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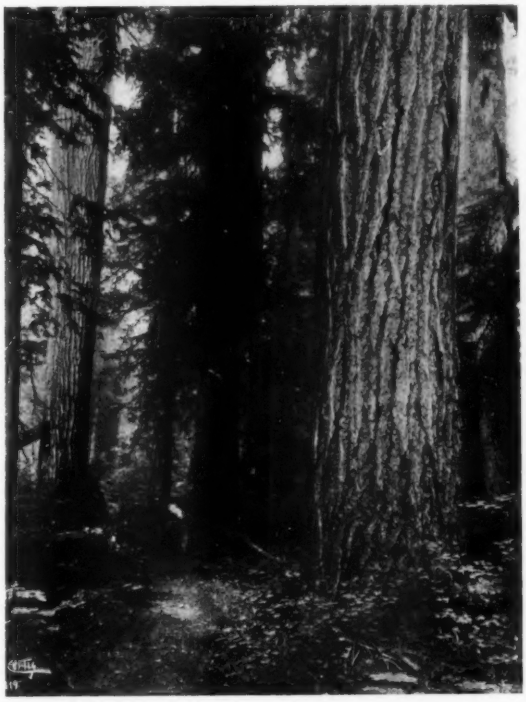
Douglas Fir

BY SAMUEL J. RECORD, *Professor of Forest Products, Yale University*

DOUGLAS fir or Oregon pine is a tree of the first commercial importance. Growing in massive stands in the Pacific Coast region, the eventual center of lumber production in America, it promises to be the principal lumber tree of the country. It is now extensively used in the West, is in active competition with Southern yellow pine throughout the Mississippi Valley and is gradually winning a permanent place in the Eastern markets. It is exported to South America, Australia, China, Japan, Philippine Islands and South Africa, and found extensive use in constructive work on the Panama Canal. It is destined to play a prominent part in rebuilding Europe after the war.



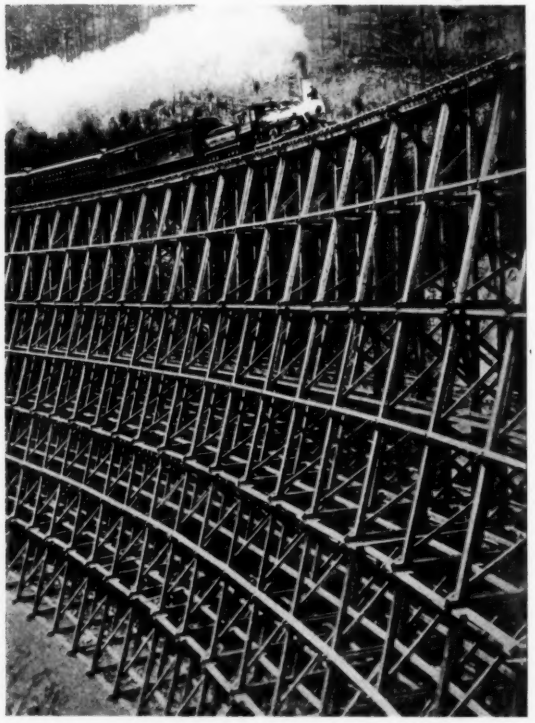
ON MOUNT RAINIER RESERVATION, WASHINGTON

The tree resembles the spruces, hemlocks and the true firs, but the wood is like yellow pine. It is not surprising that early botanists found it a difficult tree to classify and renamed it several times as opinion shifted from pine to fir (*Abies*) and back again. Finally it was placed in a new genus and is known technically as *Pseudotsuga*, meaning false hemlock. There is like confusion in the popular names, and while Douglas fir and Oregon pine are the most common, there are other more or less local designations such as red fir, yellow fir, Douglas spruce, British Columbia fir or pine, and Puget Sound pine.

No other important commercial tree in America is so widely distributed as Douglas fir or grows under such diverse climatic conditions. Its range extends over more than 2000 miles from north to south and almost 1000 from east to west. It is obvious that these great variations in conditions of growth must be reflected in the quality of the timber produced. Accordingly, two distinct forms of the tree are recognized, namely, the Rocky Mountain form and the Pacific Coast form. At their extremes these two kinds present such differences in rate of growth, form of tree, character of foliage and cones, and quality of the wood, that they would be considered distinct species did they not in portions of their range intergrade and lose their identity.

The mountain form grows throughout the Rocky Mountain system from latitude 55 degrees north in British Columbia southward for 2200 miles. The demand of the tree for a certain amount of moisture in soil and air causes it to occupy progressively higher situations from north to south, and in its Southern range it is confined almost exclusively to high elevations. The trees are comparatively small, rarely over eighteen inches

in diameter and 90 feet in height. The stand occasionally reaches as much as 8000 feet per acre, but usually is much less. The wood is red in color, very hard, more or less cross-grained and knotty, and very durable in contact with the ground. Its principal use is in the rough for purposes where clear-



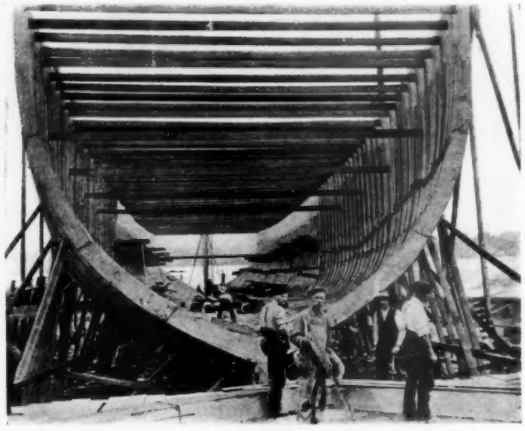
BRIDGE TRESTLE, CANADIAN PACIFIC RAILWAY, BUILT OF DOUGLAS FIR IN 1896

ness and length are not requisites, as in mine timbers and railroad ties.

The Coast form of Douglas fir is essentially a different tree and provides the valuable lumber and timbers of commerce. It is at its best not far above sea level in southern British Columbia and in the region between the coasts of Washington and Oregon and the western foothills of the Cascade Mountains. Here in the exceedingly humid climate and moist soils all trees attain large size and the forests are dense and heavy. Douglas fir comprises about half of the total stand, usually in mixture with hemlock and to a greater or less extent with spruce, cedar and the true firs. Not infrequently, however, it grows practically alone, the immense trunks crowded closely together and rising to great heights with scarcely a limb to mar their smoothness. Heights of 200 to 300 feet are common, and exceptional specimens have been measured which did not fall far short of 400 feet. In diameter they range up to 15 feet.

The yield of timber from such a forest is of course very large. Single trees have been known to measure 60,000 board feet, and in one recorded instance one acre supplied half a million feet of lumber. Such figures are exceptional, as it is rather unusual for a stand to cut more than 50,000 board feet per acre. It is evident that from such forests it is possible to obtain dimension timbers of any size desired and that clear boards and planks are available in all widths and lengths. Unfortunately the market conditions are such that only the better grades will repay exploitation, and enormous waste results of what eventually will be considered valuable material.

Even the Coast form of Douglas fir is not uniform in quality and lumbermen recognize two kinds, known as red fir and yellow fir. In the denser stands the trees grow rapidly in height but slowly in diameter, and the fine-grained, light, yellowish wood which results is the so-called yellow fir. Where the stands are more open and the trees can get more light the increase in diameter is correspondingly greater and the wider annual rings are reddish in color and exhibit more contrast between the soft open spring wood and the dense flinty material produced later in the season. This is the



DOUGLAS FIR AS USED IN SHIP BUILDING IN BRITISH COLUMBIA

red fir of the lumberman. That the difference is mainly due to rate of growth is attested by the fact that the same tree may produce the red or coarse grade of material in early life when diameter growth is rapid and the yellow or fine grade later when the annual rings become narrower, as they do in old

DOUGLAS FIR IN APARTMENT HOUSE CONSTRUCTION

Note heavy column girders and laminated floors.

trees. Thus a log may yield yellow fir from the outside and red fir from the interior. The mountain form does not exhibit this difference, and even the fine-grained wood is red and hard.

The yellow grade is considered the more desirable and is the kind shipped to distant markets and upon which the reputation of Douglas fir is based. The wood is uniform, straight-grained, easily worked, comparatively free from pitch and is adapted to all standard paints and finishes. The red fir is strong, rather difficult to work, more resinous, and while suited for structural timbers is not adapted to the variety of uses to which the better grade is put. In Douglas fir, as in the Southern pines, there exists a close relationship between the density or weight of the dry wood and the strength and other mechanical properties. Grading rules based on density, similar to those now in use for Southern pine, are in course of preparation for Douglas fir. According to investigations of the U. S. Forest Service the rate of growth, which in general is associated with the greatest strength in Douglas fir, is 24 rings per inch.

Douglas fir is adapted to the same purposes as Southern pine. The latter is used so extensively and is so well known that the best idea of Douglas fir as a structural timber is gained by comparing it with the pine. The following comparison, which is from a recent publication of the Forest Products Laboratories of Canada, is based upon all the comparative data available, and seems to be a fair presentation of the matter.

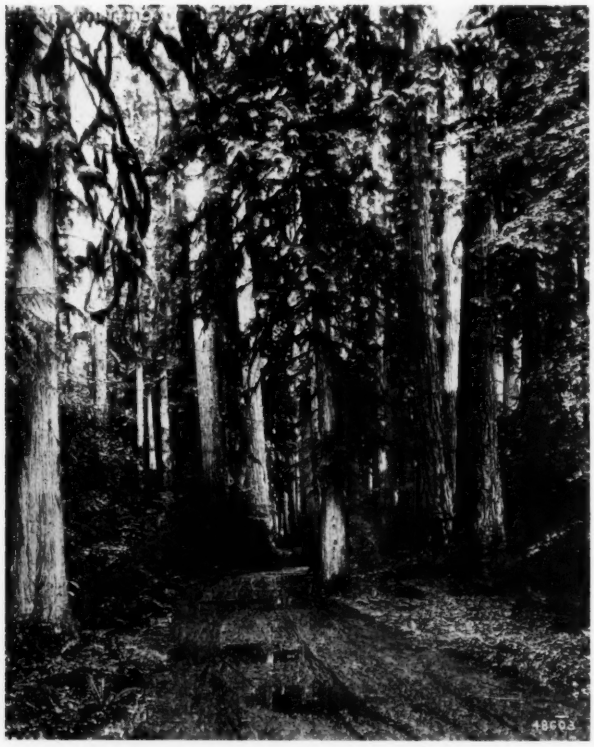
"1. *Strength in bending.*—In modulus of rupture the majority of tests show Douglas fir to be weaker than longleaf pine by about 10 per cent. On the other hand, all tests with the exception of two show Douglas fir to be stronger than longleaf pine by varying amounts, say 10 per cent on the average, in fibre stress at elastic limit.

"Tests of long duration on timber have shown that if a beam is loaded in excess of its elastic limit it will eventually fail. In accordance with this it appears that the elastic limit stress is the greatest stress which can be safely used in timber structures, and it would therefore be logical to base working stresses for design on the elastic limit stress and not on the ultimate breaking strength as determined in the testing machine. This practice is at present followed in determining suitable standard working stresses for other structural materials such as steel, and it is now being recognized that the elastic limit is the logical basis for design in the case of timber as well. Douglas fir should, therefore, be capable of taking a greater working stress in bending than longleaf pine by the amount mentioned, for the same degree of safety. This, however, would not apply in the case of extremely short beams.

"2. *Strength in longitudinal shear.*—All tests show Douglas fir to be weaker than longleaf pine by from 20 to 25 per cent. In the case of beams so

DOUGLAS FIR AS USED IN THE CONSTRUCTION OF A MILL BUILDING

Note the laminated flooring.



RED FIR AND RED CEDAR

short that strength in shear rather than bending strength becomes the deciding factor, longleaf pine should accordingly be allowed a working stress greater by the amount mentioned.

"3. *Stiffness.*—Not infrequently, as in the case of ceiling joists under certain conditions, the maximum deflection of a beam becomes the deciding factor in its design rather than its strength. A stiff timber of high modulus of elasticity would in this case be desirable. In the majority of cases Douglas fir is credited with a higher modulus of elasticity than longleaf pine by from 4 to 10 per cent, although there are a few exceptions to this rule. It would look as though the safe working modulus of elasticity for Douglas fir might be taken to be about 5 per cent greater than for longleaf pine. In any case the same modulus could certainly be used.

"4. *Strength in compression parallel to grain.*—All tests, almost without exception in the case of stress at elastic limit and without any exception in the case of maximum crushing strength, show Douglas fir to be from 10 to 20 per cent weaker than longleaf pine. A greater working stress for longleaf pine than for Douglas fir in the case of columns would in accordance with this be good practice.

"5. *Strength in compression perpendicular to grain.*—All tests without exception show Douglas fir to have somewhat greater strength in compression perpendicular to grain than longleaf pine, by amounts ranging up to 10 per cent, indicating that greater working stresses for Douglas fir in compression perpendicular to grain would be permissible.

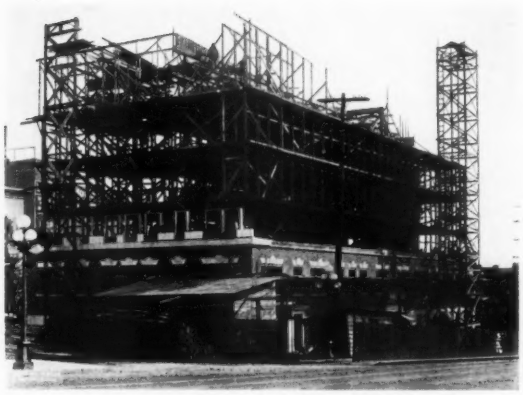
"6. *Weight of material.*—All the tests show Douglas fir to be lighter than longleaf pine by about 20 per cent."

This comparison serves to emphasize the closeness with which the mechanical properties of Douglas fir and Southern pine approximate each other. The differences given are not greater than will be found in selected material of the two groups. Accordingly it is not remarkable that the exponents of the two woods can take the same data and from them make out a case for their respective products. The two woods are practically interchangeable and have identical uses.

In appearance also Douglas fir and longleaf pine have much in common, so that it is not always easy to distinguish them. Yellow fir is less resinous than the pine, but some grades of fir are very pitchy. There is usually a slight waviness in the contour of the rings of the fir, which shows on the end and also the surface of flat-sawed material, which is more or less distinctive. When the microscope is used, the wood technologist has no difficulty whatever in distinguishing Douglas fir from every other kind of wood resembling it, for the wood cells are plainly marked with spiral bands which are absent in the pines, spruces, true firs, etc.

Quartered or rift-sawed Douglas fir makes a good floor, and flat-sawed material is often set on edge in substantial laminated floors. The grain of flat-sawed material is very conspicuous, especially in curly grained material, and is used extensively for door and other panels. For interior trim the quarter-sawed wood gives the softest effects, but the slash grain is often used with some of the darker stains which lessen the contrast between the seasonal growths. Increasing amounts of the wood are being used in furniture making, and in this respect it is best adapted to the "mission" type.

In the building trades it is most important, being employed for beams, columns and heavy flooring in mill construction as well as for all kinds of dimension stock, joists, floor beams, rafters, flooring, siding and finish of all kinds in general construction. There is a great demand for it for bridge, trestle and harbor work, and by the railways in the form of ties, piling and car construction. It has long



DOUGLAS FIR IN APARTMENT HOUSE CONSTRUCTION

been the most important timber on the Pacific coast for boats and ships, being suitable for decking, planking, keels, yards, ribs, masts and finish. Other uses are tight and slack cooperage, tanks and silos, conduits and water pipes, and paving blocks for highways, bridges and factories. Special timbers of extra large sizes are readily obtainable from fir, as some of the mills are equipped to handle pieces 100 or more feet in length. In Montreal harbor a stick of fir was recently put into place that was 70 feet long and squared 46 inches.

No one knows how much Douglas fir timber there is standing. Estimates place it roughly at 500 billion board feet. Of course not all of this is good material but it is known that there is enough of the coast form to supply the demands for an untold number of years to come. Certainly this generation will not see any scarcity of it, though the waste in logging and through fire is excessive. Logging operations are conducted on a scale commensurate with the timber, and under present conditions only the cream of the forest will repay exploitation. On this account builders are assured a high-grade product which ranks with prime yellow pine and which will come more and more into use in the East as the supply of virgin pine is depleted.

Mount Neboh Temple

BERLINGER & MOSCOWITZ, *Architects*

IN the early days of Judaism the Jew lived with his religion, and his religious and daily occupational lives were not, as now, distinctly marked. In the early days synagogues were used, to adopt a modern expression, as social centers. In the synagogue was the meeting place where all those vital things that affected the communal life were discussed and the course of action, after reverential consideration, duly planned.

Man's religion and his daily life were not then, as now, things apart, but he took with him in his intercourse with his fellow men those principles with which the very atmosphere of the Temple was surcharged.

It was with a knowledge of all these things, the traditions of the past and the customs of the present, that the architects, Berlinger & Moscowitz, set about the designing and planning of the temple that is fully illustrated in this issue. It was planned to provide for all the usual functions of a community center, conserving many architectural traditions of a house of worship. For these reasons the plan provides, in addition to a main hall of prayer, an auditorium for receptions, class rooms, an open air gymnasium and other features that encourage a religious sentiment with wholesome social surroundings.

As the Jews have created no architecture of a distinct order, but have generally adopted the style of the country in which they lived, there are no traditional examples to be followed. Association perhaps might suggest a modern adaptation of Moorish or Byzantine motives or from the origin of the Jews, some Oriental style, but the use of such forms would be purely associative and in no sense traditional. For these reasons the architect who sets out to plan the modern Jewish Temple is not hedged about with restrictions from

VIEW OF INTERIOR, LOOKING TOWARD ENTRANCE

which he may not assert his artistic freedom. Yet there apparently exists in this country a certain tendency toward an exterior feature of design that closely follows a columnar treatment, similar to that usually employed in the smaller bank buildings, and thus suggesting temples of Mammon and not, as they properly should, temples of God.

The principal materials used are brick and terra-cotta, and they have been employed to suggest as far as possible the functional parts of the building.

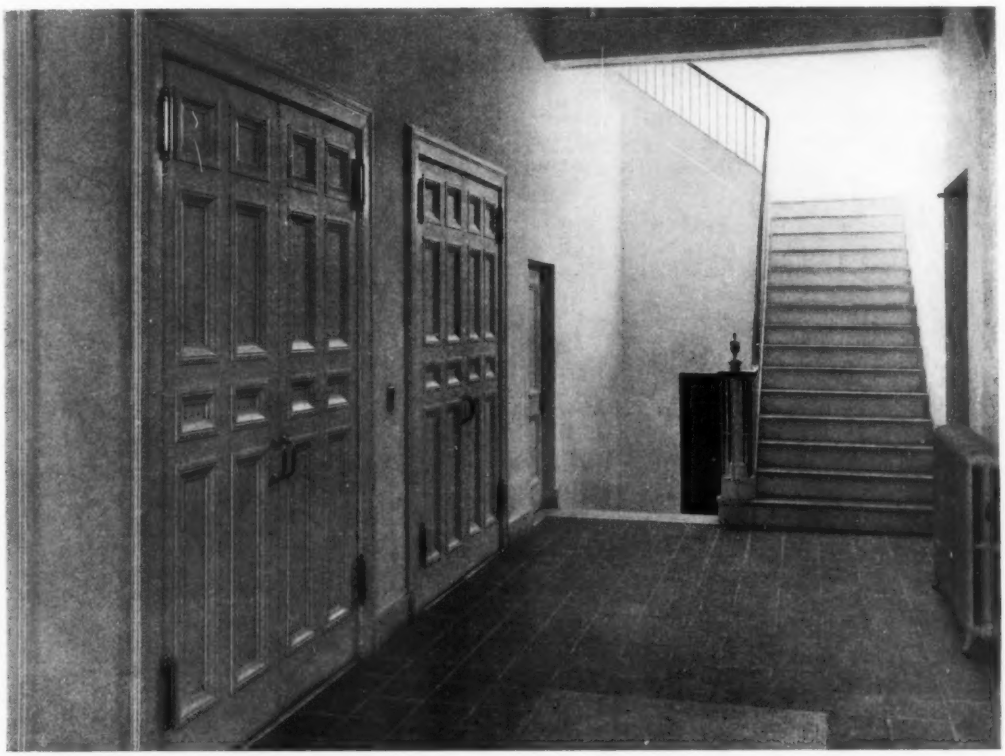
It is believed that the illustration of the Temple is so thorough that a more extended description will not be necessary to enable the technical observer clearly to understand its various details.

It might be well to state, however, that the shields of hammered and wrought iron, shown in the detailed drawings as on either side of the main doorway, have of necessity been for the present omitted. At some future time when these can be reproduced in the artistic manner intended by the architects, and a sufficient appropriation assured, they will be put in place.

The Knights of Pythias Home at Ogdensburg, New York

BERLINGER & MOSCOWITZ, *Architects*

THE preliminary sketches for the Home for the Aged for the Knights of Pythias are based on the cottage plan. Prior to the selection of an architect, there had been some discussion as to the advisability of having large dormitories to house a considerable number of inmates in one building, but by the suggestion of their consulting engineer, Mr. Leopold Philipp, the cottage system was called for, certainly the more commendable of the two, since it is the spirit of institutions of this order to be as little institutional and as near to home-life as possible, particularly when the location and amount of property available are considered. Conditions call for a gradual development, cottages being erected singly, as capacity may require, and in the completed project, will include chapels, mess-hall, auditorium, etc.



VIEW IN STAIR HALL

Department of Architectural Engineering

Efficient Safeguarding of Electrical Installations

By Tirrell J. Ferrenz, *Architect and Structural Engineer*

EFFICIENT safeguarding of electrical installations is a subject which presents many features of vital interest to architects. This is attested to by the increasing emphasis placed upon the necessity for safe construction of all forms of electrical appliances and for careful inspection of their installation. It is therefore the purpose of this article to call attention to some of the more common defects of ordinary electrical installations and to point out approved methods for their elimination, so that anyone interested, although unskilled in electrical matters, may obtain a fair idea of the subject.

The Architect's Liability

It is generally recognized that upon the architect rests the primary responsibility for the success of any structure; it is his duty to see that the building which he designs is as safe as care and forethought can make it. This liability becomes of special importance with respect to electrical installations when we consider that its evasion or neglect may result in serious accidents which frequently entail loss of life and property.

The attention which this matter warrants, however, has seldom been bestowed upon it by architects and designing engineers in the past. And while it is not the purpose here to contend that the architect should become an expert on electrical installations, since this would be manifestly impossible without doing injury to his primary vocation as a creative artist, yet the fact should be faced that it is essential for the architect to give full recognition to the demands made by subjects of this character.

Status of the Architect

It has been said that to be truly successful the modern architect must be an artist, a scientist, and a commercialist. The present tendency seems to be for the architect to ignore the latter two of these functions to a considerable degree. There is a positive danger to the profession in this since the thorough and comprehensive nature of the modern contractor's organization appears to be slowly, though surely, leading to the relegation of the architect from the position of supreme arbiter of building affairs to that of an employed practitioner.

Tendencies of this nature have been prevalent in other professions for some time past and have become firmly established. In the architectural profession, they have been given considerable impetus recently by a decision of the Illinois Supreme Court in which it is held that the Architects' License Act of that state permits the practice of architecture by corporations, so long as the corporation employs a licensed architect. It is with the seriousness of these tendencies before us that we urge upon the architect a closer personal interest in those technical matters which enter into the design and construction of every building.

Electrical Hazards

It will be conceded at the outset that the installation of electrical conductors into a building results in the introduction of hazards of various kinds. It is consequently the part of wisdom to investigate these hazards in order that proper precautions may be taken to eliminate them or at least to reduce them to a minimum.

The principal hazards arising from electrical installations are (1) the personal injury hazard, (2) the fire hazard, and (3) the danger of injury to equipment, with its resulting break in the continuity of service. The extent of these hazards varies considerably, and depends to a large degree upon whether the current being used is of low voltage or high voltage and whether it is direct or alternating current.

Direct current voltages generally used are either 115 or 230 volts in size. Alternating current, which is used for the supply of ordinary lighting and power systems, commonly has potentials amounting to 2300 volts; these are in most instances stepped down to 115 or 230 volts before being taken into a building. If the current used is supplied from a central generating station, the danger is somewhat greater than where an independent local power plant supplies the needs of the building. In the latter case the hazard is limited to the low voltage system; in the former, there is the liability of the low voltage lines coming in contact with, and being charged from, the high potential lines which carry the supply current to the building.

Such a condition as that just mentioned may arise from several different causes, but usually occurs where wires of deficient insulation become crossed.

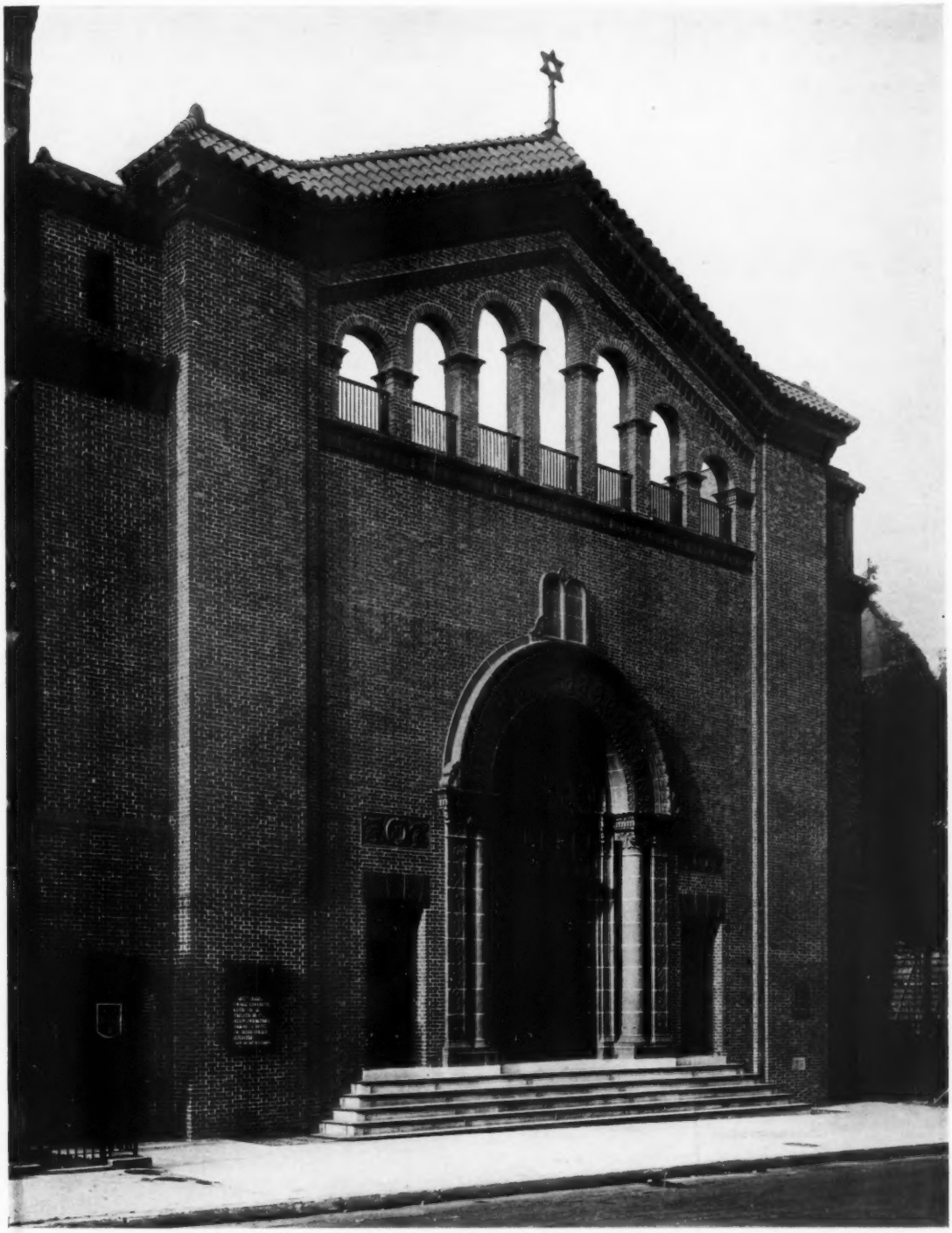


PLATE 206

MOUNT NEBOH TEMPLE, WEST 150TH STREET, NEW YORK

BERLINGER & MOSCOWITZ, *ARCHITECTS*

PLATE 207

MOUNT NEBOH TEMPLE, WEST 150TH STREET, NEW YORK

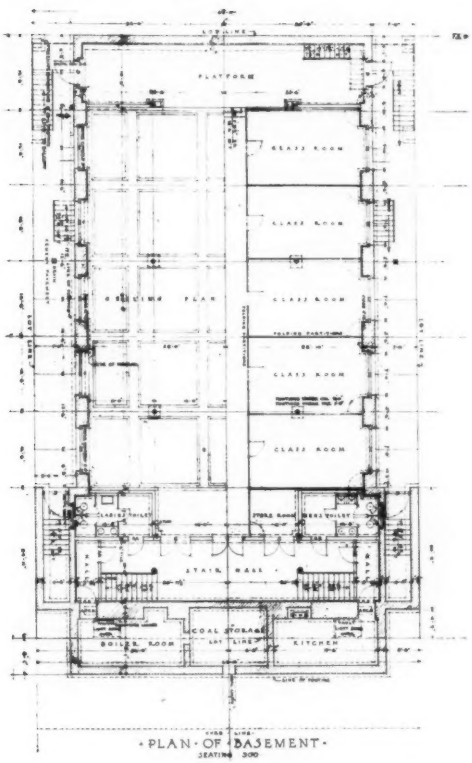
BERLINGER & MOSCOWITZ, *ARCHITECTS*

PLATE 208

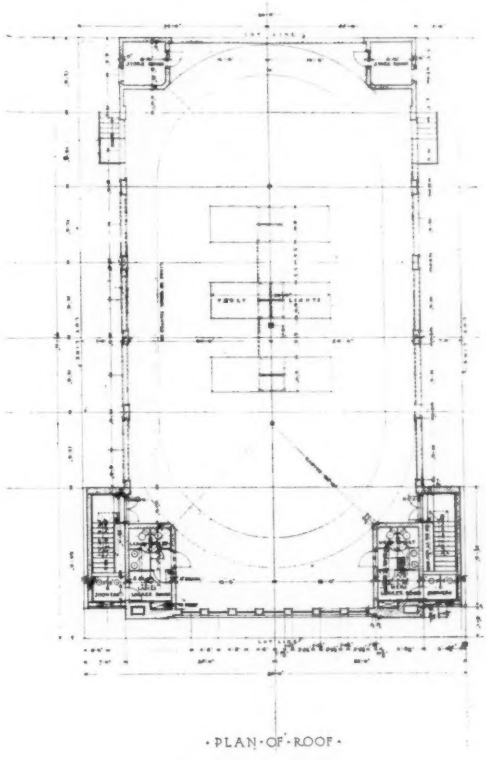
DETAIL OF MAIN ENTRANCE

MOUNT NEBOH TEMPLE, WEST 150TH STREET, NEW YORK

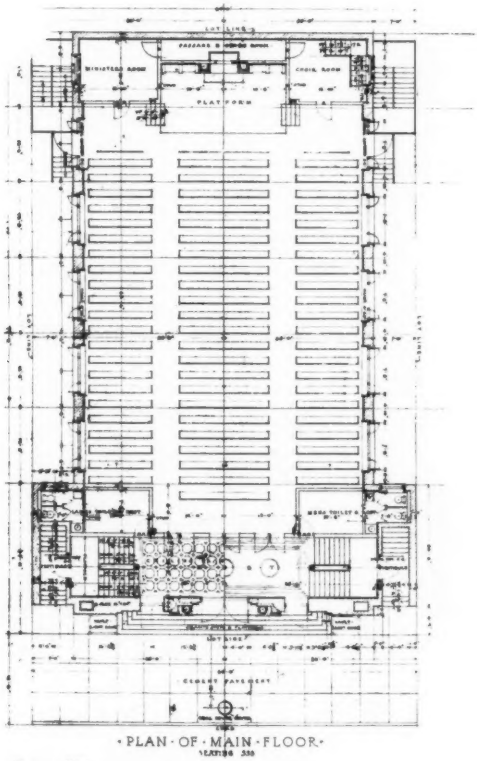
BERLINGER & MOSCOWITZ, *ARCHITECTS*



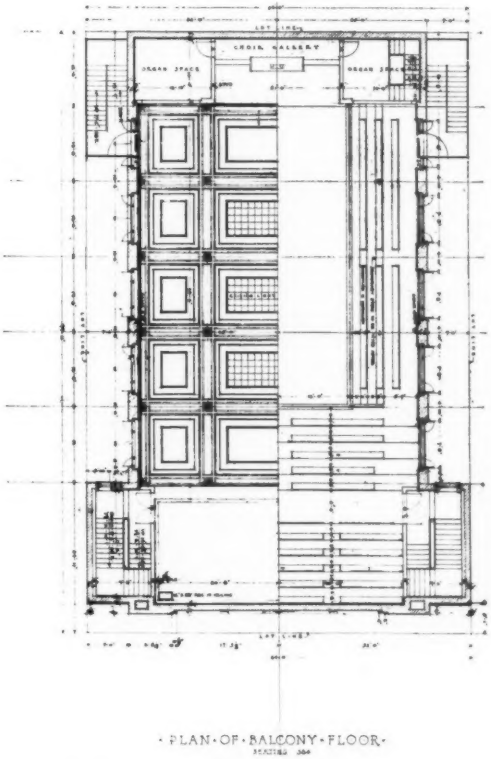
PLAN OF BASEMENT



PLAN OF ROOF



PLAN OF MAIN FLOOR



PLAN OF BALCONY FLOOR

PLATE 209

MOUNT NEBOH TEMPLE, WEST 150TH STREET, NEW YORK

BERLINGER & MOSCOWITZ, *ARCHITECTS*

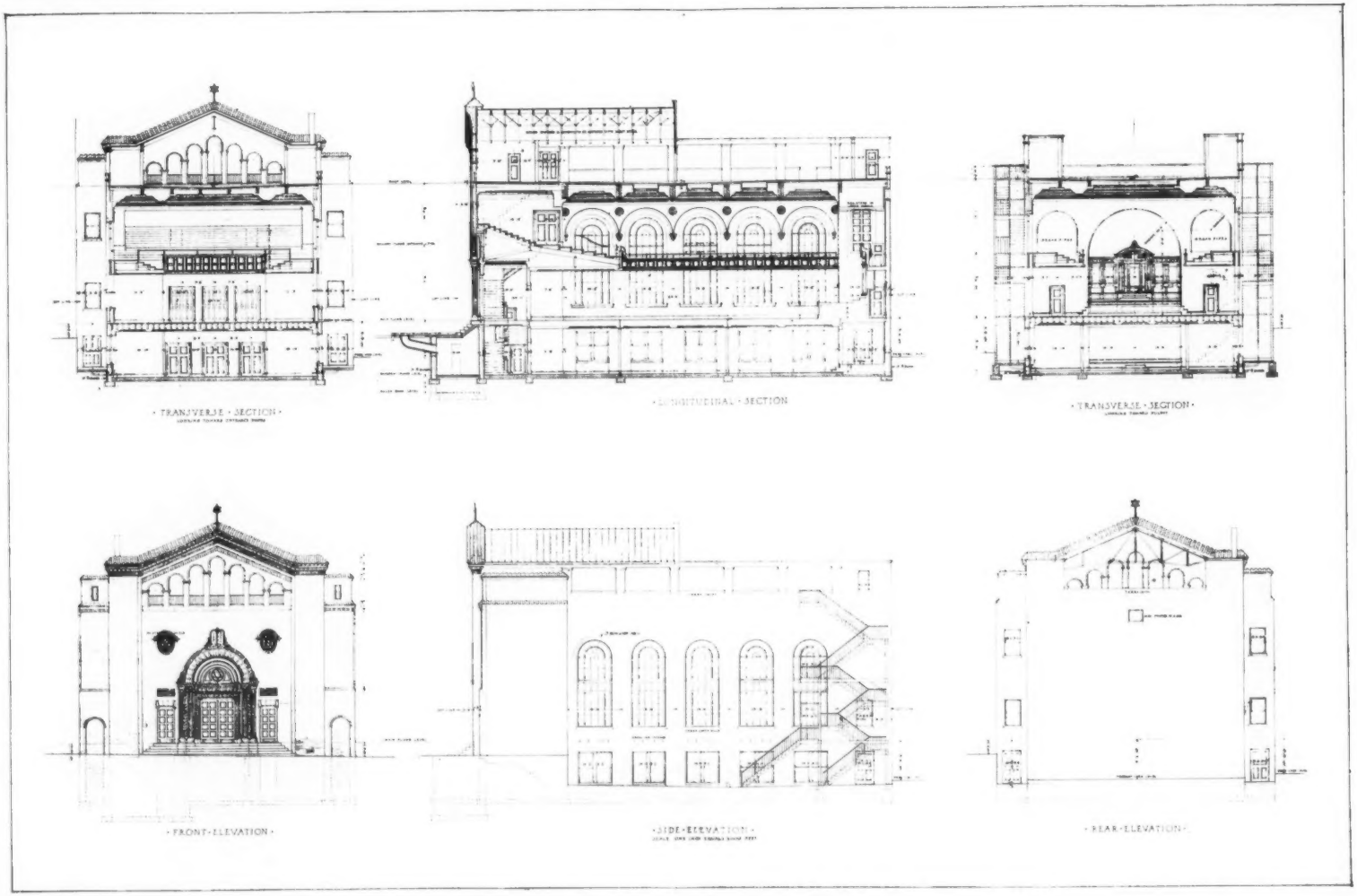


PLATE 210

MOUNT NEBOH TEMPLE, WEST 150TH STREET, NEW YORK

BERLINGER & MOSCOWITZ, *ARCHITECTS*

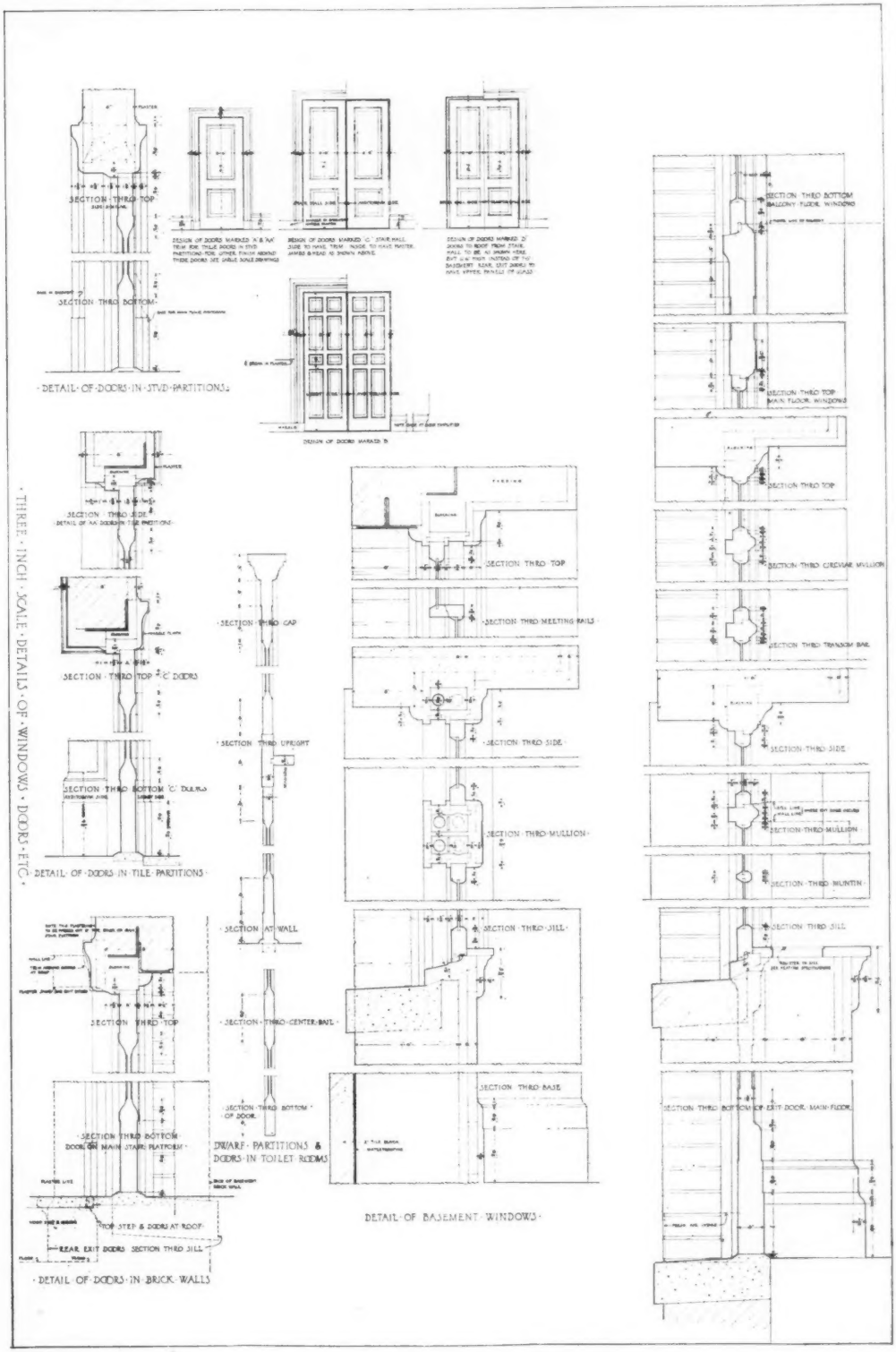


PLATE 211

DOOR AND WINDOW DETAILS

MOUNT NEBOH TEMPLE, WEST 150TH STREET, NEW YORK

BERLINGER & MOSCOWITZ, *ARCHITECTS*

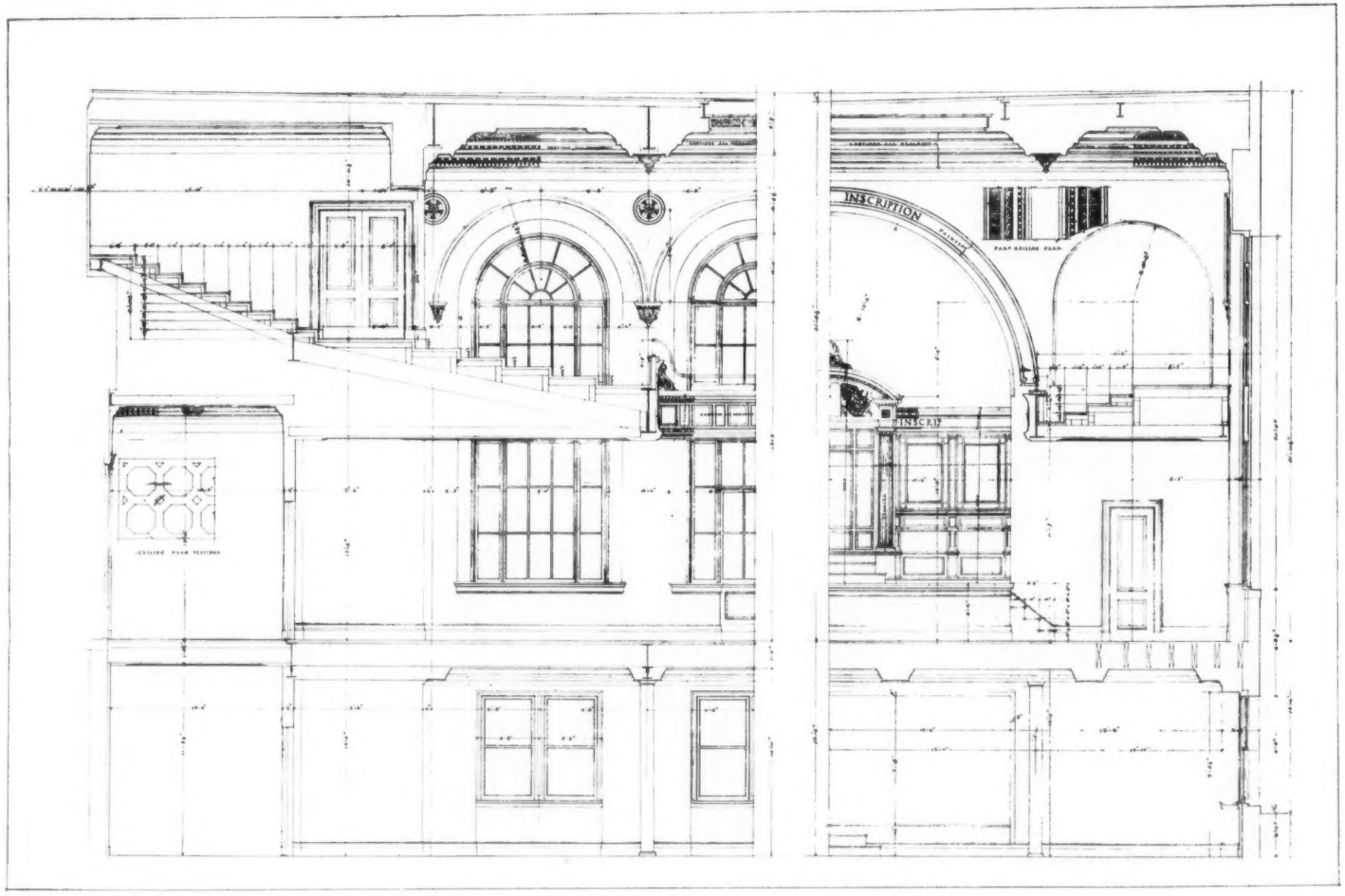
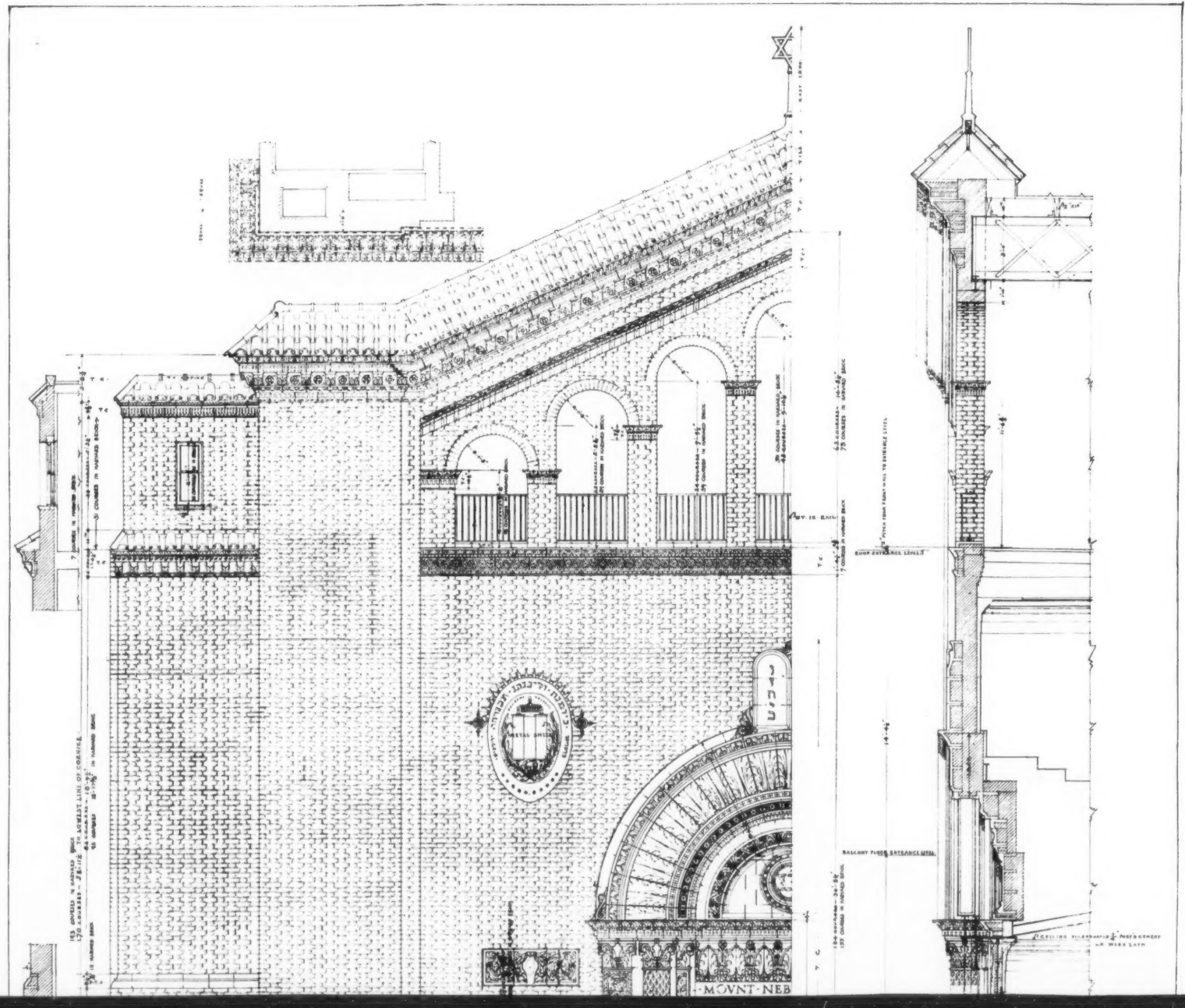


PLATE 212

MOUNT NEBOH TEMPLE, WEST 150TH STREET, NEW YORK

BERLINGER & MOSCOWITZ, *ARCHITECTS*


METAL SHIELD
MOUNT NEB

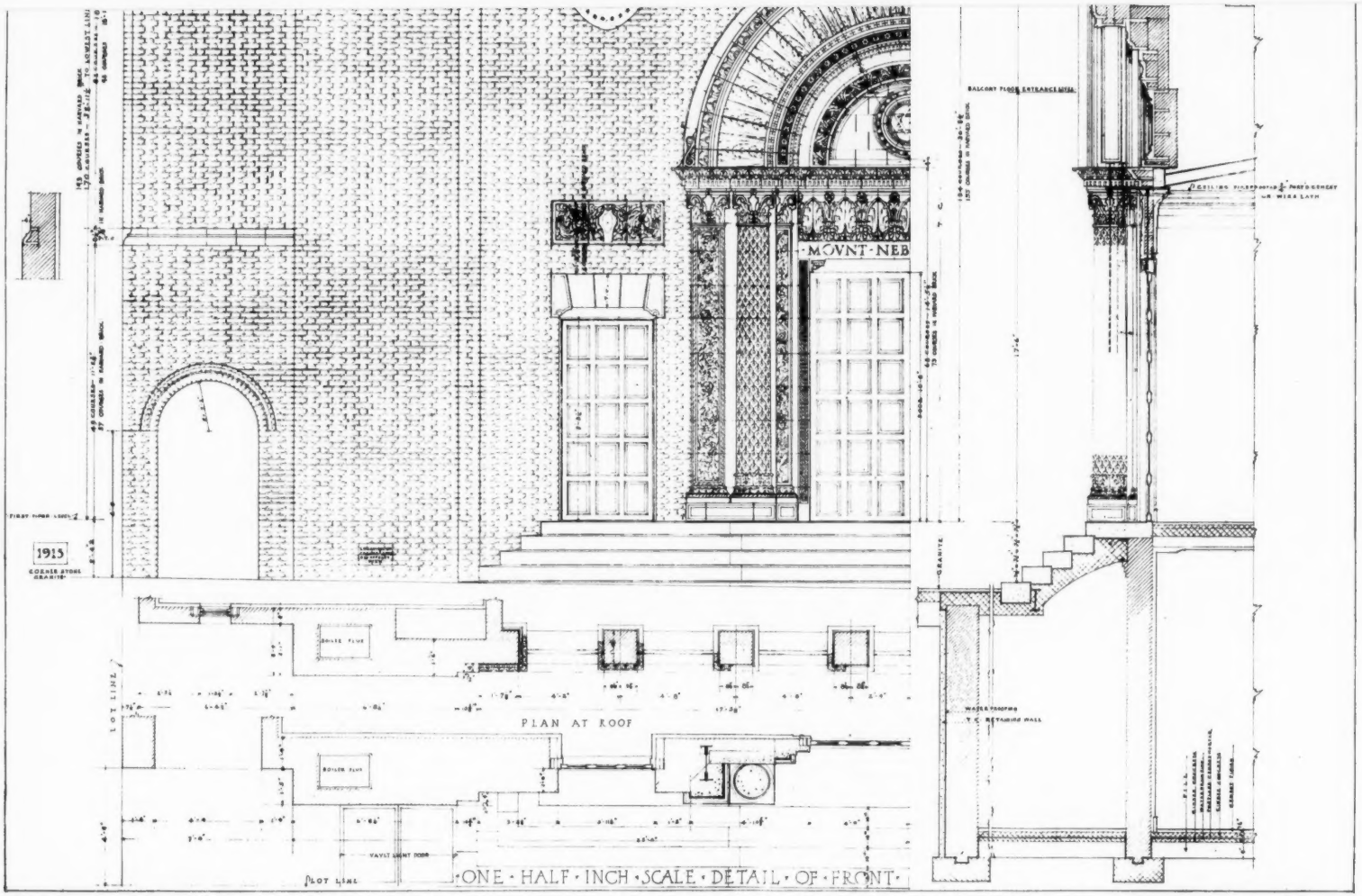


PLATE 213

BERLINGER & MOSCOWITZ, *ARCHITECTS*

THE·KNIGHTS·OF·PYTHIAS·HOME·AT·OGDENSBVRG·N Y

BERLINGER & MOSCOWITZ·ARCHITECTS ·527 FIFTH AVENVE·N·Y

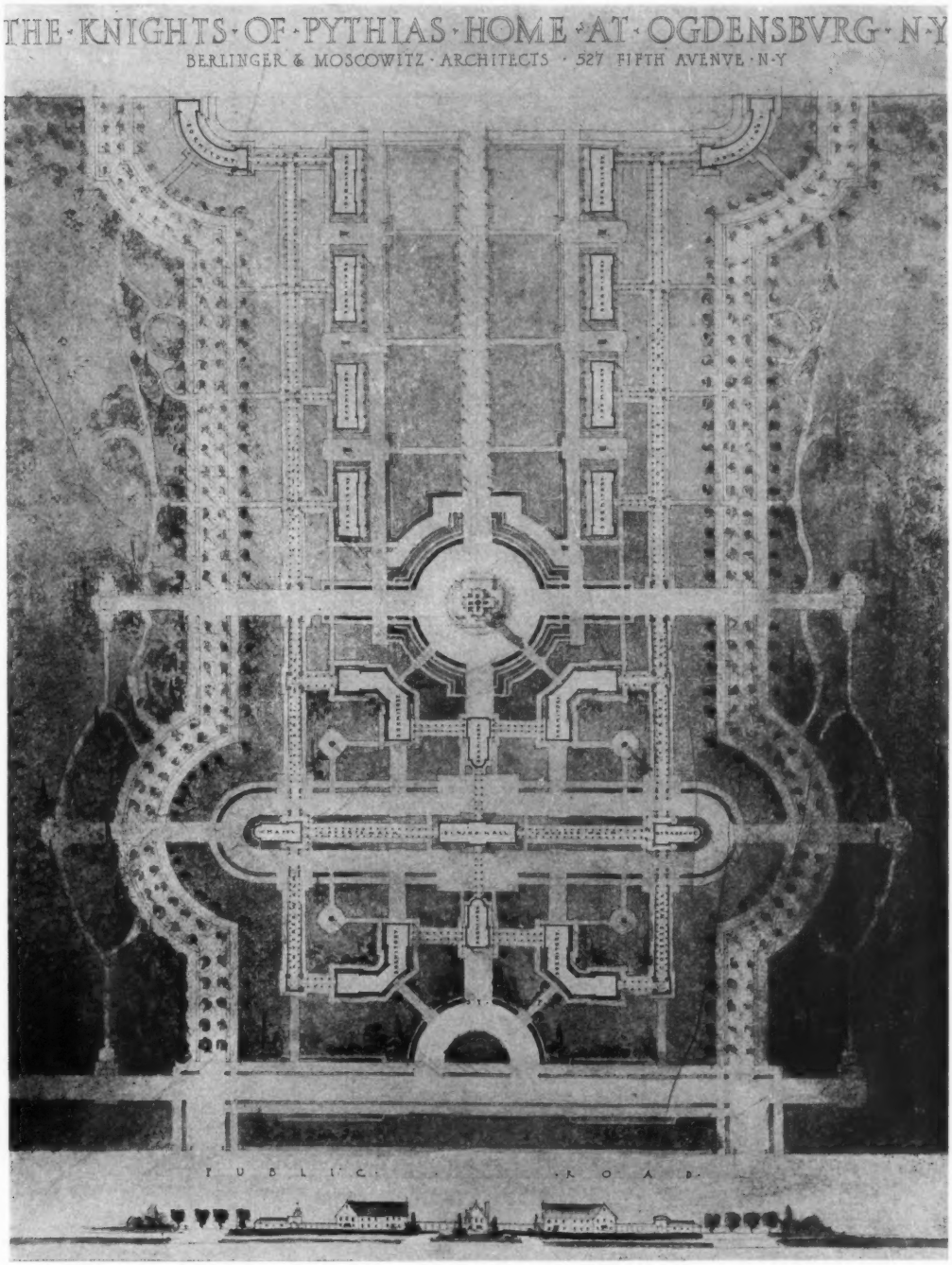


PLATE 215

PLOT PLAN

BERLINGER & MOSCOWITZ, *ARCHITECTS*

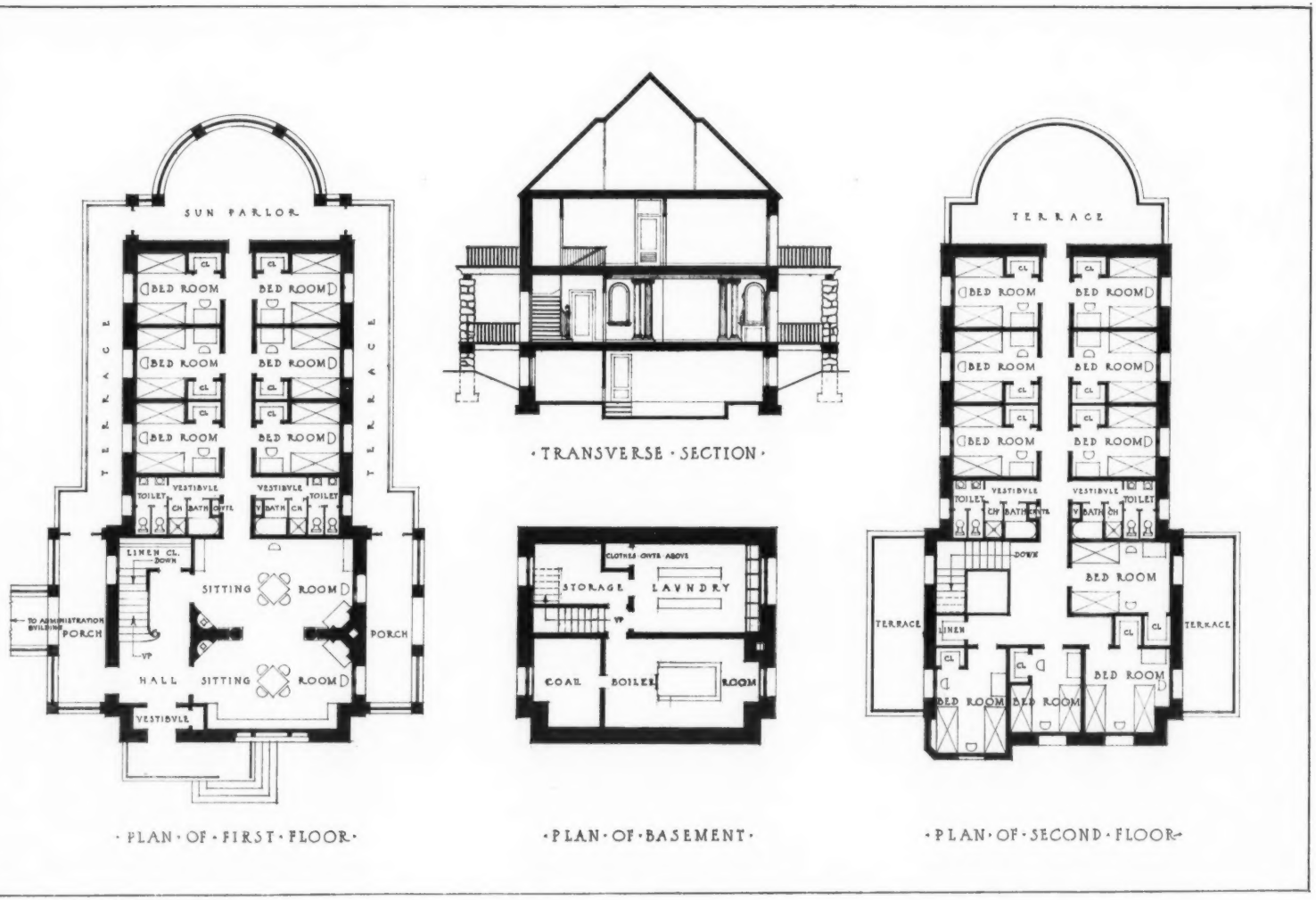


PLATE 216

KNIGHTS OF PYTHIAS HOME, OGDENSBURG, N. Y.

BERLINGER & MOSCOWITZ, *ARCHITECTS*

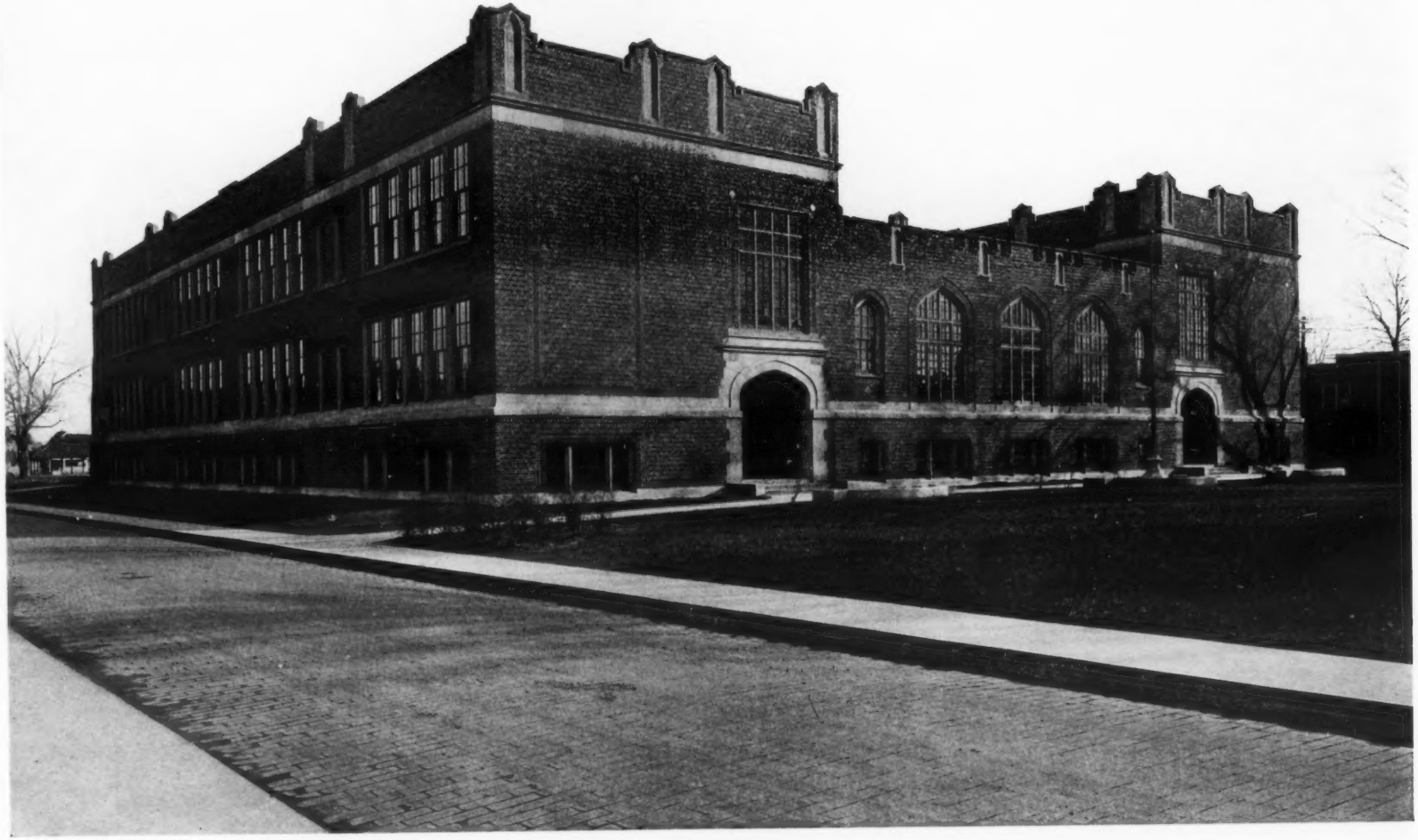
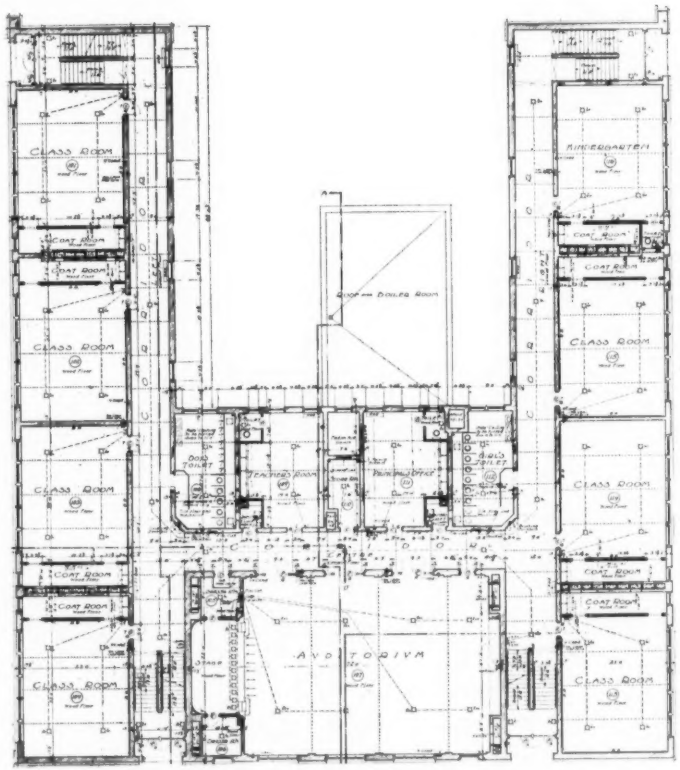


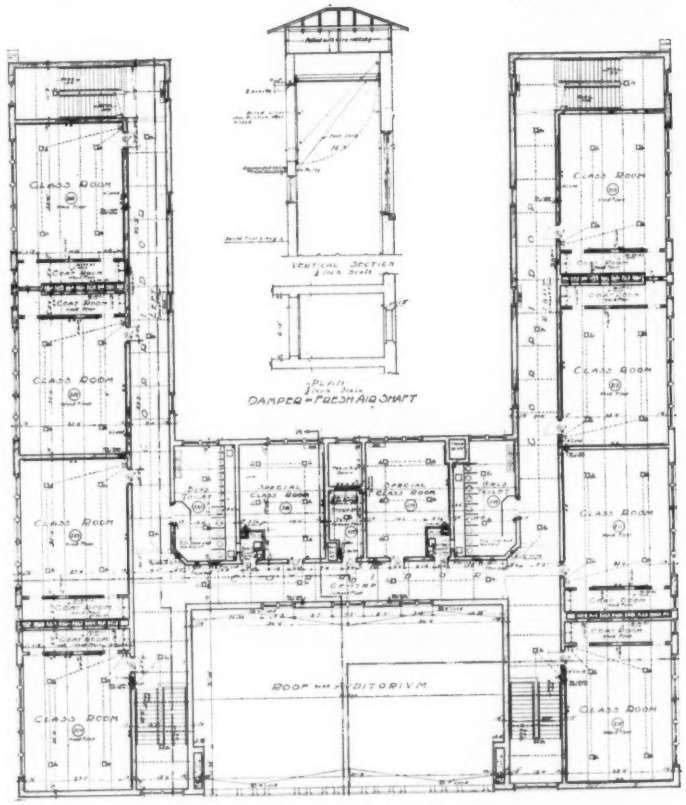
PLATE 217

CHERRY SCHOOL, TOLEDO, OHIO

EDWIN M. GEE, *ARCHITECT*



FIRST FLOOR PLAN



SECOND FLOOR PLAN

PLATE 218

CHERRY SCHOOL, TOLEDO, OHIO

EDWIN M. GEE, *ARCHITECT*

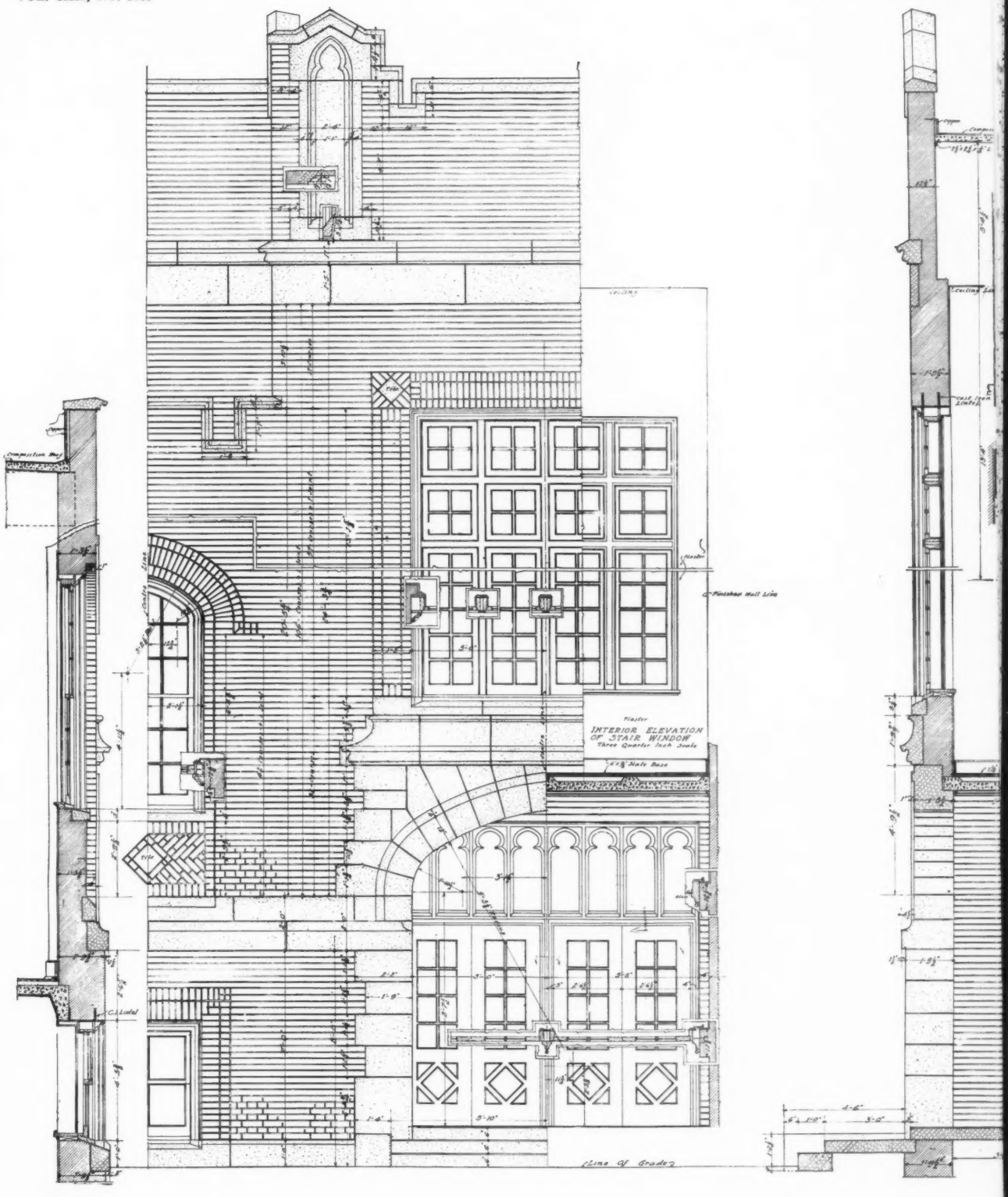
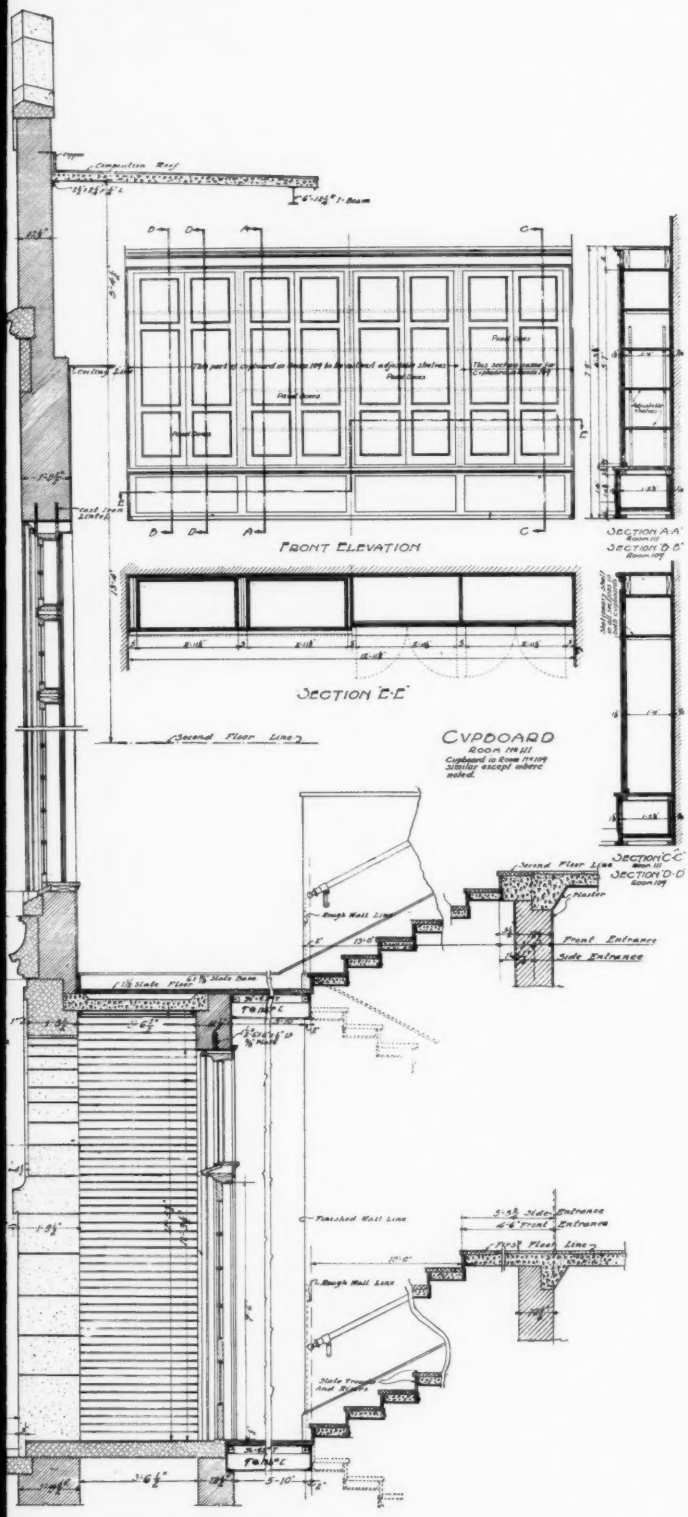
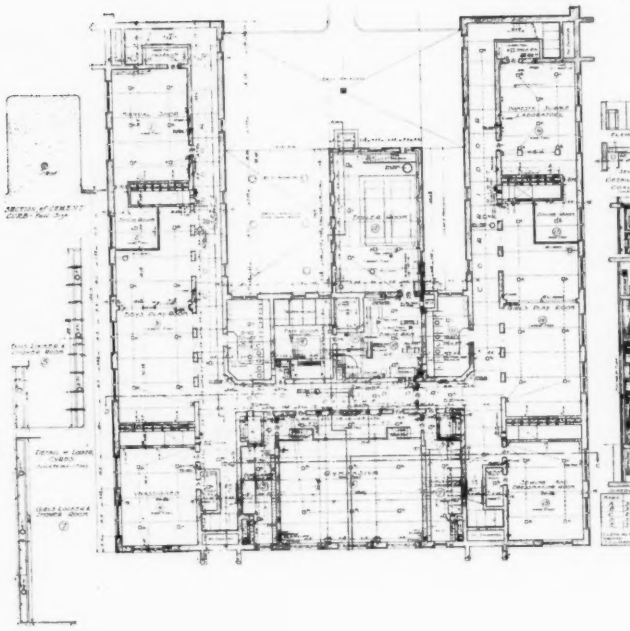


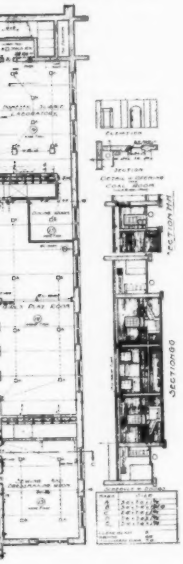
PLATE 219





CHERRY SCHOOL, TOLEDO, OHIO

EDWIN M. GEE, *ARCHITECT*



OHIO

The writer has in mind a recent incident where a high potential city arc line fell across a signal wire, which was connected to an electric clock in a nearby building. The signal wire became charged with the high voltage and an arc took place between the wire and the metal casing of a window, thus originating a serious fire.

Another characteristic situation is presented by the ordinary transformer, which consists essentially of two coils, both of which are wound on the same core. The 2300-volt alternating current from the central station is changed here into 115 or 230 volts for use in residences or other buildings. This change is the result of magnetic induction, the two coils being separated from each other by thorough insulation. It is possible that this insulation may become disrupted, and in order to prevent the higher voltage from crossing the gap and entering the building, good practice demands that both the transformer case and the neutral wire on the consumer's line shall be grounded, thus greatly reducing this hazard. The ground connection is usually made by an iron pipe running down the pole from the transformer into the ground. However, it is by no means unusual for this pipe to be burned off of the ground level by lightning discharges, thus removing the outside protection from the building circuit.

The Personal Injury Hazard.

Electrical injuries may be divided into two classes: First, those due to flashes or arcs which occur when direct or alternating currents are broken or momentarily short-circuited; and second, the various kinds of shocks which are the result of contact with charged conductors or exposed apparatus.

The size of a flash or an arc which is set up when a switch is opened is governed by the magnitude of the load being carried and the inductive nature of the circuit. Flashes are often the cause of bad burns; these are very painful and are difficult to heal. Injuries to the eyes, frequently resulting in loss of sight, are very common and may occur either from the flash itself or the consequent sputtering of molten metal.

The extent of the injuries chargeable to shocks depends upon a variety of circumstances, the most important of which may be listed as follows: (1) Magnitude of voltage; (2) Physical condition of the injured party; (3) Area and location of contact; (4) Duration of contact.

Where potentials of 500 volts or more are in use, the danger of fatal shocking is a constant menace, and great care must be exercised at all times in the handling and protection of equipment.

On 115 and 230-volt circuits the hazard of loss of life is not an important factor. While it is true that electrocutions have been caused in some cases, yet they are of infrequent occurrence. There are, however, many minor dangers of accidents due to shocks and burns from coming in contact with exposed parts. Ordinary shocks are not in themselves of a very serious nature, but usually manifest their dangerous character by causing a workman to be thrown from a ladder or into the moving parts of a machine. A slight shock to any one with a weak heart would prove serious; it has also been observed that in gripping a conductor the muscles of one's hands may become so violently flexed as to prevent him from releasing himself, in which case continuing to receive the current would soon result in death.

One of the most important factors entering into the danger of electric shocks is the magnitude of the resistance of the human body and particularly the contact resistance at the points where the current enters and leaves the body. This resistance varies over wide limits. If a particularly good contact is made, the surface resistance will be relatively small and consequently the flow of current through the body correspondingly large.

With respect to these physiological effects of the electric current, the following quotation is of interest, being taken from the report of the Commission on Resuscitation from Electric Shocks, presented at the thirty-sixth convention of the National Electric Light Association, in Chicago, June, 1913:

"The electric current may kill either by temporarily paralyzing the nervous control of the muscles of respiration, or by stopping the regular beat of the heart. When the heart is seriously affected it ceases to contract as a whole, but continues to contract in parts here and there, so that it appears to quiver. It is then said to 'fibrillate.' In this condition the heart fails to keep the blood circulating and death quickly results. At present no practical procedure has been discovered which will restore the regular beat of the heart in man after it begins fibrillating. Hope of resuscitation is now restricted to proper treatment of the cases of paralyzed respiration; and since deprivation of oxygen for about ten minutes injures irremediably some of the nerve centers of the brain, it is particularly important that measures for resuscitation be applied immediately and continued until natural breathing returns. In some instances, however, the heart may be merely weakened without being made to fibrillate; in such cases artificial respiration may be of vital importance, because a greatly weakened heart leads to impairment or total stoppage of respiration, which in turn destroys the last vestige of the heart-beat. In all cases, therefore, an at-

tempt should be made to restore natural breathing."

The Fire Hazard

We may judge of the importance of this phase of our subject by consulting fire insurance statistics which show that approximately 5 per cent of our annual fire loss of nearly a quarter of a billion dollars is contributed by fires of electrical origin. The most prolific source of electrical fires is defective wiring. This hazard is prevalent principally in those cities and smaller communities where electrical codes and fire protection ordinances are not in use, although it is by no means confined to these localities.

There are three systems of wiring which are ordinarily met with; namely, (1) exposed knob-and-cleat, (2) concealed knob-and-tube, and (3) conduit. Many defects are common to the first two of these systems, and on this account they are prohibited in some of the larger cities. These defects may be enumerated as follows:

1. *Overloading of circuits.* This results from the ease with which open wiring may be extended by incompetent persons to include additional lights or other services. In order that the additional load may be carried, the circuit requires a heavier fuse than is in keeping with proper protection, thus increasing the heating and deterioration of the insulation and the danger of serious arcing.

2. *Insufficient insulation.* The insulation on the conductors may wear through, due to swinging, jerking or other movement. Either the insulation catches fire or an arc takes place which results in igniting adjacent inflammable material. This is very likely to occur where wires passing through wooden joists or partitions are not provided with proper bushings, and especially where they are attached directly to wood or metal.

3. *Mechanical injury.* Owing to its exposed nature open wiring may be pulled off its supports and come in contact with other wires or conducting substances such as gas pipes, and thus set fire to combustible material. Concealed wiring is not subject to this objection to the same extent after the building has been completed, but it is liable to be damaged in many ways during the course of construction.

4. *Splices.* These may be improperly made or may be pulled loose, thus giving rise to dangerous arcing. Corrosion may also take place where moisture is prevalent.

From the list of hazards enumerated above, it is evident that it is unwise to permit any open or concealed wiring of the types referred to. The only method by which a satisfactory degree of safety, convenience and economical operation can be secured is by enclosing all conductors in conduits of metal pipe.

Conduits are not considered as an insulation but as a mechanical and fire protection only; consequently wires installed in conduit must be covered with proper insulation as usual. It is important that conduits be provided with suitable fittings to protect the service wires and prevent the entrance of moisture; the interior should also be free from burrs to avoid possible abrasion of the insulation on the wires. However, if the conduit system itself is properly grounded, the possibility of danger is practically eliminated even though leakage from the wires should take place.

In addition to defective wiring, other sources of electrical fires are open knife switches, current breakers, and exposed fuses. When an unprotected switch carrying a load is opened, the arc set up is likely to prove a serious fire hazard by igniting adjacent inflammable material. Mechanical injury is also likely to result in short-circuits or grounds which may originate fires. The blowing of an exposed fuse is always attended with danger, and may develop into an additional hazard through the common practice of replacing the blown fuse with a piece of copper wire or a new fuse which is several times too heavy. Naturally this procedure gives no protection whatever, but instead overfuses everything beyond, and may result in overheating the circuit, serious arcing, or damage to equipment. As the fuse is a safety feature which is designed to furnish protection against abnormal conditions of current, it is most important to guard against these dangerous practices.

Damage to Equipment

The hazard of damage to equipment usually manifests itself by burning out the armatures of motors. This may be due either to a short-circuit or ground caused by a hand or a piece of metal coming in contact with an unprotected switch, or else to an overload or surge in the current which would be possible under circumstances of improper fusing as set forth above.

However the damage to equipment is not the only aspect of the situation to consider. Far more serious is the resulting interruption of service where various utilities are interfered with, such as elevators, lighting systems, water supply, refrigeration, etc.

Safeguards

The first point to be considered in the discussion of safeguards is the necessity for keeping the voltage as low as is consistent with the working requirements of the equipment and apparatus to be used. This not only reduces the various hazards

(*Continued on page 341*)

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VOL. CXII NOVEMBER 7, 1917 NO. 2185

To Insure Better Homes for Munition Workers

FOR protection against inadequate housing of labor employed in munition factories the National Society of Defence is making a survey to estimate the need for immediate construction of steel buildings. Henry Atterbury Smith, architect, who has been serving as investigator for Eastern centers, has urged the need for the proposed dwellings if the Government requirements in war supplies are to be promptly met. Mr. Smith stated in an interview published in the daily press that the wholesale shifting of the industrial population is forcing a condition that will prove to be an important factor in supplying at the earliest possible time the growing demand for industrial houses and will also stimulate the present attitude of those who are withholding money for building loans.

With the present agreement as to the regulation of the price of steel the one great difficulty remaining to be overcome is the delay in delivery. When delivery of steel and other material can be relied upon, building activity will undoubtedly return to the volume of normal times. There has been a very decided expression of opinion on the part of architects and building contractors that the action of the Federal Government in co-operating in the regulation of the price of steel was a very important step in the direction of encouraging a strong building movement. With all the deterrent factors gradually eliminated and the very marked daily improvements in the local building situation, the hysteria that was so pronounced but a short while ago is fortunately subsiding. Now that the large force of labor that was engaged in the construction of army and navy cantonments is being released owing to the completion of these buildings, thousands of workmen will be available for the many necessities of building construction. The building market is rapidly settling to a normal condition, and there is a general tendency on the part of those holding investing capital to view the situation more leniently and to be willing to extend such financial aid in building operations as may reasonably be asked.

It is gratifying to note these conditions and to feel assured they are facts and that we have been able to pass successfully through what at one time appeared to be one of the most trying conditions that had confronted building construction since the Civil War.

The Re-education of the Adult

IN an editorial in a recent issue of the New York *Sun* comment is made on the movement in England to re-educate, on their return to civil life, such soldiers as may have become, through loss of limb or chronic ailment, incapacitated from pursuing the trades in which they were engaged before taking up military service. This editorial concludes with the following statement:

"As yet no action has been taken by the United States to establish industrial centers for the re-education of our crippled soldiers. It is none too soon to begin."

In THE AMERICAN ARCHITECT, issue of August 22, extended editorial comment was made as to the movement that had been inaugurated in New York City looking to the establishment of schools where this re-education of the adult might be undertaken, and it was stated that a generous citizen had presented to the Red Cross in New York a large sum of money and the use of a building where the preliminaries of a system could be fully tried out.

This work is now going forward in a serious way, and while it is premature to enter into details, it may be stated that when that unfortunate day arrives when our maimed and crippled soldiers find their way back to this country there will have been pro-

vided a means to re-create them so that they may become helpful to themselves and not a charge on the community.

That the Government is keeping in touch with these matters is also true, and it will be found that when necessity arises the United States will not be behind other countries in the solicitous care of men who have risked all and lost much to insure the victory of our arms.

A Good Example

ARCHITECTS, contractors and supply men, and all others directly connected with building interests in Tulsa, Okla., have recently formed a permanent organization to consider problems allied to the city's growth that may properly be considered as of importance to the building industry.

While this organization will naturally be of an industrial nature, it will not strictly confine itself to such problems, but will also include every project of social and educational advancement.

Ably conducted, an organization of this character will have an important influence in the proper development of the city and prevent those errors of ignorance and negligence that are always regrettable and so very costly in later correction.

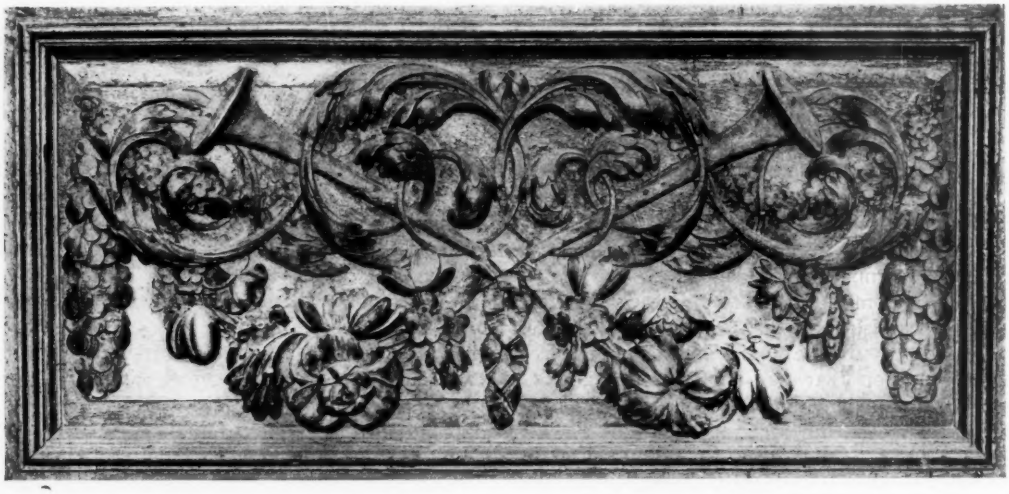
Architects practising in the smaller cities and larger towns can exert a valuable influence in associations of this nature. The opportunities for influencing correct methods of town planning, encouraging good types of architecture and rightly directing the artistic growth of the community are undoubtedly many. By giving impetus to the formation of these societies and active participation in their activities they will be serving a very useful purpose.

Stop, Look, and Listen

NOW that our universal service army is called to the colors, the war is being brought home to each of us in a more serious way than ever before. It behooves this nation to prepare these new forces in such a thorough manner that the most searching inspection will reveal no vulnerable points. There must be no weak links remaining in our chain of defense to be detected and perhaps taken advantage of by a watchful enemy.

This question of preparedness, however, is not alone a military matter. It extends all through our daily lives. Everything we do is influenced by the degree of our preparedness, and in no one place is preparedness more essential than in the architectural profession. The myriad duties which are incumbent upon the architect, merely emphasize the necessity for careful attention to every detail.

It was with this thought in mind that we published in a recent issue an article on the importance of structural details. Elsewhere in this number we continue the subject by a discussion of efficient safeguarding of electrical installations.



Safeguarding Electrical Installations

(*Continued from page* 338)

above referred to but also results in a reduction in the original cost of installation. It is also essential that the rules and regulations of the National Board of Fire Underwriters, which are embodied in the National Electrical Code, should be followed wherever possible. The principal function of this code is to minimize the fire hazard, and it should therefore be supplemented by the National Electrical Safety Code which emphasizes the elimination of the personal injury hazard.

It is evident that the interests of safety to life, prevention of fire, and continuity of service are best promoted when all electrical apparatus is properly guarded or enclosed. The importance of installing all wires in conduits of metal pipe has already been referred to. The danger of mechanical injury is thereby eliminated, any internal trouble that may develop is confined, and should the conductors become defective for any reason, or should it be desired to extend the system, the existing wires may be withdrawn from the conduit and new and larger ones substituted.

In addition to unprotected wiring, we have also observed that the manner in which electrical accidents occur is distributed among many other causes, the principal ones being unguarded knife switches, circuit breakers and fuses. For the following reasons equipment of this nature should be installed in properly designed metal cabinets:

1. To furnish protection from shocks and burns due to accidental contact with current-carrying parts.
2. To prevent tampering.
3. To eliminate the risk of fire.
4. To protect switches, etc., from mechanical injury, dust, oil and other foreign matter.
5. To prevent a break in the continuity of service due to broken circuits and burned out motors.
6. To improve appearance.

These hazards are most efficiently eliminated by enclosing switches, or both switches and fuses, in metal cabinets so arranged that access to the interior cannot be had except when the switch is in the off position. This may be accomplished by providing a switch operating handle on the outside of the housing together with an arrangement for interlocking the door latch and the switch handle. For additional security it is desirable to ground the cabinet so that a shock would be impossible in case any live part accidentally came in contact with the cover.

The hazards due to transformers are usually minimized by locating such apparatus on poles adjacent to the building. Transformers should not be attached to the building under any condition. When installed inside the building, it is of extreme importance that they should be isolated in separate and enclosed vaults of fireproof construction, which are thoroughly ventilated through a chimney or flue to the outside air.

Proper attention to the various safeguards outlined above will go far toward the elimination of the many hazards incident to the installation and use of electrical equipment. Too much dependence should not be placed on a general reference to ordinances or codes. While it is proper to be guided by these, as noted above, yet the fact must not be overlooked that in many localities the rules and regulations laid down therein do not receive the recognition which they deserve. This further emphasizes the fact that the full measure of protection can be obtained only by definite specifications and efficient supervision.

* * * * *

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France Supreme in Architecture

In architecture France is supreme. It well may be said that without France there would have been no Gothic architecture. The cathedrals of France are absolutely unrivaled. One has only to mention the names of Notre Dame de Paris, Bourges, Rheims, Chartres, Rouen, Amiens, Beauvais, and Coutances to bring up memories of miracles of creative design which no words can fittingly characterize or describe. Wonders of constructive ingenuity as they are, they have a yet more supreme significance as evidence of the refinement and taste of a people instinct with emotion and ennobled by idealism in its most exalted phase. These great buildings give expression to the spiritual aspirations of a great people. They are constructions of superb scale and fascinating beauty, embellished by tracery and arabesque, carving and inlay, stained glass, tapestry, bronze, and iron of marvelous craftsmanship and exquisite design. They are the product of a thousand years of faultless taste, the contribution of innumerable thousands of craftsmen devoted to the glory of God and the love of France.

And it is this glorious nation that the hordes of Germany would destroy. But, "They shall not pass."—Cass Gilbert in the *World's Work*.

A Theater Without Footlights

A large Philadelphia theater is to be the first one in the world to be operated without footlights. All the stage illumination will come from above, being as nearly as possible a reproduction of ordinary sunlight. The taking away of the footlights comes as a general surprise to theatergoers, violating as it does one of the traditions of stage art.

The system employed, covered by patents both here and abroad, demands a long steel bridge, of cantilever construction and 10 feet wide, which is thrown all the way across the proscenium arch directly behind the curtain. In the present instance this bridge will be 98 feet in length, and the steel construction will be of the heaviest. On the bridge will be stationed 80 electricians, each handling two lamps pointed downward and manipulated much as a soldier might aim a machine gun. The rays of light completely envelop the characters on the stage below, and explore every corner of the stage. It is just as though an enormous sun were above the players. The effect is described as the most natural lighting ever seen in a theater.

The combined candle-power of these lamps is 160,000, and the electric current used at each performance would carry a submarine across the Atlantic or illuminate two large metropolitan hotels for 24 days.—*Scientific American*.

Recent Books

PRACTICAL STRUCTURAL DESIGN. A Text and Reference Work for Engineers and Architects Adapted to the Needs of Self-Tutored Men. By Ernest McCullough, C.E. Full cloth, 300 pages, size 6 x 9 inches. Price $2.50. New York, U. P. C. Book Co., Inc., 243-249 West Thirty-ninth Street.

The present work is the result of an insistent demand made upon the author that he gather between the covers of a book a series of articles that appeared in the pages of *Building Age*, under the title "Designs of Beams, Girders and Trusses." All the statements set forth in this work had been previously reduced to accurate facts by their submission to classes of students organized for the purpose of preparing for the State examinations in architecture. The purpose of this book is to reach the man who desires the facts that the work contains, but who is too busily engaged in practical work to attend classes where these subjects are treated. The author has handled his subject in a very direct way, and all the vast amount of information set down is easily available and as easily understandable. It will be found a very useful work in the reference library of architects.

WOOD AND OTHER ORGANIC STRUCTURAL MATERIALS. By Charles Henry Snow. Full Cloth. 478 pages, size 6 x 9 inches, 110 illustrations, price $5.00. New York, McGraw-Hill Book Company.

This book has been prepared with particular reference to its usefulness to architects, engineers and students in schools of technology. Its purpose is to present general as well as physical characteristics of certain groups of structural materials, most of which are of organic origin.

Among the materials mainly described are woods, paints and varnishes. There is no doubt that a book of this character will supply much needed information. The very large demands upon the architect's time leave him small opportunity to delve into all the many books that will give him the information he believes he needs as to the characteristics of structural materials. A work of this nature is in a sense encyclopedic, and will have considerable value as a reference book in the architect's library. All the information is arranged in a systematic way and becomes readily accessible, and therefore effects a considerable saving of time in its use.

Current News

"Doing Their Bit"

A roster of men from offices of architects in Boston, Mass., who are now serving in some one of the various military departments of the United States in this country, with our expeditionary forces in France or with our Allies follows:

ADDEN & PARKER

Frank W. Crimp, Signal Training Depot, Rockcliffe Camp, Ottawa, Ont., Canada.

ALLEN & COLLENS

George F. Cleary, Base Hospital, U. S. Medical Corps, Camp Devens, Ayer, Mass.

H. Daland Chandler, 1st Training Company, C. A. C., Fort Monroe, Va.

Godfrey K. Downer, First Lieutenant, Signal Corps.

Donald A. Fowle, 101st U. S. A. Engineers Corps, France.

F. L. AUSTIN, BURLINGTON, VT.

C. G. Nichols, 6th U. S. Engineers, Company C, Washington Barracks, Washington, D. C.

BELLOWS & ALDRICH

Robert P. Bellows, American Red Cross, Paris.

Albert C. McLellan, 4th Company, R. O. T. C., Plattsburg.

Rudolph DeGhetto, 27th Company, C. A. C., Springfield Arsenal.

Donald des Granges, Atlanta, Ga.

BIGELOW & WADSWORTH

William G. Thayer, Camp Devens, Ayer, Mass.

Horace Sampson, West Point.

BRAINERD & LEEDS

D. M. Drew, National Army in training, Ayer, Mass.

Chester E. Dodge, 1st Co. C. A. C., Fortress Monroe, Va.

WILLIAM CHAPMAN

Albert Parker, United States Navy, Narragansett Pier.

COOLIDGE & CARLSON

Stanley J. Fryer, Lieutenant-Colonel, Canadian Army.

CRAM & FERGUSON

Wilberforce Horsfield, Lieutenant, British Army.

John A. Root, Second Lieutenant, U. S. A.

Joseph E. Wood, Second Lieutenant, U. S. A.

H. Bush-Brown, Naval Reserve, Washington, D. C.

W. E. Kinsley, Aviation Corps.

Howard Moise, Engineers.

Herbert MacLeod, U. S. A.

Benjamin E. Thomas, U. S. A., Camp Medical Dept., Syracuse, N. Y.

Frank Parziale, Engineers Co. B. Camp Devens, Ayer, Mass.

Kenneth Rea, Captain Canadian Army.

Dean Hamilton, Field Artillery, 36th Division.

CHARLES K. CUMMINGS

Charles K. Cummings, Ensign, U. S. N. R.

ALFRED L. DARROW

George N. Jacobs, Chief Carpenter's Mate, Dept. of the Navy, Bumpkin Island.

DERBY & ROBINSON

Eugene W. Clark, Jr., Unsettled—will let us know later.

HAVEN & HOYT

Wilfred F. Higgins, Canadian Overseas Service.

LOIS L. HOWE & MANNING

Philip N. Sanborn, 10th Regiment, U. S. Engineers, Co. F, Division No. 26, American Expeditionary Force.

THOMAS JAMES

Oscar H. Cederlund, Camp Devens, Ayer, Mass.

KELLEY & GRAVES

George W. Morris, Second Officers' Training Camp, Co. 4 N. E., Plattsburg, N. Y.

HAROLD FIELD KELLOGG

Harold B. Willis, American Ambulance Service (Military Cross), later Aviator in the Lafayette Escouadrille, now supposed to be a prisoner in Germany.

KENDALL TAYLOR CO.

George E. Parsons, Captain and Quartermaster, American Expeditionary Force, France.

Francis X. Hanlon, Co. B, 101st U. S. A. Engineers, France.

HENRY F. KEYES

Herman G. Curtis, Engineers Officers Reserve Corps, First Lieutenant, American University, Washington, D. C.

KILHAM & HOPKINS

Philip Norton Smith, Somewhere in France.

George H. McElligott, Fort Oglethorpe, Ga.

J. B. Wells, Washington, D. C.

George T. Kelley, Somewhere in France.

Ralph Aims, Coast Artillery, Panama.

Lieutenant G. Clarke Whiting, Somewhere in France.

Orin F. Freeman, Washington, D. C.

Clarke Robinson, Aviation Corps, Technology.

LITTLE & RUSSELL

W. Power Blodget, Fortress Monroe.

H. K. Franzheim, Aviation Corps, France.

I. P. LORD

Major Julian I. Chamberlain, El Paso, Tex.

MAGINNIS & WALSH

Jerome I. Downes, Plattsburg.

Alfred P. Shaw, Inspector Aviation, Paris.

William Colleary, Ayer, Mass.

Walter W. Munn, U. S. Marine Barracks, Phil.

Luther S. Phillips, U. S. N. R.

JAMES E. MCLAUGHLIN

Three men have been drafted, but not yet called to serve. When they are, will send names along.

WILLIAM L. MOWLL

Howard H. Barton, American Red Cross, Beaumont-Sur-Oise, France.

GEORGE F. NEWTON

Captain Jewett N. Newton, 302d Field Artillery, Camp Devens, Barracks No. 83, Ayer, Mass.

OLMSTED BROTHERS

Colman Schwarzenberg, Private, 33d Company, 9th Battalion, Camp Sherman, Chillicothe, Ohio.

James Wynburgh, Volunteer, British Army, care of D. Westrick, 290 Church Street, New York City.

Hammond Sadler, Gunner, Class "A", Royal Garrison Artillery. Home address, Hemingford Grey, St. Ives, Hunts, England.

Adam John Halfenstine, Private, Artillery Corps, Port of Embarkation, Newport News, Va.

Albert Donald Gray, Private, drafted, 301st Infantry, Camp Devens, Ayer, Mass.

Captain Faris B. Smith, Quartermaster's Department, Cantonments, 15th and M Streets, Washington, D. C.

Lieutenant Edward L. Keeling, Quartermaster's Department, Cantonments, 15th and M Streets, Washington, D. C.

Capt. George Gibbs, Jr., Quartermaster's Department, Cantonments, 15th and M Streets, Washington, D. C.

Theron Irving Cain, Civilian Engineer at Camp Devens, care of George Wetherbee, Barre Bldg., Ayer, Mass.

Arthur E. Spooner, Civilian Engineer at Camp Devens, care of Captain Taylor, Box 88, Ayer, Mass.

John J. Clune, Private, drafted for National Army, notified to report at Camp Devens, Ayer, Mass., on forty-eight hours' notice.

PARKER, THOMAS & RICE

William J. Mulhall, Co. C, American Expeditionary Force, France.

Rolland W. Choate, Wilmington, Mass.

Keith Harris, Poste Restante, G. P. O., London, E. C., England.

Allain de Boutillier-Chavigny, Toronto, Canada.

WILLIAM G. PERRY

Isadore Richmond, Charlestown Navy Yard.

EDWARD H. PRICHARD

Irving L. Hyland, 101st Regiment U. S. Engineers, care Postmaster, New York.

PUTNAM & COX

George C. Sturtevant, Aviation Corps in South.
B. N. Gregson, Somewhere in France.
Frank W. Horne, Navy, Weymouth.
F. Nelson Breed, Somewhere in France.
William C. McDermott, Canada.

RICHARDSON, BAROTT AND RICHARDSON

F. L. W. Richardson, American Red Cross, Paris.
Chester Churchill, Plattsburg, N. Y.
Millard B. Gulick, Plattsburg, N. Y.

GEORGE F. SHEPARD

Arthur W. McFarland, Plattsburg, N. Y.

EDWARD F. STEVENS

Lloyd Patrick, 102d Machine Gun Battalion, 26th Division, France.

Harry N. Sandell, Camp Devens, Ayer, Mass.

George A. Curtin, not yet in service, but called.

R. CLIPSTON STURGIS

J. Radford Abbott, Somewhere in France.
John Haines, Somewhere in France.
George Jacobs, Camp Devens, Ayer, Mass.

OSCAR A. THAYER

Edward Gould, Company No. 1, R. O. T. C., Fort Des Moines, Iowa.

Rhodes Robertson, do not know.

WARREN & SMITH

George E. Graves, Second Lieutenant, Camp Devens, Ayer, Mass.

WHIDDEN BEEKMAN CO.

Robert A. Whidden, 301st Regiment, Light Field Artillery, Camp Devens, Ayer, Mass.

Richard Patterson, Company F, 11th U. S. Engineers Company, American Expeditionary Force, France.

State Laws Regulating Architecture

The following States have laws regulating the practice of architecture: Illinois, California, New Jersey, Colorado, Louisiana, Utah, North Carolina, New York, Michigan, Florida, North Dakota, Idaho, Wisconsin, South Carolina.

In the States of Washington, Georgia, Pennsylvania and Ohio similar legislation is contemplated.

Architectural Society, Washington University

Officers of the Architectural Society of Washington University, St. Louis, Mo., for the ensuing term have been elected as follows: Burton L. Austin, president; James Jasper Searcy, vice-president; Wilfred B. Verity, secretary and treasurer.

Philadelphia Chapter A. I. A.

At the annual election of Philadelphia Chapter, American Institute of Architects, the following officers were elected: J. P. S. Sinkler, president; Evelyn L. Stewardson, first vice-president; Horace Sellers, second vice-president; Edward A. Crane, secretary; George I. Lovatt, treasurer, and H. Bartol, registrar, recorder and librarian. After the election an informal dinner was held.

To Preserve the Lefferts Homestead on Long Island

Funds are being raised through private sources to remove the historic Lefferts Homestead to a site selected in Prospect Park. The success of the project is now practically assured. The house will be restored to its original aspect, furnished with furniture of the Colonial period and maintained as a museum.

It is a source of satisfaction to learn that a respect for this dignified example of architecture of our Colonial period is sufficiently great to insure its preservation.

University of Illinois

The registration of students in the University of Illinois, Urbana, on October 1, 1917, was of undergraduates in the College of Engineering, 864. The enrollment of students in the whole university, not including those in the colleges of Medicine, Dentistry and Pharmacy, which are located in Chicago, was 4440.

Idaho Society of Architects

At the annual meeting of the Idaho Society of Architects held in Pocatello, a pronounced and unanimous sentiment of patriotism prompted the passing of a resolution whereby the treasurer of the Society was instructed to purchase with the club funds Liberty Bonds to the extent of $300. This action on the part of the club was supplemental to a very substantial individual subscription on the part of members.

National Commission of Fine Arts Considering Housing Congestion in Washington

In order to prevent the continuation of conditions that have in the past had a tendency to compel new residents in Washington to seek homes in Maryland and Virginia, the Commission of Fine Arts has at its recent meeting given serious consideration to the rehabilitation of southeast and southwest Washington as a residential section. The project becomes readily feasible, as many of the measures for developing the Capitol City fit exactly into the plan proposed. One of the features that will further enhance the beauty of the plan of the Capitol City is the conversion of Canal Street along the old James Creek Canal into a boulevard. It may not be generally known that Canal Street is the widest thoroughfare in the District of Columbia. All the land along the route is owned by the Government, and the improvement could therefore be carried to completion at a very small cost.

The Holland Commercial Relations Office

The Commercial Intelligence Office, Amsterdam, Holland, was founded in 1903 for the purpose of promoting commercial international relations between Holland and all other countries both as to export and import.

It places its service at the disposal of those wishing to avail themselves of it, free of charge. This bureau will present to the trade in Holland all offers of American raw material or manufactured goods. The only conditions are that those desiring this assistance shall give as reference their banks and the names of two commercial houses.

The bureau undertakes to advise its correspondents to the best of its ability, and in no case does its information release the applicant from the responsibility of safeguarding its own interests.

All inquiries should be addressed to Handelsinlichtingen, O. L. Onnes, director, Oudebrugsteeg, Amsterdam, Holland.

Texas State Association of Architects

The tenth annual convention of the Texas State Association of Architects was held at Waco, October 24-26. The following officers were elected:

President, Roy E. Lane, Waco; vice-presidents, J. E. Overbeck, C. C. Bulger and H. D. Smith, Dallas; O. J. Lorehn, Houston; Leo M. L. Dielmann, San Antonio, and F. E. Giesecke, Austin.

Scranton (Pa.) Society of Architects

At the recent annual meeting of the Scranton, Pa., Society of Architects the following officers were elected: President, E. H. Davis; first vice-president, Louis Hancock; second vice-president, John J. Howley; secretary, John H. Duckworth, and treasurer, John H. Davey.

Portland (Ore.) Architectural Club

At a recent meeting of the Portland, Ore., Architectural Club, the following officers were elected: Clayton M. Baldwin, president; Thayne Logan, vice-president, and Herbert Fredericks, secretary-treasurer.

Personals

Hugh Y. Davis, architectural engineer, formerly practising in Fresno, Cal., has moved his offices to the Riemenschneider Building, Modesto, Cal.

The firm of Buchman & Fox, architects, has been dissolved and a co-partnership under the firm name of Buchman & Kahn has been formed. The new firm will continue business at the offices of the former one at 30 East Forty-second Street, New York.

Mr. Mortimer J. Fox, who retires from the firm, has abandoned the field of architecture to take up banking and, we learn, has been elected a director of the Columbia Bank in New York. He was on November 3rd installed as vice-president of that institution.

Industrial Information

Steel Sheet Piling

Bulletin No. 108, issued by the Lackawanna Steel Co., Lackawanna, N. Y., with offices in principal cities, illustrates and describes a number of interesting engineering projects in which Lackawanna steel sheet piling has been successfully introduced.

This form of piling is designed primarily for (a) temporary construction work, where water, earth or other material is to be retained, or (b) in permanent construction where it is necessary to have a solid resistant surface either to surrounding or superimposed pressure or load.

While sheet piling is not new, its form, as perfected by the Lackawanna Steel Co., has been so largely improved as not only to make it a more reliable material in construction, but also to increase its adaptability to methods that were never possible in the earlier and cruder forms. Not only does this form of piling lend itself to certain all-around usefulness, but through perfected methods of manufacture its cost, it is stated, has been reduced so as to make it readily available in every locality for the largest of engineering undertakings and the smallest and less important phases of construction work.

A feature of this piling is a well-devised flexible joint that enables the metal to be carried along the contour of the work, no matter how irregular. Small pits, sumps, caissons and the like, by reason of this flexible joint, can be constructed with Lackawanna steel sheet piling.

The wide range of adaptability may be learned from the pamphlet, which will be mailed to architects on request.

"Defend Your Steam"

With the present possibilities of a very serious shortage of coal, and with a warning from the National Government constantly before us, urging economy in every industrial field, the question of the maximum amount of power from a minimum amount of coal becomes one of considerable importance.

It is these conditions that prompt the Magnesia Association of America whose offices are in the Bulletin Building, Philadelphia, Pa., to issue a pamphlet entitled "85% Magnesia and Heat-Insulation."

For more than a quarter century carbonate of magnesia, in an approved form, has been recognized as an efficient and economical means of heat-saving. Its uses, as perfected by this association, are very clearly set forth in the pamphlet referred to, and with the great amount of information presented, it will be found a most timely and instructive reference for architects in specification. The pamphlet may be had on application.

A Record of Reinforced Concrete Construction

As a graphic means of showing at a glance the large undertaking in concrete construction covering a period of one year, the Turner Construction Company of New York has prepared a drawing on which has been grouped, as in an industrial community, the various buildings constructed by them.

Accompanying a photograph of this somewhat unusual group is a statement giving interesting facts in connection with these industrial buildings.

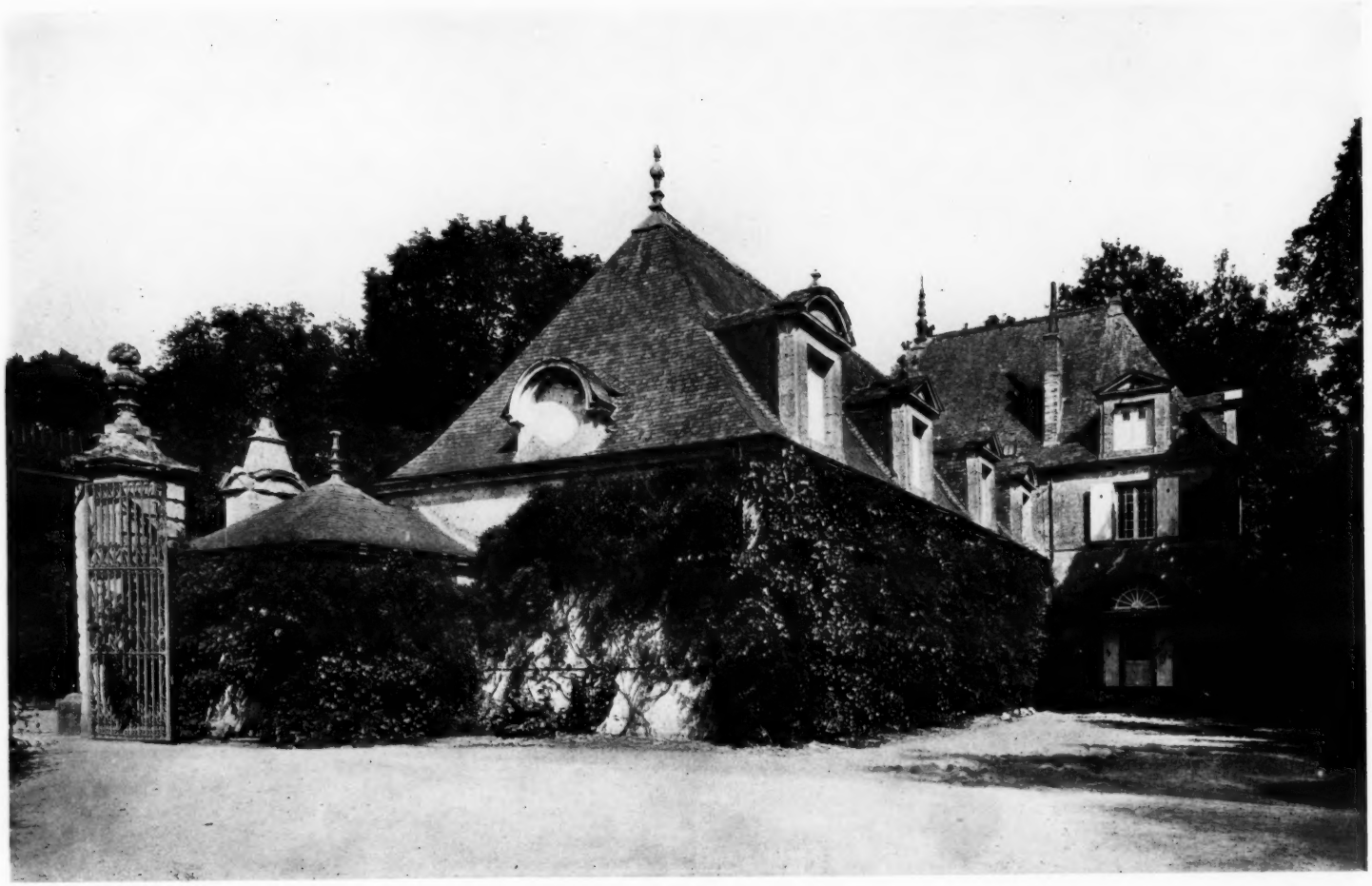
We learn that the approximate value of the group is $9,000,000, that the number of buildings is seventy and that sixty-seven different industries are housed therein.

As indicating the rapidity with which industrial building operations are conducted in this country, the statement is made that the average speed of construction was four stories in eighteen weeks.

This interesting photograph will be sent to architects on request.

Architects' Handbook on Vacuum Cleaners

The B. F. Sturtevant Company of Hyde Park, Boston, Mass., manufacturers for the past half century of fans for industrial uses, have perfected a vacuum cleaning apparatus which they state has proved eminently successful. The company, recognizing the importance of proper installation of vacuum cleaning systems in buildings, has prepared a handbook for architects and engineers, discussing all points of the plant and its installation. Instructions for computing suction losses and for determining on the sizes of machine, piping and hose lengths required are given, with tables and diagrams for easy reference. A complete standard specification form covers all points of importance to the architect. This booklet is known as Catalog 248. Another catalog, No. 244, covers the subject from a more popular standpoint. Both will be of value to architects specifying vacuum cleaners.



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