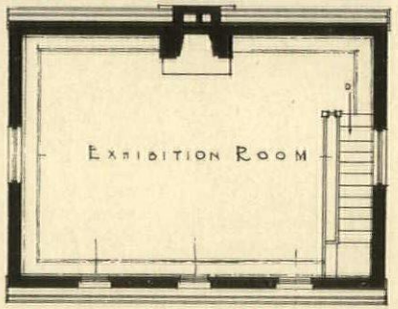
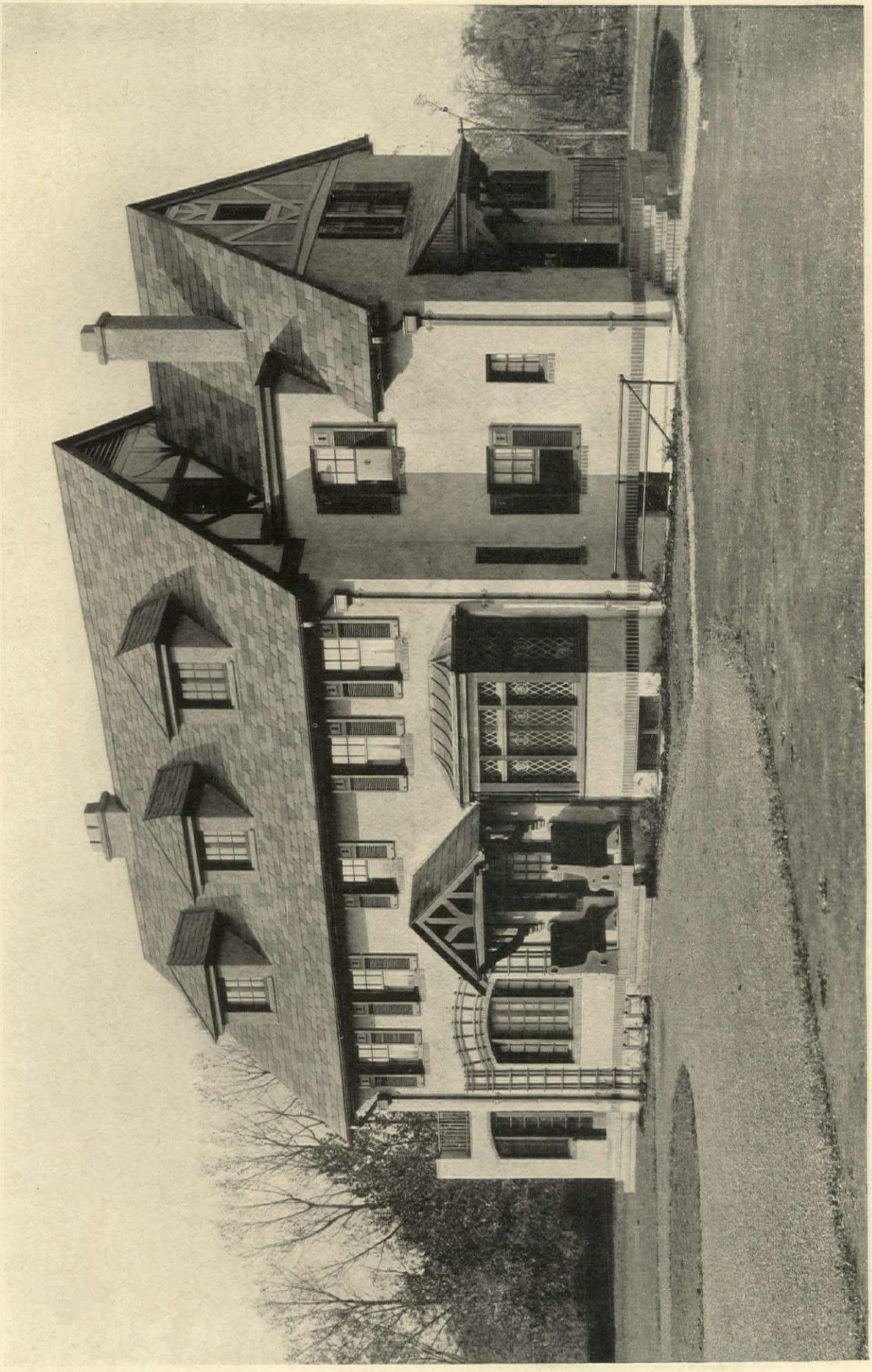




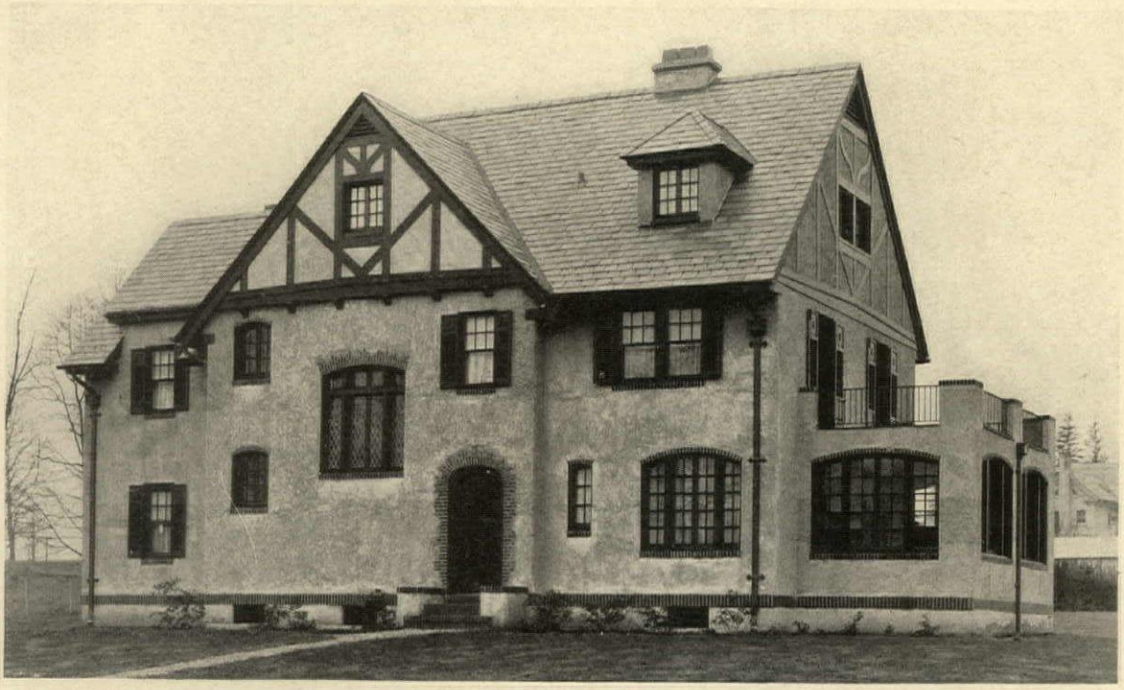
FIRST FLOOR PLAN

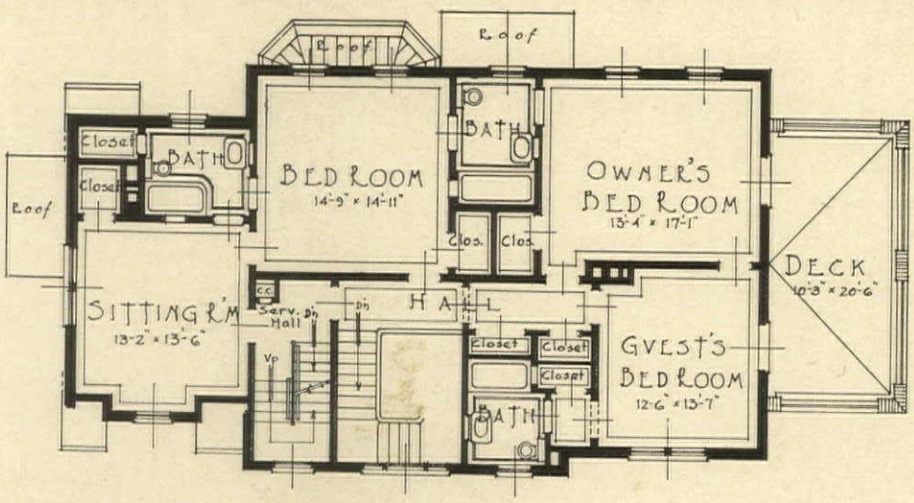


SECOND FLOOR PLAN



HOUSE OF CARL L. NITZE, BALTIMORE, MD.
WALTER M. GIESKE, ARCHITECT





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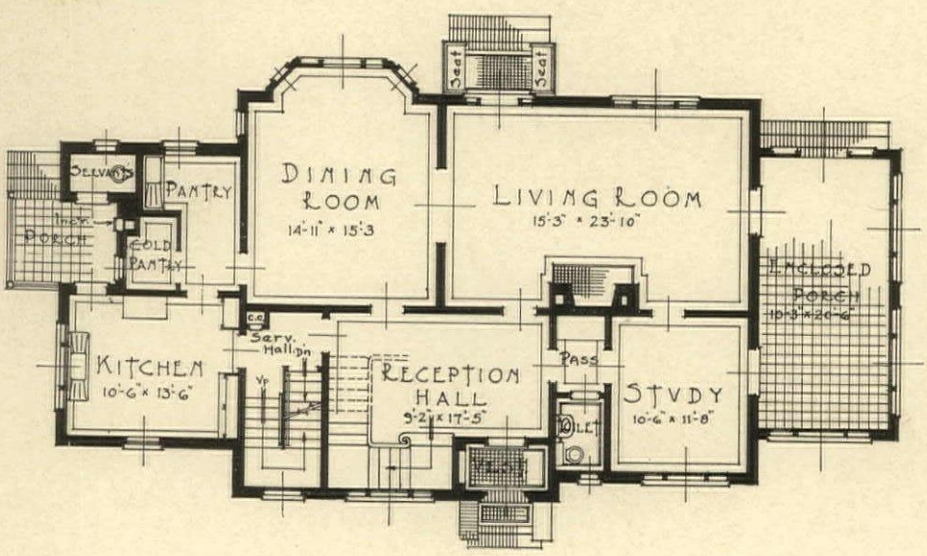
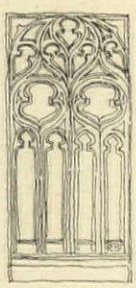


INTERIOR ARCHITECTURE

Evolution *of the* Modern Church Interior

CHURCHES, edifices set apart for Christian worship, had their beginnings in the awakening of Christianity. The Gothic style, although not definitely marked until almost 1200 years after the establishment of the Christian church, was the expression in architecture of the Christian faith, an outgrowth of the traditions of the Romanesque which, under the incentive and rules of the church, became a perfect and well balanced style. A survey of church architecture must naturally start with the Gothic, which might better have been called the Christian style.

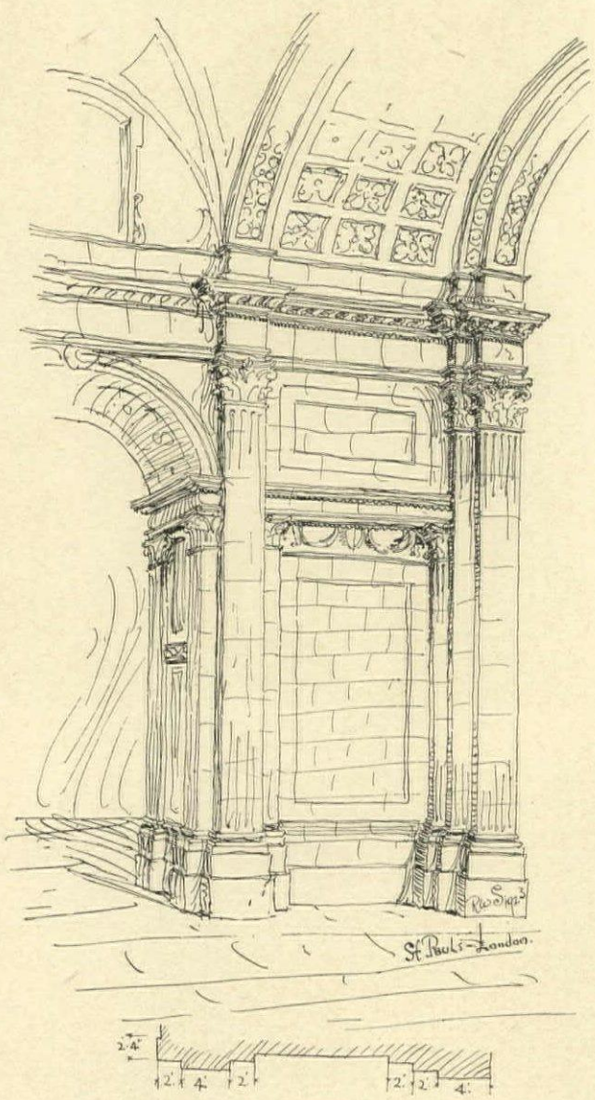
In the early days of the church, people's homes were more like fortresses than places for human habitation. In construction, they were massive and their furnishings were appropriately scarce and subservient to their purpose. While the details of the Gothic were suitable for decoration in this type of house, they, thus, can seldom be used to portray the comfortable and informal atmosphere which the modern house must convey. Nor did these crude houses satisfy all that the Gothic spirit desired. The church, however, proved to be the means of expressing the great religious fervor that swept the world. People, under slight restraint, stinted themselves in the home to give their all to the church that it might stand for all that was beautiful in design, skillful in construction and symbolic in detail.



Sketch of a French oak door of the XVth century, illustrating the character of the Flamboyant designs. Sketched in the Victoria and Albert Museum, London

Sketch of one of a pair of doors in St. John's Church, Stratford-on-Avon, England. An authentic example of the Perpendicular Gothic

In no other phase of architecture, probably, is unity in design so conspicuous as in the churches of the Gothic period. Structure was the basis of design as it had not been since the time of the old Greeks. In other words, the whole scheme of design was evolved from the plan of the building. The furniture was a part of it. Different forms of ritual affected the plan in different countries and localities just as different materials of construction affected the design of the structure. This phase of architectural design was recently ably discussed by Major H. C. Corlette, O.B.E., in an address before the Manchester (England) Architectural Society. He said, in part, that "if we turn to consider Gothic conceptions in architecture we shall find that they possess much the same sense of unity in design as the Greek builders expressed so well. In their essential nature both these traditional schools followed like principles. These principles showed that structure was the necessary element by which form could be, and should be developed. And

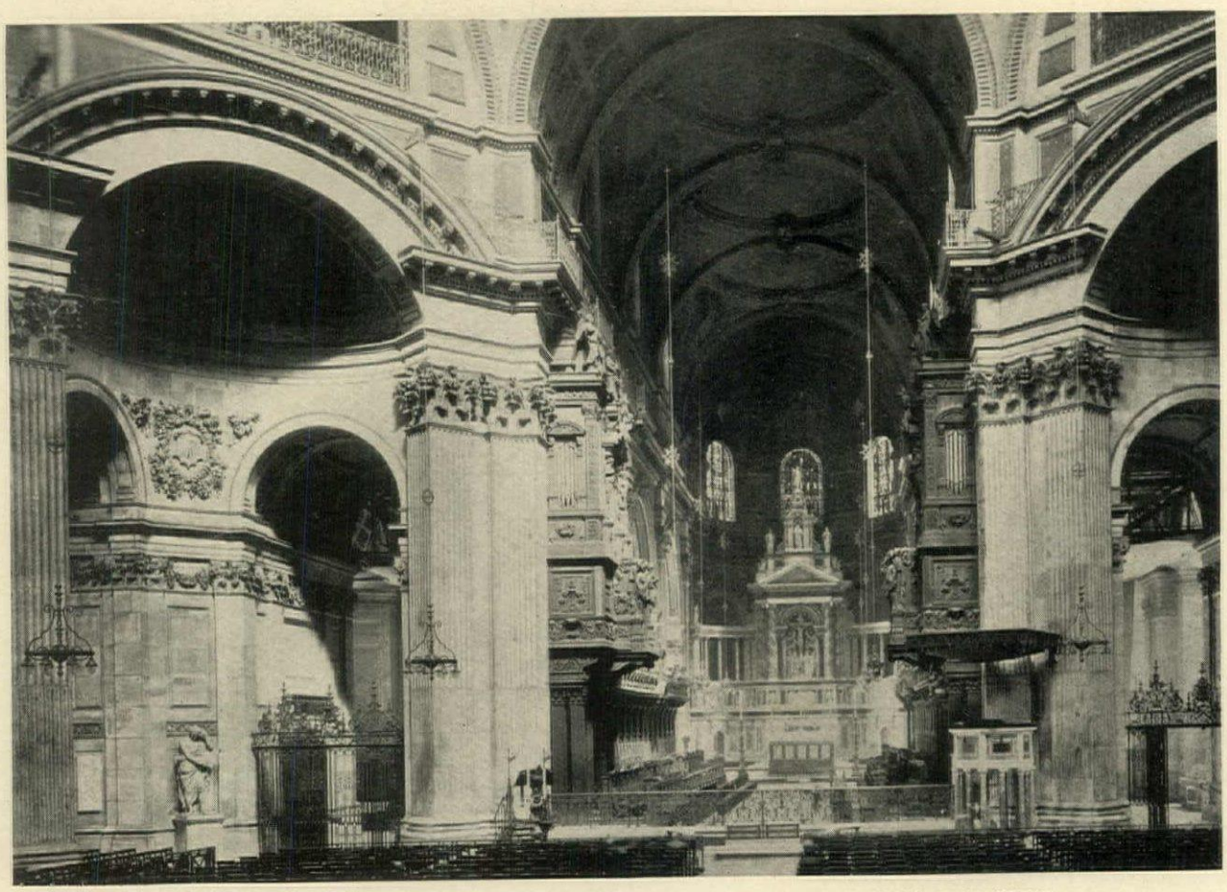


Detail sketch of the piers of the nave in St. Paul's, London, showing the intercolumnar treatment. By this arrangement of the small pilasters, 2' wide, the main pilasters, 4' wide, do not appear heavy

all changes of essential form were to be derived from structural needs. In fact, the plan, with the use for which a building was made, was the foundation out of which all real building tradition and architectural design arose. Climate allowed, or demanded, certain forms; materials dictated some methods. But these all met together and were combined in one. And it was the functional office, the structural nature, worked out as a building problem in every subordinate part, that provided new ideas, suggested differences in form, and gave architectural importance and interest to it is by this same means, using new methods, that the Gothic builders became such architectural creators."

What logic there is in that for us today! In an earlier article in this department, just such unity was urged. For a long time, architects seem to have felt the need of it in church design and it is therefore more evident there than in other buildings. Apply the principle to any building and find its direct application!

A historical analysis of church architecture should begin with a study of the Gothic style.



LOOKING THROUGH THE TRANSEPT TOWARD THE CHOIR OF ST. PAUL'S, LONDON

The dignity of the English Renaissance is one of the main factors of the design by Sir Christopher Wren, relieved by the beautiful carvings of Grinling Gibbons. The vaulted ceiling above the choir and altar is repeated in the nave, and, at its junction with the transept, breaks into a huge dome, richly ornamented and painted. The lower walls, pilasters and cornice are of stone

the finished work. This practical basis made all good architecture reasonable. It gave impetus to thought. It made the creative aspect of the art rest on common sense while it was contriving to make each useful thing a piece of beauty in a beautiful total conception. Our creative effort must begin with things, not abstract ideas alone. And so we come back to fact and find that necessity in building is the mother of invention in architecture. That is how the Greeks, within their limits, were architectural inventors. And

The name Gothic was given the style to imply its opposition to anything classic rather than to signify its connection with the Goths or Teutons. With the pointed arch as its chief characteristic, the style is more accurately known as the Pointed style. The embodiment of this motive in many of its details seemed all that was required to stamp the design as Gothic. A peculiarly characteristic means of combining this motive in the design was in the various tracery patterns included in the scheme. These often appeared in wall decora-

tions, ornamental friezes, balustrades and window designs. The lines of the designs of these tracery patterns were the means of distinguishing the interpretations of the Gothic by the architects of the various countries, and they form the chief feature of the Flamboyant of France and of the Perpendicular of England. In the Venetian interpretation of Northern Italy, the only section, by the way, of that country which took up the Gothic tendencies, tracery designs were intricate, with a decided Oriental feeling. Built around such a radical feature in design as the pointed arch and originated so expressly for one type of building, the church, other details of the style must of necessity be along radical lines and proportions. Such were the mouldings, for instance, with their angular fillets and deep hollows and undercuts, departing from anything that had ever been used or seen before. Also in the foliage ornament was this radical tendency seen.

For about two hundred years, or up to the close of the XVth century, the Gothic style dominated all church work, especially of the French school, where it had made its real beginnings. Although the church edifice was its principal means of expression, it showed itself in all manner of public and private buildings. In its development, the Gothic reached its greatest height in France, where it is even now considered the ideal style of church architecture. In England, the church gradually divorced itself from the Gothic. The transition from the Gothic to the Tudor, although very slight at first, became so pronounced that by the year 1509, the date of the beginning of the reign of the Tudor family, there were few of its original tendencies discernible. The Tudor style

GRACE METHODIST EPISCOPAL CHURCH, DAYTON, OHIO

SCHENCK AND WILLIAMS, ARCHITECTS

The character of the architectural design is suggestive of early English or Perpendicular Gothic; its boldness and simplicity are appealing and dignified. The brown oak woodwork is pleasingly combined with the stone. The furniture, of a much later period of English design, is in pronounced contrast in its detail, yet entirely appropriate with the setting. The pointed arch, the shield and trefoil, all Gothic symbols of religious life, are conspicuous in the design

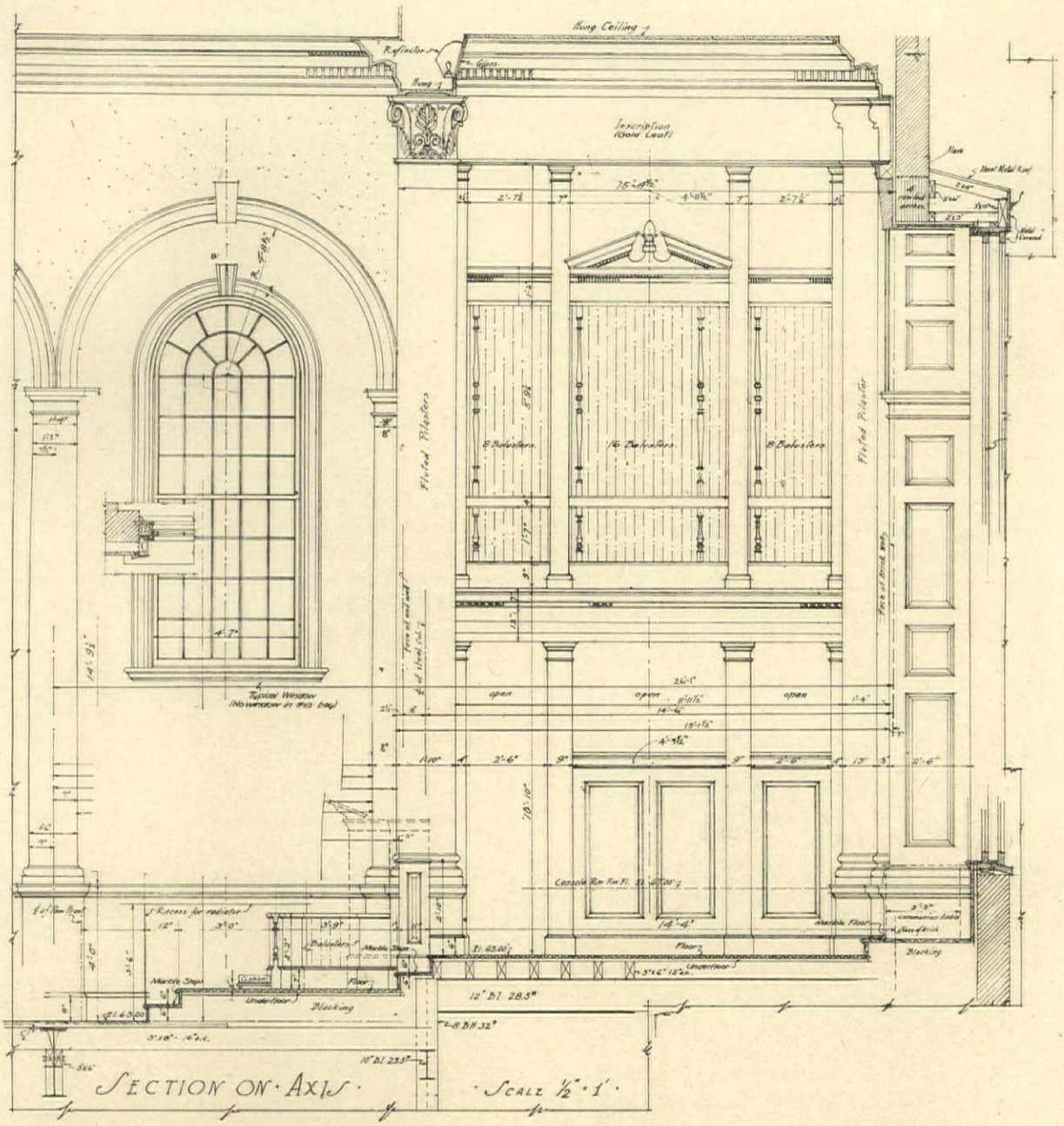
was distinctly peculiar to the English. Its qualities suited well the religious feelings of the people of that day and it replaced the Gothic as the ecclesiastic style. It continued the use of certain symbolic motives which had made the Gothic so unique in its field, and the details of the mouldings were very similar to those of the earlier style. But even these had an original turn. Its use of rough plaster walls and dark woodwork, combined often with stone of some description, appeals strongly to the church designer as well as to the communicant, for their somber but dignified effects are entirely reverential. The roof treatment of the Tudor, of crude roof trusses supporting a boarded ceiling, was in keeping with the other details and lent added interest. The feeling of freedom in design and boldness in detail, together with its symbolic ornament, make the Tudor style well suited to church design and decoration.

The churches of Italy did not come under this spell of the Gothic at all. The people seemed to prefer the Romanesque style which had served them so satisfactorily for so many years. The plaster or stone walls and applied painted ornament and decoration satisfied all their inclinations. Occasional outbursts of Gothic tendencies were noticeable in some of the Italian work, but they were so surrounded by the Romanesque lines and ornament that they were all but lost. It is because the Gothic was not introduced into Germany or Spain until many years after its establishment in France and England that the style, as interpreted by the architects of these two countries, is supposed to be rather an adaptation of the French style than to possess any originality of its own. In Germany, as in Italy, the only effect of the Gothic was discernible in its intermingling with the Romanesque and the few real Gothic buildings there follow closely the designs

BAPTIST CHURCH IN PASSAIC, N. J.

JOHN F. JACKSON, ARCHITECT

The Tudor style applied to church architecture. A good example of plank ceiling with roof trusses of bold lines and detail, characteristic of the style. Notice the corbels from which these trusses spring, a detail typical of the Tudor



PART SECTION OF THE METHODIST EPISCOPAL CHURCH, JAMAICA, L. I., N. Y.

JOSEPH HUDNUT, ARCHITECT—W. E. MANHART, ASSOCIATE

The details are carefully worked out in accordance with the Colonial style. The circular windows and colonnades are characteristic. The arrangement of balusters concealing the organ pipes, with the broken pediment in the center, is accurate in detail

as perfected by the French. In Spain, however, the designs had more originality and their work was conspicuous for its use of color and decorative furnishings, details which were wholly lacking in both the French and English work of that day. Ralph Adams Cram, F.A.I.A., in a recent series of interesting articles published in THE AMERICAN ARCHITECT gives a very vivid account of Spanish Gothic buildings, and their sources of inspiration.

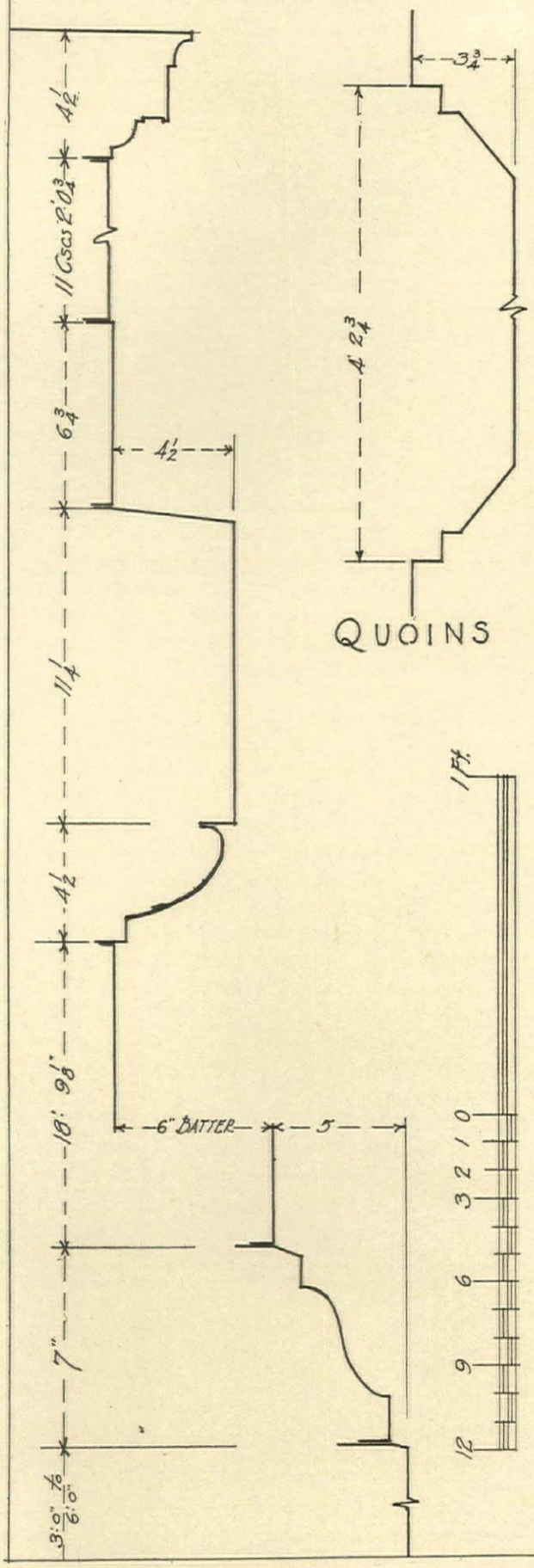
With the birth of the Renaissance in Italy, failing interest in the Gothic became noticeable. Italy welcomed a return to the ideals of its ancestors, especially in church design, for which the old Roman temples now served as fine inspiration and beautiful models. While the lines and proportions were distinctly reminiscent of the old designs, the Renaissance made much freer use of ornament and it had a real modern accent in its lines, making it conspicuous against the severe

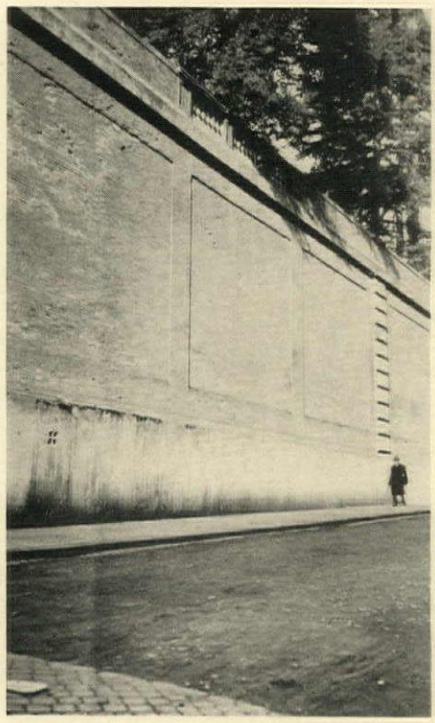
background. Carved and painted ornament invariably concealed many of the lines of the architecture inspired by the old temples. These classic motives soon found their way to the surrounding countries. The French churches were not interested in it, but in England it made itself felt. A group of English architects, headed by Sir Christopher Wren, brought the Renaissance to England, and a striking result of their efforts is St. Paul's of London, a notable example of the English conception of the classic revival. It possesses all the elements of successful church architecture of that period. Its lines and proportions are dignified and its ornament, in the characteristic manner of Grinling Gibbons, is free and bold. Although the color scheme is even cold, with stone walls and pilasters, it never suggests anything but the purely reverential.

With the gradual spread of churches throughout the world, all subordinate to the cathedral, ecclesiastic architecture took on a simpler appearance. The home had become a real place in which to live and money for church building was not so easily forthcoming as in olden days. This scarcity of funds necessitated a simpler church structure than was demanded by the elaborate Gothic lines, and the Renaissance seemed to fill the purpose. Its lines possessed all the emotional qualities that call forth feelings of a sublime and reverential nature, without those extravagant features of construction and ornamentation so much a part of the Gothic. The Renaissance, therefore, became at once popular for church work, especially of smaller and simpler types of edifice, while the Gothic still held its place as the ideal of ecclesiastic architecture when not limited by cost of construction—a place which it still holds.

Generally speaking, as related to the early cathedral, the typical American church is small, of simple, yet dignified lines, with sufficient color to lend interest and repose. The original church buildings in this country were erected by the early New England settlers and were called by them "meeting houses." This informal term and what it stands for, has held closely to the American church ever since. These original buildings, as all others in those days, were of Colonial design, and there can be no doubt of the devotional tendencies of a modern church designed along those lines. Tradition makes them sacred. They ring with true Americanism! The proportions are informal, construction dignified and details reverential. The colorings of the Colonial are particularly appropriate for church decoration for its tints are soft and mellow, yet of sufficient variety to give interest and restfulness.

Certain denominations have very decided views on what they consider a churchly design. Some, like the Episcopalians, prefer the rich Gothic; the Christian Scientists seem to choose the majestic classic, while the Baptists stick to the homely Colonial. After all, church architecture seems to be limited to these three styles, or their outgrowths and adaptations. This covers a much wider field than would at first appear. For instance, the Gothic actually embraces the Later Romanesque of Italy, the Flamboyant of France, the Perpendicular of England and the Spanish Gothic, all interpretations of the same inspiration. Similarly, the Renaissance style, in the broad sense of the word, includes the Italian Renaissance, the François I and Henri II periods, forming the French Renaissance, and the Tudor and Stuart lines as the Renaissance of England. Even the term Colonial covers the English Georgian, the Spanish Mission and the French and Dutch contemporaries, besides our own interpretation of the word,—a sort of intermingling of them all. So church design actually resolves itself into a matter of taste in choosing from these three styles and the periods which they embrace. Each one has much that makes it religious, while tradition makes them all reverential. Opinions differ, of course, and no doubt it is well that they should, for there is thus a much greater chance for the development of architectural styles. Although there are no rules which can even help in making the decision as to which style is best, there are rules to be applied after the choice has been made. These rules are the principles of design, the relation of form to structure and the element of unity throughout. They are the fundamentals on which all historical styles are grounded.





WALL TREATMENT IN ROME

Situated throughout Rome on practically all of her hills, with their gardens above the street level, are the gardens belonging to the larger palaces. The Villa Doria Pamphili, the Villa Colonna, the Villa Aldobrandini, the Villa of the Quirinal Palaces, and many other palaces in Rome have their garden walls flanging on these raised gardens.

The heights that these gardens are above the street level, and the wide space of wall below them to the street level, give ample opportunity for architectural development.

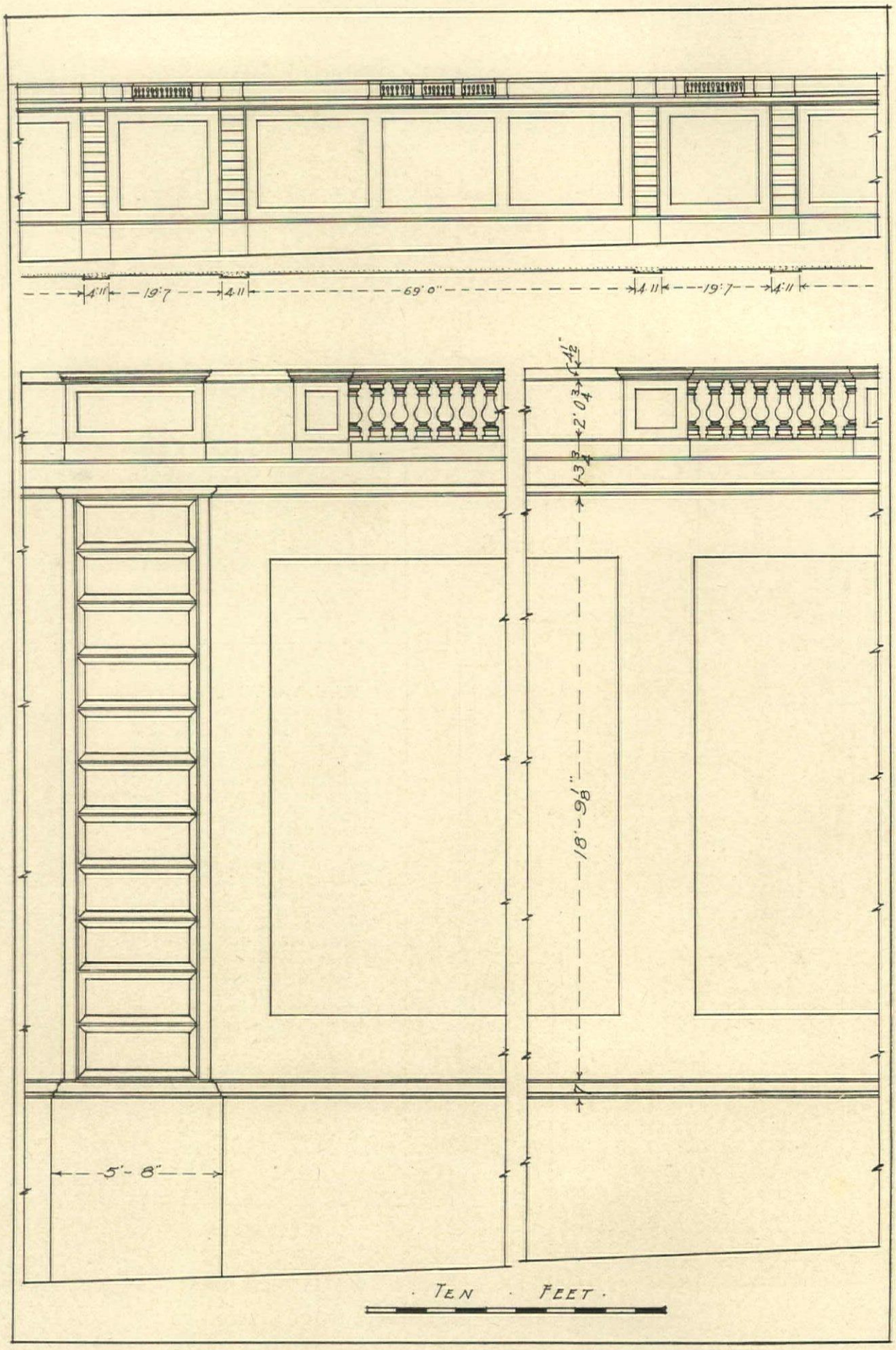
Such a wall is shown on the accompanying drawings, being located on the Via Di Aurora. However simple in character, it possesses a great deal of charm and shows how a brick wall with the Roman stone can be successfully treated.

The bricks measure 10½ x 1¾ and four courses are laid to 9".

WALL TREATMENT · VIA DI AURORA ROME

MEASURED AND DRAWN BY ROBERT M. BLACKALL, ARCHITECT

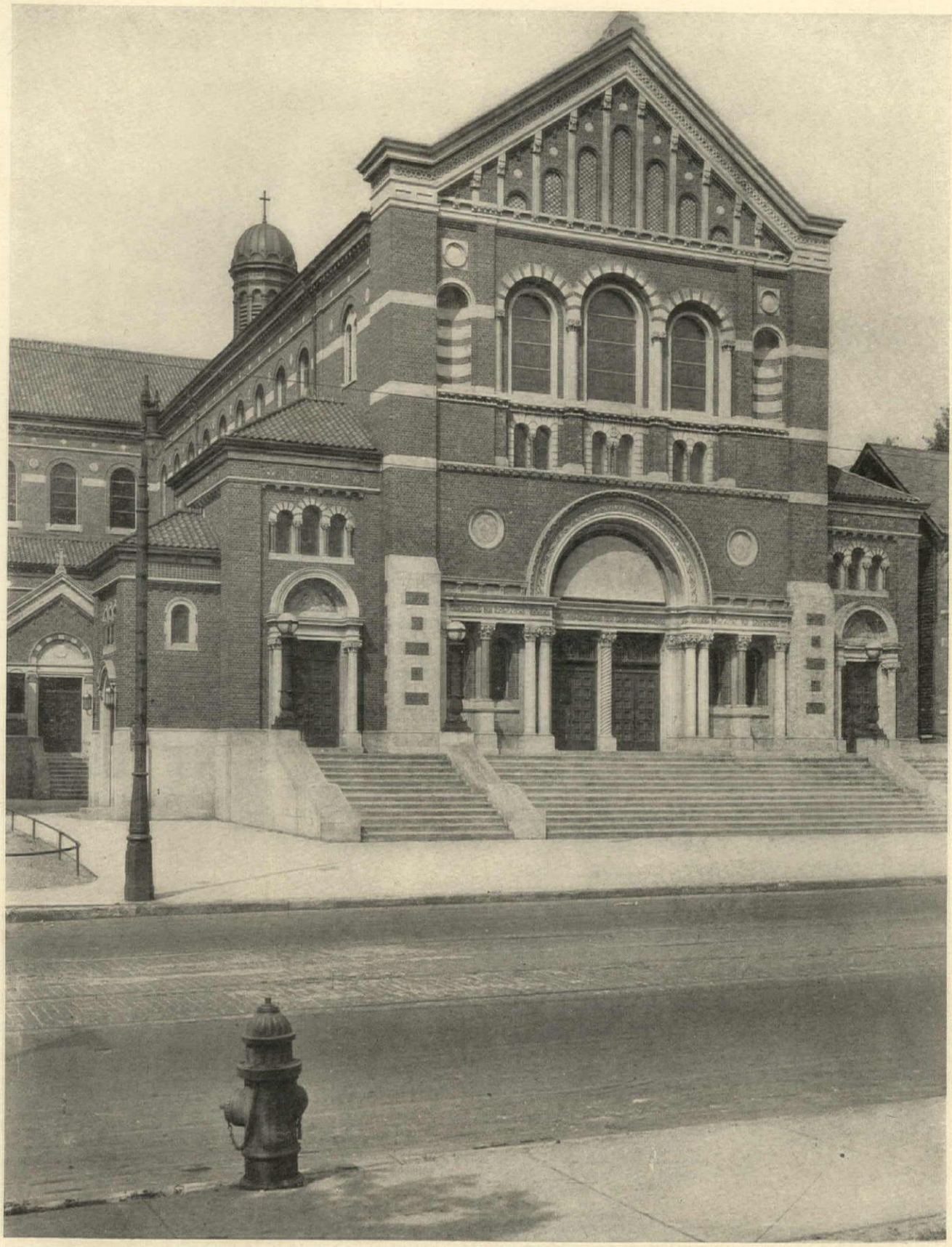
NUMBER III, SERIES III
FRENCH AND ITALIAN DETAILS



WALL TREATMENT, VIA DI AURORA, ROME

MEASURED AND DRAWN BY ROBERT M. BLACKALL, ARCHITECT

NUMBER III, SERIES III
FRENCH AND ITALIAN DETAILS

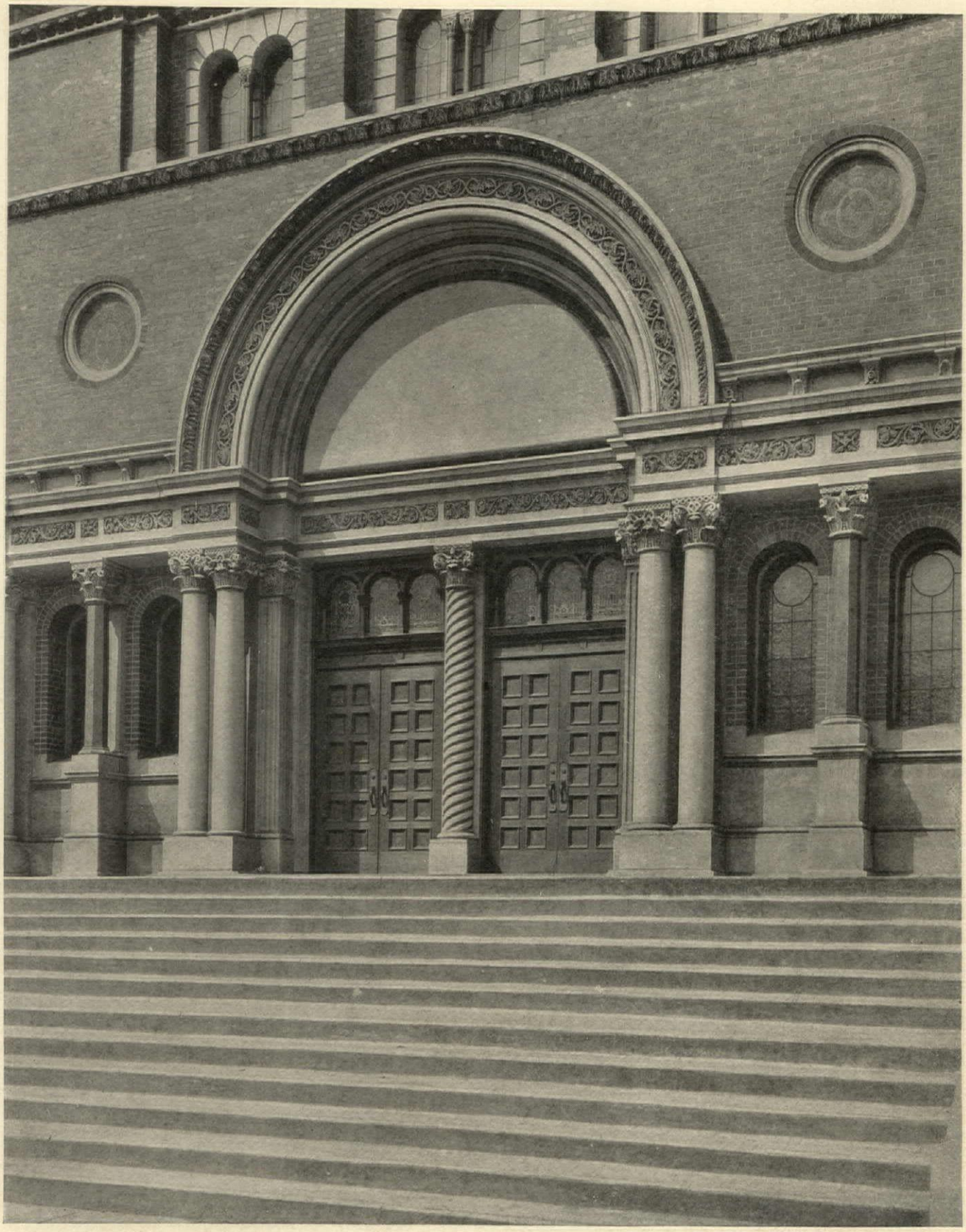


CHURCH OF THE HOLY REDEEMER, DETROIT, MICH.

DONALDSON & MEIER, ARCHITECTS

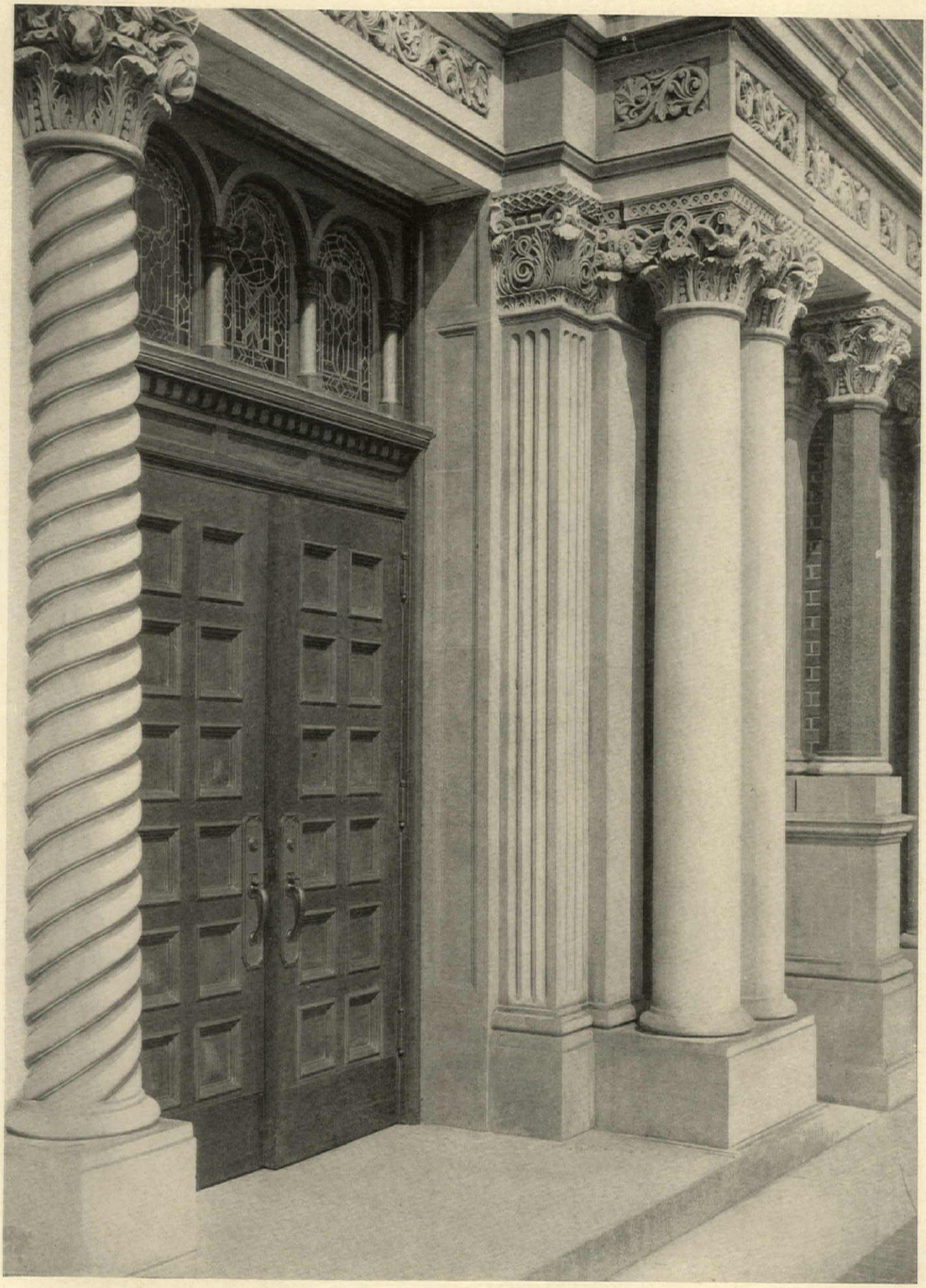
VOL. CXXV, No. 2445

MAY 7, 1924



CHURCH OF THE HOLY REDEEMER, DETROIT, MICH.

DONALDSON & MEIER, ARCHITECTS



CHURCH OF THE HOLY REDEEMER, DETROIT, MICH.

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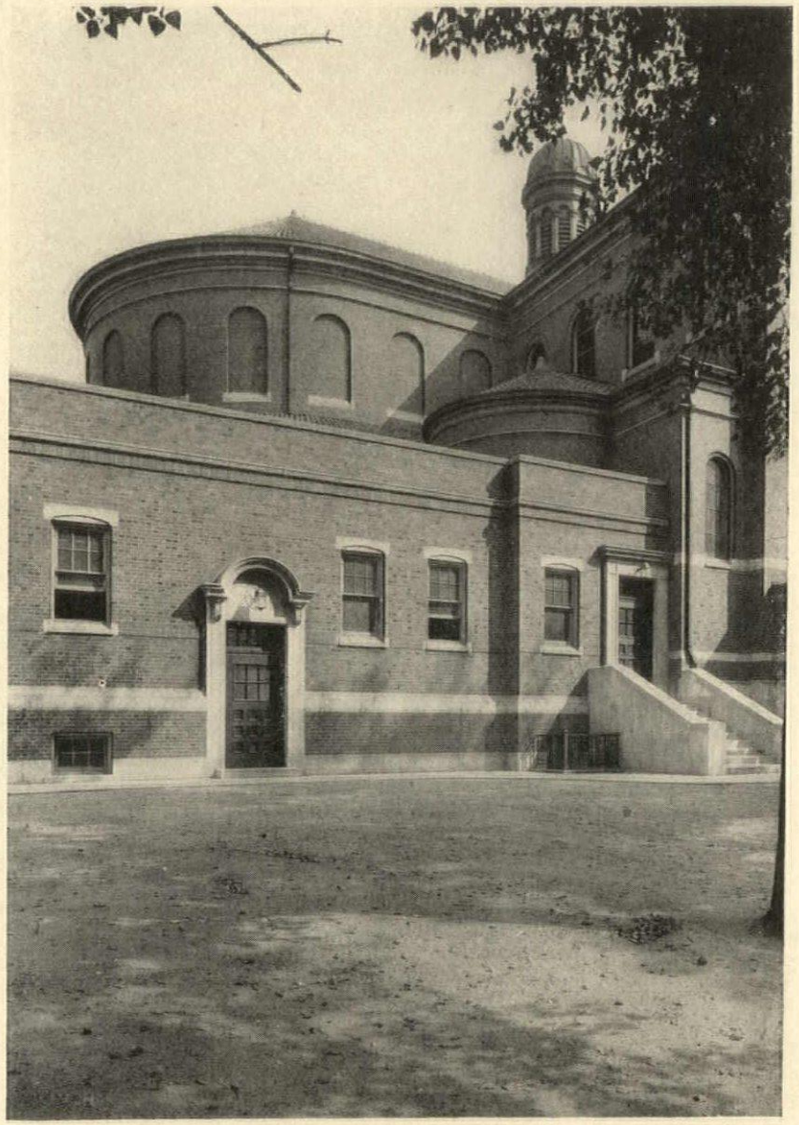

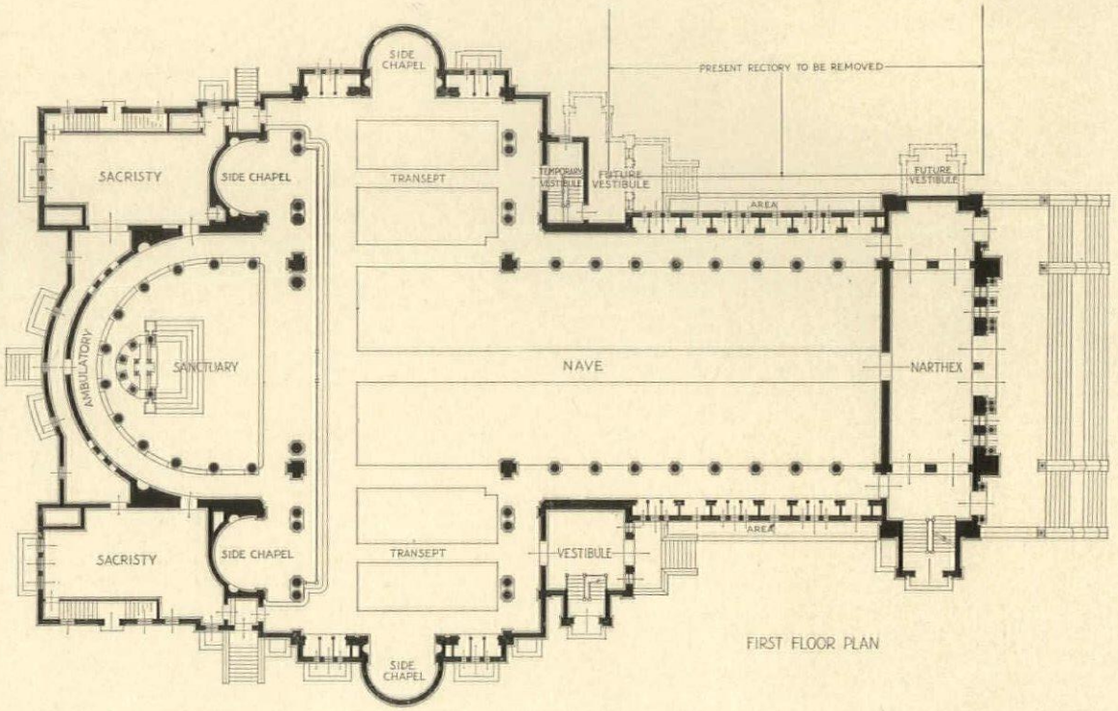

HOLY REDEEMER CHURCH - DETROIT, MICH.
DONALDSON & MEIER, ARCHTS.

This building has a full basement following the lines of the superstructure, which is used for overflow services and has a seating capacity of approximately 1400, the same as the first floor. Construction in general is of reinforced concrete, steel, brick and stone. A smooth, matte texture variegated face brick in tones of deep orange, cherry red, and dull brown was used for the exterior facing. The stone is blue and buff limestone. All exterior sheet metal work is of copper and roof of Spanish tile in mottled shades

In the interior, walls are in general sand-finish plaster with stucco for the ornamental features. The aisles, vestibules, sanctuary, chapels, etc., are of ornamental tile. The treatment of the sanctuary floor is especially rich and is interspersed with quantities of cipollino marble. Interior wood finish is white oak stained in a subdued dark greenish gray tone

The high altar and the communion railing were constructed in Italy of Botticino, Sienna, Carrara, and Grecian marbles with inlaid glass mosaics. A considerable quantity of very excellent stained glass is already in place

CHURCH OF THE HOLY REDEEMER, DETROIT, MICH.

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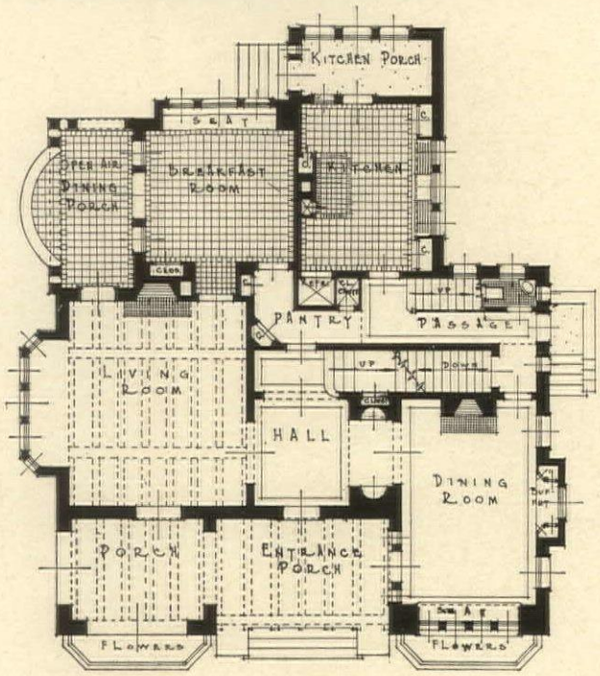
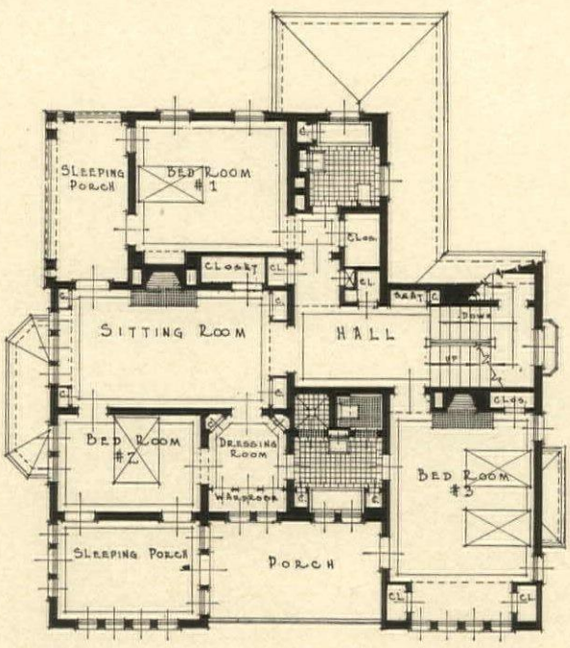




OWN HOUSE OF ATLEE B. AYRES, ARCHITECT, SAN ANTONIO, TEX.

BREAKFAST ROOM

LIVING ROOM

OWN HOUSE OF ATLEE B. AYRES, ARCHITECT, SAN ANTONIO, TEX.

BEAUX-ARTS INSTITUTE *of* DESIGN

OFFICIAL NOTIFICATION OF AWARDS

JUDGMENT OF MARCH 11, 1924

SECOND PRELIMINARY COMPETITION FOR THE 17TH PARIS PRIZE

OF THE

SOCIETY OF BEAUX-ARTS ARCHITECTS

"A UNITED STATES VETERANS HOSPITAL"

One of the recent problems of our Government has been to provide suitable hospital facilities for the care of veterans suffering with unbalanced minds as a result of the hardships, deprivations and horrors of the war. This problem has been faced by dividing the United States into fourteen districts based on military population, and each district is to be provided with suitable hospital accommodations. The plan disposition of such a hospital is the subject of this program.

On a large stretch of Government property in one of these districts, a reservation, 1800 x 2400 feet, has been set aside for the purpose of building a neuro-psychiatric hospital for five hundred patients. The reservation is situated on a high plateau with a main highway on one of its sides, and a nearby Railway line permits running a spur into one corner of the reservation for the economies of delivery both in construction, and later in handling supplies incident to the operation of an institution of this magnitude. As the prime objective of the hospital is the care of those mentally diseased and their restoration to normal well being, the method requires the organization of a complete institution composed of a number of buildings covering considerable areas with auxiliary features such as heat and power, supply and storage as well as the housing of the medical officers, nurses and attendants.

Briefly, a new patient reports to the Main Building, which is in the nature of a general hospital and also contains the administrative offices. Here he is kept for a period of observation and afterwards sent to the Disturbed or Continued Treatment Buildings. Wherever possible, the treatment takes the form of Occupational Therapy or the co-ordination of mind necessary to performance of skillful work such as weaving, pottery working, mechanics, gardening, truck farming, etc. Cheerfulness is a factor of great importance, and every effort is made toward the contentment of the patients in their work as well as their recreation. At the end the patient is transferred to the Convalescent Building, and from there finally discharged as cured. The general plan should have a well ordered character, the buildings disposed so that sun and air penetrate everywhere, and their surroundings rendered as attractive as possible with landscape treatment.

The main group is to be located some distance from the highway to insure quiet. It is composed of the following units of approximately the ground area given:

1. A Main Building of 15,000 square feet
2. A Disturbed Patient Building of 8,000 square feet
3. A Continued Treatment Building of 8,000 square feet
4. A Re-educational Building of 8,000 square feet
5. A Mess and Kitchen Building of 12,000 square feet
6. A Recreation Building of 7,000 square feet and
7. A Convalescent Building of 4 000 square feet

The auxiliary group shall include:

8. Two buildings for Men and Women Attendants, each of 3,000 square feet
9. One Nurses' quarters of 6,000 square feet
10. A small house for the Medical Officers in charge
11. 6 small houses as quarters for Staff Officers
12. 6 small houses as quarters for Staff Assistants
13. A Garage and Shops Building
14. A Boiler House
15. A Store House with adjoining railroad siding, and
16. The composition completed by a greenhouse, truck gardens, athletic grounds, roads, etc.

The names of the units must be shown on the plan.

JURY OF AWARDS:—H. O. Milliken, J. M. Howells, W. A. Delano, P. A. Cusachs, W. Warren, B. W. Morris, E. V. Meeks, G. Howe, W. M. Kendall, and G. G. Will, in Charge of Veterans Hospital Construction Service, U. S. A.

NUMBER OF DRAWINGS SUBMITTED:—22.

AWARDS:—

PLACED FIRST AND SECOND MEDAL: E. L. Babitsky, Atelier Wynkoop-Seymour, N. Y. C.

PLACED SECOND AND SECOND MEDAL: P. Goodman, Atelier Licht, N. Y. C.

PLACED THIRD AND SECOND MEDAL: A. F. Euston, Atelier Hirons, N. Y. C.

PLACED FOURTH AND SECOND MEDAL: H. K. Bieg, Chicago Atelier, Chicago, Ill.

PLACED FIFTH AND SECOND MEDAL: S. R. Moore, Columbia University, N. Y. C.

PLACED SIXTH (FIRST ALTERNATE) AND FIRST MENTION: L. I. Kahn, University of Pennsylvania, Phila, Pa.

PLACED SEVENTH (SECOND ALTERNATE) AND FIRST MENTION: G. P. Turner, "T" Square Club, Phila., Pa.

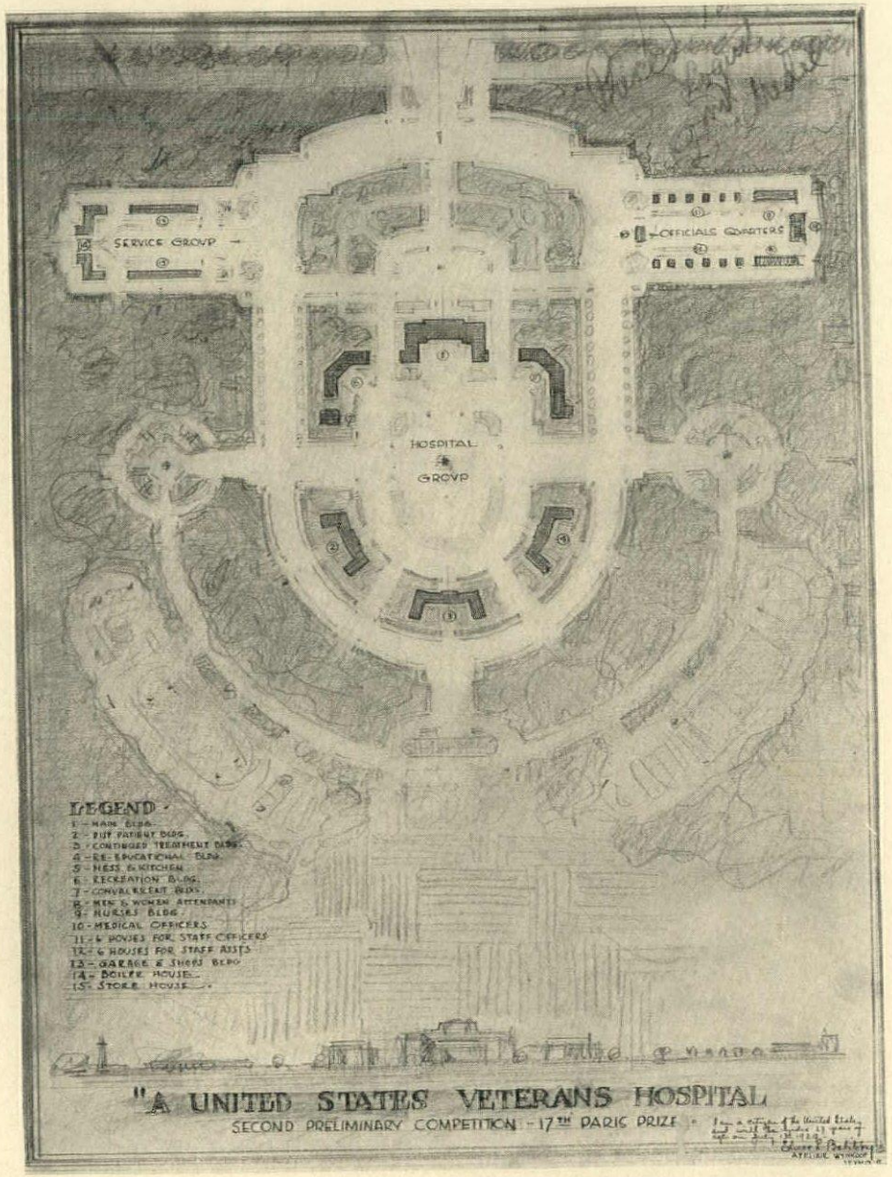
FIRST MENTION:—N. J. Schlossman, Chicago Atelier, Chic., Ill.

NOTE:—N. J. Schlossman was "H. C." for Prize as he was an Alternate in this competition.

J. L. Evans, University of Pennsylvania, Phila.

NOTE:—J. L. Evans was "H. C." for Prize as he was an Alternate in this competition.

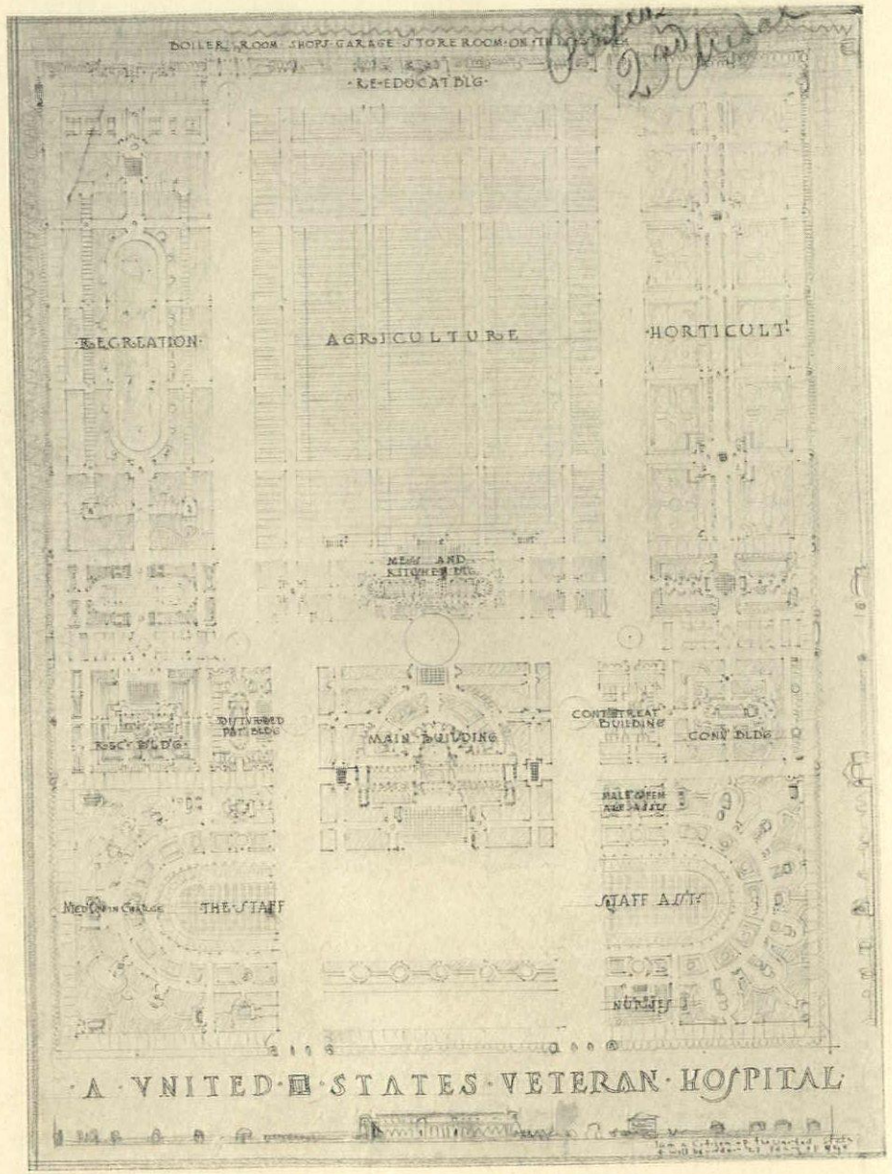
SECOND MENTION:—J. N. Franklin, Carnegie Inst. of Tech., Pittsburgh; I. J. Loebl, Chicago Atelier, Chicago; L. F. Fuller, Los Angeles Archtl. Club, Los Angeles; R. H. Crawford, Univ. of Southern California, Los Angeles.



PLACED FIRST—SECOND MEDAL

E. L. BABITSKY

ATELIER WYNKOOP-SEYMOUR



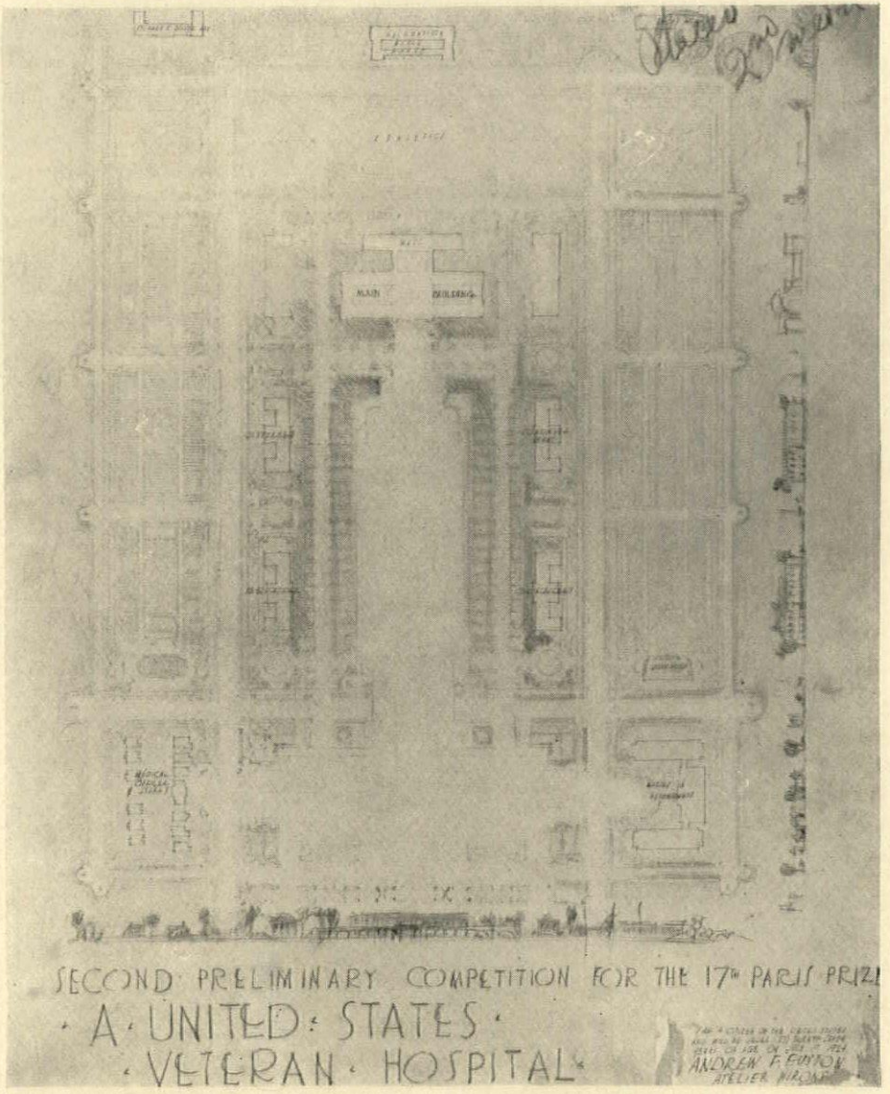
PLACED SECOND—SECOND MEDAL

P. GOODMAN

ATELIER LICHT

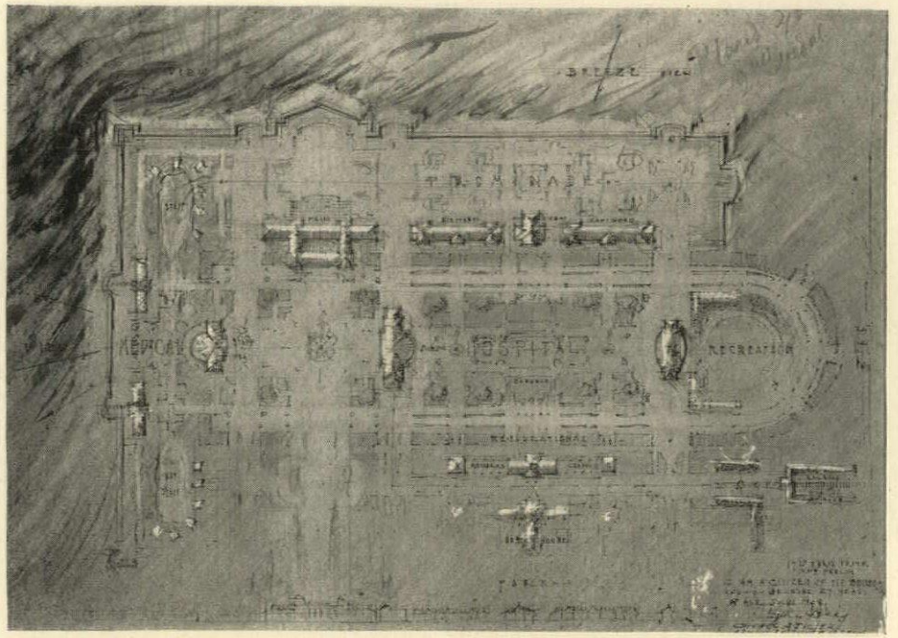
SECOND PRELIMINARY COMPETITION FOR 17TH PARIS PRIZE, SOCIETY OF BEAUX-ARTS ARCHITECTS

A UNITED STATES VETERANS HOSPITAL



PLACED THIRD—SECOND MEDAL

A. F. EUSTON — ATELIER HIRONS

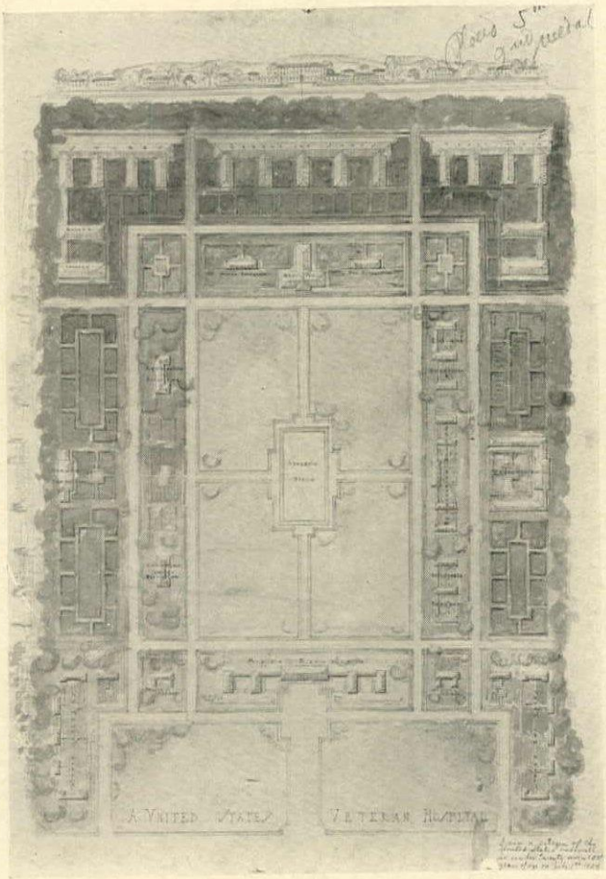


PLACED FOURTH—SECOND MEDAL

H. K. BIEG — CHICAGO ATELIER

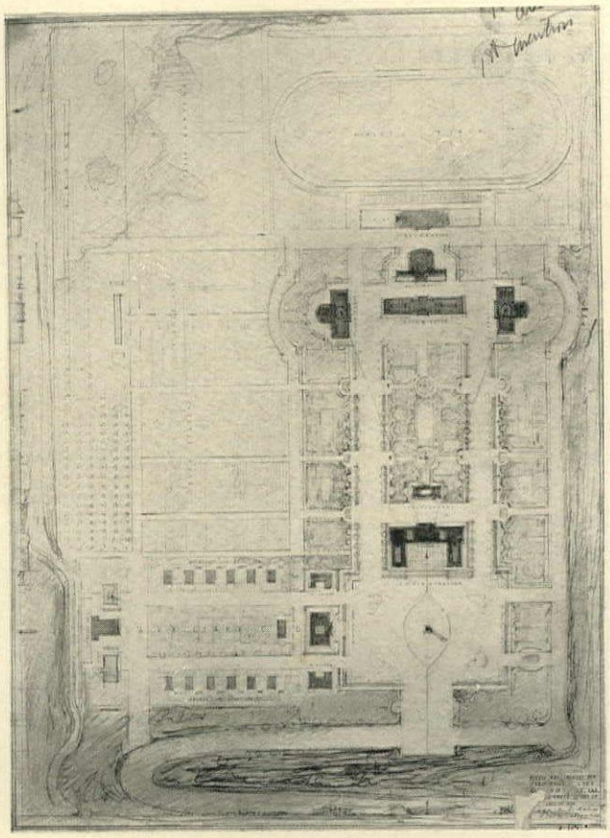
SECOND PRELIMINARY COMPETITION FOR 17TH PARIS PRIZE, SOCIETY OF BEAUX-ARTS ARCHITECTS

A UNITED STATES VETERANS HOSPITAL



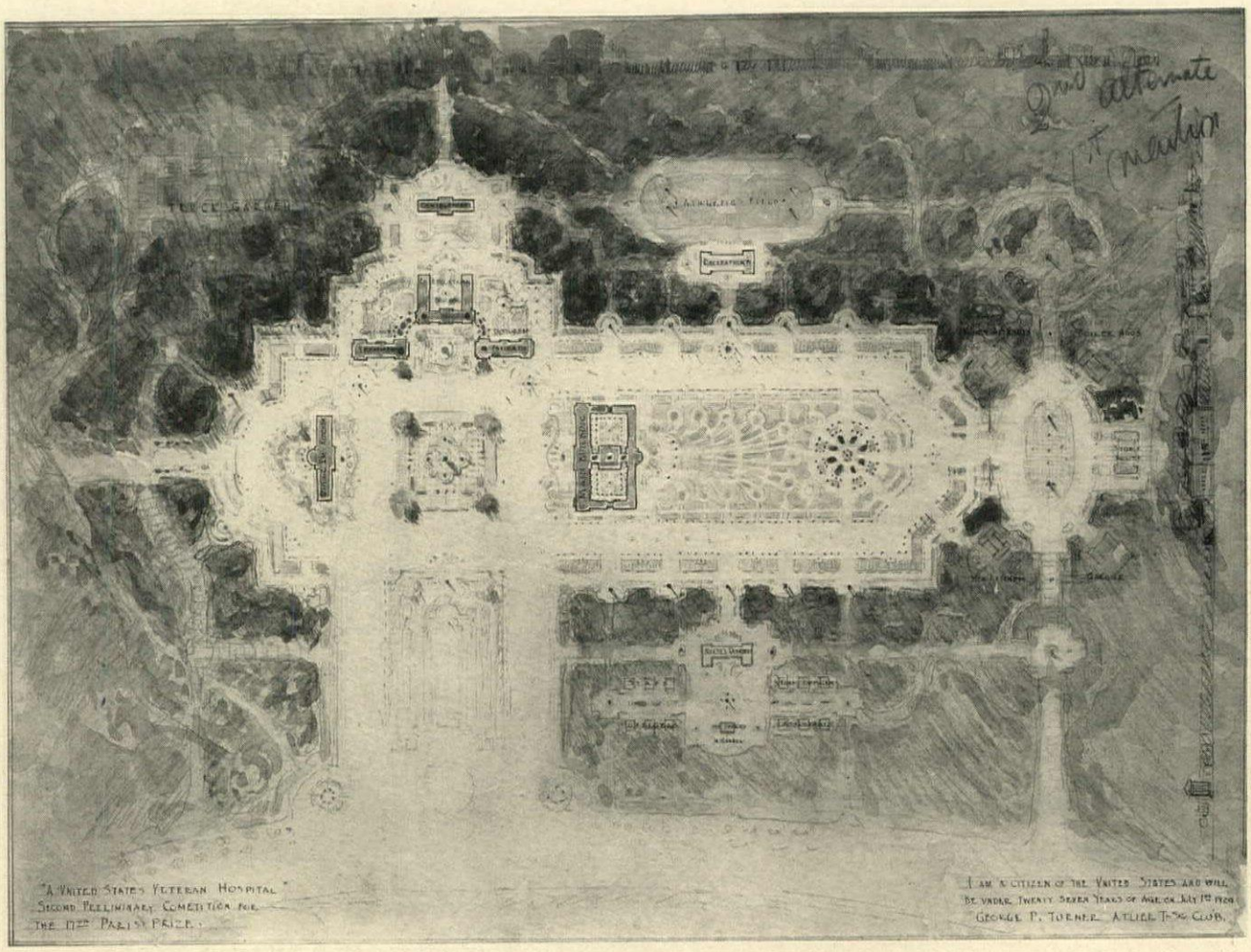
PLACED FIFTH—SECOND MEDAL

S. R. MOORE COLUMBIA UNIV.



PLACED SIXTH (FIRST ALTERNATE)

L. I. KAHN FIRST MENTION UNIV. OF PENN.



PLACED SEVENTH (SECOND ALTERNATE)

GEORGE P. TURNER FIRST MENTION "T" SQUARE CLUB, PHILA.

SECOND PRELIMINARY COMPETITION FOR 17TH PARIS PRIZE, SOCIETY OF BEAUX-ARTS ARCHITECTS

A UNITED STATES VETERANS HOSPITAL

ARCHITECTURAL ENGINEERING

The RENTAL *of a* NEW OFFICE BUILDING *and* RENTAL VALUES FOR OFFICE SPACE

BY W. H. BALLARD*

CAPITAL will be attracted to the business of owning and operating office buildings in competition with other kinds of business, in direct proportion to the safety and return which it will yield. The rental value of office space is its value to the tenant or buyer of the space. It is not the value determined by the average cost to the owner of producing each square foot of net rentable area of each individual office.

Planning a rental campaign for a new building covers a larger field than planning for an old or completed building, since with the old or completed building we are limited by conditions already fixed. In order really to plan a rental campaign for a new building the foundation should be laid before the site is purchased, or if this is not possible, before any plans are prepared.

The owner of the new building which is to be erected, rented and operated is engaging in the business of owning an office building either because of the prospective profit to be secured from engaging in the office building business, or because he desires to erect an office building in order that he may use a portion or all of the building to provide suitable quarters for his business.

The owner should secure the services of an architect and a building manager before completing the purchase of a site for the building. More often than not the site of a new building is determined before these services are secured. The rental of space in the building and the plans for the building must then conform to the limitations of the site. If the site has not been secured, the architect and building manager will have an opportunity to furnish the owner with very valuable advice in regard to the adaptability of various sites for improvement with an office building.

In determining upon a site and the tentative plans for the new building, a careful survey should be made in order to determine the present and future demand for space in an office building in the particular location or district. Estimates should be made of the kind and amount of space required by the average tenant, the probable number of tenants, the business of the tenants and the percentage of occupancy by various kinds of business. A careful survey of the occupancy of seventy-two of the better office buildings in the financial district of one of the large cities has yielded a great deal of valuable information.

For the purpose of this survey 300 square feet have been considered as the area of a single office. This information may not be an exact picture of the conditions which exist in other cities, but will serve to illustrate information which is of interest to every architect and building manager. The most surprising fact disclosed was the occupancy of 72% of the space by tenants occupying from one to five rooms. The results of this survey are as follows:

No. of Tenants	Classification	Amount of Space Square Feet	Percentage	
			Tenants	Space
97	Accountants	67,300	2.5	2.2
44	Advertising	21,000	1.1	.9
62	Architects	38,400	1.6	1.4
125	Associations	61,980	3.2	2.4
1	Automobiles	300	.02	.0001
17	Banks and Trusts	29,800	.4	1.1
136	Bldg. Equip. and Materials	65,000	3.5	2.4
42	Chemicals	37,200	1.1	1.4
66	Coal and Wood	53,000	1.7	.2
80	Cotton	70,000	2.	2.7
33	Elec. and Gas Appliances	43,000	.8	1.6
179	Engineers	104,900	4.	4.
39	Exports and Imports	29,400	1.	1.1
72	Food	35,520	1.8	1.3
4	Household Equipment	3,000	.1	.1
170	Insurance	243,000	4.4	9.3
370	Investments	327,500	9.	12.2
833	Lawyers	568,400	21.	22.
55	Lumber	30,000	1.4	1.1
118	Machinery	59,600	3.	2.2
27	Marine	33,100	.7	1.2
61	Medical and Surgical	21,600	1.5	.8
80	Merchandise Brokers	30,600	.2	1.1
198	Miscellaneous	97,500	5.1	3.7
41	Office Equipment	25,400	.1	.9
29	Oil	42,400	.7	1.6
68	Ore	42,100	1.7	1.6
46	Paper	25,000	1.2	.9
1	Photographers	300	.02	.0001
55	Printers—Publishers	36,400	1.4	1.4
24	Public Utilities	24,200	.6	.9
79	Railroads and Equipment	29,100	2.	1.1
352	Real Estate	178,290	9.1	6.9
4	Restaurants	1,200	.1	.04
11	Rubber	7,500	.2	.2
35	Shoe and Leather	29,800	.9	1.1
64	Stenographers	21,600	1.6	.8
11	Stone	4,500	.2	.1
71	Unclassified	25,200	1.8	.9
33	Wool	17,400	.8	.6

*President, W. H. Ballard & Co., Inc., Real Estate Brokers—Building Management, Boston, Mass.

Another interesting result of this survey is a classification of the number of tenants engaged in various kinds of business, the amount of space occupied and the percentage of tenants and percentage of space occupied to the total area.

No. of Tenants	Space Square Feet	Percentage
26	10,000 sq. ft. each	9.45
37	5,000 " " "	6.72
80	3,000 " " "	8.72
81	2,100 " " "	6.18
59	1,800 " " "	3.86
243	1,500 " " "	13.25
365	900 " " "	11.94
633	600 " " "	13.80
2388	300 " " "	26.04

Rental Values of Office Space

A tentative rental schedule should be prepared from the preliminary plans and a decision reached as to the tenants to whom space in the building can be rented. The building manager should convince himself of the actual rental value of the office space to be produced, since this is essential in order to convince the tenants to whom the offices in the completed building are to be leased.

It is still a common practice in a great many buildings to make up a rental schedule of the building on the basis of so many dollars a square foot for the net area in each office, making, perhaps, some variation for corners and inside or dark space. This results in an inequitable schedule, many tenants paying more than they should, and others paying less.

A square foot rental is of value only for comparison between different floors in a building, or between the total rentable areas in different buildings.

A true rental schedule should be based on the value of the space to the tenant and not on the cost to the owner of producing a particular office. I believe that I can, with your assistance, perfect a table for determining accurately a comparative rental value of office space. The first essential in a valuation table is a common factor which will provide a means for comparison. I have used, for this factor, an office with a minimum depth of fifteen feet. As the office increases in depth the space decreases in value. The table which I present for your consideration is based on the front foot value of an office fifteen feet deep; the value of greater depths being expressed in a percentage of the front foot value of the minimum depth of fifteen feet. After determining the front foot value for a given depth, a division of this value by the depth in feet will give the square foot value, if desired for comparison. If this table meets with your approval, we shall all be able to revise our rental schedules for our own and also the tenant's benefit. If we can all agree to use a common factor, for example, the minimum office depth of fifteen feet, our rental comparisons between various buildings in the future will be of more real value.

A complete schedule of the services to be furnished to the tenants should be determined and the cost estimated, since the cost of furnishing this service constitutes a large portion of the rental value to the tenants. After approximating all of the elements such as cost of land, building, rental value of the completed building and cost of services to tenants, the owner of the prospective building can determine the probable return upon the money which he is to invest in the office building business. An unsatisfactory return to the owner is always a hard problem to deal with, since the owner's discontent manifests itself in a continual temptation to cut rentals and curtail services.

Selling Space

A rental agent of skill and experience should be secured. If it is not possible to secure the full time of a competent agent, it may be possible to retain the services of a building manager in an advisory capacity. The number of assistants, location and organization of an office depend upon the size of the project. Application blanks, lease forms and other office material should be provided. A census should be taken of all office tenants in other buildings and the approximate rentals which they pay. This sounds difficult perhaps, but is really quite simple if you can secure the plans of the other buildings, and from the street directory or personal observation obtain the names of all of the tenants, the typical area per office can be estimated and an approximate rental applied for each of the different buildings. It is very helpful indeed, upon receiving an application for space, to be able to take the applicant's card from the file and know, oftentimes better than the applicant does himself, the amount of space which he occupies and the rental which he pays. There is a real opportunity to furnish the larger users of space with the services of an architect to assist them in planning a practical and an economical use of space. This will often result in a tenant's leasing less space than the amount he believed was necessary.

You are all familiar with the old saying that "anything bought right is half sold." A building manager whose rental schedule is based on the value of the space to the tenants has "bought right" and should have little difficulty in leasing all of the space in the building. A new building planned rightly is one which will yield the largest number of square feet of rental area of the

highest rental value, together with the smallest number of square feet of secondary value as may be necessary to produce the kind and variety of space required to fill the actual and not the fancied needs of the tenants to whom the space is to be rented.

Space in a new building should be offered for rental only after a careful study has been made of the consequential tenants who may be interested to locate in the building. A preliminary offering of space should be made in person to these concerns. When leases are closed with a number of such tenants, the character of the building is determined and a real incentive furnished to the smaller users of space to close leases. It is very essential that the street floor of the building be rented to tenants and for such use as will not detract in any way from the dignity of a new building. A general offering of space can now be made, using all of the various forms of publicity. In the cities where real estate brokers assist in office renting, they should be provided with full information and encouraged to assist in securing tenants for the building.

Publicity

Publicity in regard to a new office building is always of interest to the general public whether they plan to occupy space in the building or not. A continuous story of the various events pertaining to the purchase of the land and all of the subsequent happenings should be furnished to the newspapers for use as news items. Some of these items are the announcing of a decision to build, the name of the building when determined, the building manager selected, the architect and engineers selected, plans and illustrations of the building, awarding of the contract for the erection of the building, permanent rental signs erected on the site of the building, progress during construction, leases completed from time to time, completion and opening of the building. In each individual case, with competent advertising counsel, various kinds of publicity can be prepared and distributed. These consist of circulars or broadsides, plan books of the building, or more modest leaflets, special letters and publication of a list of the tenants.

% of Value	Office Depth	Front Foot Value	Square Foot Value	Front Foot Value	Square Foot Value	Front Foot Value	Square Foot Value	Front Foot Value	Square Foot Value
100	15	$45.00	$3.00	$60.00	$4.00	$75.00	$5.00	$90.00	$6.00
105	16	47.25	2.95	63.00	3.93	78.75	4.92	94.50	5.90
110	17	49.50	2.91	66.00	3.88	82.50	4.85	99.00	5.82
115	18	51.75	2.87	69.00	3.83	86.25	4.79	103.50	5.75
120	19	54.00	2.84	72.00	3.79	90.00	4.73	108.00	5.68
125	20	56.26	2.81	75.00	3.75	93.75	4.68	112.50	5.62
129	21	58.05	2.76	77.40	3.68	96.75	4.60	116.10	5.52
133	22	59.85	2.72	79.80	3.62	99.75	4.53	119.70	5.44
137	23	61.65	2.68	82.20	3.57	102.75	4.46	123.30	5.36
141	24	63.45	2.64	84.60	3.52	105.75	4.40	126.90	5.28
145	25	65.25	2.61	87.00	3.48	108.75	4.35	130.50	5.22
148	26	66.60	2.56	88.80	3.41	111.00	4.26	133.20	5.12
151	27	67.95	2.52	90.60	3.35	113.25	4.19	135.90	5.03
154	28	69.30	2.47	92.40	3.30	115.50	4.12	138.60	4.95
157	29	70.65	2.43	94.20	3.24	117.75	4.06	141.30	4.87
160	30	72.00	2.40	96.00	3.20	120.00	4.00	144.00	4.80
162	31	72.90	2.35	97.20	3.13	121.50	3.91	145.80	4.70
164	32	73.80	2.30	98.40	3.07	123.00	3.84	147.60	4.61
166	33	74.70	2.26	99.60	3.01	124.50	3.77	149.40	4.52
168	34	75.60	2.22	100.80	2.96	126.00	3.70	151.20	4.45
170	35	76.50	2.18	102.00	2.91	127.50	3.64	153.00	4.37
175	40	78.75	1.97	105.00	2.62	131.25	3.28	157.50	3.94
185	50	83.25	1.66	111.00	2.22	138.75	2.77	166.50	3.33

BALLARD TABLE—RENTAL VALUES OF OFFICE SPACE

Percentage of values from a unit depth of 15 feet to a maximum depth of 50 feet. Illustration of the application of this table to office rentals of $3.00, $4.00, $5.00, and $6.00 a square foot for the first 15 feet in depth, expressed in front foot and square foot values for offices of varying depths

JURISDICTIONAL AWARDS

AT its recent meeting held in Pittsburgh, the National Board of Jurisdictional Awards rendered a number of important decisions which are summarized as follows:

Case No. 3. Request for Rehearing of Decision on Low Pressure Heat. (Disputants: Steam Fitters and Engineers.)

The Board reaffirmed its decision made August 2, 1923, awarding the work to the steam fitters.

Case No. 26. Rehearing Foremanship over Concrete Work on Walls, Foundations, Footings, etc. Below the First Floor. (Disputants: Bricklayers and Laborers.)

The Board decided that the work in question shall be done by laborers under the supervision of such skilled mechanics as the employer may designate.

Case No. 27. Setting, Installing or Sticking of Artificial Stone. (Disputants: Bricklayers and Plasterers.)

The Board decided that the setting, installing or sticking of all artificial stone which is reinforced with burlap or other fibrous material, whether cast or fabricated in shop, or on the job, is the work of the plasterer and cement finisher; and the setting, installing or sticking of all artificial stone which is not reinforced with burlap or other fibrous material is the work of the bricklayers, masons and plasterers.

Case No. 28. Plastering Work for Preparation of Walls, Ceilings, etc., for Tiling. (Disputants: Bricklayers and Plasterers.)

The Board decided that plasterers shall prepare or plaster all walls and ceilings which are to receive tile, except the final setting bed which shall be applied by the tile layers. Three bathrooms, vestibule and small halls in single residences shall be plastered by the tile layer.

Case No. 30. Petition to Amend Decision on Cutting Chases or Channels in Brick, Tile, Masonry, etc. (Disputants: Bricklayers and Plumbers.)

The Board decided that inasmuch as the question involved many other trades that the matter should be deferred, the Building Trades Department in the meantime to use its good offices toward having it amicably adjusted.

Case No. 33. Operation of Hand Derricks when used to Hoist Reinforcing Rods. (Disputants: Laborers and Iron Workers.)

The Board decided to grant a rehearing on the subject at the next meeting.

Case No. 34. Gunite Work, or Handling of Cement Guns. (Disputants: Hodcarriers, Plasterers and Bricklayers.)

The Board decided when work is to be of the thickness of 1½ inches or greater, the handling of cement guns shall be done by the laborers. When work to be performed is less than 1½ inches in thickness, the handling and control of the nozzle shall be the work of the plasterers and cement finishers. It is understood that this decision does not allow the laborers the right to finish where any finishing tools are required.

The decision on the following disputes will be reserved until the next meeting:

Case No. 1. Request for Rehearing of Dispute on Metal Trim *in re* hollow metal doors and trim for Elevator Enclosures. (Disputants: Sheet Metal Workers and Iron Workers.)

Case No. 29. Request for Rehearing of decision on Conduo Base. (Disputants: Sheet Metal Workers and Electrical Workers.)

Case No. 18. Request for Rehearing of decision on Power Derricks. (Disputants: Bricklayers and Iron Workers.) Temporarily withdrawn pending agreement between the two trades.

Case No. 31. Installation of Slate Blackboards and Slate Partitions to Urinal Stalls. (Disputants: Bricklayers and Roofers.) Dispute adjusted by agreement, the Slate Roofers conceding the work to the bricklayers.

The Associated General Contractors in behalf of a number of members of the organization presented a request for a rehearing of the decision of the Board awarding the placing of reinforcing rods to the Iron Workers. A number of contractors urged the Board to grant the request while the Iron Workers objected to it. The Board in executive session decided to defer action upon the request until its next meeting.

The Sheet Metal Workers presented a request asking the Board to reconsider its decision rendered in December, 1920, awarding form and metal dome work to the Carpenters. The request was denied.

The Board in executive session confirmed a ruling of Chairman Miller made recently on some work in Philadelphia in which he interpreted a decision of the Board and awarded the placing of metal trim and elevator doors to the Iron Worker.

OUTDOOR SWIMMING POOLS

THERE is a growing recognition of the desirability of and necessity for public swimming pools. Where one is found, it indicates a progressive and enlightened community. Naturally these swimming pools are found where bathing facilities are not available on river or lake beaches. They are planned to serve the special needs of the community. A comprehensive survey of the outdoor swimming pools in this country has been made by Stanley Pinel and the results published in Bulletin 61, Engineering Extension Department, Iowa State College, Ames, Iowa, entitled Outdoor Swimming Pools.

In this bulletin, Mr. Pinel describes and illustrates sixteen outdoor pools located throughout this country. The range of types is so large that the study of this bulletin will be of material assistance to persons who have the designing of such things in hand. The details of construction and the essential requirements are clearly explained. These minimum requirements can be extended and elaborated as means permit.

These are matters that should interest architects as public spirited citizens and their planning and construction are naturally their work. The bulletin will be found a valuable addition to the library of architects and engineers as well as public officials and laymen.

SHEARING TESTS OF LIMESTONE

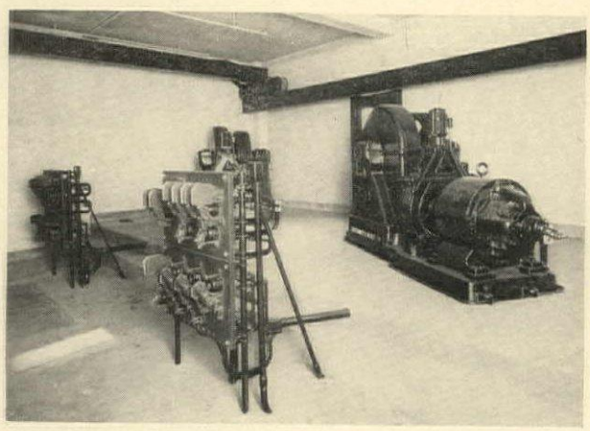
AN apparatus has been built by the Bureau of Standards for making shear tests on various types of stone. Preliminary tests with Indiana limestone indicate shearing values for this material of approximately 2000 lb. per square inch, or about one-third of the compressive strength. This property of stone is of considerable interest in connection with its use in structures but up to the present time very few determinations of shearing strength have been made.

VERTICAL TRANSPORTATION

BY H. D. JAMES*

THE volume of traffic handled by elevators in our large cities is greater than that handled by our horizontal transportation systems, and the possibilities for increasing business in our cities today and for the successful handling of the increase depend more upon an efficient elevator service than upon the traction systems. The latter already have a valuable auxiliary in the automobile, but for the elevator so far no substitute has been found.

As cities grow and the size of buildings increases, the problem of the elevator system becomes more difficult. The ordinary building served by one or two elevators presents no system problems for the elevators are merely operated up and down in response to signals from passengers at the various floors. During portions of the time the elevators are entirely idle, and seldom is their full capacity required.



CONTROL PANELS AND WINDING MACHINES FOR FREIGHT ELEVATORS IN DEPARTMENT STORE FOR JOSEPH HORNE COMPANY, PITTSBURGH, PA.

In large buildings, however, where there are a great number of elevators and constant service is required, a system of operation becomes advisable, and one of the operators, known as a starter, is stationed on the main floor to select the time each elevator leaves, it being his duty to maintain an even spacing between cars and, as far as his facilities permit, to avoid congestion. Under this system passengers on other floors wishing to take the elevator press a button which, by means of a signal light, causes the first elevator approaching the floor in the desired direction to be indicated. Department store elevators, it may be mentioned, stop at each floor and there these call buttons are not required.

In very large buildings it has been found advisable to give the starter some control over the elevators after they leave the main floor. With this in view, indicating boards have been devised which show the position of each elevator at any instant. Sometimes means of communication with the individual elevators are provided, enabling the starter to speed up an elevator by having it run by certain floors, the calls on those floors being transferred to the elevator next following. The dispatching system may be still further developed by giving the starter some control over the speed of the individual elevators, enabling him to maintain a better spacing between the cars. Another modern feature now on trial is a means for stopping the elevator at floors automatically, the argument for it being that it eliminates jerking the car back and forth at a landing, caused either by the operator's inability to gauge his stops accurately or his failure to understand a passenger's wish to stop in time to make the landing without reversing the car.

Very high buildings require the institution of local and express service. For example, a twenty story building may have one set of elevators serving the first ten floors and another the upper ten. Both sets stop at a common intermediate floor to transfer passengers who desire to travel between the upper and lower sections. Here, a proper distribution of the elevators between local and express service is essential.

Recently new difficulties have been presented in the tower type of building. If all the cars are run from the ground floor to the top, too large a percentage of the floor space in portions of the building would be given over to elevators. As the problem now more nearly approaches that of horizontal transportation, it is probable that it may be solved in the same way, namely, by having a few express elevators run the height of the building with only a few stops, the intermediate floors being served by local elevators.

Unusually good elevator service is necessary in commercial buildings, such as department stores, devoted to the selling of merchandise. The best selling floor is at the street level. Other floors become less desirable in proportion to their distance from the street level because it is difficult to induce the average person to travel to the upper floors. Especially is this true if the elevators are not of the best, and to overcome the customers' objections in this respect elevator service of the highest type is required. One outcome of the ef-

*Control Engineering Department, Westinghouse Electric & Manufacturing Company.

forts of department store managers to cope with the situation has been the removal of all departments not engaged in the direct display and sale of goods to customers, such as the offices, storerooms, and packing and shipping departments, to the top floors of the building.

Furthermore, in the downtown sections of large cities street space often becomes too valuable to permit the parking of delivery trucks around department store buildings. One factor materially relieving the situation has been the replacement of horse drawn delivery vehicles by the automobile truck. This allows elevators to be employed to convey incoming trucks quickly and easily to the top of the building, where they can be unloaded and the goods lowered by gravity chutes to the other floors. Also, the trucks can here be reloaded and lowered to the street for outgoing delivery.

The storing of automobiles, both pleasure cars and trucks, in high buildings is also accomplished by elevators. Many garages in downtown districts are enabled by this means to use their upper floors for this purpose, greatly relieving the congestion on the street floor that would otherwise result.

Power operated elevators first came into use about the time of our Civil War. At first they were either driven by a steam engine or belted to a line shaft, the steam engine at that time being the universal source of power. Many modern elevators, both of the worm and spur gear type, resemble the old steam driven machines with the exception that an electric motor has been substituted for the steam engine. A little later hydraulic machines of various designs were developed.

The electric elevator, which is now the common one, was introduced about 1890. It was early realized that one of the great advantages of the electric motor for elevator service was the fact that it consumed power only in proportion to the load, and that where power was obtained from central stations there was no expense when the motor was idle. The hydraulic machine, although it had the advantage of smoother operation, consumed the same amount of power regardless of its load, because the water is pumped at a fixed pressure and the same volume of water is used for a trip irrespective of the load carried by the car. The hydraulic system also required a pumping station in the building, which had certain standby losses even when the elevator car was not in operation. This inherent economy of the electric machine has been the most important factor causing it to supersede the hydraulic. Still another has been the decrease in maintenance cost of the electric elevator. In its earlier stages the apparatus was not substantial, the art being young and experience mostly lacking, and the maintenance cost and the indirect cost incident to delays for repairs made such an installation expensive to maintain. But while the cost of upkeep of the hydraulic machine has not changed much since the early installations, the hydraulic art being an old one and its engineering problems well understood years ago, on the other hand the electric drive is still comparatively new and rapid strides are yet being made in improving the engineering features of the apparatus and in reducing its first cost, as well as its cost of maintenance.

With the advantage of economy of operation in his favor, it was long the ambition of the electric elevator engineer to make a machine that would operate as smoothly as the hydraulic, and he has at last triumphed beyond his expectations, for there is probably no hydraulic machine that compares in smoothness with the latest electric type, operated by what is known as the variable voltage system.

In studying the question of smooth operation it was found that the problem is one mainly of bringing the car up to speed smoothly and of retarding it smoothly, and not of its actual speed at any instant. Persons riding on an elevator are not usually affected by the speed of operation, but they are very sensitive to the rate of change of speed. By means of mathematical calculation as well as by actual tests, elevator engineers have been able to plot curves showing the maximum desirable rates of acceleration and deceleration of elevator cars, as well as what is theoretically the best shape of curve these should take.

The early rheostatic type of control did not approach this ideal curve and for this reason the electrical engineer for a long time was unable to obtain the smoothness of operation so much desired. Although the hydraulic machine does not conform to this ideal curve either, it is an improvement over the other because it does not have abrupt changes in speed similar to those incident to the rheostat control. But while the hydraulic machine can be adjusted to give a smooth start and stop, under these conditions the car is not accelerated as quickly as is permitted by the shape of the ideal curve.

Further studies in electric control indicated that greater smoothness was possible if a cushioning effect could be produced in the armature circuit of the motor. It was found that this effect could be obtained by placing a reactance coil in the circuit. The improvement resulting from the use of this coil at once re-established the electric elevator as a direct competitor of the hydraulic machine. Good results had previously been sought by the use of a large number of contactors for accelerating and decelerating the motor, but these required careful adjustment which was affected by dirt, variation in weather conditions, and other agencies, which necessitated continual attention to maintain smooth operation. An experienced elevator engineer could go from one building to another, both using identical equipment, and compare the industry and ability of the electricians in charge of the elevators by noting the relative smoothness of operation of the systems.

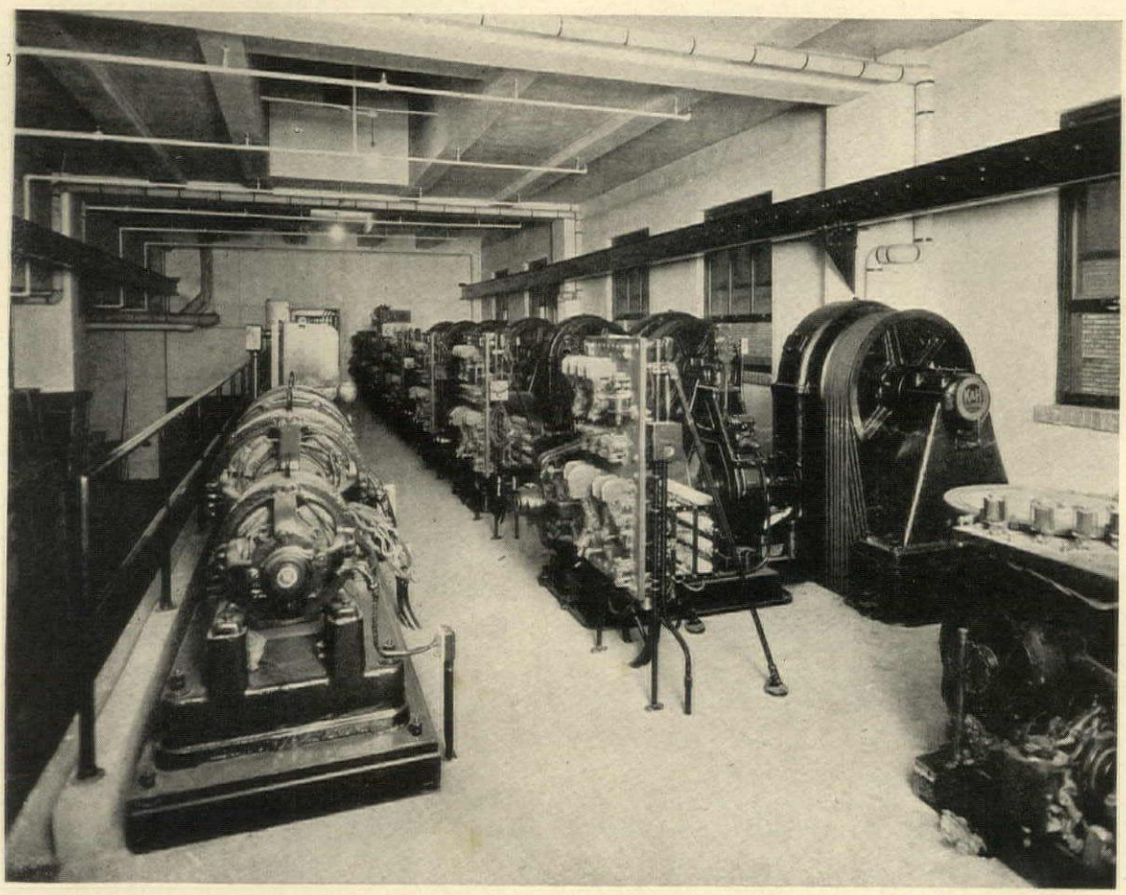
When the reactance coil was employed it was

found that this invention helped to make the operation inherently smooth, making it possible to use fewer contactors and reducing in consequence the difficulty experienced from the control's getting out of adjustment.

The greatest step forward in elevator systems was made when the relatively old system of variable voltage control was improved for elevator use. With this system an individual generator is provided for each elevator motor. The voltage supplied by the generator depends upon the strength of its field, and the strength of the field can easily be increased or decreased by turning the handle of a small rheostat in the circuit back and forth. This voltage is applied to the motor, the motor speeding up when the voltage increases and slowing down when it decreases. By placing the rheostat in the master switch of the elevator car and causing it to be operated by the switch handle the operator can change quickly and smoothly to any speed within the range of the motor.

Elevators were operated from a system of this kind about the year 1900, but at that time electrical engineers did not have sufficient design and test data at hand to enable them to proportion the characteristics of their motors and generators so as to overcome certain inherent difficulties and get the best results. With present design knowledge, however, machines can be built which have certain definite time characteristics in themselves, so that the rate at which the speed of the car changes is controlled by the design of the machine and only a small amount of adjustment is required in the control.

Elevators operated from this system can be accelerated and retarded faster than any other type. This results in a great saving of time in handling passengers between the floors of a building. The reason this is possible is that there is a very close resemblance between the characteristic curve of acceleration of properly designed variable voltage machines and the ideal curve, previously referred to, giving the maximum rate at which the car may be accelerated. This saving of time is of greatest importance where frequent stops are made. Perhaps the most important saving occurs in department stores.



VIEW OF ELEVATOR MACHINE ROOM IN DEPARTMENT STORE FOR JOSEPH HORNE COMPANY, PITTSBURGH, PA., SHOWING THE APPARATUS REQUIRED FOR VARIABLE VOLTAGE CONTROL. AT THE LEFT ARE THREE MOTOR GENERATOR SETS; AT THE RIGHT THE CONTROL PANELS AND WINDING MACHINES

In department stores also and for the same reason, the ability of an operator to make an accurate landing is very valuable. The time lost in inching a car up and down to bring it to the floor level often represents a large percentage of the total operating time. The elevator operator has to rely entirely upon his own experience for estimating when and how far to move the car handle

to slow down and stop. With most types of elevators this means one point with one load and a different point with another, because with most hydraulic and electric elevators the speed varies with the load. Since the operator largely judges his rate of speed by the location of the handle, his judgment is seriously impaired if the handle when in a given location results in one speed with one load and a different speed with another, rendering his problem of making accurate landings very difficult. Design engineers express this marked slowing down of a motor under heavy loads by saying that the regulation of the motor from light load to heavy load is poor. This regulation can be corrected to some extent by certain changes in the design of the motors and generators, but as long as several elevator motors are supplied from a common generator, it is impossible to adjust a single generator so as to obtain good regulation of all the motors under the differing conditions obtaining at any one time. When, however, each motor has its own generator, as in the variable voltage system, both can be designed to get good speed regulation not only at full speed but also at the very slow speeds used in making a landing. The speed is practically independent of the load in the car and there is, therefore, a definite speed for each position of the control handle. The operator can soon learn to judge his stops and make them with little loss of time, and hence with this system the time required for making landings is reduced to the minimum. It is possible that this improvement of the speed regulation may do away with the necessity for automatic leveling by means of locking bars or secondary sets of gears which, because of the poor speed regulation inherent in rheostatic controllers, has been tried in a number of recent installations.

Another improvement made possible by the variable voltage system appears when the elevator is made to descend rapidly. When descending with a full load, the usual system of control permits a rate of acceleration of the car which closely approaches a free fall, the only retarding forces being friction and the inertia of the rotating parts. When the motor is thus being driven by the load and exceeds its normal full speed, a generator action results which causes a current to flow back from the motor to the line. This generator action increases very rapidly with a small change in motor speed so that the effect on the passengers is first the sensation of actually falling, followed by a rapid retardation of speed as the retarding action of the motor becomes great enough to balance the load. Anyone who has ridden on the ordinary high speed elevator has probably noticed this unpleasant effect. Electric elevators which are operated from a single source of supply usually have this same effect to a greater or less extent and the same is also true of the hydraulic elevator though not in such a marked degree.

With the variable voltage system the passenger has the sensation, not of a free fall, but of a rate of travel definitely under control. He feels a very definite pressure underneath his feet during the downward motion of the car even when it is fully loaded, resulting in a feeling of security. This is due to the fact that, since each motor is connected to its own generator, the rate of acceleration is directly controlled by the change in voltage of the generator. The result is that the motor is generating power at all speeds from the start going down until the car is operating at its highest speed. The difference in sensation can perhaps best be understood by riding in elevators typical of the different systems.

A further advantage of the variable voltage system appears in connection with the modern power systems. Formerly, wherever possible, elevators were operated from direct current power. The direct current systems, however, are everywhere being replaced by alternate current systems of distribution, making it necessary to install motors driven by alternating current or machinery, such as motor generator sets or rotary converters, to convert the alternating to direct current for elevator service.

When alternating current motors have been used, they have proved satisfactory for freight and slow speed passenger service, but the induction motor has certain inherent characteristics which make it difficult to apply to high speed service. It also takes a large amount of power during the accelerating period. Improvement has been sought by changing its design, but at best the problem is difficult and few elevator engineers would recommend such an installation for high grade office buildings or hotels.

When direct current cannot be obtained for high class service, therefore, it has been usual to convert the alternating current by the employment of motor generator sets or rotary converters. With the variable voltage system, a separate generator is provided for each motor and the alternating current without conversion is used to drive the individual motor generator sets. When power factor correction is made advisable by the rules of the power company, this system also permits the use of synchronous driving motors to accomplish this purpose. In addition, automatic means can be provided for starting and stopping single motor generator sets, so that a set may be shut down and all standby losses eliminated when any elevator is not in use. When, however, a rotary converter or motor generator set is designed to operate the entire bank of elevators, it must be kept running at all times, including the inactive periods of the day and night, and the total cost of power is, therefore, larger than that required with the variable voltage system.

The LAW *as to* ARCHITECTURE

BY CLINTON H. BLAKE, *Jr., of the New York Bar*

AN interesting report has just been published of a decision by the Court of Claims, in a suit by a contractor, instituted some time ago for damages based on the claim that the specifications under which the bid was made and the contract entered into were inaccurate. The work involved was excavation work covering something over ten miles on the barge canal. The cost of the excavation depended, in large measure, on the nature of the material to be removed. The contractor claimed that the State's records showed the existence of hardpan and "hard" and "very hard" material, and that the State engineers substituted the words "clay, sand and gravel," or similar words, the inference from which was that the excavation work would not be difficult.

The Court is reported to have sustained the contention of the plaintiff that the specifications were inaccurate, that the excavating was a much more difficult proposition than the agents of the State had indicated in the plans and specifications, and that the representatives of the State must have known that the plans and specifications prepared did not give an accurate description of the material which the contractor was expected to excavate, and was softer and easier of excavation than was actually the fact. The plaintiff was awarded a large sum in damages. The decision of the Court, if rendered as reported, and if the facts found are as the report states, would seem to be good law and of special interest to architects.

If the plans and specifications indicate the existence of certain conditions, whether these have reference to excavation work or otherwise, and the contractor, on the basis of the representations contained in the plans and specifications, submits his bid and enters into the contract, he should certainly be entitled, in fairness, to recover the damages occasioned to him by his so doing, if he can prove that the conditions were other than as represented, and especially if he can prove that the true conditions were known to the owner or to the architect or should have been known to them, had they exercised reasonable diligence.

In many cases, the contractor will be required under the contract to make his own tests and examination of the proposed site, before submitting his bid. Where this course is followed and no representations are made in the plans and specifications or otherwise, the contractor will be bound by his bid, and will not be in a position to claim damages as against either the owner or the architect. It is apparent, therefore, that an architect should be diligent to check and verify his facts in any case where he indicates in the plans or specifications the existence of special conditions which are material elements affecting the cost of the work to the contractor. If any survey be furnished to the contractor by the owner or any statement of facts relative to the site or building operation be so furnished, the architect, in so far as the matter is within his knowledge or under his control, will do well to assure himself that the facts stated are accurate. The better and safer course, wherever possible, will be so to draft the contract or requests for bids, that the verification of all essential facts of this character rests upon the contractor.

The foregoing considerations will apply with equal force to the other situations which characterize the building operation. It is unwise for the architect to make any unnecessary representations either to the client or to the contractor. It is very natural that, in discussions or correspondence with them, he should thoughtlessly make statements with respect to cost or site or any one of a dozen other elements concerned in the operation. Unless, however, it is necessary that he do this, he will do well not to commit himself. Representations which, when made, seem entirely harmless, may later assume entirely different aspects, and result in perplexities and considerable loss. If the architect, in dealing with the contractor, makes any representations to the latter in behalf of the owner, he should make it clear that the statements which he makes are based on the facts as given to him by the owner, and that he is acting merely as spokesman for the latter. Similarly, in dealing with the owner, he should not state to him, as facts, representations made to him by the contractor, without making it clear that he is transmitting merely the contractor's statement of the case.

In the course of his employment, the architect is naturally called upon to make statements and findings as the work progresses. This is especially true of his work in supervising the construction. Aside, however, from these manifest and proper duties, he should studiously avoid commitments, verbal or otherwise, which may not be understood or which, if understood, may be later used to embarrass him. It may seem rather trite to say that in any statements or representations made, he should be sure of his facts before stating them. Nevertheless, the caution is not at all an idle one, in view of the many times that an architect does make statements which he believes to be accurate, but which he has not suffi-

ciently verified. His troubles are sufficiently numerous at the best, before his relationship with the client and with the contractor has been happily and successfully terminated. There is no need to add any unnecessary difficulties or to provide any unnecessary grounds for misconstruction or dissatisfaction.

LEGAL DECISIONS

UNDER a building and construction contract, the terms were such that the work to be performed covered a very considerable period of time. It was necessary for the contractor, in order to carry out the terms of the agreement, to expend large sums of money. The contract provided that the payments to be made should be based upon the amount of the work performed. The question arose between the parties, whether it was necessary, under the contract, for the contractor to perform, before payment of the amounts due him was made. The court held that where, as in the foregoing case, work covers a considerable period and the contractor is called upon for large expenditures and payments based on the amount of work done, the covenant to perform undertaken by the contractor is dependent upon the covenant to pay and that, unless the covenant to pay is faithfully adhered to, the covenant to perform cannot be enforced.

Steel Co. v. Construction, etc. Co., 114 *Atlantic* 780.

IN the case last cited, it appeared, also, that the contractor had substantially complied with the contract to pay and had in good faith liquidated all sums which it believed were due. The additional question arose, under these conditions, whether the sub-contractor was justified in abandoning the work and whether the contractor was entitled to any time within which to comply with a demand for payment, before the abandonment of operations by the sub-contractor. The court held that a sub-contractor is not justified in abandoning work where the contractor has substantially complied with his contract to pay, and has paid, in good faith, all monies which it believes to be due. The court further held that the contractor should be given a reasonable time within which to comply with a demand for payment, before the operation should be abandoned.

(Editor's Note) In considering the above decision, it is well to bear in mind that the wording of the contract, in any case is, in the last analysis, the controlling factor. If the contract, by its terms, clearly provides that the covenant to perform is not dependent on the covenant to pay or that absolute rather than substantial compliance by the contractor is necessary, or specifies a given time after which the sub-contractor may abandon the operation, the decision of the court will be controlled by the contract terms. If, for instance, the contract provided that the sub-contractor might abandon the work provided the contractor did not make payment within one day after demand therefor, the sub-contractor would have the right to abandon the work on the expiration of that day, if payment had not then been made. The doctrine of reasonable time for the performance of an act by a contracting party is one which is invoked by the courts in cases where the contract is silent as to the time within which an act is to be performed or upon the expiration of which a right accrues.

A CONTRACT provided that the contractor should install a heating plant. In order to do so, it was necessary for a portion of the foundation wall of the structure to be removed. The contract did not require the contractor to replace the portion of the wall which it was necessary to remove. The contractor entered upon and performed the work and thereafter the house settled and it was found that the settling was due to the removal of the wall by the contractor. It was also found, however, that the work of the contractor was performed with proper care and that there had been no negligence on his part. The court held that, under these conditions, the contractor, having performed his services in accordance with the contract and without negligence on his part, could not be held liable for the damage caused by the settling of the house.

Hardware Company v. Freeman, 198 *P.* 711.

A CONTRACT provided that, upon the failure of the contractor, after notice by the owner, to make adequate provision for the work, the owner should have the right to supply the contractor with the men and materials necessary to complete the work within the time specified in the contract. Upon the failure of the contractor to provide a sufficiency of men and materials, the owner, under the foregoing provision of the contract, took possession of the building and assumed charge of the work. The court held that this, under the contract term, was a violation thereof, and that the owner was not authorized to take charge of the work by virtue of the provision of the contract above referred to, but only to supply, as therein stated, the necessary men and materials to the contractor. The court further held that a notice given by the owner to the contractor, after the owner had violated the contract by taking possession of the building and taking over the work, was ineffectual.

Grey v. Bekins, 199 *Pacific* 767.

PETITFILS CONFISERIE BUILDING

BUILDING FOR HENRY D. CANE

A GROUP OF SHOP FRONTS IN LOS ANGELES, CAL.

DESIGNED BY T. BEVERLEY KEIM, JR., ARCHITECT AND ENGINEER

SHOPS FOR DRS. N. W. & H. B. GOODMAN

DETAIL OF SHOP FRONT

PETITFILS CONFISERIE BUILDING, LOS ANGELES, CAL.

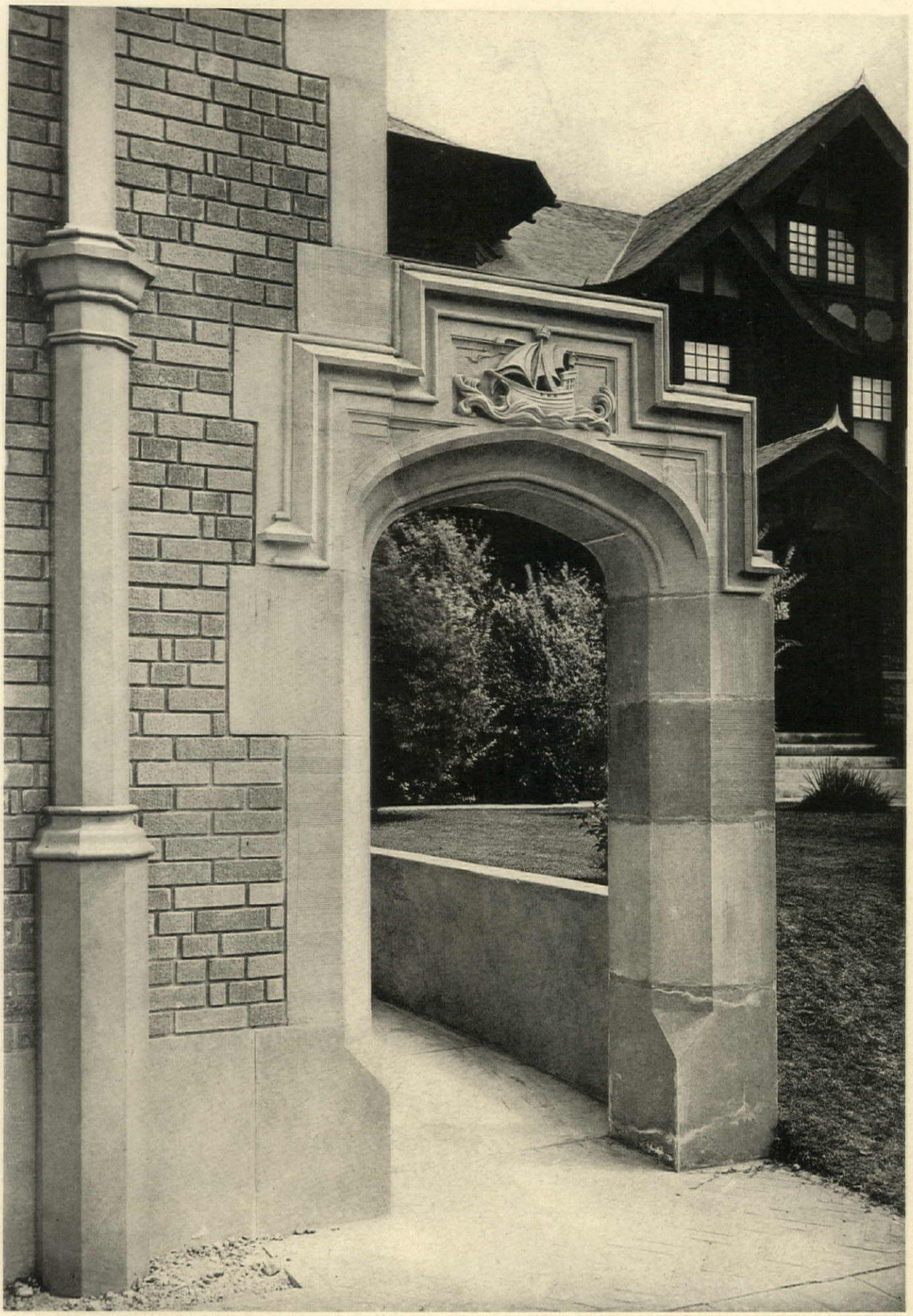
T. BEVERLEY KEIM, JR., ARCHITECT AND ENGINEER

DETAIL OF SHOP FRONT FOR HENRY D. CANE, LOS ANGELES, CAL.

T. BEVERLEY KEIM, JR., ARCHITECT AND ENGINEER

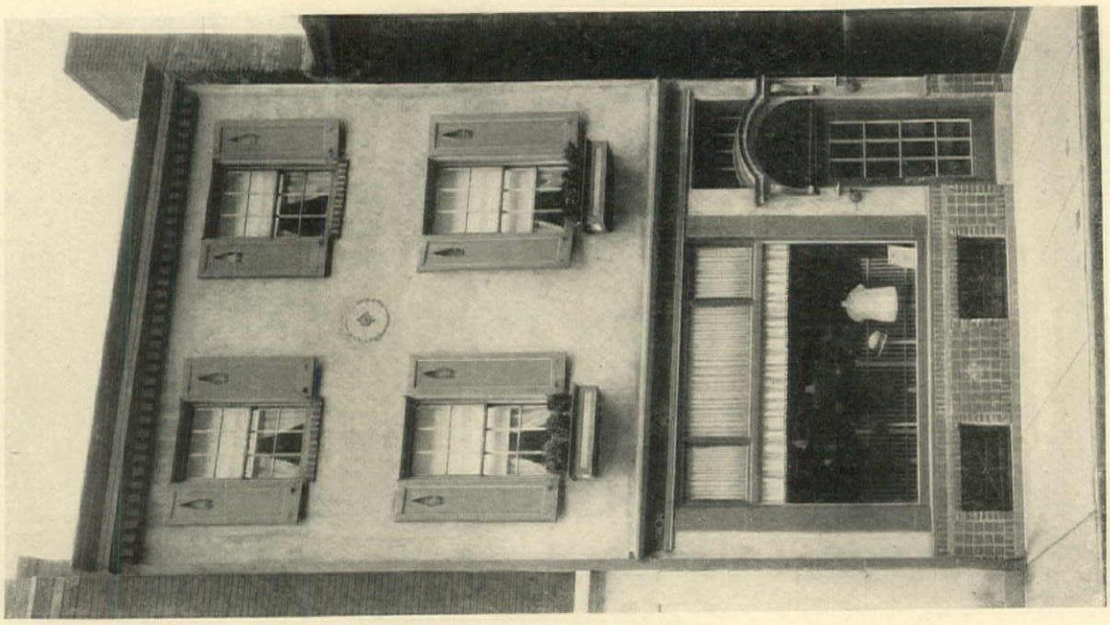
DETAIL OF STORE FRONT FOR DRS. N. W. & H. B. GOODMAN, LOS ANGELES, CAL.

T. BEVERLEY KEIM, JR., ARCHITECT AND ENGINEER



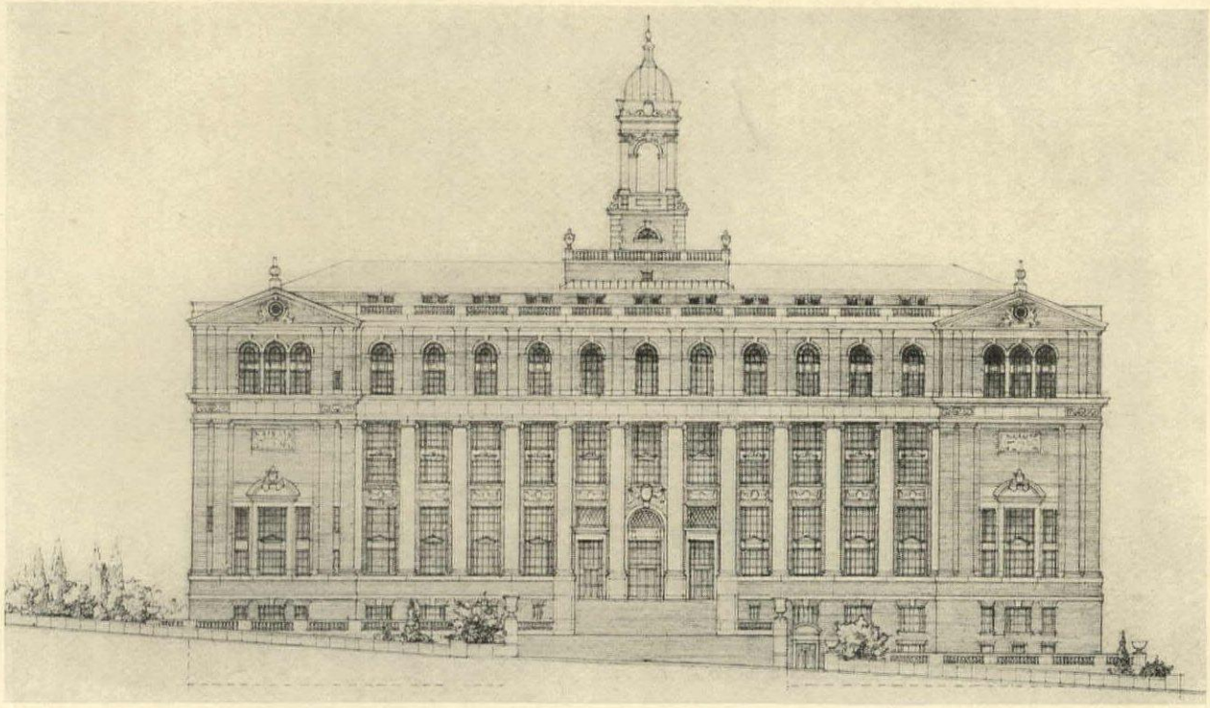
DETAIL OF A GROUP OF SHOPS IN LOS ANGELES, CAL.

T. BEVERLEY KEIM, JR., ARCHITECT AND ENGINEER

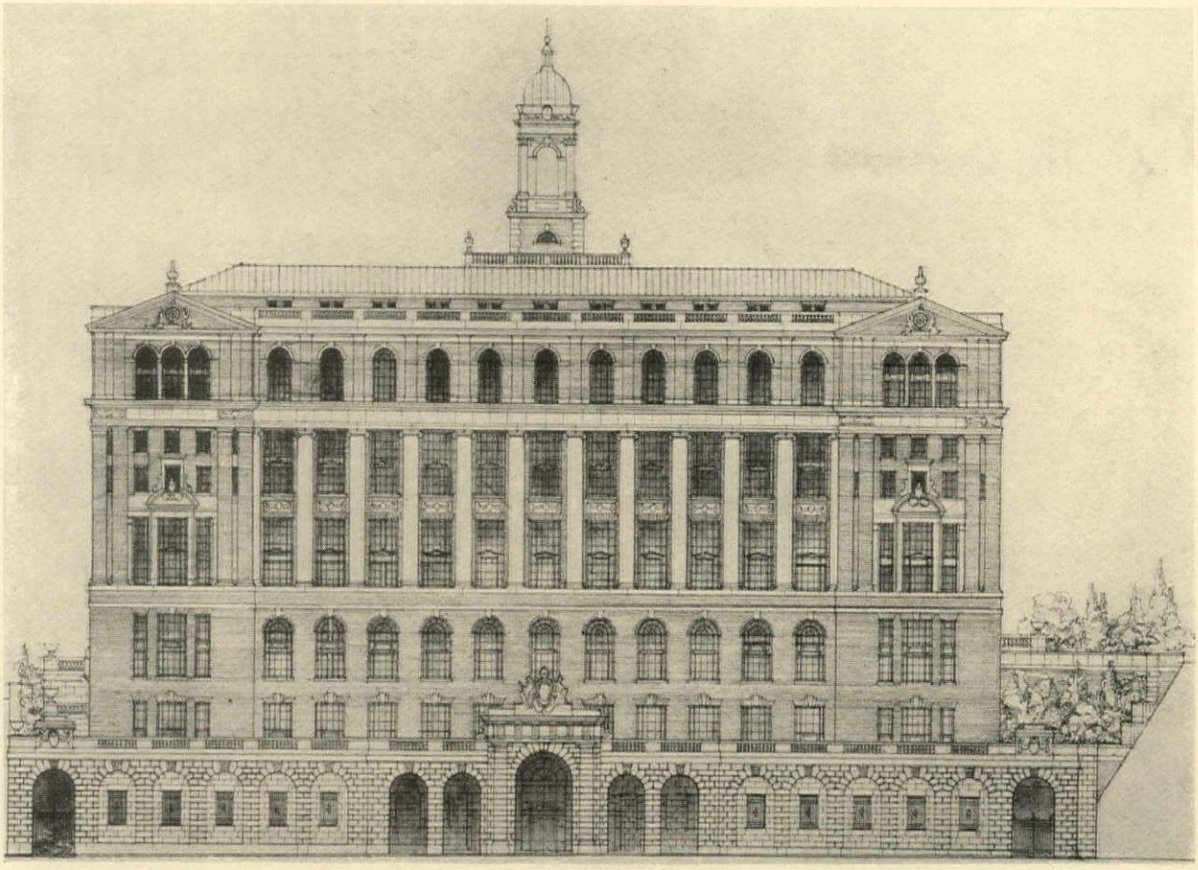


TWO SHOP FRONTS IN PHILADELPHIA, PA.

WILLIAM B. KOELLE, ARCHITECT



BENEFIT STREET ELEVATION

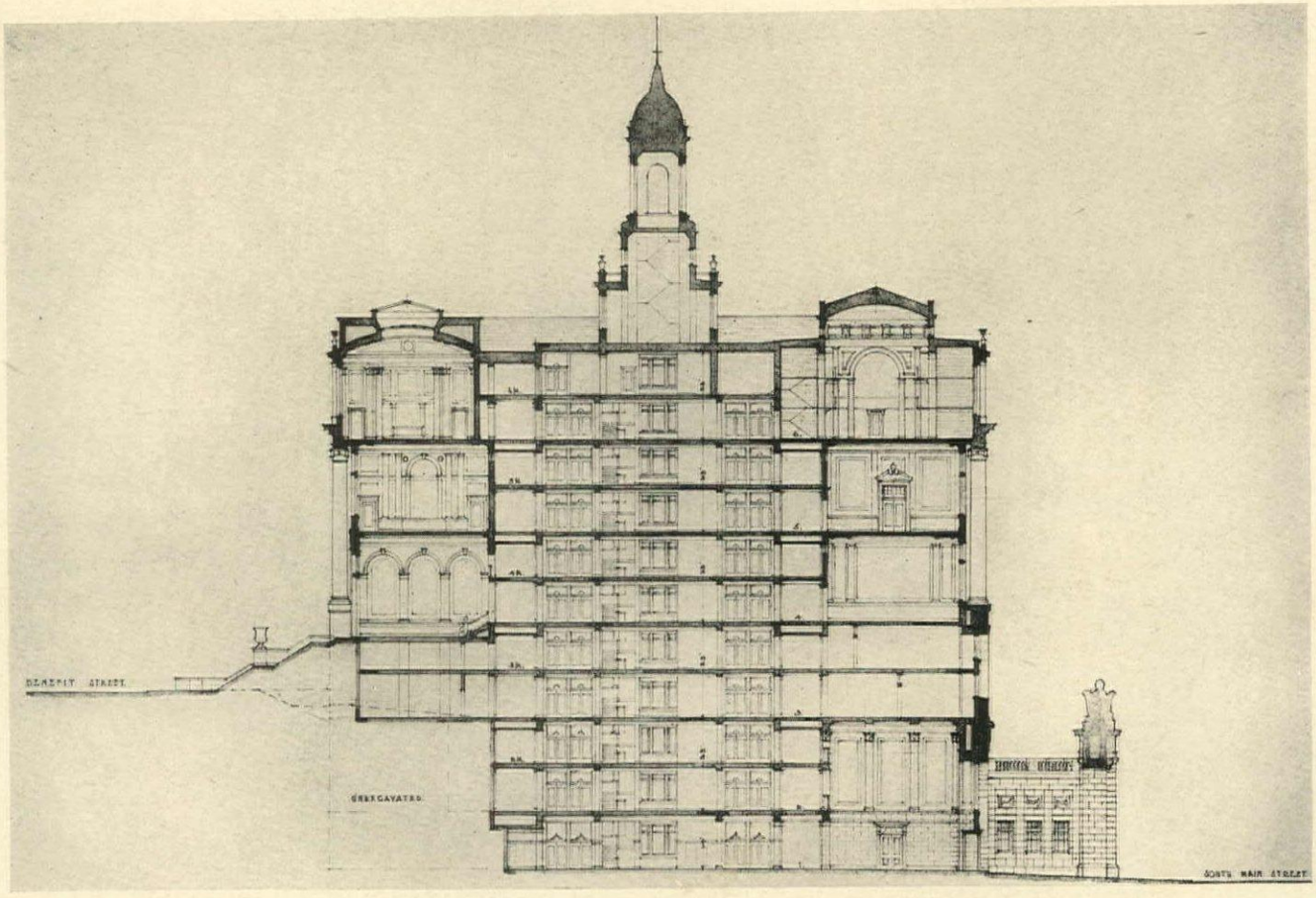


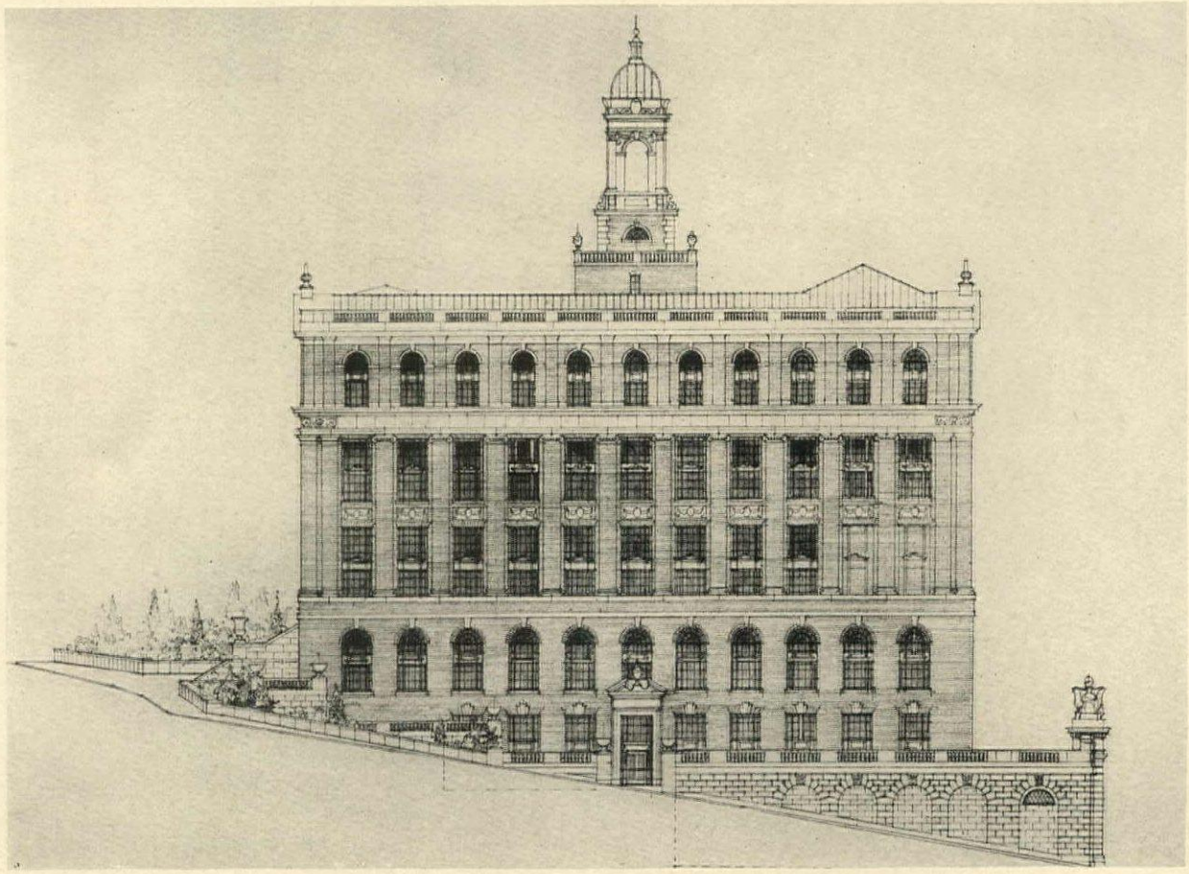
SOUTH MAIN STREET ELEVATION

DESIGN PLACED THIRD

COMPETITION FOR COURT HOUSE, PROVIDENCE, R. I.

ELEAZER B. HOMER AND GORHAM HENSHAW, ASSOCIATED ARCHITECTS





HOPKINS STREET ELEVATION

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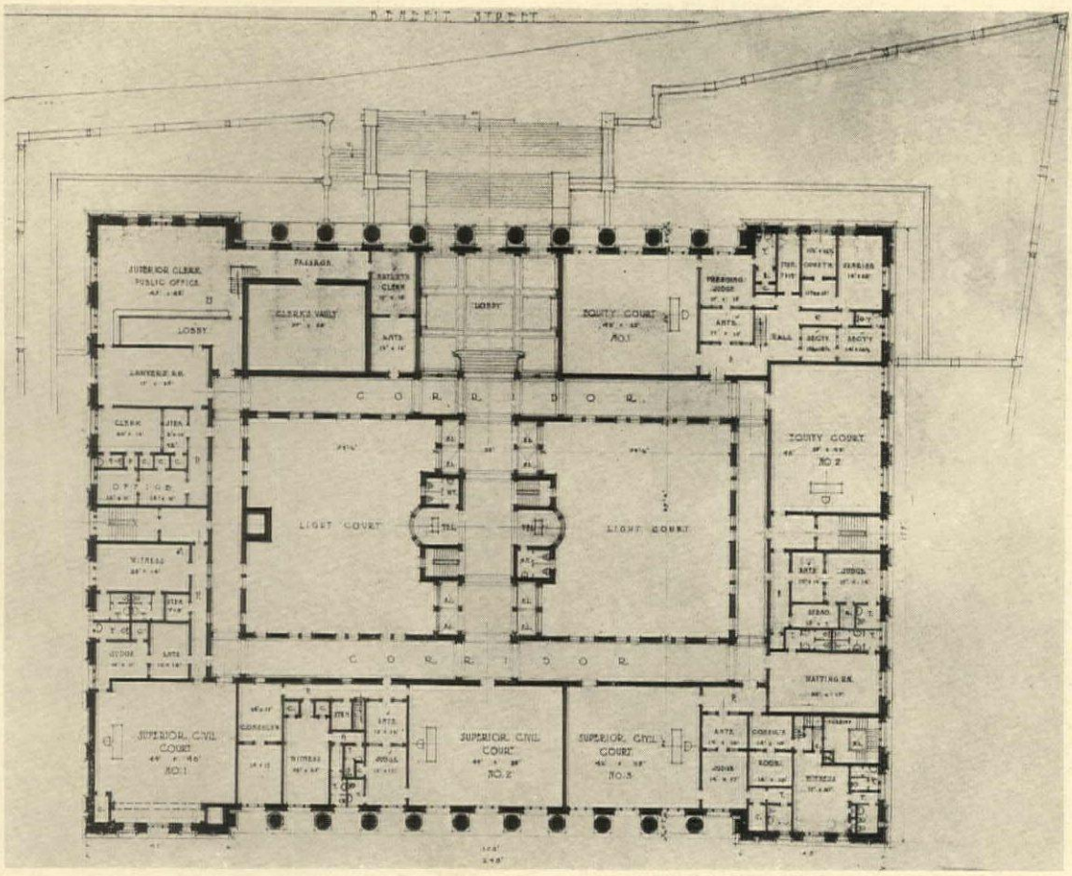
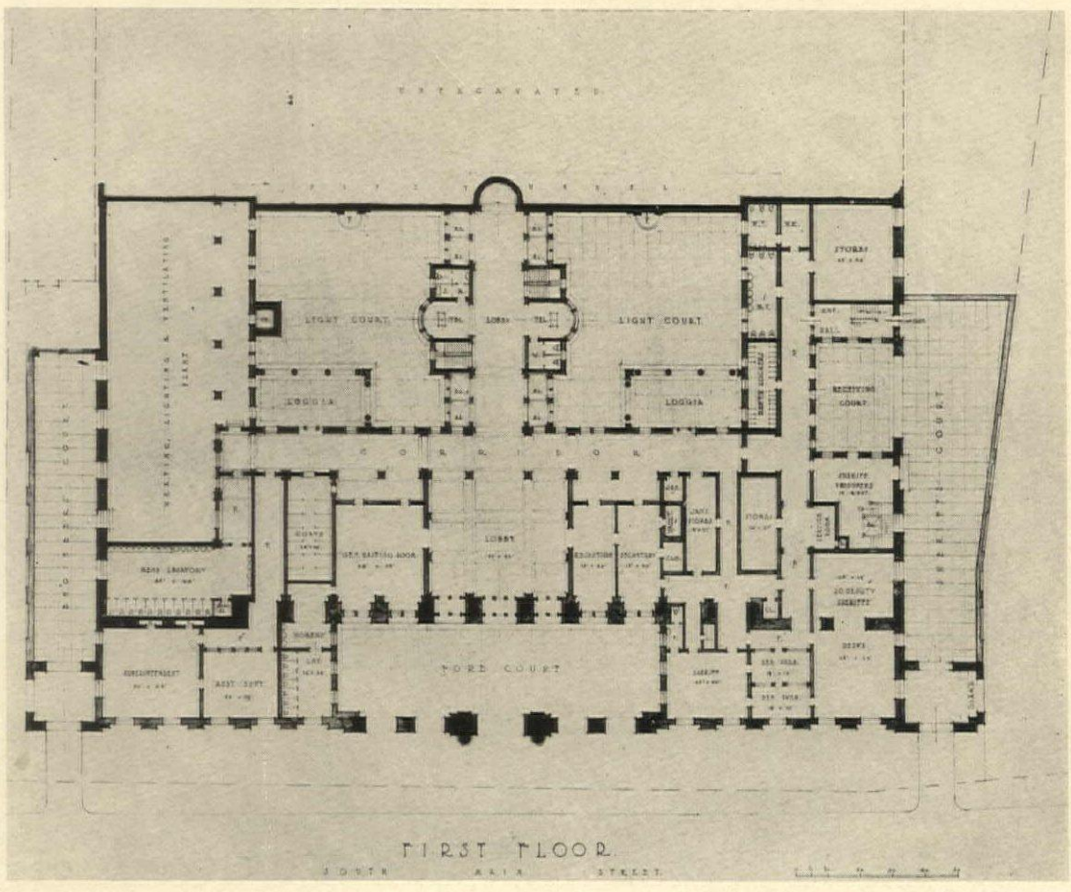


FOURTH FLOOR



FIRST FLOOR

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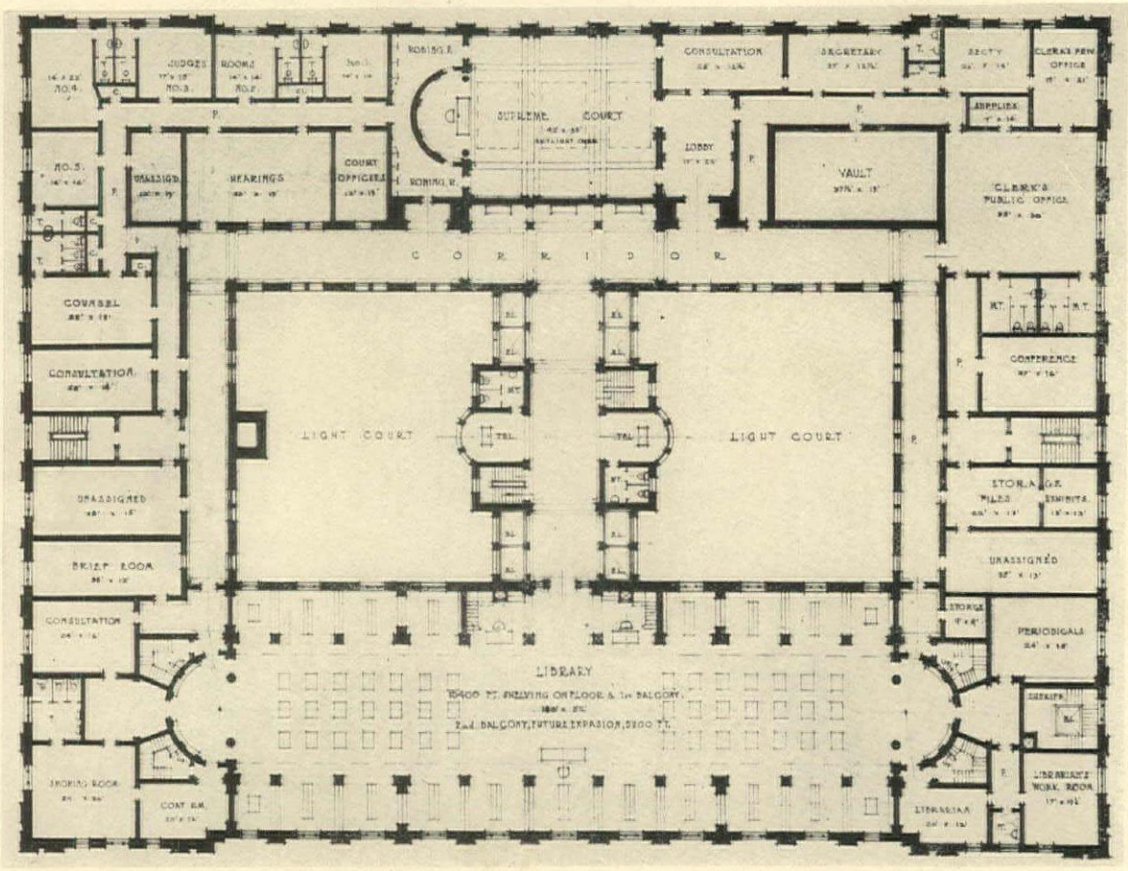
ELEAZER B. HOMER AND GORHAM HENSHAW, ASSOCIATED ARCHITECTS



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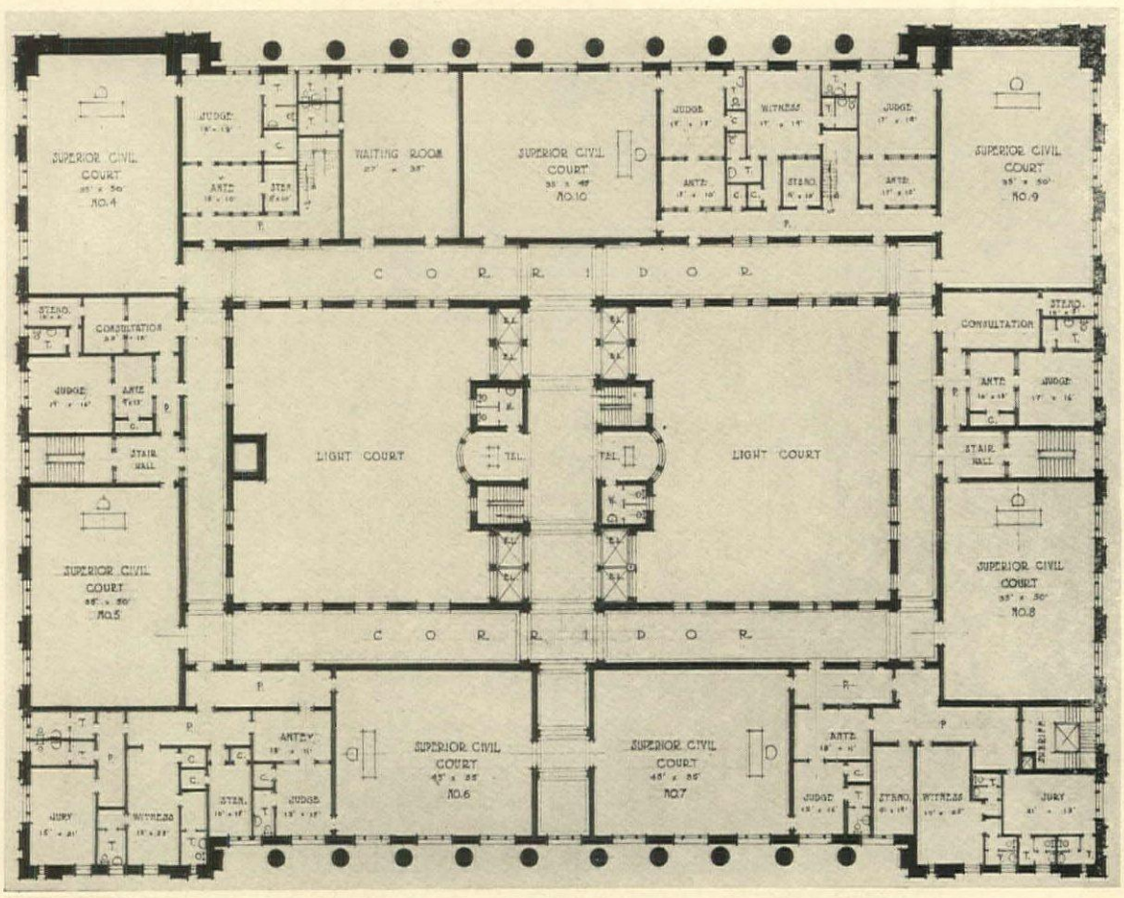

FIFTH FLOOR

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SPECIFICATIONS

Brick Masonry Specifications (Continued)

THE waterproofing of parapet walls is a subject that merits more attention in the writing of specifications than in the preparation of drawings, although the ultimate object of the specifications must be understood by the draftsman. The drawings must be prepared accurately to indicate the work necessary. Many roofs are said to leak when as a matter of fact it is the parapet walls themselves that are leaking. A guarantee for roofing generally will be found to cover only the main roof surfaces while the guarantee for flashing either is avoided or is specifically omitted. Probably the reason for this avoidance of responsibility is a recognition by the roofing contractors that equity demands that they accept guarantees on flashings when the contractor has nothing to do with the construction of the walls or other intersecting surfaces that are flashed. It is the rare roofing specification that calls for a guarantee on flashing and if the specification writer is careful to construct his parapet walls in a watertight manner, and so construct them that they will remain weatherproof for the term of the roofing guarantee, he may be well assured that the roofing contractor will not hesitate to guarantee the flashings under the normal conditions that govern the warranting of results in building construction.

It may be said that the main objection to parapet walls structurally is the seeming ignorance of causes for the effects that everyone may notice within a block of his office. Weathering has a most deteriorating effect on masonry that has both sides exposed to the weather, and especially where there are a large number of joints including vertical joints with top exposed surfaces. The roof construction itself may have some effect on a parapet wall. If the construction is of concrete there may be expansion, which expansion may have been neglected by the designer, because he has failed to comprehend the importance of careful study of expansion in construction, a condition rarely visible after the building is finished. If the roof pitch has been accomplished by means of cinders, they may be soaked while being placed, with the consequent expansion in volume which, of course, would rupture the masonry construction. If the roof construction is of wood, expansion of the construction may have some effect, or the warping and twisting of the timber may be involved in the causes. Almost any form of roof construction as a matter of fact, may be regarded as a contributing factor in poor parapet wall construction and stability, especially if it is poorly designed and inefficiently supervised.

Parapet walls, and this term, by the way, includes all walls having both sides exposed to the weather, such as vent stacks, smoke flues, garden walls, and so forth, should have the minimum number of joints and the joints that will be vertical with the top exposed surfaces, must be reduced to a minimum. The quality of the brick itself, or of the stone or terra cotta, must be studied and assurance must be had that saturation by moisture, especially in driving rain, will not occur to a very great depth. Of course the use of vitrified surfaces, or surfaces of practically non-absorbent character, are the most desirable, both for the facing of parapet walls, and for the coping and covering.

The wall construction below the level of the roof must form a solid substantial foundation and if the parapet wall is of sufficient height to require it, must have sufficient counterbalance for ties or anchorages. As indicated in previous articles, the mortar for parapet wall use should be a waterproof mortar. This may be a Portland cement mortar which is made with sand that is of good quality with respect to range in sizes of grains, or the cement mortar may be waterproofed with one of several integral waterproofings that apparently have proved successful in previous use. It may be trite to repeat that the qualities of integral waterproofing must be thoroughly investigated before use, especially if they are to be depended upon for real waterproofing work. If lime gauging is to be used for fattening the mortar, just the right quantity to permit the proper degree of fatness and no more must be specified. This may be best gauged by experience in the use of local materials, but as a general rule, lime gauging, not exceeding six to ten per cent, should be used.

If brick is to be used, it should be vitrified brick for the exposed facings with the usual run of common brick for the center part of the wall. Where face brick must be used to carry out the design of the building or the use of materials, it will be expected that such brick will be of good non-absorptive value. Where terra cotta or limestone occurs, the non-absorptive surface is to a large extent provided and such facings are especially desirable for the reason that the number of joints is reduced very greatly. It should not be necessary in walls faced with common brick to extend the common brick through the height of the parapet wall. The difference in color or texture of vitrified brick as compared to common brick should not be objectionable, especially when the results to be accomplished are to be considered. The wall copings it is expected will be of

terra cotta, stone, concrete or vitrified, salt glazed tile. Brick copings are not considered in this category as they are most inefficient in good construction and should only be allowed where the design requires them, and the architect knows that they must be repaired constantly. Brick parapet copings may be made watertight but the material required will, to a large extent, nullify the artistic use that should be the governing factor.

The parapet walls should be not less than 12″ thick, and sufficient bracing of masonry in the form of piers, or buttresses, or of some other character, should be provided, to withstand the anticipated wind load, without causing hair cracks which may be seen quite often at the roof level, or one or two courses above this plane. Intersecting cross walls, of course, supply anchorage which is sufficient if the walls are not over 40 ft. apart. In the case of high parapets, special precaution must be exercised in the strength of construction. If copings of terra cotta or stone or if other projections of similar materials occur above the roof level, their anchorage, depth of penetration, and general fitting into the masonry work must be considered. If the parapet walls are pierced with open spaces, and especially if these spaces are filled with balustrades a rather dangerous condition will occur unless the peculiarities of such construction are understood. It is unfortunate that in many cases where pierced parapets are used, the lower rail of the balustrades will be within 6 in. of the roof level and oftentimes closer. In such event the flashing of the roof cannot be accomplished without the use of metal, and the placing of counterflashing is particularly difficult. Wall penetrations, furthermore, provide a third surface which is the jamb surface, that will offer just that much more exteriorly exposed surface.

All the masonry materials in parapet walls with the exception of limestone, should be laid in waterproof mortar. Limestone must, of course, be laid in lime mortar or in a cement mortar for which white or non-staining Portland cement is used. The specification writer may find in his available market, one of the patented brick mortars or cements that will not stain limestone, but of this quality he must be assured. Accurate information on the content of iron oxide will usually indicate whether or not such mortars will stain limestone. Inquiry may of course be made to the Indiana Limestone Quarrymen's Association. This subject will be more fully covered later in the discussion on specifications for setting of limestone. All joints, both vertical and horizontal, must be slushed solid with the mortar and the brick should be laid plumb and level so as not to provide water tables for the gathering of moisture and frost at the joints. The mortar joints should be troweled and pointed in a weathered joint or in a flush joint. One of the most vulnerable points in parapet wall construction is the top surface on which the copings are set. One method for waterproofing these surfaces requires the placing of a smoothly troweled, level, mortar bed on top of the brick masonry wall, conveniently below the coping. If the coping will permit it, brick should be arranged to project one or one and one-half inches above the masonry wall level to provide keys for the coping. Over this mortar coat, there should be spread a troweled coating of elastic cement that will not stain the materials with which it comes in contact, and if necessary, of a color matching the color of the facing materials. This coating should be not less than one-sixteenth of an inch thick, and the elastic cement must be of a consistency required for correct application. It should not be an elastic cement that will require sanding, and it should be sticky enough to require that the trowels be kept wet while they are being used. On top of this waterproofing coat, the final coping should be set, bedded in the waterproof cement mortar used for the rest of the work. The joints in the copings and the joints immediately under the copings on either side of the wall should be filled to within one inch of the faces with elastic cement, colored to match the finished material. This elastic cement must be made for caulking use, and it must not crack or disintegrate in freezing weather or run out in warm weather. Where copings project beyond the face of the walls, this elastic cement should be applied to the under face of the vertical joints as well as to all other faces. The horizontal joints immediately under the copings should be caulked similarly. As a matter of fact, no finished pointing or caulking of any of these joints should be done with any material except an elastic cement. Further assurance of constructing a watertight parapet wall may be had by specifying that a trowel-applied elastic cement coating, be applied on the inner, or roof side faces or other faces not exposed to general view to a thickness of about one-sixteenth of an inch, unless the material has sufficient body to remain in place in a thickness of one-eighth of an inch. This coating should be applied over the entire surfaces extending from underside of coping down to and over roof flashings and counterflashing. These surfaces then will be covered with watertight skin, which practically removes the parapet wall from the condition of having both sides exposed to the weather. It is probably not any more expensive to resort to this than it would be to point the mortar joints with elastic cement. Corners and all angles of parapets should be reinforced with strap or bar iron, or should be so constructed that they will not open up.

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. Keane & 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:

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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.

Very truly yours,

Walter E. Gillham

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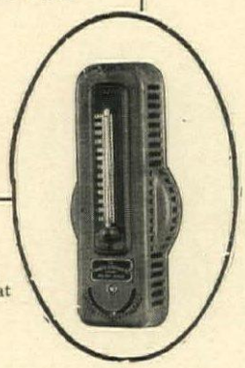

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Publishers, The American Architect and The Architectural Review.

OUTLINE OF TENTATIVE SPECIFICATIONS FOR FOUNDATION WALLS AND FOOTINGS

Serial No. 11.10

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2. Drawings:
3. Agreement:
4. Terms of Payment:
5. General Conditions:
6. Regulations and Codes:
7. Standards:
8. Patents:

II. ECONOMIC

9. Scope of Contract:
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10. Method of Analysis and Comparison of Bids:
    - 10-1. Methods:
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III. GENERAL DESCRIPTIVE

12. Service Conditions:
    - 12-1. Location:
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IV. PRELIMINARY PREPARATION

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21. Redesign of Footings:
22. Connection to Existing Structures:
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24. Sash Slots:
25. Brick or Stone Ties:
26. Setting Miscellaneous Iron and Steel:

VII. SCHEDULES

27. Field Operations:

VIII. RESULTS

28. Inspection and Rejection:
29. Guarantees:

HISTORIC JUMEL MANSION TO BE IMPROVED

THE Committee for the Restoration of Jumel Mansion, at 160th Street and Edgecomb Avenue, New York City, General Washington's headquarters in the Revolution, met recently and approved the plans of Charles A. Platt, architect, to lay new pathways, rearrange the grounds, provide rest benches for the public, fence in the park and build a separate brick fireproof building for the heating apparatus. This brick building would also house the gardener and contain an office for the Department of Parks.

Attention was drawn to the fact that since the property was purchased by the city in 1903 there has been very little spent upon the building and grounds. The basement of the mansion is to be restored in its original form and the little wooden kitchen at the rear removed on account of fire risk.

The official designation of the mansion grounds is Roger Morris Park.

VICTOR D. BRENNER, MEDALLIST, DEAD

VICTOR DAVID BRENNER, medallist and sculptor, designer of the Lincoln penny, died recently in New York. That an immigrant artist should have modeled one of the famous heads of Lincoln has been spoken of as significant of the spirit of America, which Brenner spent his life in interpreting. Brenner was born in Shavely, Russia, in 1871.

THE FIFTH AVENUE ASSOCIATION TO HOLD COVER DESIGN CONTEST

THE Fifth Avenue Association, Inc., offers a cash prize of Five Hundred Dollars ($500.-00) for the best cover design for a historical book of Fifth Avenue, to be issued in connection with the Centennial Celebration of the Opening of the Avenue. It becomes of the first importance, therefore, to give a clear description of the purpose of this Centennial Celebration, and of the contents of the historical souvenir book for which a cover design is sought, symbolic of the Centennial and the spirit of Fifth Avenue.

The official opening of Fifth Avenue was approved in the Autumn of 1824. In the Autumn of 1924, Fifth Avenue will commemorate this event, and in a series of displays, exhibits and pageants, the Fifth Avenue of today will show the momentous developments which have taken place in the one hundred years passed. In order to have a permanent record of this Centennial Celebration, and at the same time to have an authoritative history of Fifth Avenue, The Fifth Avenue Association will publish a souvenir book with historical text and illustrations, and for this proposed book it seeks a cover design that will summarize the manifold phases of the present day Fifth Avenue, as inspired by its history. This will be the only official book of the Centennial and no other book will be endorsed by The Fifth Avenue Association.

A very comprehensive circular and one that will be helpful to competitors may be had by addressing The Fifth Avenue Association, Inc., 358 Fifth Avenue, New York City.

RAILROAD CHAIR AT YALE

THE Association of Railway Executives has established at Yale University a professorship of transportation in memory of T. DeWitt Cuyler, Yale, '74, according to an announcement made recently by the university Secretary. The endowment for this chair amounts to $125,000 and represents gifts from members of the association and friends of Mr. Cuyler.

Winthrop More Daniels will be the first incumbent of the Cuyler professorship. Mr. Daniels's field is in the economics of transportation, and he has written much of economics and public utilities.

YALE DEDICATES FORESTRY BUILDING

YALE UNIVERSITY, a pioneer in forestry conservation, which has given to the United States three national foresters and established the largest forestry school plant on the continent, recently dedicated a new home for that department. Sage Hall was formally transferred from the family of the donor, William Henry Sage, Yale '65, to the University.

Wayne Rapid-Rate Water Softeners Economical to Buy and to Operate

No Moving Parts. No Chemicals. No Expert Attention Required. No Storage Tanks Needed

Simplicity is the keynote of the Wayne rapid-rate Water Softener. Only 3 plumbing connections are necessary—to supply main, to service lines and to the drain.

No chemicals are used to soften the water. The softening action is a natural attribute of the Wayne processed mineral—which has the natural quality of removing lime and magnesia from the hard water as it flows through the Softener at the regular supply pressure.

By means of the Wayne two-unit installation, costly storage tanks are eliminated and continuous supply is assured under all circumstances.

Regeneration Quick and Simple

The complete regenerating process with the Wayne rapid-rate Softener takes only 20 minutes—including back-washing, salting and flushing. All 3 operations are controlled by a simple system of 5 valves, which are plainly marked.

Costs are Very low And the Savings Quickly Pay for It

Wayne rapid-rate Industrial Water Softeners range in price from $600 up, according to capacities. Any plumber can make the installation in a few hours.

Operating costs are the very minimum—as only common table salt is needed in the regeneration process. The salt does not come in contact with the water supply—as it is flushed out into the drain.

The Bellerive Apartments, Kansas City, use a Wayne Rapid-Rate Water Softener to free them from the expenses which hard water causes.

Wayne Softened Water eliminates boiler-room expense caused by hard water scale in boilers, water pipes and heaters. It saves coal; saves repair and replacement bills. Wayne Softened Water is far better for bathing, shampooing and shaving, and much better to drink and to cook with.

The Wayne Mineral itself is practically indestructible. The tanks and valves are of finest materials—built to give long years of service.

Complete information on request. Write today for the facts which prove that the Wayne is America's most satisfactory Water Softening System.

Wayne Tank & Pump Co., 865 Canal Street
Fort Wayne, Indiana

Division Offices in: Atlanta, Boston, Chicago, Cincinnati, Cleveland, Columbus, Dallas, Dayton, Des Moines, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Memphis, Minneapolis, New York, Omaha, Philadelphia, Pittsburgh, San Francisco and St. Louis

Warehouses in: Philadelphia and San Francisco

Foreign Offices: Toronto, Ontario, Canada
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REG U.S TRADE MARK

Wayne

RAPID RATE

Water Softeners for Household and Industrial Purposes

ARCHITECTURE AND ADVERTISING

A CORRESPONDENT to *The Architect*, London, has the following to say as to the proposed advertising conference to be held this Summer in London:

I have noted in the press of late that an important Conference of Advertisers is soon to be held in London, the American organizers of which state that advertising in England is "still in its infancy," in consequence of which a huge advertising campaign is to be launched from one end of the country to the other.

I am strongly of opinion that should this be successful it will be at the expense of our few treasured possessions in the way of landscape architecture, etc.

I for one certainly think that already we have far too many posters, and that the ever-increasing electric sky signs of the West End are vulgar and inartistic at night, while their appearance during the day, "sprawling right across architectural refinements" which are the product of years of study, is greatly to be deplored.

If, on the other hand, the advertisers really wish to improve English advertising, why not encourage really "artistic" posters, and, in lieu of our present garish night signs, "floodlight" the buildings, as a few West End firms have done?

I feel sure that if the Conference follows something on these lines it will achieve success, produce a "Brighter London," and at the same time encourage an appreciation of architecture, which appears to be sadly lacking in this country at the present moment.

UNEARTH A GREEK CITY

FRENCH archaeologists working in Syria have discovered at Saliyeh, in the Euphrates region, a Greek city founded just after the death of Alexander the Great, 2,246 years ago, and abandoned in 273 A. D., when the deserts sands covered it.

Among the objects dug from the ruins are a number of parchments, one of which, written in 189 B. C., is said to be the oldest Greek manuscript extant. The scientists also uncovered a series of mural paintings of exceptional importance as a source for the study of Byzantine art.

NEW BUILDINGS FOR PARIS

THE Paris Municipal Council, it is learned, has recently voted twenty-one million francs to be applied to the demolition of houses considered to be unhealthy and the erection of new buildings conforming with modern ideas of hygiene.

RUINS OF GREAT ROMAN TEMPLE UNCOVERED

WORKMEN engaged in clearing the ground around the ancient Roman gymnasium in Orange, France, have brought to light the ruins of a temple, of far greater dimensions than those of the famous Maison-Carres at Nimes or the Temple of Augustus and Livia at Vienne.

The chief architect of the State Archaeological Department regards the find as of great importance and is pushing the work of excavation.

PERSONALS

Heacock & Hokanson, architects, have moved their offices from 1218 to Suite 905, 1211 Chestnut Street, Philadelphia, Pa.

Emery Stanford Hall, A.I.A., has moved his office and studio from 64 East Van Buren Street to Suite 1306, Tacoma Building, 5 North La Salle Street, Chicago, Ill.

Robert Peal, architect, has moved his office to 206 Leonard Building, 2014 East 105th Street, Cleveland, Ohio, where he will continue in the practice of architecture, specializing in residence work.

Harry E. Warren, architect, has moved his offices to 247 Park Avenue, New York City, the firm of Jallade, Lindsay & Warren having been dissolved. Manufacturers' catalogs and samples are desired.

Frederick A. Elsasser, architect, announces that he has opened an office at 855 Broad Street, Newark, N. J., for the general practice of architecture. Manufacturers are requested to send catalogs and samples.

B. Albert Comm, architect, announces the opening of his office for the general practice of architecture at 20 West Jackson Boulevard, Suite 1615, Chicago, Ill., where he would be pleased to have manufacturers send catalogs and samples.

Brickey & Brickey, architects, 212 North Lancaster Avenue, Dallas, Tex., have opened new offices at 611-612 State National Bank Building, Houston, Tex. Manufacturers' catalogs and samples would be appreciated at the Houston office.

Free Aids to Production

Washington Iron Works

SEATTLE, WASHINGTON

Designed by Richard Ellis, Structural Engineer

Twenty thousand square feet of Continuous Sash with Truscon Tension Operators and 17,000 square feet of Truscon Standard Windows with Torsion Operators solved the daylighting and ventilating question for this plant. The picture at top of page shows the efficient light distribution thru Truscon Continuous Sash in the foundry.

EVERY installation of Truscon Continuous Sash incorporates an abundance of fresh air and daylight—the free aids to production.

This type of window literally makes a hinged glass roof that can be opened and closed at will. When open, the glass canopy affords protection against inclement weather.

Long or short runs of Truscon Continuous Sash may be used singly or combined one above the other. They may be installed on a slope or in the vertical plane. All types of Truscon Continuous Sash are controlled by means of Truscon Mechanical Operators.

Beside Truscon Continuous Sash, there is a wide variety of other types of Steel Windows.

A corps of daylight engineers in 48 principal cities are at the service of architects, without the slightest obligation, to help solve any steel window problems.

TRUSCON STEEL COMPANY, Youngstown, O.

Warehouses and sales offices from Pacific to Atlantic.
For addresses, see phone books of principal cities.
Canada: Walkerville, Ont. Foreign Div.: New York.

TRUSCON STEEL WINDOWS

REFERENCE LIST OF BUSINESS LITERATURE

A service arranged for the use of the Architect, Specification Writer and Architectural Engineer

This list of the more important business literature of Manufacturers of building material and equipment is published each issue. Any of these publications may be had without charge, unless otherwise noted, by applying to The American Architect and The Architectural Review, 243 West 39th Street, New York, or obtained directly from the manufacturers. Either the titles or the numbers may be used in ordering.

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.

486. *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.

ANCHORAGE EQUIPMENT

Midwest Steel & Supply Co., Inc., 100 East 45th St., New York City

643. *Data Book for Architects & Engineers.* A well illustrated data book showing methods of using Midwest Box Rails, I, Rails, Stringers and Inserts in the solution of anchorage problems for transmission, electrical, mechanical, material handling equipment, piping, trackage, cables, etc. Practical working data for the architect is plentifully supplied. 54 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; pictures 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 telsecopic 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.

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 file, 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.

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.

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 and 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.

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.* Specification 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.

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

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.

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

CEILINGS, METAL

The Edwards Manufacturing Company, Cincinnati, O.

193. *Pamphlet* of 32 pages describing metal ceilings and wainscoting. Well illustrated, with list prices and rules for estimating. 7 x 10 in.

CELLAR SASH—See Doors and Windows

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

MEYER STEELFORMS

Save form work and labor costs

through early removal and speedy re-use from floor to floor. With less concrete, steel and form work, labor costs are considerably reduced.

Of heavy gauge sheet steel, accurately shaped and reinforced—the most rigid forms on the market. Runways can be placed directly on the forms. They save eight to ten per cent in concrete quantities over other style, light gauge forms on account of their rigidity and special shape. Additional saving of concrete quantities is gained from their angled corners.

The numerous advantages of Meyer Removable Steelforms are being employed daily in outstanding structures all over the country. It is not enough for you to accept this fact generally. Permit us to PROVE their features and savings in your next building.

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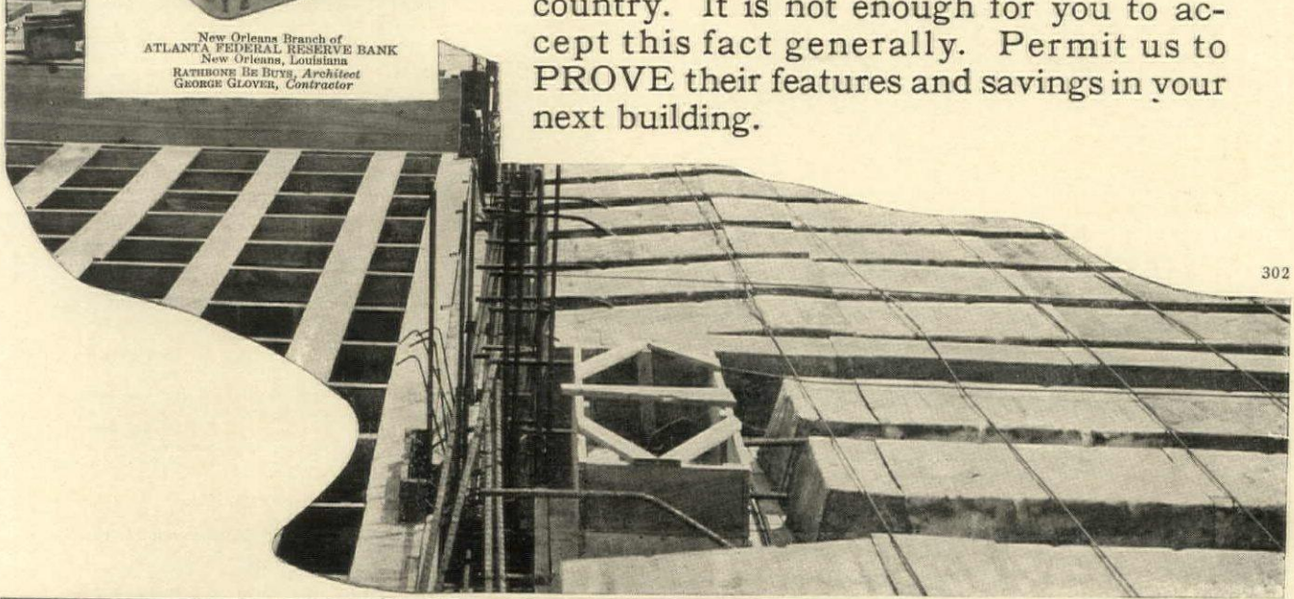
New Orleans, Louisiana
RATHBONE DE BUYS, *Architect*
GEORGE GLOVER, *Contractor*



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REFERENCE LIST OF BUSINESS LITERATURE—Continued

CEMENT

The Best Bros. Keene's Cement Co., Medicine Lodge, Kansas.

FS17. *Best Bros. Keene's Cement.* A booklet containing descriptions of the various grades of cement and specifications for their use for all purposes and finishes and directions for use. 32 pp. 5 x 9 in.

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.

599. A circular describing improvements in manufacturing the material, cost comparisons, physical tests and specifications for use. 4 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. 8¼ 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.

650. *Concrete Floors.* Contains the tentative specifications of the American Concrete Institute for concrete floors of all kinds, with notes on floor finishes, coverings, typical construction designs and computing data. 16 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

Enameled Metals Co., Pittsburgh, Pa.

584. *Pittsburgh Standard Rigid Conduit.* A catalog describing patented thread protected enameled conduit and galvanized conduit with specifications and useful wiring data. 31 pp. Ill. 6¼ x 9½ in.

DAMPPROOFING—See also Waterproofing

DOOR BEDS

White Door Bed Co., 130 N. Wells St., Chicago, Ill.

FS15. *"White" Door Beds and Space Saving Devices.* Book F97. A complete catalog of doorbeds, dressing, china and kitchen cabinets and built-in ironing boards. 24 pp. Ill. 11 x 8½ in.

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 Casements, 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, Condue-Base, etc. Also various types of frames, jamb construction and architectural shapes. 178 pp. Ill. 8½ x 11 in., in loose leaf.

Irving Hamlin, 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.

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.

David Lupton's Sons Co., Philadelphia, Pa.

FS22. *Consider the Windows, Publication C-103.* A finely illustrated booklet showing installations of steel windows in residences, also details and dimensions. 48 pp. Ill. 5½ x 8 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.

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.

Van Zile Ventilating Corporation, 280 Madison Ave., New York City.

697. *The Ventadoor.* A catalog describing a metal ventilating panel installed in wood and metal doors, always sight-proof and can be closed sound-proof and serves the purposes of a transom. 14 pp. Ill. 3½ x 6 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.

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

Crampton Farley Brass Co., 221 Main St., Kansas City, Mo.

194. Several pamphlets describing various types of floor and area-way drains. 3½ x 6¼ in.

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 Elevators and Dumb-waiters in Modern Architectural Construction.* Illustrated catalogue. 4¼ x 8¼ in. 80 pp.

Concrete *and* Progress

Not only in the shifting skylines of New York and San Francisco, but throughout all this broad land of ours, we see in the making a new and greater American Architecture.

In the development and steady advancement of modern architecture, concrete is naturally playing a conspicuous part.

Concrete meets the economic and structural requirements of the twentieth century, and its wide range of adaptability in form and color gives the architect and the sculptor practically unlimited opportunity to express their ideals of beauty.

The booklets, shown above, contain a wealth of practical information on concrete. The list is as follows: "Concrete Data for Architects and Engineers," "Portland Cement Stucco," "A Manual of Concrete Masonry Construction," "Concrete School Houses," "Concrete Hotel, Apartment and Office Buildings," "Mercantile and Industrial Buildings of Concrete."

Let the nearest office listed below know which booklets you want. They will be sent without obligation

PORTLAND CEMENT ASSOCIATION

A National Organization
to Improve and Extend the Uses of Concrete

Atlanta	Dallas	Indianapolis	Milwaukee	Parkersburg	San Francisco
Birmingham	Denver	Jacksonville	Minneapolis	Philadelphia	Seattle
Boston	Des Moines	Kansas City	New Orleans	Pittsburgh	St. Louis
Charlotte, N.C.	Detroit	Los Angeles	New York	Portland, Oreg.	Vancouver, B. C.
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Our Booklets are sent free only in the United States, Canada and Cuba

REFERENCE LIST OF BUSINESS LITERATURE—Continued

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.

Burke Electric Company, Erie, Pa.

562. *Bulletin 126, Direct Current Motors and Generators.* A bulletin describing motors and generators developed especially to meet the most severe requirements and conditions encountered in mills, factories, small power plants, office buildings, etc. 8 pp. Ill. 8 x 10½ in.

Crouse-Hinds Company, Syracuse, N. Y.

FS21. *Condulets for Concealing in Concrete.* A folder describing these important features of electrical installations in concrete. 6 pp. Ill. 6½ x 12 in.

The Hart & Hegeman Mfg. Co., 342 Capitol Ave., 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.

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.

American Elevator & Machine Co., Louisville, Ky.

196. *Illustrated Catalogue* showing elevator equipment for various uses. 32 pp. 2½ x 9½ in.

Knestner & 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., N. Y. C.

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.

ESCALATORS

Otis Elevator Co., 260 Eleventh Ave., N. Y. C.

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.

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.

FIRE DOORS AND SHUTTERS—See Doors and Windows

FIREPLACES AND MANTELS

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

676. *Blue Print Details.* A valuable set of scale details of correct fireplace construction and examples of details to avoid. Instructions for setting the Colonial head throat and damper. Explanations of necessity for summer use of damper. Folder equivalent to 8 pp. Ill. 8¼ x 10½ 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 weights, 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.

716. *Distinctive Floors.* A publication describing Gold-Seal Rubber Tile, its composition, manufacturing and method of installation. Illustrations in full color of twelve different finishes. 8 pp. Ill. 7¾ x 10¾ in.

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.

718. *Gold-Seal Treadlite Tile.* This tile, a scientific compound of cork, various gums and pigments, is described and illustrated in colors. Detail drawings and specifications for installation are included. 32 pp. Ill. 7¾ x 10¾ in.

FS20. *Distinctive Floors of Gold-Seal Treadlite Tile.* A folder describing this type of flooring with ten illustrations of patterns in color. 8 pp. Ill. 8 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.

523. *Marbleloid for Schools.* A bulletin showing schools in which Marbleloid flooring is used. It is a composition flooring applied in a plastic state. Other bulletins show where it has been used in various classes of buildings. 4 pp. Ill. 3½ x 11 in.

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.

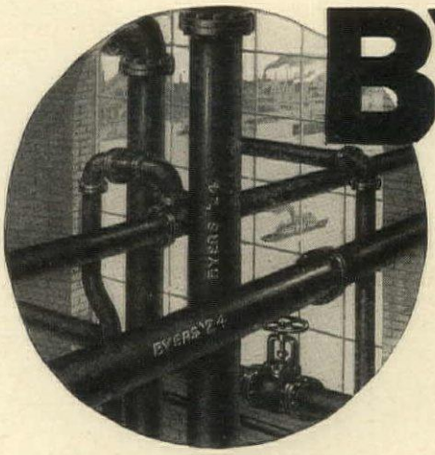
FLOORS—See Building Construction

FRAMES—See Doors and Windows

FURNACES—See Heating

FURNITURE—See Chairs

GARAGE CONSTRUCTION—See also Building Construction



BYERS PIPE

GENUINE WROUGHT IRON

"—hold fast that which is good"

WE GAZE in fascination upon a magnificent new building, created by an architect's genius, we think, out of the morning mist. Yet mature reflection brings home to us the fact that what we are contemplating is really a product of the past—painstaking study of its failures and successes, adapted to suit new needs and new conditions.

¶ In 1874, Byers pipe was installed for plumbing and heating in the Genesee Hotel, Buffalo. For fifty years it continued to serve the patrons and guests uninterruptedly. When the old hostelry was finally demolished to make room for a larger and finer edifice, the pipe was found to be in remarkably good condition. Profiting by this 50-year demonstration of worth, Byers pipe was specified and installed in the new building erected on the same site.

¶ Byers, alone among pipe manufacturers, continuously for sixty years have made honest old-fashioned wrought iron pipe, never deviating from the high standard of quality set up long before modern cheapening processes were introduced.

Literature on request

A. M. BYERS COMPANY
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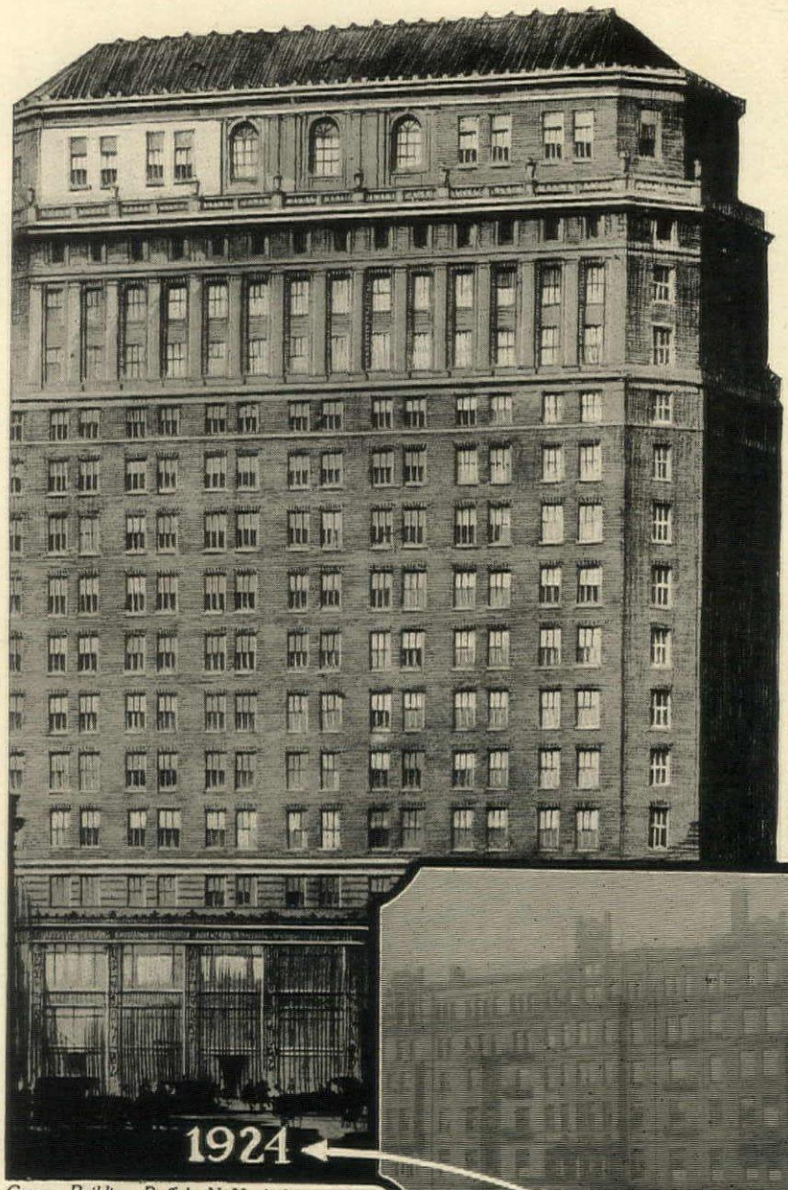
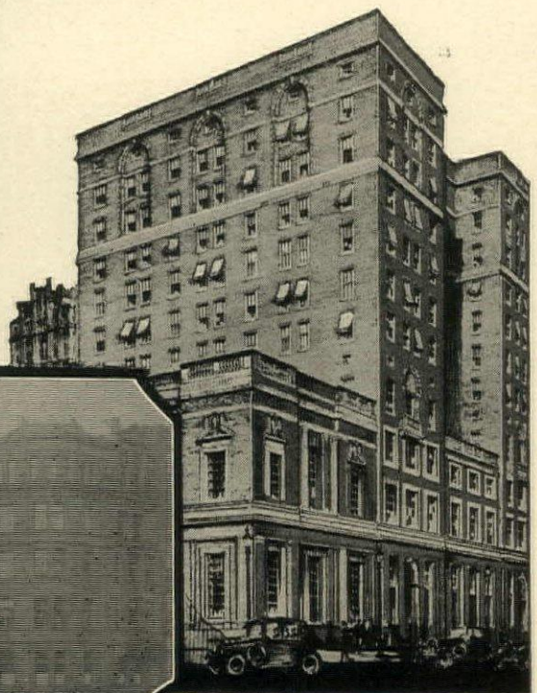


Genesee Building, Buffalo, N. Y. Architects: Edw. B. Green & Sons; Merrill Clement, Associate (Designer) Buffalo. Erected 1923 on site of old Genesee Hotel—see above. Byers installed throughout.



Athletic Club, Buffalo, N. Y. Architects: Edw. B. Green & Sons, Buffalo. Plumbing Contractor: Geo. H. Drake. Heating Contractors: W. G. Cornell Co. Byers Pipe throughout.

Look for Name and Year **1874** *Rolled in Every Length*

REFERENCE LIST OF BUSINESS LITERATURE—Continued

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.

Kewanee Boiler Co., Kewanee, Ill.

573. *Water Heating Garbage Burners, Tabasco Water Heaters and Tanks, Catalog No. 75.* A descriptive catalog of steel water heating garbage burners, water heaters, hot water storage tanks, pneumatic tanks, gravel basins, blow-off receivers and air receivers. Tables of sizes, dimensions, capacities and pressures. 30 pp. Ill. 6 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.

564. *The Cement Gun, Its Application and Uses.* Reprint of a paper by Byran C. Collier, M. 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 x9 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.

The Casement Hardware Co., 227 Pelouze Bldg., Chicago, Ill.

627. *Win-Dor Casement Hardware.* A booklet describing the general use of casement windows and description, specifications and details of the casement window and the operating devices suitable for all uses. 22 pp. Ill. 5½ x 8½ 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.

Francis Keil & Son, Inc., 401 East 163rd St., New York City.

FS23. *Keil Jimmy and Burglar Proof Lock.* A leaflet describing the special features of this lock with sizes and specifications. 10 pp. Ill. 3½ x 6¼ in.

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.

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

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.

436. *Sliding Door Hardware. Catalog No. A-17.* A catalog of sliding door hardware of Parallel, Accordion and Flush Door partitions. 32 pp. Ill. 7 x 10 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. New 1921 Catalog.* This new 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.

13. *Eight Garages and Their Stanley Hardware.* Booklet Plans, drawings and complete hardware specifications. Size 5 x 7 in. 32 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, Blind 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 Outfits.* 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.

241. *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.

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

749. *Excessive Fuel Consumption.* A circular explaining the reasons why fuel economies are effected by the use of Dunham Steam Heating Equipment. 8 pp. Ill. 3½ x 6 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.

356. *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.

703. *H & C Wrought Steel Grilles.* A new type of ventilating grille permitting passage of air but not sight, also plain square mesh grilles, made of steel, bronze and brass. Details and specifications. 4 pp. Ill. 8½ x 11 in.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

HEATING

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 & 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.

FS19. *The Watchman of the Coal Pile.* A booklet describing the economic advantages of the Hoffman Siphon Air Valve. 16 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.

237. *The Valve Behind a Good Heating System.* This booklet describes Jenkins Radiator Valves, Automatic Air Valves and other valves used in connection with steam and hot water heating. 16 pp. 4½ x 7¾ 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. 8½ 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.

572. *Kewanee Radiators, Catalog No. 72.* A descriptive catalog of the standard types of cast iron radiation including wall radiation, wall boxes, radiator brackets and accessories. Tables of capacities, roughink in dimensions and other data. 23 pp. and supplement. 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. *Thermostatic 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.

395. *About Radiator Enclosures.* A booklet showing how easily and effectively unsightly radiators may be concealed by enclosures which adorn a room. 15 pp. Ill. 6¾ x 9¾ in.

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 ¾ 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, Office 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.

645. Special bulletins describing in detail all of the apparatus in their general catalog. Sent on request. 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.

Richardson & Boynton Co., New York, Chicago, Philadelphia, Providence and Boston.

FS18. *Practical Rules.* Rules for the successful warm air heating of average dwelling houses. 12 pp. Ill. 4½ x 7½ in.

HOISTS—See Elevators and Ash Hoists

INCINERATORS—See Garbage Destroyers

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 boards 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 fire-proofing, 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.

Mitchell-Tappen Company, 15 John St., New York, N. Y.

257. *Booklet 14 on Standardized Metal Caging.* Description of various ways of reinforcing the concrete fireproofing on structural steel work, with particular reference to Standardized Metal Caging.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

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.

The Prometheus Electric Co., 352 West 13th St., New York.

145. *Promethus Electric Plate Warmers.* Leaflets illustrating the plate warmer, describing its construction, utility and types, adaptable for residences and hotels, according to specifications. Sizes and dimensions. Size 5⅝ x 9 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 qualtities 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 N. 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 Bell 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 theatres with distribution schedules and specifications. Also applications of control to Masonic buildings, schools and colleges. 32 pp. Ill. 8 x 11 in.

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

613. *Erikson Reflectors, Catalog No. 90.* Description of and details for 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.

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.

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.

LINOLEUM

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

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.

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.

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.

635. *Convincing Proof.* Booklet 3⅜ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of architects and sculptors.

METAL MOLDINGS

National Metal Molding Co., Pittsburgh, Pa.

152. *Hand-book 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.

METALS—See also Iron and Steel—Roofing

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

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

OFFICE EQUIPMENT

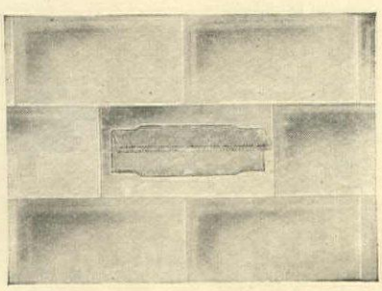
Eugene Dietzgen Co., 166 W. Monroe St., Chicago, Ill.

FS24. *Folding Wall Rack.* Description of wall rack for holding drawings and blue prints bound in sets and flat. 2 pp. Ill. 5½ x 8½ in.

They Changed to Onliwon

Gatesworth Apartment Hotel, Lindell and Union Boulevard, St. Louis

THIS ONLIWON CABINET PARTICULARLY ADAPTED TO FINER BUILDINGS



Above is illustrated the white porcelain ONLIWON recess toilet paper cabinet with which the Gatesworth is equipped. This cabinet is the size of a 3x6 inch tile and fits flush with the wall. Other styles may be had in white porcelain (surface type), nickel silver or gun metal finish.

In the original specifications for the Gatesworth Apartment Hotel, St. Louis, a certain toilet paper system was specified. But when it was proved to the owners that Onliwon is not only the most satisfactory toilet paper service from the standpoint of convenience, ease of maintenance and quality of paper, but that Onliwon actually effects a saving of from 15 to 50 per cent, **they changed to Onliwon,** and the tile contractor installed a complete equipment of Onliwon recess cabinets (see illustration).

Would it not be to the advantage of your clients to investigate this service?

By asking our salesman to call you place yourself under no obligation—or write for our Architects File Card and full details.

APW Quality Toilet Paper Products
REG. IN U. S. PAT. OFF.

A.P.W. PAPER CO. ALBANY N.Y.

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

REFERENCE LIST OF BUSINESS LITERATURE—Continued

ORNAMENTAL IRON AND BRASS

The American Brass Co., Waterbury, Conn.

139. *Illustrated Pamphlets.* Describes the use and adaptability of Extruded Architectural Shapes, Benedict Nickel, Brass and Copper Pipe in Iron Pipe sizes for plumbing installations. 8½ x 11 in.

PAINTS, STAINS, VARNISHES—See also Waterproofing

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

342. *Cabot's Creosote Stains.* Description of a standard stain for shingles, siding, boarding and timbers, with covering capacity and specifications. 16 pp. Ill. 4 x 8½ in.

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.

Samuel H. French & Co., Philadelphia, Pa.

312. *French's Paints and Varnishes.* A catalog and price list of paints, stains, varnishe , mortar, mortar colors, cement colors and materials for plasterers, with instructions for selection of colors, etc. 44 pp. Ill. 4 x 8 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. 3⅜ 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.

727. *Mapaz No. 1 Painting Handbook.* A combination note book and handbook describing the characteristics of zinc oxide and its use in painting. Also use of lace for stencils and tables for various color mixtures. 22 pp. text. 112 blank pp. 2 x 4½ in.

Parker, Preston & Co., Inc., Norwich, Conn.

357. *Art in Shingle Stains.* Description of waterproof, odorless shingle stains and waterproof coating for walls and floors with covering capacities and directions for use. 27 pp. 3 x 4½ in.

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.

565. *Immaculate Distinction.* A book describing Satinette Enamel, and enduring white enamel for interior and exterior use. Specifications are given for use on new and old work, metal, plaster, etc. 22 pp. Ill. 5 x 7 in.

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.

PARTITIONS

J. G. Wilson Corp., 2 East 36th St., New York.

618. *Folding Partitions and Sectionfold Partitions.* Two catalogs describing folding partitions operated on pivoted castors working in narrow flush floor track with overhead guide track, all doors equal width. 16 and 14 pp. Ill. 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. 3rd Edition.* Devoted to the installation of steel pipe in large buildings, architectural anti-corrosion engineering, gas piping, specifications 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 11¾ in.

A. Wyckoff & Son 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 computations. 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, bidets, water closets, urinals, slop sinks, bathtubs, kitchen sinks and laundry trays, also seats, faucets, bathroom fixtures and accessories. Completely illustrated with roughing in diagrams. 242 pp. Ill. 8 x 11 in.

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.

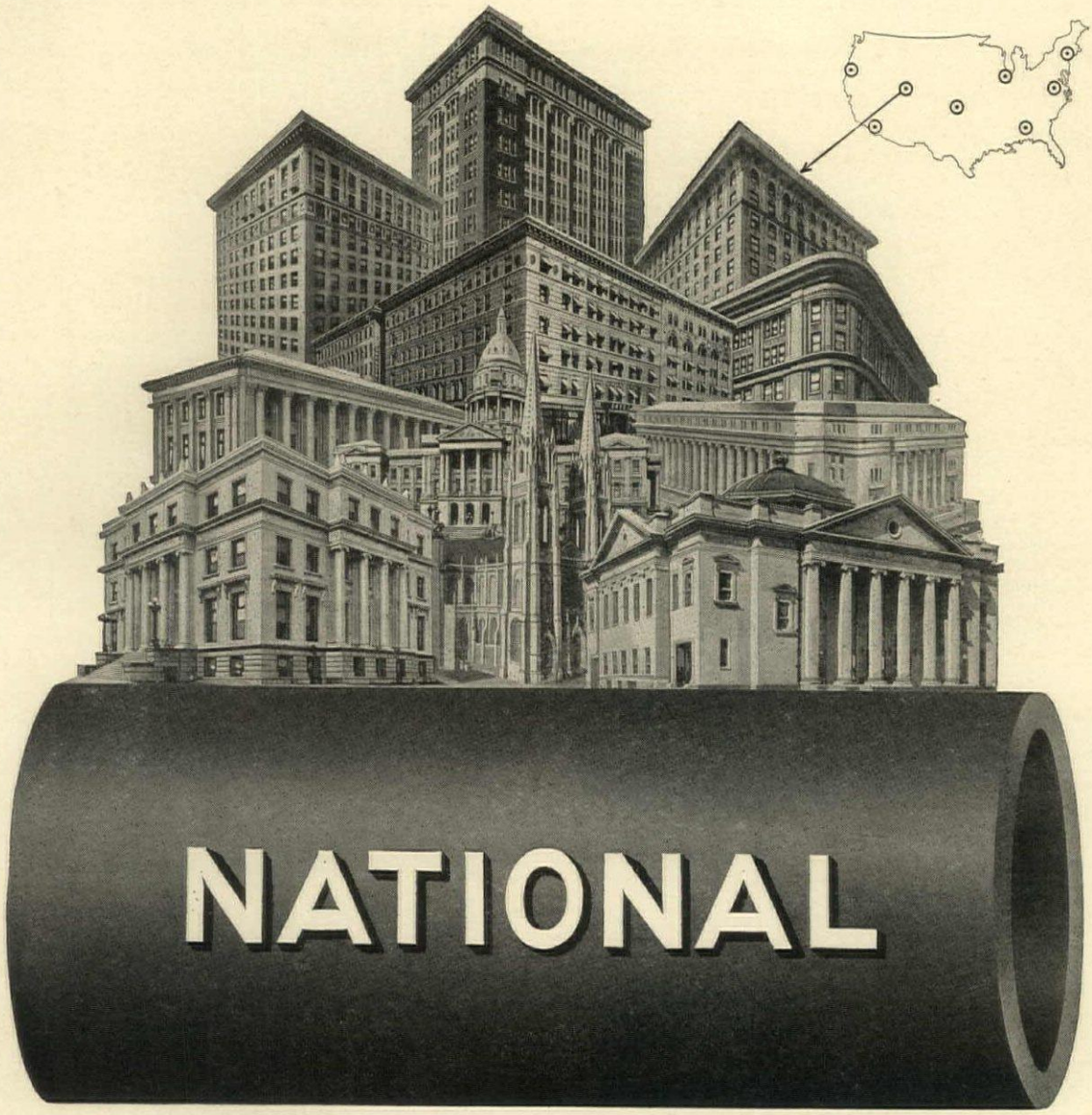
The Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.

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.

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



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IN taking her place among the great cities of the West, Denver has not overlooked the importance of architecture in her development. Her Federal, State and privately owned buildings are beautiful and enduring monuments to exceptional creative genius and civic enterprise. Into them have gone the best of plan and study and the most dependable of materials. This means a useful and satisfactory service that will extend far into the future. A large proportion of her finest buildings are equipped with "NATIONAL" Pipe.

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

REFERENCE LIST OF BUSINESS LITERATURE—Continued

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.

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 ton 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 re-rolled, 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.

John Boyle & Co., Inc., 112-114 Duane St., New York, N. Y.

212. *Boyle's Bayonne Roof and Deck Cloth.* List B 93. A prepared roofing canvas guaranteed waterproof for decks and the roofs and floors of piazzas, sun-parlors, sleeping porches, etc.

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-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

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.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

SEWAGE DISPOSAL

United Cement Products Co., Indianapolis, Ind.

FS16. *Health Bulletin on Sewage Disposal.* A booklet explaining the operation of septic tanks with details and layouts. 2- pp. Ill. 6 x 9 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

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 Asso., 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 in.

STORE FRONTS.

Brasco Mfg. Co., Chicago, Ill.

56. *Brasco System of Hollow Metal Store Front Design.* Folio of Detail Sheets. Full size detail sheets 1, 2, 3 and 4. Corner bar, division bar, reverse bar and three-way bar, head transom sill and jamb sections. Sheets 18 x 22½ in.

57. *Hester System Store Front Construction and Design.* Folio of Detail Sheets. Full size detail sheets, a, b, c and d, of hollow metal store front construction, giving full size sections of head transoms, sill and jamb with moulding profiles and bar cover to house awning construction. Sheets 18 x 22½ in.

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

New Process Stove Co., Division of American Stove Co., 4301 Perkins Ave., Cleveland, Ohio.

457. *Catalog No. 148.* A complete catalog of gas ranges from a single cover hot plate to the most elaborate hotel range. Also lists gas heaters for rooms. 110 pp. Ill. 7 x 10 in.

Reliable Stove Company, Division of American Stove Co., Cleveland, Ohio.

460. *Reliable Angleiron Gas Ranges.* A pamphlet illustrating hot plates, laundry stoves and a complete line of gas cooking stoves and ranges equipped with the Lorain Oven Heat Regulator. 8 pp. Ill. 8 x 11 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. 8½ 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 illustrations 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.

358. *Home Suggestions.* A new book in colors describing and illustrating the use of tiles in floors, walls, ceilings, fireplaces, garages, for exterior embellishment, etc. Full of suggestions. Sent to architects on request. 7½ x 10⅝ in.

359. *Basic Information on Tiles.* Book giving practical information on ingredients, processes, gradings, sizes, shapes, colors, finishes and nomenclature. Sent to architects on request. 7½ x 10⅝ in.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

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.

706. *Glazed Tiles and Trimmers, Publication K-400.* An invaluable book for use in laying out glazed tile work. Details of standard tiles, mouldings, curbs, sills and other trimmers with illustrations of assembling for many uses. Free to architects and members of their staff only. 86 pp. Ill. 7¾ x 10¾ in.

TIME CLOCKS—See Clocks

TOILET PARTITIONS—See Wainscoting

TRIM—See also 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.

525. *The Great Outdoors Brought Inside.* In this book is a description of the new rectangular combination skylight and ventilator; the Burt fan ventilator for removing odors, fumes, etc., when atmospheric conditions interfere with the gravity process; and a table giving prices, dimensions, weights and gauges of iron of the Burt Ventilator. Some good general information about ventilators is included. 16 pp. Ill. 3⅝ x 6¼ in.

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.

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

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.

113. *Sanalining Sanitas Lining and Prepared Lining.* Folder. Notes on durability and cleanly character of the above three products. Size 3¾ x 6 in.

114. *Hints to Decorators.* Booklet. Instructions and specifications for the application of Sanitas, with notes on finishes and material. Size 5 x 6¾ in. 20 pp.

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.

589. *Ruud Automatic Storage Systems.* Catalog of automatic hot water storage systems for domestic, industrial and commercial uses. Details, capacities, dimensions and other data. 24 pp. Ill. 6 x 9 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.

Hydrex Asphalt Products Corp., 120 Liberty St., New York.

62. *Dampproofing Walls, Above and Below Grade.* Illustrated booklet. Uses and specifications of Hydrex Paint, Hydrex (Bitumen). Compound and Hydrex Waterproof Primer for walls above and below grade, stainproofing cut stone, acid-proofing floors, etc., described. Size 8½ x 11 in. 8 pp.

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 System. 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. 7⅛ 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.

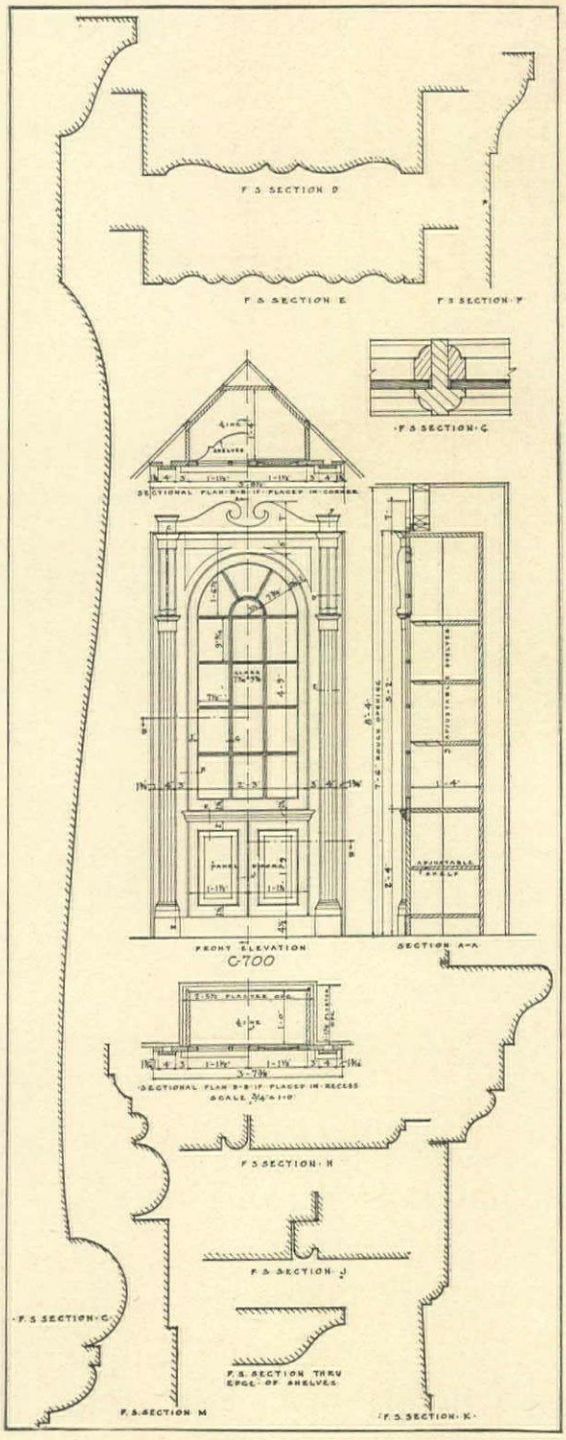
663. *Keeping Down the Cost of Your Woodwork.* A book illustrating Curtis interior woodwork and built-in cabinets and fixtures designed by Trowbridge and Ackerman, Architects, New York. Colored illustrations and details. 16 pp. Ill. 7 x 9¼ in.

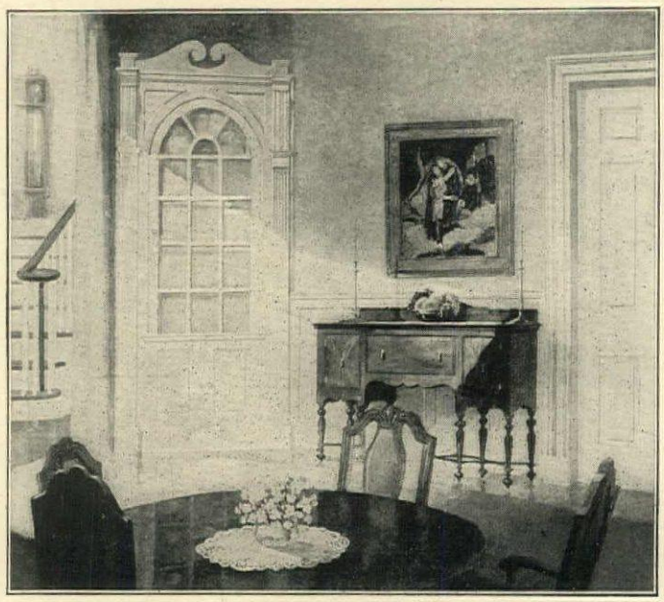
Hartmann-Sanders Company, 6 East 39th St., New York, N. Y.

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.

CURTIS WOODWORK

contributes to the popular appreciation of good taste in home building.





What Do You Think of This Design?

THIS is a Curtis detail drawing of Corner Cupboard C-700 which is furnished in birch and is adaptable to enameling in Colonial work.

Curtis designs cover all sorts of woodwork, interior and exterior, such as china closets, buffets, kitchen dressers, mantels, book cases, French doors, window seats, stairs, breakfast nooks, entrances, doors, windows, moldings and trim.

The use of these detail drawings will save a great deal of time and work in your drafting room. The design selected may be directly traced from the detail sheet and made a part of your plan.

Through the use of these details and specifying Curtis Woodwork you make sure of the highest quality of wood, accurate and sturdy construction and smooth sanded woodwork that saves time and labor in erecting and finishing—to say nothing of prompt delivery.

You will be interested to learn about the entire line: how standardization over a sufficiently wide range allows the architect ample freedom in his selections, resulting in houses of good architectural values without entering the realm of "special work."

See the Curtis dealer or write us for information on Curtis Detail Sheets.

Curtis Woodwork is sold by retail lumbermen east of the Rockies. Make sure the woodwork you buy bears this trademark—

1866 CURTIS

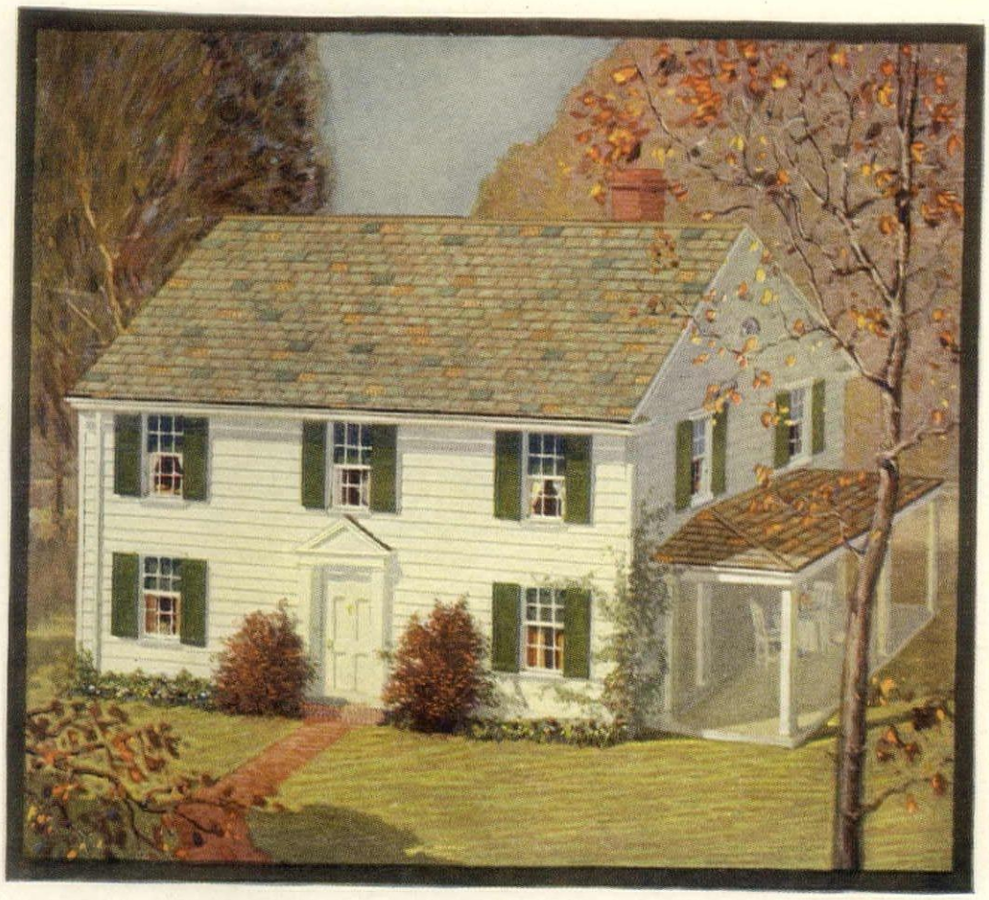
The makers of Curtis Woodwork are proud to identify their products by this mark.

The Curtis Companies Service Bureau
145 Curtis Building, Clinton, Iowa

Curtis Companies, Inc., Clinton, Iowa

Curtis Detroit Co., Detroit, Mich.	Curtis, Towle & Paine Co., Lincoln, Nebr.
Curtis Bros. & Co., Clinton, Iowa	Curtis, Towle & Paine Co., Topeka, Kans.
Curtis & Yale Co., Wausau, Wis.	Curtis-Yale-Holland Co., Minneapolis, Minn.
Curtis Sash & Door Co., Sioux City, Iowa	Curtis Door & Sash Co., Chicago, Ill.

Sales Offices in: Pittsburgh - New York - Baltimore



RICHARDSON Product

From the makers of Flex-a-tile Housetops, Viskalt Membrane Roofs, Viskote, and similar products

The Richardson Multicrome Roof in Opal, shown on the Colonial House designed for House Beautiful magazine by Henry Atherton Frost and Eleanor Raymond of Cambridge, Massachusetts

Newly created by Richardson

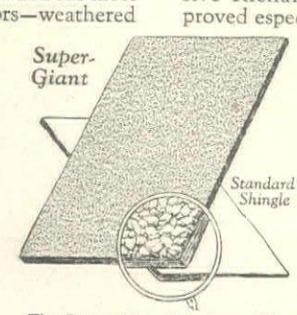
—*an* opal *roof of exclusive beauty from blended colors in slate*

An *opal* roof of a beauty hitherto unknown has now been created by Richardson.

This roof is built from the new Richardson opal shingles, no two of which are alike. On each are blended the most beautiful Richardson colors—weathered brown and jade green.

When these shingles are applied, just as they come from the bundle, the result is a delicately mottled coloring, like the play of light on a rippled mountain lake.

Both architects and home owners who have seen this effect agree that it is the most distinctive of the color combinations in Richardson Multicrome Roofs.



The Super-Giant Shingle—50% thicker, 100% more rigid, and 35% more economical in cost of laying

The Richardson Multicrome Roof

In addition to opal, the Multicrome Roof is laid in other pleasing color effects.

The rare *weathered brown*, an exclusive Richardson color in slate, has proved especially popular when applied in combination with other Richardson shingles of *jade green, tile red,* or *black pearl.* In fact, there is a Multicrome Roof to harmonize with every color scheme, and to please every client's taste.

The new colors, opal and weathered brown, are used only on the Richardson Super-Giant Shingle—famous for its beauty and endurance.

With its inner foundation of Richardson felt, for fifty years recognized as the best; coated and saturated with Viskalt, the vacuum processed waterproofing, 99.8% pure bitumen, the Super-Giant assures you *lasting* beauty for your roof.

Write for our new booklet

If you have not already discovered the *lastingly* beautiful effects made possible by the new weathered brown, write us. We will send you our beautiful new booklet *Roofs of Distinction* together with samples of Richardson Super-Giant Shingles in weathered brown, opal, and other colors. And, remember—for every roofing use there is a Richardson product.

The RICHARDSON COMPANY

Lockland (Cincinnati), Ohio

Chicago · New Orleans · Atlanta · New York City · Dallas

RICHARDSON ROOFING

Clip and mail this coupon

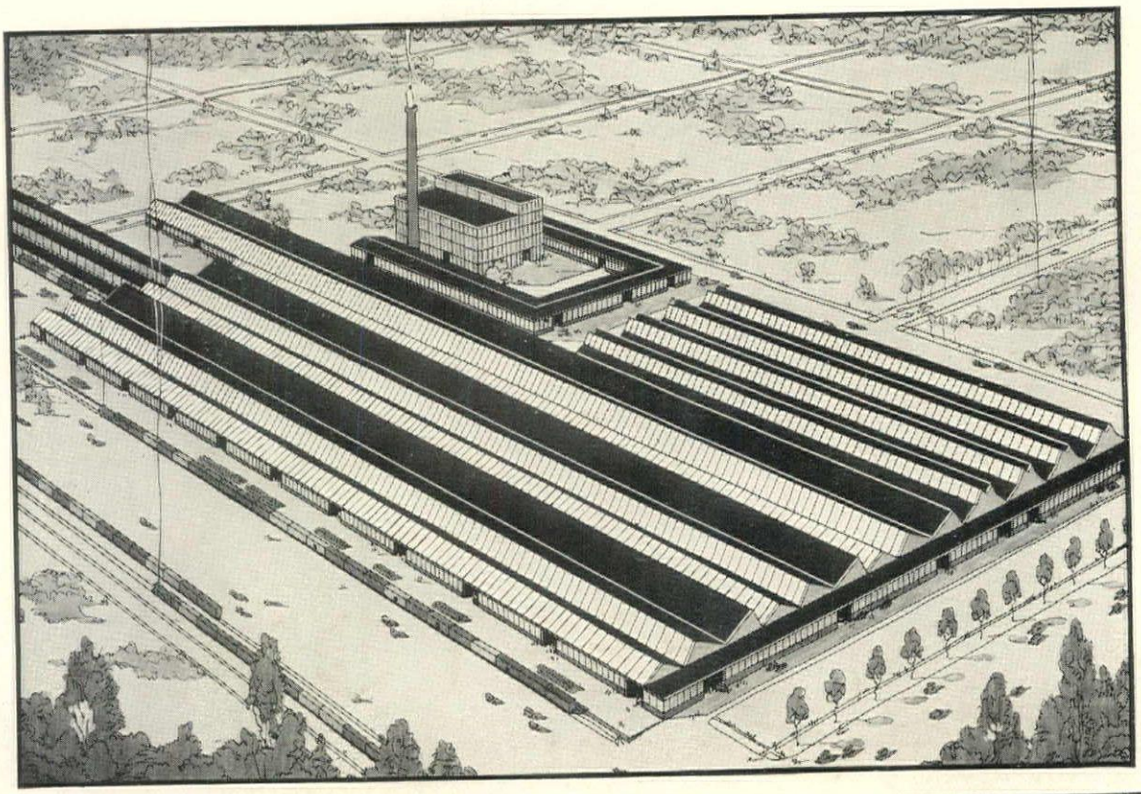
The Richardson Company
Lockland, Ohio

Gentlemen:

Please send me samples of Richardson Super-Giant Shingles, your new booklet, and further facts about Richardson Roofing.

Name .....

Address .....



Why JEWETT chose a Viskalt roof

PERMANENT weather protection through years of hard service. That was the main requirement demanded of the roof for the new Jewett automobile plant. And upon the facts proved by careful, scientific investigation a Viskalt Membrane Roof was chosen for this huge building.

How long an applied roofing will last depends, as you know, upon the quality of its felt base and that of the waterproofing used on it.

The inner foundation of Viskalt Membrane Roofs is Richardson felt, which has excelled for more than half a century. Maximum absorptive capacity, great tensile strength, unusual pliancy and certain uniformity—these qualities make of it the ideal long-wearing waterproofing base.

And the waterproofing for this sturdy foundation is Viskalt—a 99.8% pure bitumen, especially vacuum-processed to give a degree of permanence hitherto unknown. Exacting tests show that under every strain of temperature, weathering, tension and pressure this remarkable waterproofing remains pliant, adhesive and impervious to water.

These factors which combine to insure years of care-free endurance, plus moderate cost of application, make a Viskalt Membrane Roof doubly economical and satisfactory. Fifty-five years of manufacturing experience are back of the materials it contains. And remember, there is a Viskalt Compound for every waterproofing need.

Let us send you an interesting pamphlet containing valuable roofing information and complete specifications. Just use the coupon below.

The RICHARDSON COMPANY
Lockland (Cincinnati) Ohio

Chicago New Orleans New York City
Atlanta Dallas

THE new Jewett plant just completed by the Paige-Detroit Motor Car Company, Detroit, Michigan, is said to be the largest and most modern in construction and equipment in the automobile industry. Its capacity is 500 cars a day. Special care was given to the design of the roof which is of advanced saw-tooth construction.

That the architect, Albert Kahn, who has designed most of the automobile plants in Detroit, and the officials of the Jewett plant, chose a Viskalt Membrane Roof after careful investigation, shows how generally Viskalt is recognized as the logical covering for industrial buildings. In Detroit alone, there are about forty acres of Viskalt Membrane Roofs.

RICHARDSON *Viskalt Membrane* ROOFS

PLIANT UNDER STRESS

The Richardson Company
Construction Materials Division
1008 Fisk Bldg.,
New York City
Gentlemen: Please send me your pamphlet of specifications for Viskalt Membrane Roofs.

Name.....

Address.....

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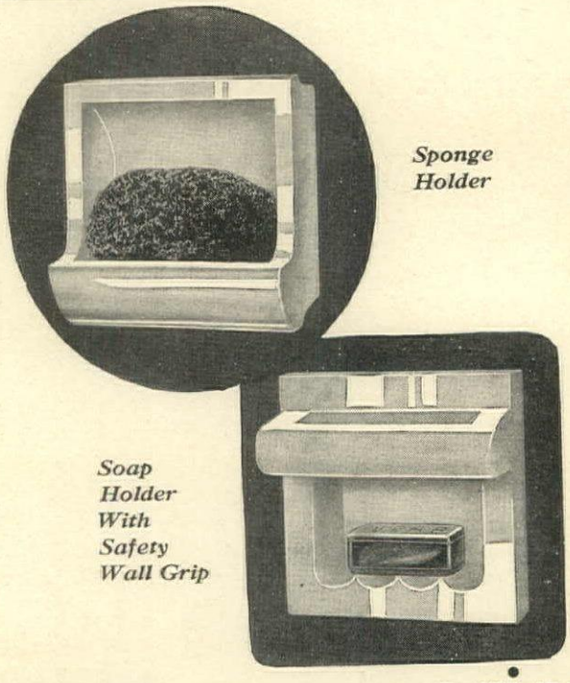


Sponge Holder

Soap Holder With Safety Wall Grip

Bathroom accessories *that are permanent*

WE ARE the originators of built-in china bathroom accessories. From the very start, we have made it a point of honor to produce fixtures as good as can be made.

Through our advertising, Fairfacts Fixtures are generally known and accepted. Our business has had a remarkable growth. We feel that no house is really modern without these China fixtures. They have stood the test of time and are unquestionably superior to fixtures of metal or enamel.

If you are convinced of the merit of Fairfacts Fixtures and if your clients also desire them, they should be designated by name in the specifications and not merely called built-in fixtures. The yellow and red Fairfacts label pasted on each fixture is your protection. If you take the precaution of seeing this trademark before it is removed, you may be sure they are genuine Fairfacts Fixtures.

Fairfacts Fixtures meet every bathroom need, soap holders, tumbler holders, shelves, safety wall grips, tooth paste and brush holders, paper holders, towel bars, electric radiators and a wide variety of combinations.

Fairfacts Fixtures are installed by tile contractors—the only trade that does this work—and should be included in the tile contract. We do not sell the plumbing trade.

Send for Catalog F. Details and specifications also appear in Sweet's Architectural Catalog.

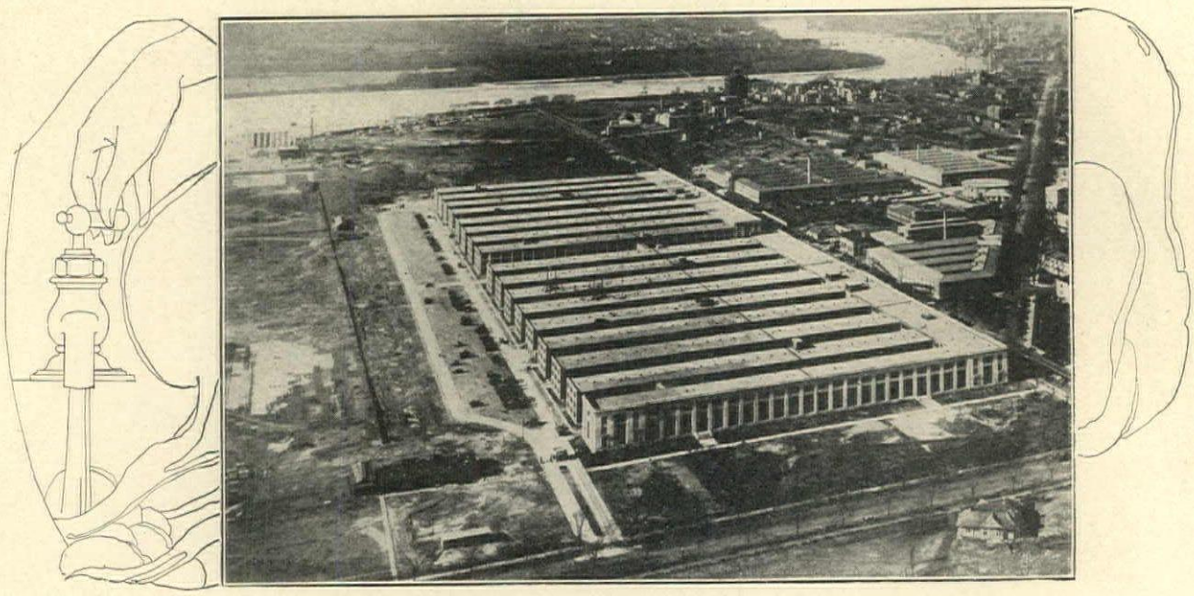
THE FAIRFACTS COMPANY, INC., *Manufacturers*
Dept. B 234-236 West 14th Street
New York City

Look for this BATHROOM Fairfacts FIXTURES *Trade mark*

Fairfacts Fixtures

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

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



NAVY AND MUNITIONS BUILDING, WASHINGTON, D. C.

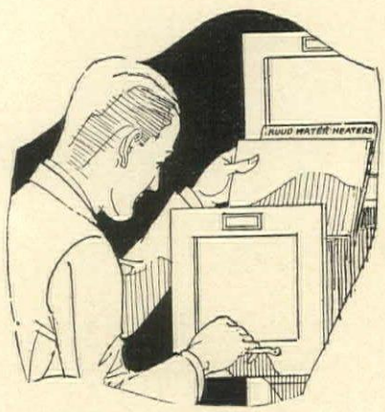
Ten RUUD Multi-Coil Storage Systems

It is natural that a building serving a throng of Government employees should have ample hot water facilities. Of interest then is the Navy and Munitions Building, the home of the world's largest Automatic Gas Water Heater installation.

This structure is three stories high and consists of eight wings connected by front offices and corridor.

Four Hot Water Service Stations are located between the wings, each station supplying Ruud Hot Water to the wing on each side.

Two RUUD Multi-Coil Storage Systems connected to a thousand gallon tank are located in each station. Later two additional RUUDS were installed for cafeteria usage, making a total of 10 RUUDS that furnish ever-ready, steaming hot water.



For Your Convenience

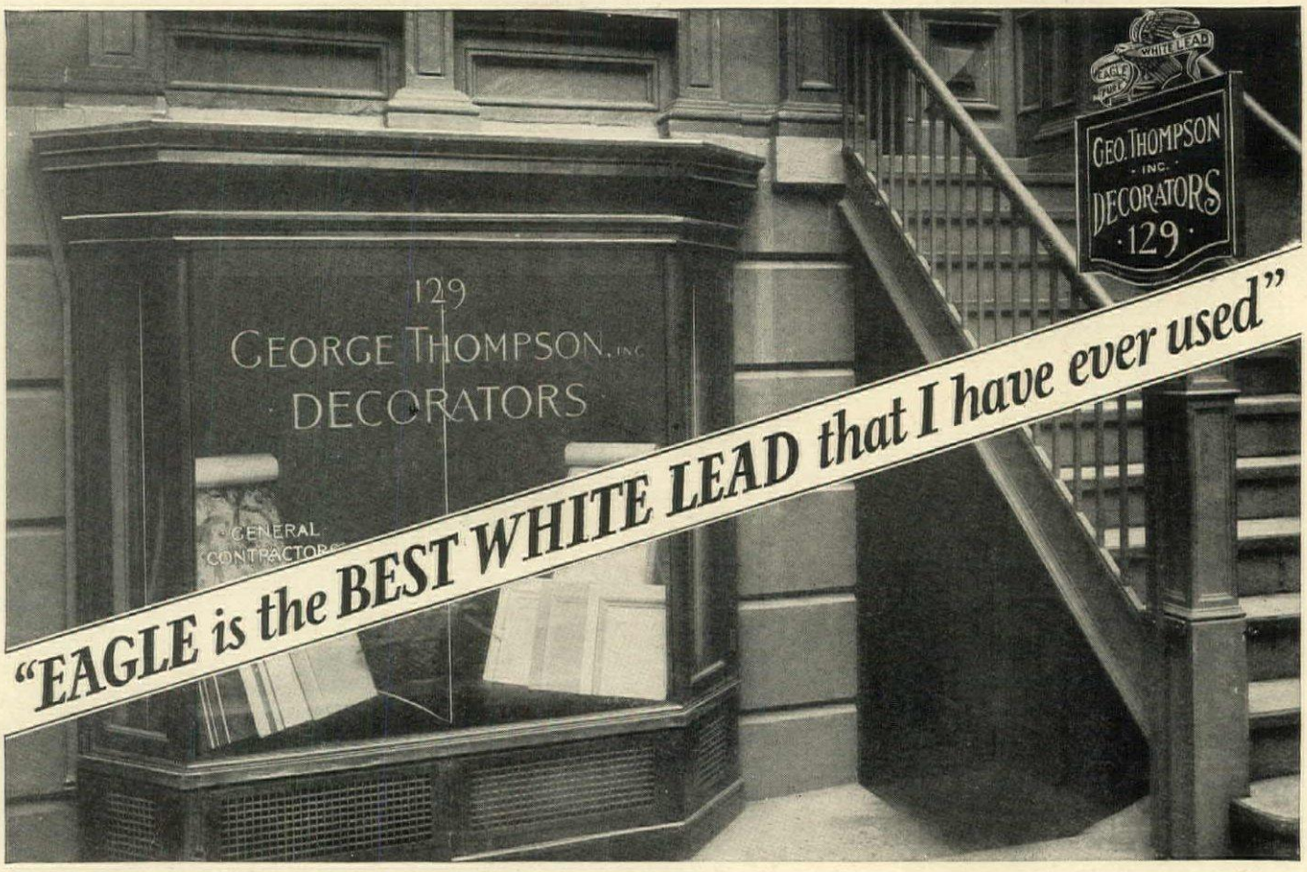
As convenient and satisfying to architects as Ruud Automatic Gas Water Heaters are to clients. A slight pull of the file and the Ruud Architect's Specification Folder presents all the data necessary for Perfect Hot Water Specifications. Write for your copy. Did you get a Delineator?

RUUD MANUFACTURING COMPANY
PITTSBURGH, PENNA.
BRANCHES IN ALL LARGE CITIES

RUUD AUTOMATIC GAS WATER HEATERS

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

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



Why a Master Craftsman Specifies Eagle White Lead Only

GEORGE THOMPSON, of George Thompson, Inc., New York City, uses Eagle White Lead in Oil exclusively.

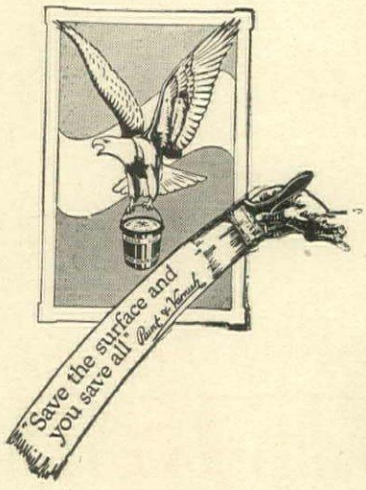
As an apprentice painter, Mr. Thompson learned his craft forty years ago. For twenty-two years he was associated with Peter McKay, a famous decorator of old New York. From the school of experience he learned the value of craftsmanship in the trade and the value of superior materials for painting.

Since George Thompson, Inc., was organized in 1908 he has held to this standard and specified Eagle White Lead in Oil exclusively. On this basis of quality in materials and craftsmanship in painting George Thompson has built a most successful business. His work consists only of the highest type of interior decorating and the painting of the finest homes in the city. He is busy the year 'round.

"Eagle is the best white lead I have ever used," Mr. Thompson says. This is the master painter's story that is coming more and more frequently to The Eagle-Picher Lead Company, as painters and painting contractors realize more fully the advantages of pure Old Dutch Process White Lead in Oil.

Since 1843 Eagle White Lead in Oil has been pure Old Dutch Process.

Should a process of manufacture be discovered that is a better process and not merely a cheaper one for the production of White Lead, The Eagle-Picher Lead Company will consider its adoption. Until that time Eagle White Lead in Oil will continue to be Pure Old Dutch Process, the White Lead in Oil that the painter knows.



The EAGLE-PICHER LEAD COMPANY · 862-208 *South La Salle Street* · CHICAGO

EAGLE *Pure Old Dutch Process* WHITE LEAD

CINCINNATI CLEVELAND PITTSBURGH PHILADELPHIA NEW YORK MINNEAPOLIS
BUFFALO DETROIT BALTIMORE NEW ORLEANS KANSAS CITY ST. LOUIS JOPLIN

Plants: CINCINNATI NEWARK GALENA, KAS. HENRYETTA, OKLA. PICHER, OKLA.
EAST ST. LOUIS, ILL. CHICAGO ARGO, ILL. JOPLIN, MO. HILLSBORO, ILL. (2 *Plants*)

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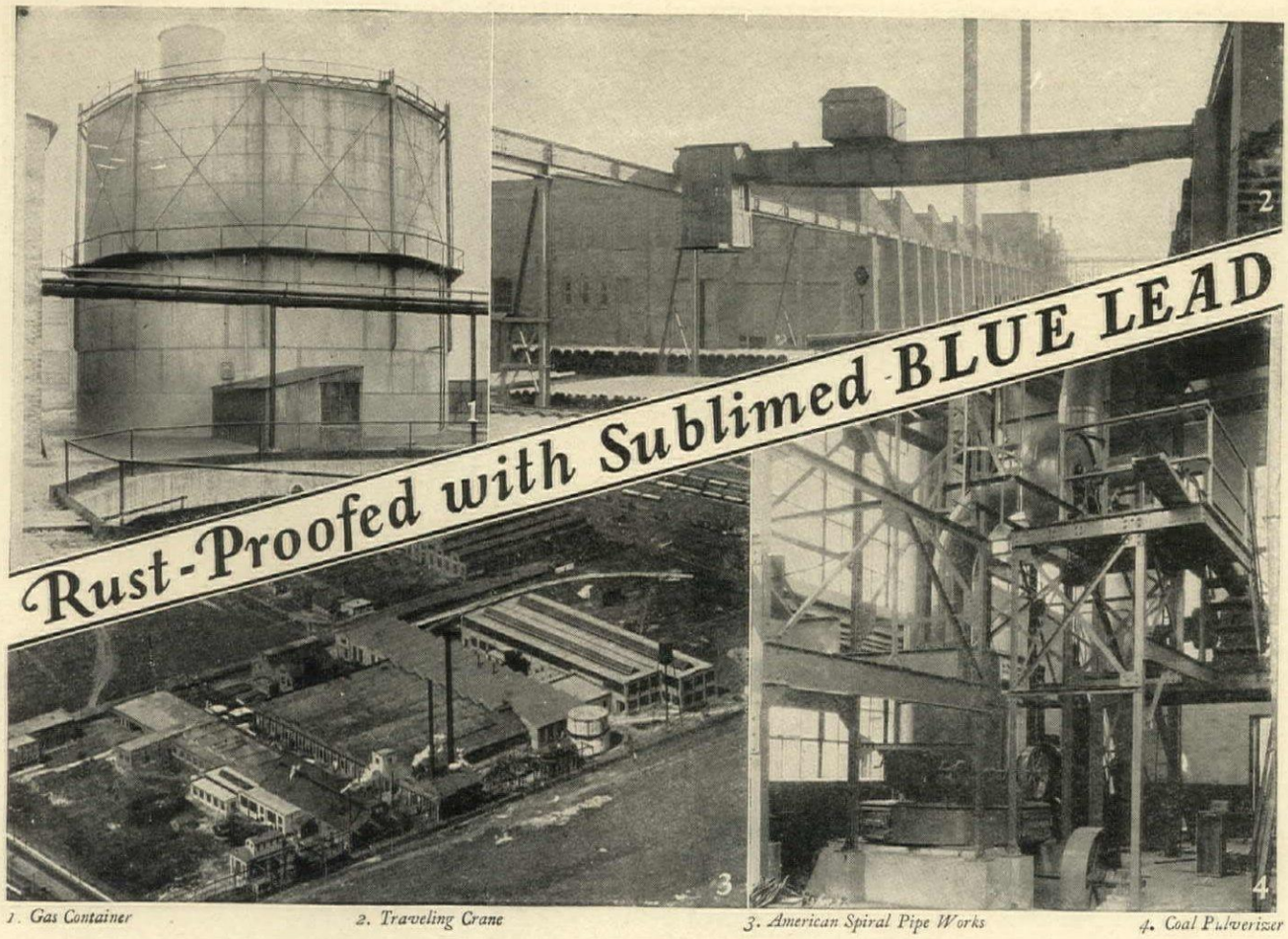


1. *Gas Container* 2. *Traveling Crane* 3. *American Spiral Pipe Works* 4. *Coal Pulverizer*

Rust-Proofing Worries Were Ended at This Plant in 1910

FOR fourteen years the American Spiral Pipe Works has standardized on Sublimed Blue Lead in Oil for all rust-proofing purposes. Exposed to many different conditions, indoors and out, to excessive heat and corrosive gases as well as to the corroding action of the elements, Sublimed Blue Lead in Oil has successfully met every requirement for a rust-inhibitive paint at this plant. Today they say:

> "Over a period of more than 14 years, since 1910, Eagle-Picher Sublimed Blue Lead has proven to be the most satisfactory and durable rust-proofing pigment that we have ever used on the various steel structures about our plant, exposed to many different conditions."—American Spiral Pipe Works.

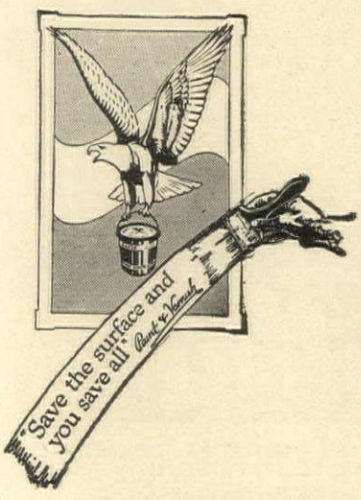
Sublimed Blue Lead in Oil works so easily and smoothly under the brush that a painter can cover a greater area in a day and still produce a paint film that is free from breaks, runs, or alligatoring. The paint film is properly elastic and virtually insensible to changes in temperature.

One hundred pounds of Sublimed Blue Lead in Oil will cover 5216 square feet of iron or steel. This is equivalent to a surface a foot wide and nearly a mile long. It will not harden in the container.

The durability of Sublimed Blue Lead in Oil as a long-time protector of metal surfaces has been proved both in technical tests and in the field.

Send for your copy of "Fighting Rust with Sublimed Blue Lead."

Send for "Fighting Rust with Sublimed Blue Lead" —a Rust-Proofing Manual



The EAGLE-PICHER LEAD COMPANY · 862-208 *South La Salle Street* · CHICAGO

EAGLE *Picher Sublimed* BLUE LEAD *in* OIL

CINCINNATI CLEVELAND PITTSBURGH PHILADELPHIA NEW YORK MINNEAPOLIS BUFFALO DETROIT BALTIMORE NEW ORLEANS KANSAS CITY ST. LOUIS JOPLIN

Plants: CINCINNATI NEWARK GALENA, KAS. HENRYETTA, OKLA. PICHER, OKLA. EAST ST. LOUIS, ILL. CHICAGO ARGO, ILL. JOPLIN, MO. HILLSBORO, ILL. (2 *Plants*)

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Horse Head Zinc is not the only permanent, rust-proof metal for conductors, gutters, roofing, flashings and valleys, but all the others are expensive. Send for Bulletin A-2C.

New Jersey Zinc

The New Jersey Zinc Company

Established 1848

160 Front Street, New York City

CHICAGO — Mineral Point Zinc Company · PITTSBURGH · SAN FRANCISCO · CLEVELAND — The New Jersey Zinc Sales Co.

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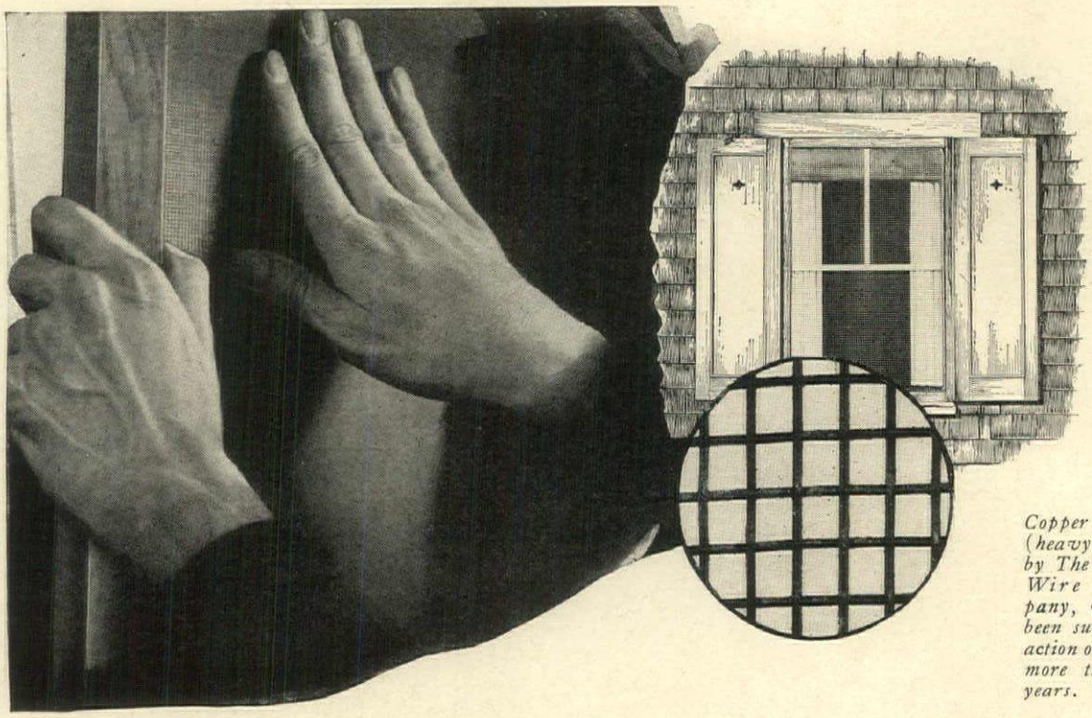


Copper Screen Cloth (heavy grade) made by The New Jersey Wire Cloth Company, which has been subjected to the action of salt air for more than twelve years.

A Copper Screen Cloth That Will Not Stretch

GOOD copper screen insect cloth is universally recognized as the best and most economical material that can be used for door, window and porch screens.

Any doubts regarding the efficiency of copper screen cloth which still may exist in the minds of some architects arise from the fact that ordinary pure copper cloths are too soft and pliable. They stretch and bulge.

This is not true of Jersey Copper Insect Screen Cloth.

It is made of copper 99.8% pure—the most durable metal in common use—it has stiffness and tensile strength comparable to that of steel cloth.

This is due to a special Roebling process which is applied exclusively to the wire used in making Jersey Copper Screen Cloth.

We will be glad to send you samples which you may test for yourself in order that you may realize fully the resiliency of Jersey Copper Screen Cloth. No annoying sales efforts will follow.

THE NEW JERSEY WIRE CLOTH COMPANY
614 South Broad Street
Trenton New Jereey

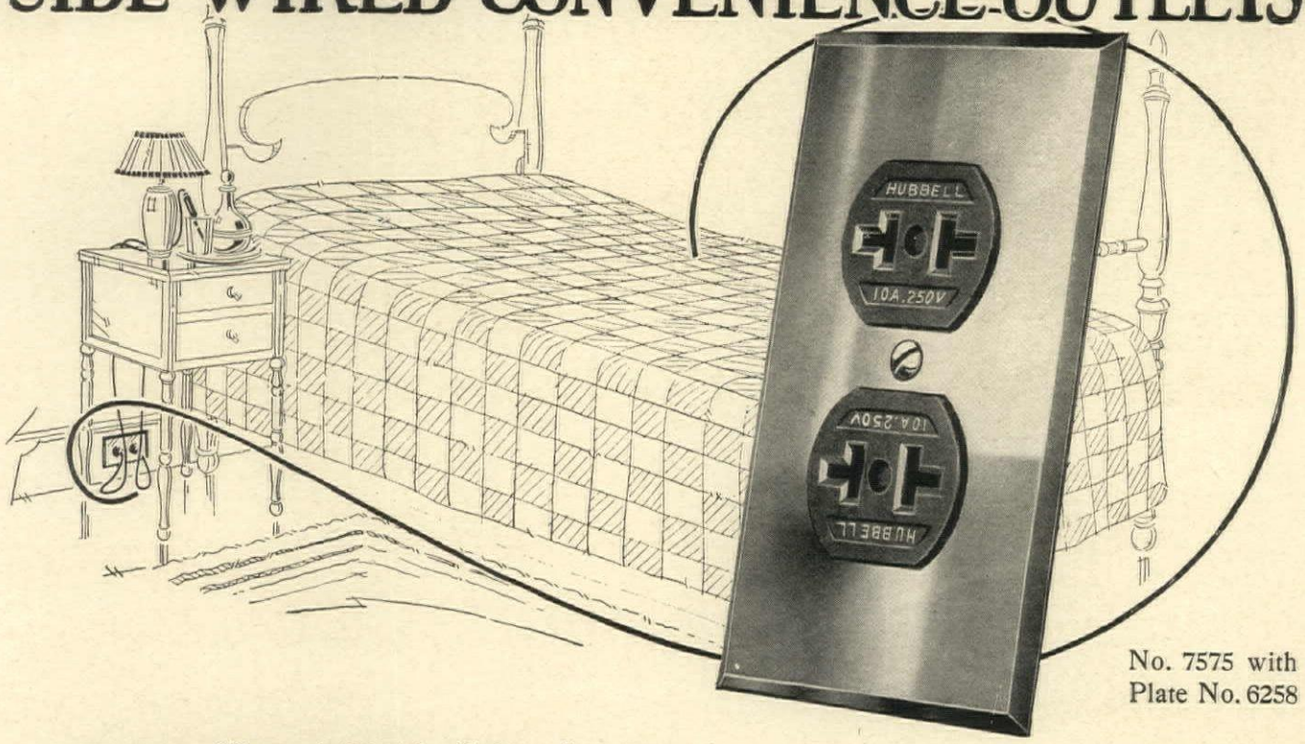
JERSEY

Copper Screen Cloth

Made of Copper 99.8% Pure

HUBBELL

SIDE-WIRED CONVENIENCE OUTLETS



No. 7575 with
Plate No. 6258

THE utility of Hubbell Duplex Convenience Outlets is appreciated by any client.

For the duplex outlet makes the use of electric appliances and portable lamps convenient.

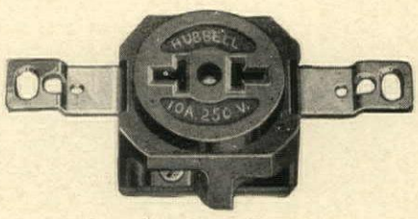
Hubbell Convenience Outlets are made in both single and duplex types; side or top-wired.

We would be glad to cooperate with any architect regarding the most advantageous locations for Convenience Outlets in any class of building.

HARVEY HUBBELL INC
ELECTRICAL WIRING DEVICES
BRIDGEPORT CONN. U.S.A.

SHALLOW

Only $\frac{13}{16}$" deep; suitable for thin partitions.



No. 7550

Remember it's the Te Slots, that make outlets "Convenient"

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Old Reliable H&H

"2081" in the Specifications

You'll find it in specifications written thirty years ago, and you'll find it today in the latest specifications of those same builders and architects.

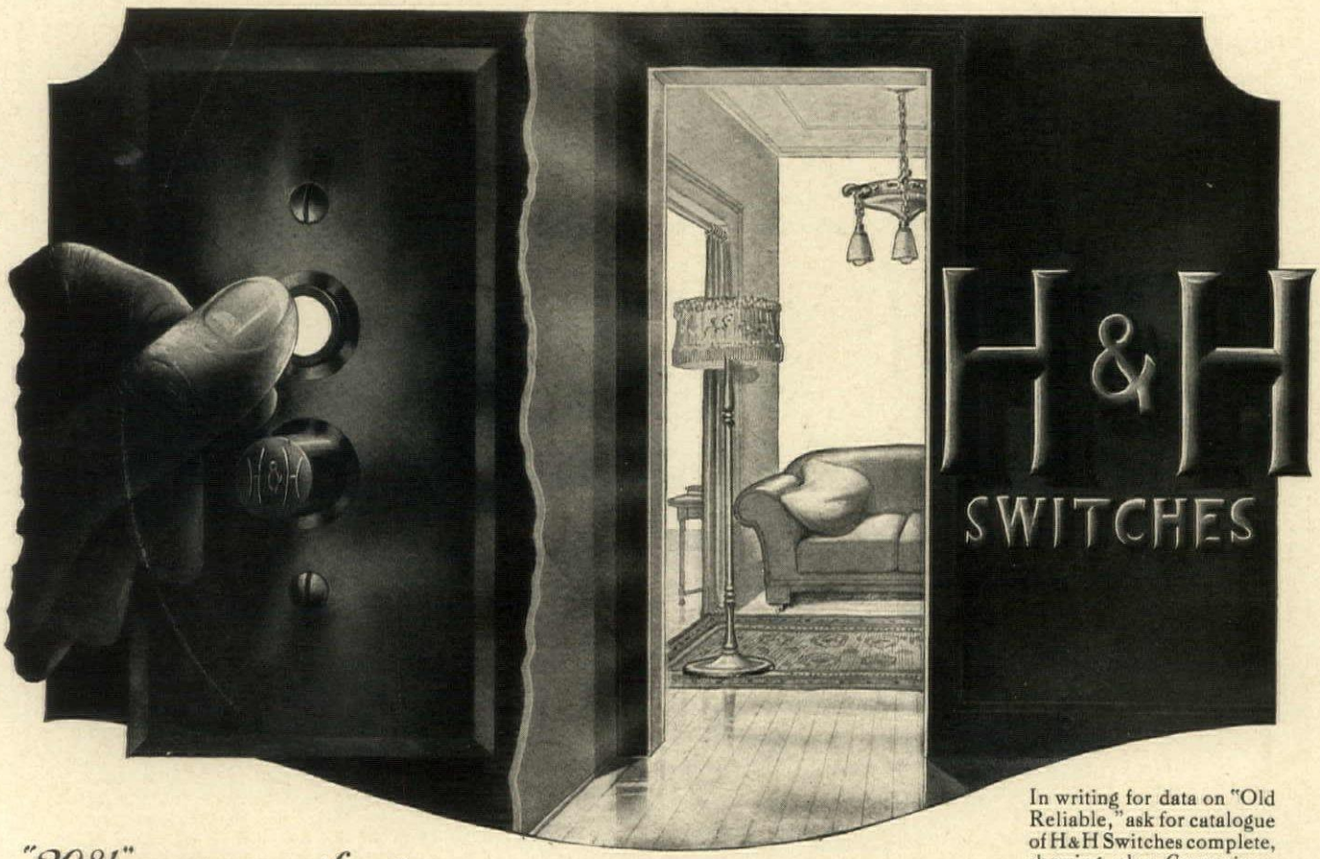
The dean of Push Switches, it was "standard" from the start, and three decades of switch-making have had little improvement to offer "Old Reliable".

New switches have come into the H&H family; fine switches to look upon; costlier switches. But none have replaced "Old Reliable" for quiet, enduring service.

The buttons press with an even tension; there's no more resistance near the end of the stroke than at the beginning. No jar as the spring acts and the contacts meet.

It's one place your customer puts his finger on value he can *feel!* Of all the things in an installation, this *one* puts the owner *in touch* with the quality of the job.

Not so high-priced as some switches; not so low as some others. Just in-between—and *just the switch* for the medium and better-class buildings that concern you most.



"2081" in your specifications

In writing for data on "Old Reliable," ask for catalogue of H&H Switches complete, showing also *Convenience Outlets* and other devices.

THE HART & HEGEMAN MFG. CO. HARTFORD, CONN.

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FRANK & SEDER BUILDING

Pittsburgh, Pa. protected by a Genasco Standard Trinidad Built-up Roof

Why Genasco is Different!

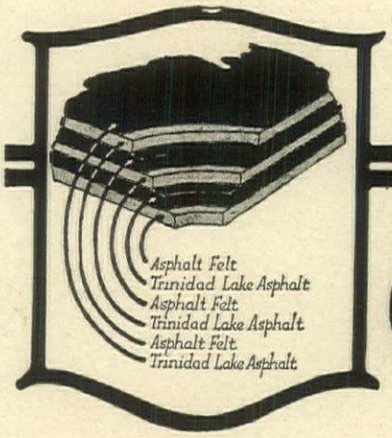
Genasco Standard Trinidad Built-up Roofing is smooth-surfaced—not covered by gravel or slag. It needs no protection from sun, wind or rain.

Genasco Standard Trinidad is built of nature-made, world-old Trinidad Lake Asphalt—not an unseasoned, artificially produced compound.

Genasco Standard Trinidad is reinforced with long-fibred, all-rag felt of great tensile strength—not felt made of paper.

These explain why Genasco Standard Trinidad is the longest-lasting, lowest-cost-per-year-of-service built-up roofing made. Write at once for details.

Cross-sectional view of a Genasco Standard Trinidad Built-up Roof.



The BARBER ASPHALT COMPANY
PHILADELPHIA

New York	Pittsburgh	Kansas City
Chicago	St. Louis	San Francisco

Genasco
STANDARD TRINIDAD Built-up Roofing

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

The New IDEAL Smokeless Boiler

Meets the most rigid smoke ordinances

TO MEET the need for a smokeless boiler that is simple, efficient and dependable, we have developed this new IDEAL Smokeless Boiler, which assures absolutely smokeless performance through a new device, the IDEAL Smoke Oxidizer.

Through an intake on either side of the boiler, is drawn fresh air, which, without being raised to a high temperature, mixes directly with the fuel gases. A compressed mixture is formed which is instantaneously ignited and bursts into the rear gas chamber as a flame of about 2700° F, when all the smoke particles are changed to colorless Carbon Dioxide.

During the travel of the hot gas through the extra long, gas-tight flues, maximum heat is given up to the flue walls—high efficiency, making for minimum fuel consumption.

And not the least important fact about the boiler is that your clients will not find it expensive.

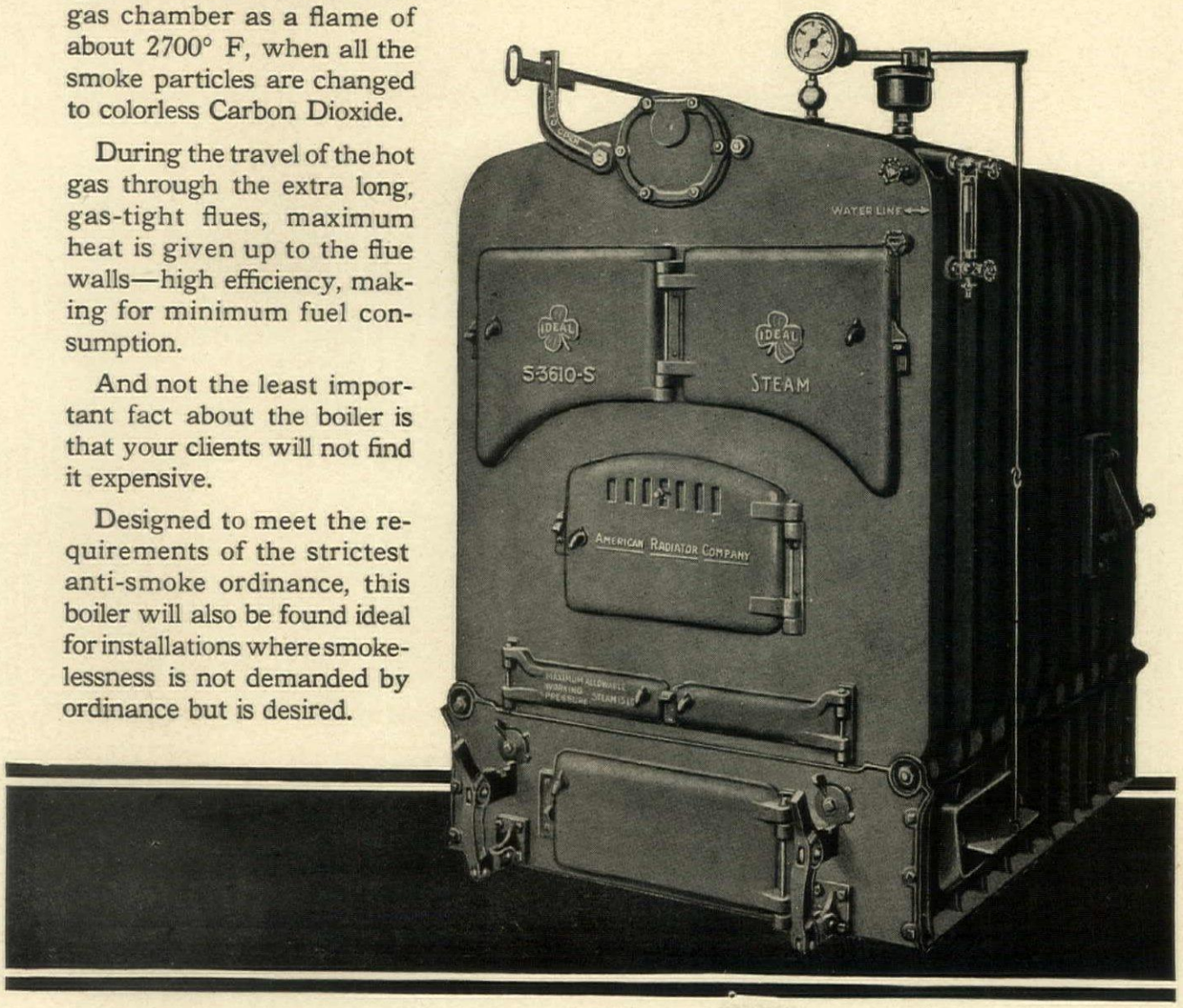
Designed to meet the requirements of the strictest anti-smoke ordinance, this boiler will also be found ideal for installations where smokelessness is not demanded by ordinance but is desired.

Boiler capacities are as follows:

Steam . . . . 2,000 to 17,750 sq. ft.
Water . . . . 3,250 to 28,500 sq. ft.

Architects and Engineers who have not received our new catalogue are invited to write to our nearest branch office or the address below for the book about this boiler, which gives complete engineering data.

AMERICAN RADIATOR COMPANY
IDEAL Boilers and AMERICAN Radiators for every heating need
Dept. T 1181803 Elmwood Ave., Buffalo, N.Y.
Branches in all principal cities



FIELD MUSEUM *of* NATURAL HISTORY, Chicago
Graham, Anderson, Probst & White, Architects
McNulty Brothers, Plaster Contractors

A Million Years in the Making!

THE construction of the newly erected Field Museum of Natural History at Chicago was really begun away back in antiquity with Nature as the master architect.

Among countless thousands of interesting and instructive specimens on display in this building are skeletons and fossils which Paleontologists recognize as the remains of mammals, reptiles, clams, etc., which existed perhaps even before man. These remains of prehistoric life, seasoned in the vaults of Nature, have also played an important part in the CONSTRUCTION of this building.

From such fossilized clams," or dolomites, and the limestone formation that surrounds them, is made

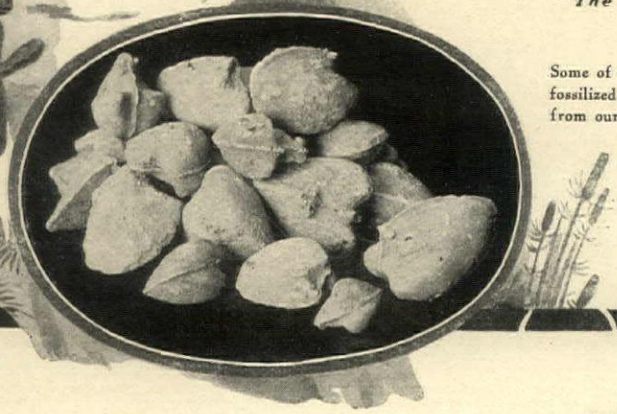
OHIO WHITE FINISHING LIME *it spreads so easy*

Being 99½% pure dolomitic, having an unusual chemical content and a peculiar natural composition, OHIO WHITE FINISHING LIME produces a permanent, hard, snow-white wall,—fire-resisting, metal-preserving and acoustics-improving.

Firm, yet exceedingly "fat" or plastic, it gives maximum coverage with a minimum of both labor and material.

The complete story of lime from antiquity to the present day is told in the interesting booklet "A Job That Took a Million Years, or The Tale of the Clam." Write for a copy today; you'll find it an interesting addition to your library.

The OHIO HYDRATE & SUPPLY CO.
Woodville, Ohio
"The Lime Center of the World"



Some of the fossilized clams from our quarry

Residence, Chester Bolton
Cleveland, Ohio

Vitralite
The Long-Life Enamel

Prentice Sanger
Architect

THE beauty of distinctive decoration is emphasized by Vitralite, *the Long-Life Enamel.* Luxuriously rich in appearance, Vitralite is economical in use. It will withstand wear for years. It will not discolor. It produces a smooth, porcelain-like finish that is easily kept immaculate. Wherever beauty must be combined with unusual service, architects can confidently specify Vitralite in one of the many beautiful tints or white. It may be obtained in either gloss or eggshell finish.

Save the surface and you save all

The Pratt & Lambert Architectural Service Department is at your service. Let us help you with your wood-finishing problems.

Save the surface and you save all

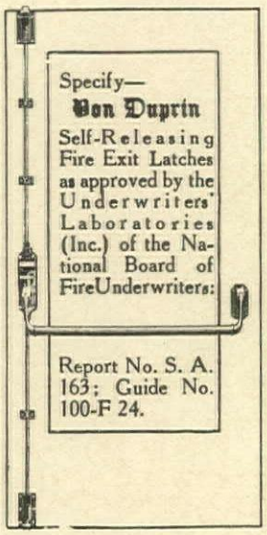
PRATT & LAMBERT-INC., 98 Tonawanda St., Buffalo, N. Y.
In Canada: 8 Courtwright Street, Bridgeburg, Ontario

PRATT & LAMBERT VARNISH PRODUCTS

Von Duprin

Self-Releasing Fire Exit Latches

Better Than Ever



The **Von Duprin** latch of several years ago was a remarkably well designed and carefully made device.

It was, in fact, so well made that no **Von Duprin** device, anywhere, has ever failed to operate in an emergency.

Not content, however, with the practical perfection of the device at that time, we have since made improvements and refinements which put the **Von Duprin** of today in a class of complete superiority to that of a few years ago.

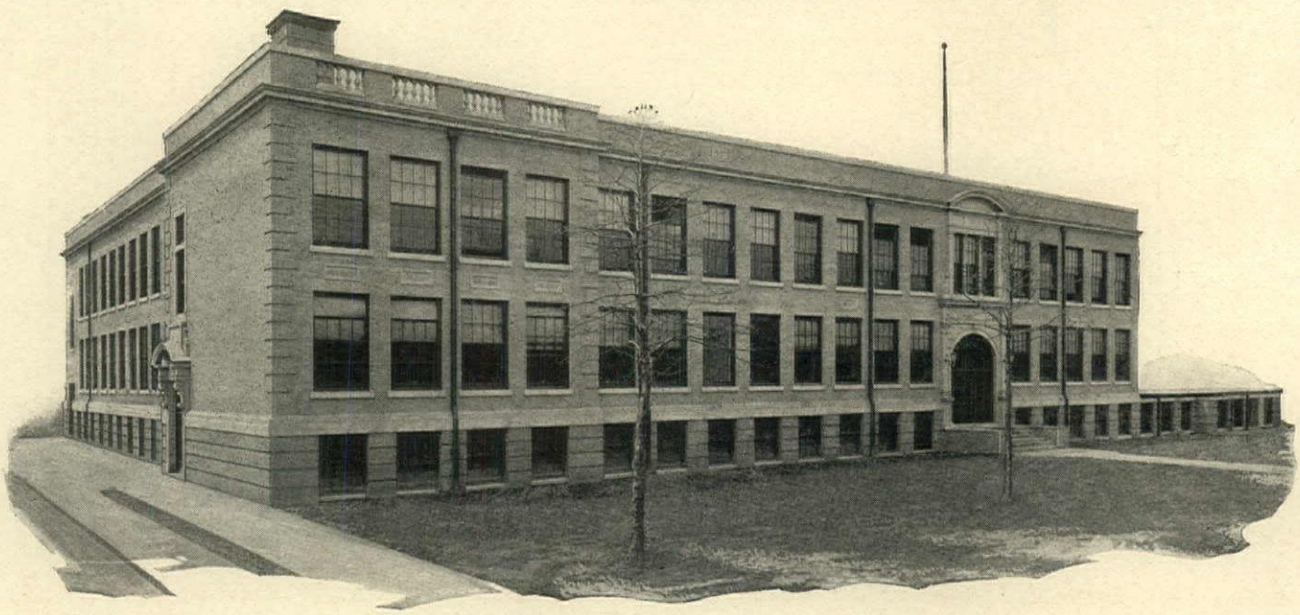
That you may have full information about the latest developments of the device we will, beginning next month, publish a series of advertisements in this magazine giving detailed information about the most interesting improvements embodied in the **Von Duprin** latches now in production.

If you wish this information all at once, ask us for Catalog 24-Q.

For general specification information, see "Sweet's," pages 1415-1419

VONNEGUT HARDWARE CO.
Indianapolis, Ind.

Emerson Junior High School, Lakewood, Ohio.
C. W. Hopkinson, Architect.
The Drummond Miller Company, Contractors



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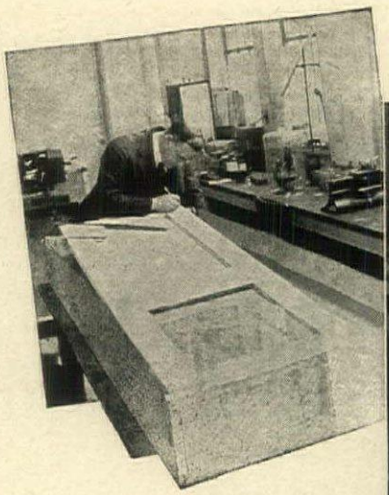


Professor Grondal examining a Laminex door after it has been submerged in water for 24 hours.

Laminex doors taken from dry kiln after 24 hours at 185° Fahr., with relative humidity of 30 per cent.

Laminex doors being tested for strength of panels in 200,000 pound Olsen testing machine.

Proof that
LAMINEX DOORS

1—Unaffected by water 2—Free from shrinkage 3—Tough and durable

Nine Laminex stock doors were picked at random, as they came from our factory. They were taken to the Forest Products Laboratory, University of Washington, School of Forestry, and there submitted to the most daring tests ever applied to regular-run mill-work.

Read this report of the test, made by B. L. Grondal, M. S. F.

Report on tests of doors submitted by the Wheeler, Osgood Company

MATERIAL TESTED:

Nine Laminex stock doors, with built-up rails and stiles and an upper and lower panel of three-ply laminated wood, all of Douglas fir, were furnished by The Wheeler, Osgood Company of Tacoma, Washington, under the following designations:

Nine doors 2′ x 6′—1⅜″. No. 82-V.

METHOD OF TESTING:

Three doors, selected at random, were tested by subjecting the lower panel to a static load applied by means of a 200,000-pound Olsen testing machine until complete failure ensued. The load was applied to the center of the panel by means of a wooden block having a crowned surface two inches by four inches in area in tests upon two doors, while in the test of the third door the load was applied by means of a steel block over an area of one square inch. The moisture content of the blocks at the time of testing averaged 5.2%. Results of the tests follow:

Door Number	*Load required to break panel*	*Cause of break*
1	722 pounds	Splitting of solid wood in center stile.
2	1097 pounds	Breaking of veneer on opposite face.
3	922 pounds	Shearing of veneer by sharp edges of steel block.

In no case did the glueing of the panel or the molding strips holding the panel show signs of failure, and the tests indicate that a door of this type may be expected to withstand very severe usage.

Three doors were subjected to a "soaking" or immersion test in water, to determine the effect of absorption of moisture upon the strength of the glue or in producing warping and swelling in the door. This test was conducted by weighing each door, measuring the width of each door before and after soaking, re-weighing each door and noting the amount of absorption and finally by drying the doors and noting the effect of such immersion in water upon the structural qualities of the door. In each case the doors were completely immersed in water at a temperature of 65° Fahr., for a period of twenty-four hours, with the following results:

Door Number	*Effect upon veneers and glued joints*	*Shrinkage cracks after drying*	*Absorption*
1	None	None	3 lbs. 2 oz.
2	None	None	2 lbs. 9 oz.
3	None	None	2 lbs. 6 oz.

None of the doors was made unfit for use by this treatment, the only effect of the water being a normal "raising" of the grain. The maximum expansion in width was 0.03 inches and the minimum expansion 0.02 inches. The complete absence of warping of the panels and the door as a whole, and the very slight expansion due to absorption of moisture was especially noticeable.

Three doors were finally subjected to very severe drying conditions in a commercial dry kiln, the doors being placed in the kiln and removed by the writer. In this kiln the doors were subjected to a temperature of 185° Fahr., and a relative humidity of 30 per cent, for a period of twenty-four hours, with the following results:

Door Number	*Effect upon veneers and glued joints*	*Shrinkage cracks*	*Loss in moisture*
1	None	None	1 lb. 0 oz.
2	None	None	0 lb. 13 oz.
3	None	None	1 lb. 2 oz.

The above tests indicate very clearly that inside doors of the character submitted for the above tests may be expected to withstand severe usage and that they should give unusually satisfactory service under extreme climatic conditions.

Very truly yours, *Bror L. Grondal.*

LAMINEX DOORS ARE TRADE-MARKED AND GUARANTEED

All Laminex doors are trade-marked on the top or bottom rail and bear our gold label replacement guarantee. Built in old growth Douglas fir, with vertical grain stiles and rails as well as all-flat grain.

Ask your dealers for Laminex. Write for special monograph.

The Wheeler, Osgood Company

Tacoma, Washington, *"The Lumber Capital of America"*

Sales Offices: Chicago, Memphis, Los Angeles, San Francisco, Spokane

Manufacturers of "Woco" Douglas Fir Doors and Fir Sash

LAMINEX DOORS

WILL NOT SHRINK, SWELL OR WARP

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

It's Easy to Select the RIGHT Lorain-equipped Gas Range

ARCHITECTS sometimes find their selection of equipment limited because of too few designs. With gas ranges equipped with the Lorain Oven Heat Regulator there are so many styles offered by each of six different makes, that it's an easy matter to select the type of gas range exactly suited for each particular installation—in house, hotel, hospital, church or apartment building.

The annoyance of having to decide upon a certain stove style because the one desired is not made is automatically eliminated. Much valuable time is saved by thus simplifying the selection. Also, there is greater opportunity to choose a model that will exactly suit the builder or owner.

The famous Lorain Oven Heat Regulator, the one with the Red Wheel, is the first *perfect* application of thermostatic control of heat to the oven of the domestic gas range. Lorain insures perfect results in baking and cooking; it eliminates "pot-watching"; it makes possible the cooking of a Whole Meal in the oven at one time while the housewife is miles away; it permits of the canning of fruits in the oven with perfect results; it saves time, labor, food and fuel.

Lorain is used in thousands upon thousands of homes, clubs, churches, hospitals, fraternal organization structures,—and in over 1,000 leading schools and universities for instruction in cookery. For specific data as to sizes, styles, etc., see pages 2315-24 inclusive, 18th Edition Sweet's Architectural Catalog.

These famous stoves are equipped with the Lorain Oven Heat Regulator:

QUICK MEAL, RELIABLE, CLARK JEWEL, DANGLER, DIRECT ACTION and NEW PROCESS.

On this page are illustrated only a few of the hundreds of models and sizes of Lorain-equipped Gas Ranges. Catalogs, price lists, etc., on request.

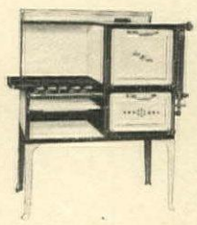
AMERICAN STOVE COMPANY

Largest Makers of Gas Ranges in the World

333 Chouteau Avenue St. Louis, Mo.

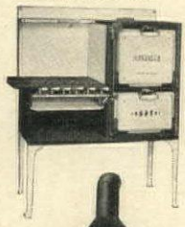
LORAIN
OVEN HEAT REGULATOR

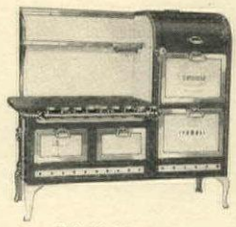
Quick Meal No. 22-18



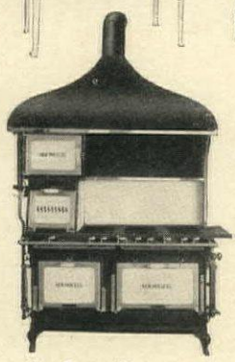
Quick Meal No. 1-416

Reliable No. 5916

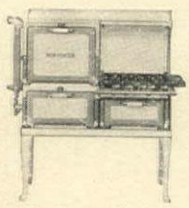




Reliable No. 5330

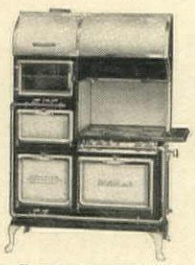


New Process No. 24-18-16

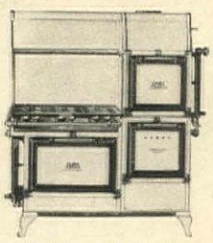


New Process No. 844

Dangler No. 2233-XF



Dangler No. 2205-WF



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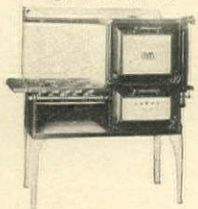

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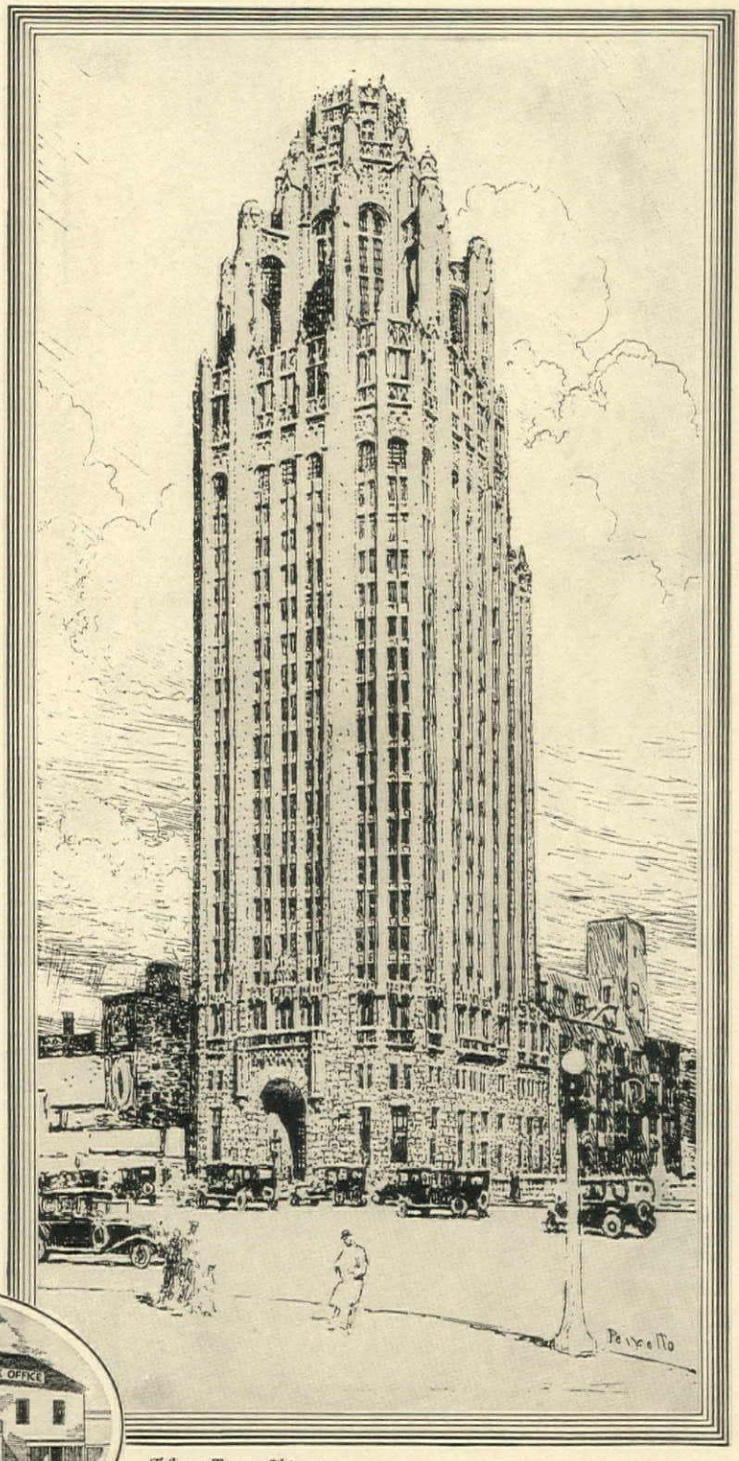

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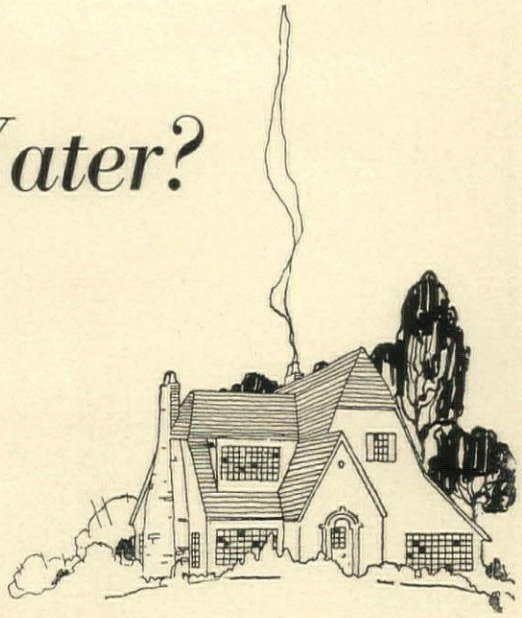

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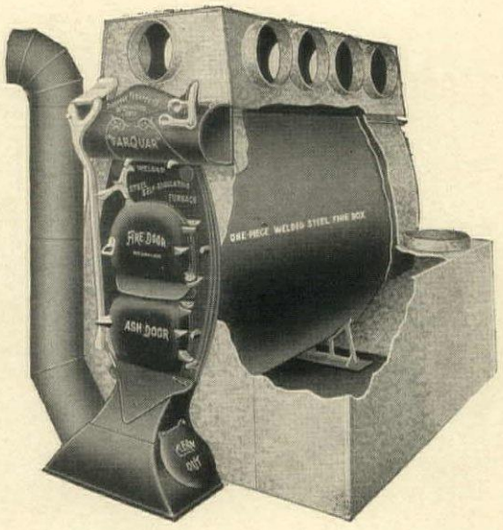

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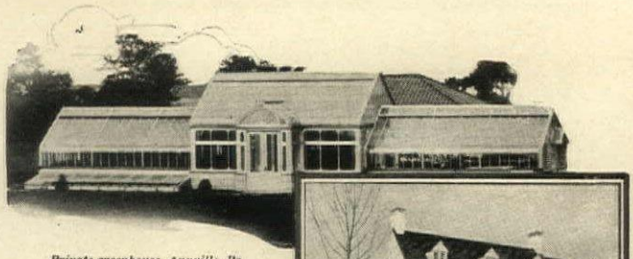

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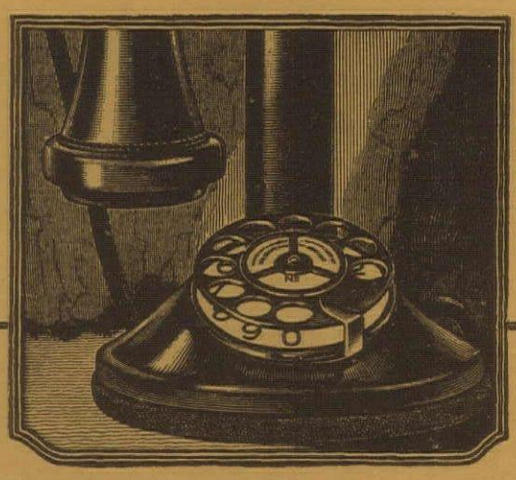

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