

THE AMERICAN ARCHITECT



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Erecting Homes in Winter

The above illustration shows the residence of William Mills, Cedar Rapids, Iowa, in course of construction. Designed by Architect William J. Brown. Stucco Contractor Charles R. Carpenter. Bishopric Stucco Board was used on this home.

DO NOT permit winter's interfering hand to halt your construction this year—apply Bishopric Stucco and Plaster Board to the studding or sheathing and proceed with the interior finishing.

Bishopric Board has in numerous instances especially in the severe cold of the Northwest stood exposed to the elements from fall to spring without disintegration or damage. In every instance the buildings have been ready for Stuccoing at the Architect's or Contractor's convenience.

If your clients are in urgent need of a place to live they can occupy a Bishopric Board walled home in considerable comfort until the spring Stuccoing. The insulating qualities of this Board are decidedly extraordinary—it keeps a home extremely warm and dry. Dampness cannot penetrate the Asphalt Mastic and fibre-board and the heavy wood strips are creosoted against exposure. Warmth and comfort are increased when it is used on the interior instead of wood lath.

Bishopric Board's economy should influence contracts at this time. The saving on the average home is about 25%. This is a big point today!

But best of all Bishopric Board is a Stucco background you can be sure of. You can apply the Stucco next spring and know that the walls will remain permanently beautiful and crackless—monuments to your judgment.

Tell your clients they can go ahead with their construction and specify Bishopric Board!

We are ready to give you every service in connection with winter construction on Bishopric Board. Write us and get our Booklet.



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CINCINNATI, OHIO





AN ITALIAN WELL-HEAD

THE AMERICAN ARCHITECT

VOL. CXVI

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The Lump Sum Contract

An English View of the Competitive Contract

(From Our Special Correspondent)

ONE of the subjects which has created and is at this moment creating the keenest interest within the profession, both in this country and in America, is that of the competitive contract system, which was freely discussed in the recent conference on the conditions of the building industry, held by the Royal Institute of British Architects, already mentioned in these columns.

Involving as it does the whole relations of architect, contractor and client, the subject is no less to the front in America, and the valuable contribution recently offered by Mr. Sullivan W. Jones in his address before the Institute of Electrical Contractors of New York has been noticed and reported in the London architectural press.

I have before me at this moment the very full report of this illuminating address in the columns of *Construction*, and I there find that the lecturer condemned in the most unhesitating manner the competitive, stipulated-sum contract system, which held so largely before the war. This lump-sum contract system had in his view "a corrupting influence on every one who became involved in it." It was demoralizing to the contractor, for both general and sub-contractor found it almost impossible to secure a reasonable profit honestly. On the side of materials for construction unscrupulous competition had tended to undercut prices, and the same kind of competition among contractors had steadily driven down the standards of work. The false assumption of this system was that a modern building can be described by drawings and specifications with sufficient completeness to allow for an accurate computation of cost, and hence for bids that are really competitive; and this difficulty, serious enough in itself, is doubled or trebled by the speculative element, inherent in every lump-sum contract, that when a contractor signs such a contract "he sells short for delivery over a stipulated period of time the quantities of labor and material required."

Obviously, with a rising labor market and a material market which cannot be controlled, this risk assumes proportions which "no sensible man is willing to meet."

Nor was the architect here in a really sounder position. His drawings and specifications, theoretically complete, could hardly be so in fact. As the work proceeds omissions come to light, differences arise, and the architect is in a dilemma of confessing his difficulties to his client, or compromising with the contractor. These evils were traced by the lecturer to modern industrialism. The great buildings of the Middle Ages and Renaissance were constructed by societies or guilds on what we would now call the cost basis, the designers being not architects but master builders; though if a "bill of quantities" had not then reached its present development at least, as has been pointed out by Mr. William G. Richardson in a recent letter to *The Builder*, the "question of cost has governed erection of buildings ever since mankind had a housing problem to solve, if Shakespeare's historical color can be depended on:

"When we mean to build

We first survey the plot, then draw the model;

And when we see the figure of the house,

Then must we rate the cost of the erection.

Which if we find outweighs ability,

What do we do then but draw anew the model

In fewer offices, or at least desist

To build at all." 2 Henry IV, Act II.

The understanding here entered into may not have been strictly on the lines of the R. I. B. A. form of contract, but there is more than a hint that sometimes the tender was too high (as not infrequently happens nowadays) and something had to be cut out to bring down the cost.

But Mr. Sullivan Jones points out very truly that with industrialism came accumulations of wealth

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by many who had not previously possessed it, and that "these owners applied to the purchase of their homes the same methods that had made profits for them in business. They strove to drive hard bargains with the contractor, and the architect was shortly called upon not only to design the building but to exact the utmost possible of the contractor for his client. The demand for distinctiveness in design and for luxuries increased the architect's difficulties, both in preparing adequate drawings and specifications, and in securing from the contractor what he considered the contract called for. In England this condition produced the surveyor and the quantity system; in France the unit price contract became the rule for better class work, unit prices being established by the national architectural society, and recognized in law as standard, with the architect as 'verificateur,' a function closely corresponding to that of the English surveyor." The quantity system, based on the bill of quantities, either as the actual basis of the contract or an essential part of the specification, became thus a recognized part of the English procedure; and it may be of interest here to trace out, very briefly and in broad outline, the methods of this procedure in taking out a bill of quantities, leaving its detail to the reader's own experience or to be found in the recognized text books.

Before signing the contract in the English system the contractor is expected to deposit with the architect a fully priced out copy of the bill of quantities, and all extras or omissions of similar work and description are to be valued on these prices as set forth, any extra not agreeing with items in the bill of quantities to be valued at a corresponding price in the architect's valuation. When the bill of quantities forms the basis of the contract if the quantities come short the contractor is allowed the deficiency in settling his account; if too full the difference is deducted.

When the bill of quantities does not form the basis of the contract, but is merely a document on which the contractor forms his estimate then in the specification, in place of the usual clause stating that the bill shall form the contract basis, there may be used some such clause as the following—"that the contractor shall satisfy himself that sufficient has been taken in the bill of quantities for everything necessary to carry out the contract in accordance with the specification, drawings, dimensions and the site." The quantity surveyor's fees are $2\frac{1}{2}$ per cent upon the total contract, such amount to be paid by the contractor to the quantity surveyor as the work proceeds upon the amount of the architect's certificates; but half the total amount shall be paid out of the first certificate. As a matter of practice the quantity surveyor's fees vary

from $1\frac{1}{2}$ to $2\frac{1}{2}$ per cent, according to the class of work, and it is often found better to let the employer pay the fees direct.

Let us turn now to the actual working out of a bill of quantities, which obviously will follow the usual lines of specification, of which it forms such an essential part, commencing therefore with excavator, bricklayer and drainings, under such headings as surface digging, basement digging, basement trench, concrete, footings, dampcourse, brickwork, etc., and following with facings, drains (gulleys and setting pipes and laying, bends, etc.) and pavings. Surface digging is measured per foot super up to 12 inches deep, and over this per foot cube; basement digging (divided into depths of 6 feet, kept separate), and trenches per foot cube, concrete per foot cube, billed in yards; and after "taking off the carcass" we come to the finishings, i. e. ceilings (measured per foot super and billed in yards), floors and skirting, fireplaces, windows, doors external and internal, stairs, lavatories, baths, closets, general water supply, gasfitter's work and painting.

The "taking off" being completed, the dimensions should be "squared" and entered in the squaring book (black ink being used), to be checked by another person, and ticked off in red ink when proved correct; and here both the "squarer" and "checker," outside their mechanical work, should keep a keen eye open for any slip on the part of the "taker-off." Next the squared dimensions should be transferred to the abstract sheet under their respective heads of trades, in the order in which they will appear in the bill, this process being known as "abstracting." The order will here (as just stated) be that of the bill, and it is a good rule to use plenty of paper and headings, rather than that of a cramped abstract.

Thus the preparation of a bill of quantities consists of the three operations of "taking off," "abstracting" and lastly "billing," and requires a thorough knowledge of construction in detail and trade methods of carrying out, the aim of the quantity surveyor being so to measure and describe each item that the builder may be able readily to understand it and accurately assess value, a provision to be always kept in mind. In "taking off" the dimensions of the various items are taken from the drawings and then entered with the proper description on dimension paper, each page of which is ruled for two columns of dimensions, the first column on the left being called the "timesing" column; and when the same dimension occurs twice or more the number of times is entered in this column.

The next column is for the dimensions, and the third column, called the "squaring" column, for the products of the dimensions, e. g. twice 242

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feet by 20 feet 1 B in M (one brick wall in mortar). The three systems of "taking off" are "taking off in trades," i. e. each trade *taken off separately*, a laborious and nearly obsolete method; and taking off each portion of the work *complete in all trades*, e. g. window openings taken off complete, including sashes, frames, glass, brickwork, facings, plaster, architraves and window boards—a system which saves time for the taker-off. But an effective modification of the above is separating "the carcase and the finishings," which facilitates subdivision of work and lessens the labor of abstracting; and here the "taker-off" will be well advised to use plenty of headings for his dimension sheets, and perhaps in a large job to take off a wall at a time.

Lastly, we come to the billing, and in a small job the bill is usually continuous, i. e. all trades bound together in one document, and the total of each trade carried to a summary at the end; but for large buildings it will help the work of the estimator to split it up into several sections. For instance, in such a group of buildings as a hospital it may be well to make a continuous bill of each separate building in the case of the main buildings, and group together the smaller buildings in a bill of all trades. The bill, as completed, will be in the form of an estimate, commencing with general conditions affecting cost and methods of payment to contractor, then preliminaries and what are called "spot" items (i. e. items which necessitate an actual visit before pricing), and so on; and it is a good rule to look up the drawings very carefully before commencing to take off, and to read the specifications with no less attention, to see if these differ in any way from the drawings.

Before leaving the subject let us take an instance of the use of a bill of quantities in a very recent instance, that of the model form of agreement issued only last week by the Ministry of Health, to be generally adopted in connection with state housing schemes. Here the fees (sec. 16) for bills of quantities and variations (if any) in the quantity surveyor's expenses shall be paid by the employer, who in this case would be the local authority, or the state, and the fees of the quantity surveyor employed by the contractor shall be payable by the contractor. The signed drawings and specifications and priced bills of quantities are (sec. 3) to remain in the custody of the architect, to be produced by him as and when required, but as regards the price bill of quantities only to the employer's nominee, the quantity surveyor, the contractor or an authorized officer of the Ministry of Health; and it is stipulated that the contractor shall properly execute and provide everything necessary for the execution of the works to the reasonable satisfaction of the architect, and in accord with

signed drawings, specifications, bills of quantities, etc.

Here then in these articles of agreement we have two contracting parties, the employer (i. e. the local board) and the contractor, and the form used states that "whereas the employer, in pursuance of his statutory powers is desirous of having erected.... at.... and has caused drawings and specifications describing the work to be done to be prepared by.... his architect, and bills of quantities to be prepared by..... And whereas the said drawings, Nos. 1 to.... inclusive, and the specifications, the bills of quantities and schedule of prices attached to these presents have been signed, etc., etc."

I wish now, before concluding, to consider what is the general English opinion on the competitive contract system, which we have seen so forcibly attacked by Mr. Sullivan Jones, and here the discussion on this very subject in the recent Building Conference may be of assistance. "A man," said Mr. Hardcastle, A. R. I. B. A., F. S. I., "proposing to build desires to know three things: (1) What he is going to have; (2) when he may expect to have it; (3) what he will be called upon to pay for it. And these questions we have been accustomed to answer with approximate accuracy." But to the second and third of these—as the speaker pointed out—no answer can in present conditions be given; and we have fallen back on what is known as the prime cost plus profit system, under which many millions worth of work has been recently carried out and which some would like to see permanently adopted. But this system, he added, connotes a "notable diminution of effort. . . The instinct of competition is, after all, rooted in human nature. There is such a thing as fair competition; there is healthy competition. . . At the same time, at any rate, for a few years we can hardly ask contractors to take some of the risks they have faced in the past." And the speaker pointed out that a not unusual clause in recent contracts stated "in the event of any alteration in the price of materials or wages or conditions of labor the contract price shall be varied accordingly," and went on to suggest that it might be advisable that all contracts should contain this clause.

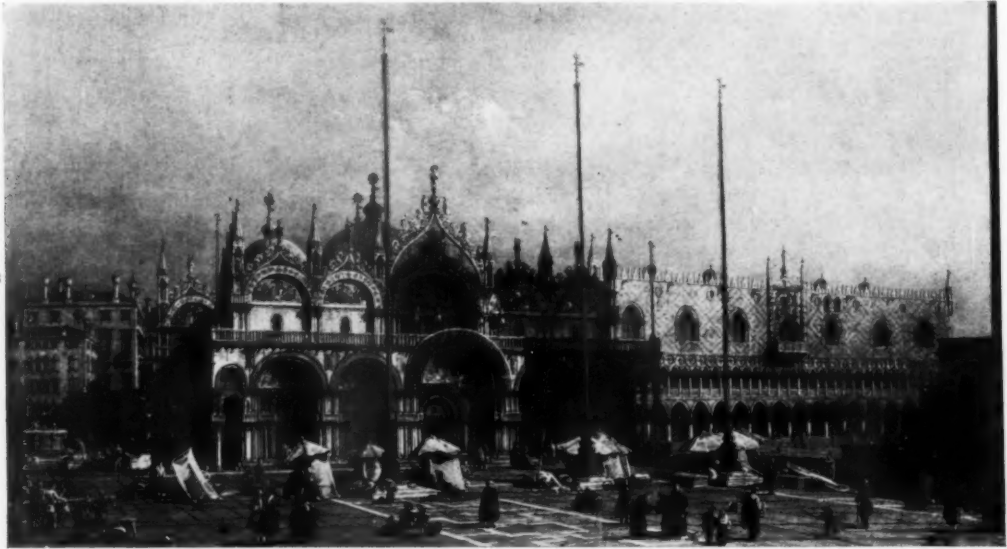
Mr. Paul Waterhouse, F. S. A., expressed a very similar view. "It seems a fine thing to sweep away the system of competitive tendering. The faults of the system are so obvious. . . But would it be well for builders and employers if the competitive system were swept away? I believe not. The builder must be paid on a reckoning of some sort, and that reckoning must be made up and checked in one of two ways. It must be either on ordinary bill of quantities priced at the start, as if in competition, and adjusted by a quantity surveyor at

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completion, or it must be a bill worked out on the prime cost and percentage system. . . Prime cost!" added the speaker, "What is prime cost? I insult nobody when I point out that however loyal and honest a builder may be the prime cost and percentage system offers him no inducement to buy cheaply, and certainly encourages builders' merchants to charge as highly as possible. . . I would suggest that 'prime cost,' which sounds so final, is in the realities of commerce elastic." In this brilliant address, which was delivered extemporarily, as Mr. Benjamin Greenwood wrote later, Mr. Waterhouse argued that none of the "four parties," operative, builder, architect and client, can profitably be eliminated from a system which is the product of generations of experience and experiment; or, as Mr. Waterhouse puts it, in his terse way, let the machinery of the ordinary contract, involving the collaboration of the quartet, be cleaned and oiled and put back into use (especially oiled)."

Lastly, the view of Mr. A. A. Hudson, K. C., on the question before the meeting, "should the competitive contract system be retained, abolished or modified?" was no less strong and very closely reasoned. "In my opinion," he said, "there is only one answer to this question, viz., that the competitive system should be retained and the prime cost system abolished. During the war the system of competitive contracts has, to a great extent, been departed from, and for it various methods of pay-

ing contractors on what is called 'prime cost' have been substituted. This to my judgment can only be justified in exceptional circumstances, or in cases where expense is only a secondary consideration. Work even now is being carried on by public departments on the system of the payment of actual cost so-called, and the public is invited to believe that nothing could be fairer or more to its advantage than that a contractor should only be paid the actual cost, with a small fixed profit. . . The public do not know and are not told that actual cost. It cannot be ascertained either at all or only as to a part of the work, and the amount which is said to represent actual cost is made up of estimates and approximations, and these estimates may vary enormously. . . The result of the prime cost system is that when a contractor is paid so-called actual cost he is not paid actual cost, but partly actual cost and partly an approximation of actual cost, depending on the quantity of work done and of work which can only be estimated." We see thus that—though there are plenty against—there is a strong consensus of reasoned opinion with us which, admitting the defects of the competitive contract system, would not hastily destroy it; this may come from the innate conservatism, by no means a bad quality, of the English character, but perhaps also from recent experience. The whole subject is of such interest and importance that I hope to return to it later.



CATHEDRAL OF ST. MARK'S, VENICE
FROM THE PAINTING BY CANALETTO
(Courtesy of M. Knoedler & Co.)

The City Planning Movement

By JOHN NOLEN, *City Planner*

THE modern movement for city planning in the United States may be said to have begun about 1890, with a special stimulus along certain lines in 1893 through the influence of the World's Fair at Chicago. A large amount of city planning, much of it of a high order, was done earlier. In no sense, however, did it represent a movement—it was not widespread, and it was not continuous or persistent.

Notable examples of earlier city planning are: William Penn's plan for Philadelphia in 1682, and the plans for other Pennsylvania cities, like Reading, for instance, which were connected with it; the plan of Williamsburg, Va., in 1699; Oglethorpe's plan for Savannah, in 1733; the great plan of L'Enfant for Washington, D. C., in 1790; other plans due to the influence of L'Enfant or his associates, as Buffalo, N. Y., and Erie, Pa.; the plan for New York City in 1807. All of these plans were of a spasmodic character, of the "once for all" type, without any adequate provision for systematic revision and extension.

The period from the early part of the nineteenth century until the last decade of that century was one in which the planning of cities, like the architectural planning of buildings, and, in fact, like municipal government itself, was at low point, characterized by few results of a desirable type. It was during this period largely that the western cities adopted checkerboard plans of the most commonplace form, without any real recognition of the requirements of streets and transportation, nor the necessity to preserve natural features, nor to set aside public open spaces, nor to take care of the economic and industrial problems involved in the improvement of waterways and waterfronts.

The more direct sources of the present city planning movement have been many. Among the most important which should be mentioned are the following: The influence of the plan of 1871 for New York City, which showed not only highways, but a system of rapid transit railroads free from grade crossings with the streets; the appointment of the Boston Board of Surveys in 1891; the Boston Metropolitan Plan Commission in 1892; the World's Fair Exposition at Chicago in 1893; the establishment of the school of landscape architecture of Harvard University in 1900; the work of Daniel H. Burnham, Charles F. McKim, Augustus Saint Gaudens and Frederick Law Olmsted, Jr., in the report of the Senate Committee on the District of

Columbia, in 1902; the plan of Chicago prepared under the direction of the Commercial Club, 1906-8, by Burnham and Bennett; and the creation of a committee on a city plan by the Board of Estimate and Apportionment of New York in 1914, with the problem of districting the city as an important feature; and the making of a large number of general plans and reports for the smaller cities.

The background of these definite projects was the rapid growth of cities, a nation-wide civic awakening, the improvement of the form and character of city government, the establishment of public service commissions, the organization of local improvement societies, civic bodies, women's clubs, chambers of commerce and boards of trade.

A great influence was also exercised by the rapid and substantial progress of town planning in Europe. Soon after the Franco-Prussian war the German cities beginning with those in Prussia went to work systematically to improve their municipalities. Much planning was done, and publications of value were issued. Other European countries, especially France and Belgium and Austria, achieved success in the replanning of towns and cities for modern life. Especial mention should be made of the passage of the English Housing and Town Planning Act in 1909, which provided a suggestive method of procedure for Canada and the United States.

A clearing house for city planning ideas and an effective means of stimulating and directing the movement was secured by the organization of the National Conference on City Planning in 1909, which has continued its work to date, holding an annual conference, publishing a quarterly entitled *The City Plan*, and carrying on correspondence.

The ideas of most significance in the modern city planning movement are: the increasing dependence of the individual upon the prosperity of the city as a whole; the importance of planning, not merely for the routine requirements, but also for those of the future; and the necessity, for reasons of economy as well as success, of co-ordinating the planning of the various features so that the improvements to be carried out will be well related, one to another, far-seeing and permanent.

The city planning movement in the United States, and in the various cities which take it up, has usually three phases. There is first the propaganda, which expresses itself mainly in rather vague discussion. That is followed often by the preparation

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of a report and a general plan submitting more or less definite proposals based upon a preliminary study, and resulting as a rule only in tentative suggestions. Frequently as a direct result of this general planning, however, detailed plans and construction drawings for definite improvements follow. This third stage is apt to be somewhat ineffective, unless suitable local machinery is secured in the form of a planning board or city plan commission

with some real power and an appropriation with which to do its work.

An excellent outline of "How to Organize a City Planning Campaign," by Frederick Law Olmsted, has been published in the American City pamphlets. It gives the basic idea of city planning, the city plan office of the future, a city survey as the basis for a plan, and physical accomplishment as the final step.

The Capitol Theatre

Broadway and 51st Street, New York

THOMAS W. LAMB, *Architect*

THE Capitol Theatre, illustrated in this issue, is the latest addition to the already large number of theatres located in New York. In many respects it is one of the most remarkable structures that has ever been erected, and in its size is a substantial refutation of the many times stated opinion that moving picture theatres would never reach the proportion of those erected in the past for the "legitimate" drama or grand opera.

Before proceeding to a detailed description of the architectural and decorative features of this building some comparisons as to its size and seating capacity will be interesting.

The owners claim that the Capitol is the largest theatre in the world. Its seating capacity is said to be more than 5300, and this may be compared with the capacity of the Hippodrome, which is 4623; the Metropolitan Opera House, which is 3306, and Carnegie Hall, which is 2632. Compared with other motion picture theatres in New York the Capitol's figures are even more imposing. The Strand seats 2989, the Rivoli 2206, and the Rialto 1960. The past tendency in this country to exploit size and cost in buildings over architectural or artistic excellence is fortunately waning. No matter how large we may build or how great a number of dollars we may spend in building, the commercial value of good architecture is to-day more generally conceded than ever before. The proof of this is to be found in the Capitol Theatre. While it is large, very large, and cost a great sum, the wise policy of its promoters is shown in the evidence everywhere to be seen of the most carefully studied architecture and the most artistically refined expression of decorative treatment. The general architectural

character of the exterior of the building is shown in the view presented in this issue.

The interior as far as its general aspect is concerned may be studied by reference to the interior views. The scheme of color and those details of construction that cannot be determined by the examination of photographs will require more specific reference.

This theatre practically grew on its site. In explanation it may be stated that its construction was carried forward during the war, and all the drawbacks and hindrances attendant on that period were experienced.

As a legacy of the great war the Capitol presents a number of features hitherto unknown in big construction operations. Primarily, it is the first theatre, or large building for that matter, wherein the structural steel was fabricated on the site. The urgent demands of the Government for material for war purposes closed the great mills against that kind of work for structural purposes and made it a very difficult undertaking to secure the necessary expert labor. The steel itself had been bought before the emergency, however, and a working force was recruited that did the laying.

This undertaking proceeded under the direction of the steel construction engineers, whose force was limited to some thirty men under the abnormal condition then existing. It is a remarkable fact that the greatest steel truss ever used in an interior was built and set in place under these circumstances, without benefit of the ponderous permanent machinery and labor-saving equipment to be found available in every mill. This truss is 170 ft. in length, 16½ ft. high and weighs more than one

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hundred tons. It extends from east to west on the Fifty-first Street side of the building, acting as the principal support for the series of cantilevers on which the balcony rests. It is supported at either end by a column 6 ft. within the building, leaving an unbroken and unsupported span of nearly 160 ft. This long sweep is one of the factors that contributes largely toward the atmosphere of airiness and lightness characteristic of this large interior.

There are many longer spans in engineering works in various parts of the world, but nothing of its magnitude anywhere under one roof. There

designed to reduce vibration to the minimum, and have, but never on anything like so large a scale, for here is an overhang that extends 40 ft. at the minimum—the very center of the balcony.

Some conception of the magnitude of the structural problems that had to be met is possible through understanding that 1100 tons of steel were employed.

Not the least remarkable of the structural features is to be found in the proscenium dividing the stage from the auditorium. Here again the necessity existed for a tremendous truss, and concrete



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are other trusses within the building worthy of notice, especially in view of the conditions under which they were built. A system of eleven trusses, each of 120 ft. span, support the roof. These are 21 ft. high at one end and taper to 14 ft. at the main roof truss. The latter is 30 ft. 7 in. in depth and 100 ft. span.

The absence of visible supports for the balcony is due to an unusual system of cantilevers projecting from the main balcony truss in a direct line 28 ft. and diagonally 40 ft. These trusses are

was called into requisition to minimize the demand of steel. The proscenium opening itself is 61 ft. wide and 50 ft. high, and the truss in question spans this vast opening. A supporting pier at either side was made of poured concrete, reinforced with steel, 3 ft. thick, 6 ft. wide and towering 76 ft. high. At a point 50 ft. above the stage floor the truss was poured in the same manner, closing the proscenium opening at the top and providing a solid truss 72½ ft. wide, 26 ft. high and 3 ft. thick.

Primarily, the interior is in empire style in its

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architecture, ornamentation and decoration. The entrance lobby has marble walls and is treated in soft brown colors and gold, covering the stucco or plaster ornamentation. This gold is in the lobby, glazed with soft green. Elsewhere it is Roman gold and other ornamentation glazed and rubbed to produce a desired effect. The entrance lobby leads to the main lobby, spreading out to right and left and fronting a dignified marble staircase. Massive walls of dark walnut rise to a ceiling of rich ornamentation in Roman gold and light brown tints. Five panels enclose murals of unusual interest and beauty. These murals are the work of an American artist, William Cotton, and wonderfully add to the effectiveness of this spacious section.

Ascending the white marble stairway the grand promenade is reached—a spacious elongated chamber with an arched ceiling ornamented in ivory and gold with Wedgewood panels. The Fifty-first Street entrance is decorated in the same restful manner, softened to harmonize with the ivory tones of the grand promenade.

The auditorium is entered at the left of the grand promenade. The magnitude of the huge space is only exceeded by the richness of its decoration and the perfection of its detail. The burst of color and gold is so blended with the architectural details and with such fidelity as to create a most satisfactory effect.

The proscenium arch, the vast ceiling with its three large and twelve smaller domes, the vistas of columns and the walls themselves are all in light brown color and Roman gold—glazed, blended and softened to one harmonious whole.

This decorative scheme is enhanced by a brilliant array of French rock crystal chandeliers which, with the rich hangings, complete the decorations. Eleven of these chandeliers hang from the main ceiling and others are to be found in the grand promenade and the main lobby.

Highways and Shade Trees

The planting of shade trees has recently been the subject of comment in the daily and technical press, both as a form of memorial and for the material value as well. Advocates of this idea are cautioned by *Engineering News-Record* to remember that in many sections of the country, soil conditions are such that shade trees may be a positive detriment to the roads.

The trees keep the heavier soil, such as clay, from drying out, and a decided tendency to disintegration is noted where shade is abundant, particularly in macadam roads. On wide thoroughfares, where

the trees would be some distance from the pavement, they would be less detrimental, but on the narrow country highways, where shading has the most charm, and where the roads are largely of the lighter types of construction, such as water-bound and bituminous macadam, it seems doubtful whether the trees should be planted. On soil which may be thoroughly underdrained shade has little detrimental effect, unless the surfacing is made of ingredients that are directly affected by moisture. Its effect on the retention of water by heavy-soil subgrades, eliminating proper support of the base, and causing freezing and heaving of the pavement in winter, is worthy of careful attention.

To insure the results desired, trees should certainly be planted indiscriminately. Those who know trees should be instrumental in their selection, and should choose them with regard to the particular species that will be best adapted to the locality where planting is proposed.

Imitating the Surface of Hard Woods

The following discovery, reported by the *Building News* of London concerns the treatment of soft wood so that its surface appearance becomes not only the same as that of hard wood such as oak, ash, chestnut, etc., but the surface itself shows the real properties of hardness, density and strength which are peculiar to the hard woods.

A piece of wood having the properties of soft wood is taken and a number of cuts or incisions are made close together in the longitudinal direction of the fibre in such a way as to copy the arrangement of the surface pores peculiar to the hard wood it is desired to imitate. The depth of these incisions should be about 2 mm. The surface so treated then receives a "mineral" coating, generally consisting of an oil and a mineral substance made into a paste, to which is added the coloring material suitable to the wood it is desired to imitate. This material is rubbed into the surface pores artificially produced so that the pores are completely filled up, the excess remaining being wiped off. The substance in question is composed in such a way that it permanently hardens in the pores, forming on the surface a mosaic embedded in the wood. The wood thus treated can then be polished or treated in any of the other ways usual in practice. The advantages claimed for this process is that a surface equally as hard as that of the hard woods is obtained, but the remainder of the wood can be worked equally as well as the soft woods that have not received the treatment. Owing to the hardness of the surface, the soft wood presents all the advantages of density and fine appearance.

Beaux-Arts Institute of Design

DIRECTOR OF THE INSTITUTE, LLOYD WARREN

ARCHITECTURE, WILLIAM F. LAMB

SCULPTURE, JOHN GREGORY

INTERIOR DECORATION, ERNEST F. TYLER

MURAL PAINTING, ERNEST C. PEIXOTTO

Official Notification of Awards— Judgment of November 18th, 1919

PROGRAM

CLASS "A"—I PROJET

The Committee on Architecture proposes as subject of this Competition:

"A PRIVATE ENTERTAINMENT PAVILION IN A GARDEN"

The owners of many of the large country estates who at times entertain lavishly are anxious to keep their own houses for family privacy and have therefore built on their grounds entertainment pavilions either partially or entirely separated from their house. These buildings are similar in many ways to Country Clubs, but should have a much more private and personal character.

The subject of this program is the design of such a pavilion. The site, facing a distant view, is on gradually sloping ground, dotted with some fine old trees. An ample water supply flowing by gravity from a higher source has

suggested to the owner the idea of combining with other features for entertainment an enclosed swimming pool. The pavilion is to be only one story high, shall contain an ample entrance vestibule with coat rooms and toilet accommodations for ladies and gentlemen, a main hall fitted as a lounging room, and a ballroom with card-rooms and retiring rooms. Kitchen accommodations will be located in the basement, but serving pantries shall be provided on



Third Medal

E. R. FROESE-ATELIER ST. LOUIS
Class "A. I." Esquisse Esquisse

THE DECORATION OF A PENDENTIVE



FIRST MENTION.

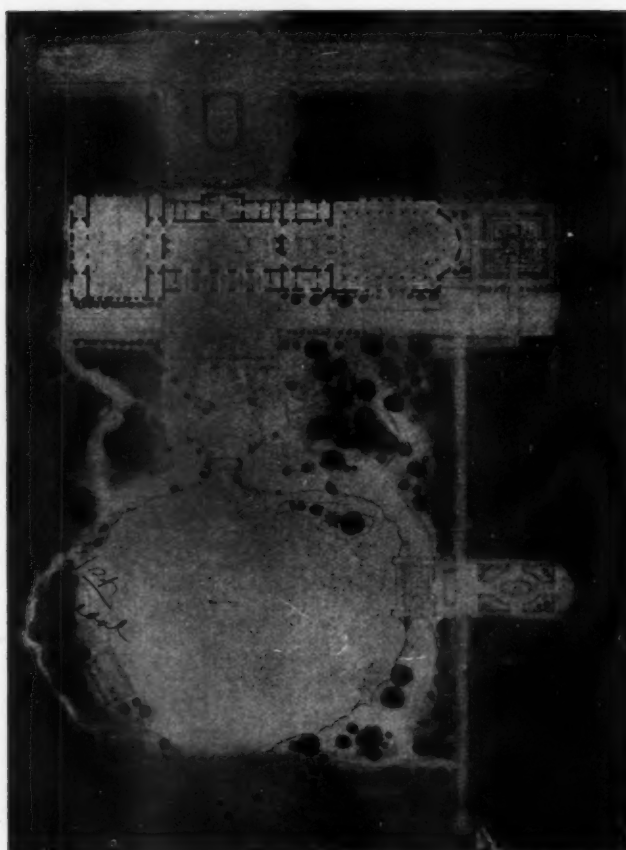
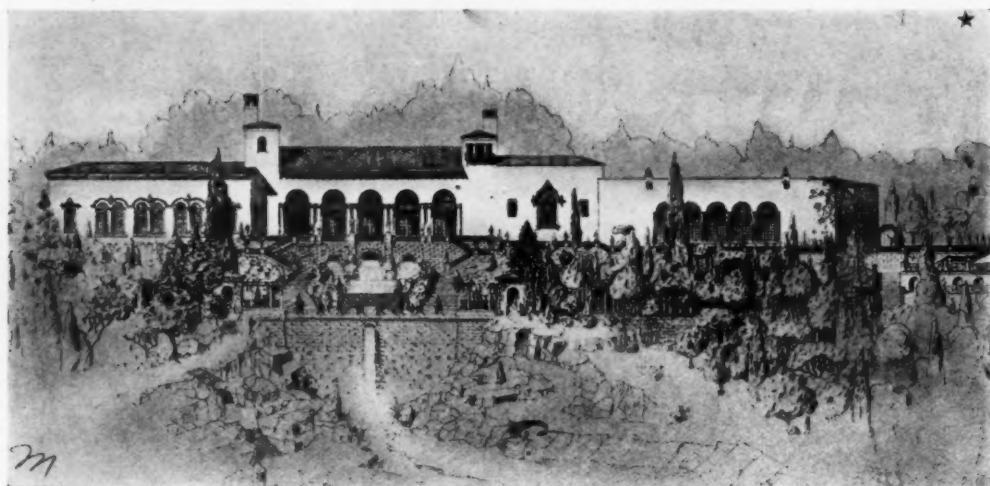
VERNE S. SWAN—CORNELL UNIVERSITY.

Class "B. I." Esquisse Esquisse

A SIGN POST FOR TRAFFIC REGULATION

the main floor. The swimming pool is also to be located on the main floor and may be used as one of the chief decorative features of the competition. Ladies' and gentlemen's dressing rooms shall be provided, but may be combined with the coat rooms mentioned above. The overflow from the enclosed swimming pool shall be led to an outdoor swimming pool which will be used in warm weather and shall be of generous size to allow for water sports.

The pavilion is to be surrounded by gardens. Again in their design the supply of water should play a prominent part, for the slope of the land lends itself readily to cascades, pools and water gardens. Ramps, steps, balustrades, with small pavilion, statues and other garden furniture shall be used. A tennis court and bowling greens are



C. F. GROMNIE *FIRST MEDAL* UNIV. OF PENNA.
Class "A. I." Projet.
 A PRIVATE ENTERTAINMENT PAVILION IN A GARDEN
 STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN.

THE AMERICAN ARCHITECT

to be provided. The entire site occupied by the gardens and pavilion should not exceed 400 x 600 feet.

JURY OF AWARD: F. A. Godley, R. M. Hood, M. Prevot, P. Cret, H. Hornbostel, E. V. Meeks, F. C. Hirons, G. A. Licht, H. W. Corbett, J. C. Mackenzie, Jr., M. B. Stout and D. D. Ellington.

Number of drawings submitted—67.

AWARDS:

FIRST MEDAL:—A. O. Ahlberg, Atelier Denver, Denver; J. M. Hirschman and C. F. Gromme, University of Pennsylvania, Philadelphia.

SECOND MEDAL:—A. C. Denison, F. B. Post, Rosa-

Mixsell, A. W. Bitterman, I. Safier, G. Roth and L. E. Gowen, Columbia University, New York; H. F. Bremmer, J. F. De Young, J. P. Davis and C. C. Pribeke, Carnegie Institute of Technology, Pittsburgh; E. S. Lacosta, Atelier Corbett, Gugler, N. Y.; H. H. Davis and R. L. Walldorff, Syracuse University, Syracuse; R. Nickel, B. Laub and R. Platt, "T" Square Club, Philadelphia; C. C. Emery, E. Coscia, J. W. Brooks, A. L. Ferguson, C. Caspary, E. R. Purves, J. A. Royer, A. C. Strobel, N. H. MacLeish, H. Webber, H. L. Stone, P. F. Taylor, S. J. Laschenski, G. K. Trautwein, N. Friz, E. O. John, L. C. Test, A. W. Inman, N. L. Henshaw, T. B. Epps, A. D. Kline, G. M. Martin and A. E. Westover, Jr., University of Pennsylvania, Pa.; S. J. Makielski, University of Virginia, Charlottesville; W. F. McCaughey, University of Illinois, Urbana; G. F. Street, University of Kansas, Lawrence; F. A. Elsasser, Atelier Wynkoop, N. Y.; O. Wilkins, Yale University, School of Fine Arts, New Haven.

PROGRAM

CLASS "B"—I ESQUISSE ESQUISSE

The Committee on Architecture proposes as subject of this Competition:

"A SIGN POST FOR TRAFFIC REGULATION"

In most of our large cities the traffic police are equipped with some form of stop and go signs to aid them in directing traffic at congested points. These signs have taken many different forms and have often been combined with a shelter for the policeman on duty.

The subject of this competition is the design of such a sign to be located in the corner of an island of safety at the intersection of two busy thoroughfares. The island is 8 feet in diameter. The sign is to be of permanent character and must be easily controlled and legible both day and night. It shall be combined with a shelter for the policeman and the platform on which he stands should be raised above the level of the island.

JURY OF AWARD: H. R. Sedgwick, P. A. Cusachs, W. L. Bottomley, J. Wynkoop, W. S. Wagner and H. P. Pennington.

This Jury also served as Jury of Award for Class "A. I." Esquisse Esquisse.

Number of drawings submitted—48.

AWARDS:

FIRST MENTION:—T. Yokogawa, V. S. Swan and R. Siering, Cornell University, Ithaca.

MENTION:—E. K. Hunter, Cornell University, Ithaca; G. Chittenden, Los Angeles Architectural Club, Los Angeles; G. L. Chandler, University of Kansas, Lawrence.

PROGRAM

CLASS "A. I."—ESQUISSE ESQUISSE

The Committee on Architecture proposes as subject of this Competition:

"THE DECORATION OF A PENDENTIVE"

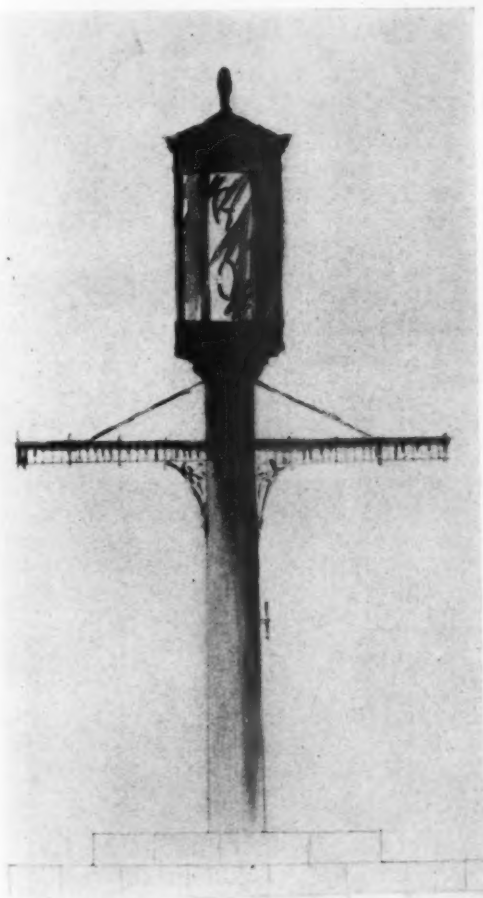
The main concourse of a large railroad station is covered by a dome resting on pendentives which are supported by four massive piers. These piers are each about 15 feet broad on the angle and the dome is approximately 80 feet in diameter. The subject of this program is the decoration of the pendentive alone with sufficient of the upper portion of the supporting pier and of the lower portion of the drum to show the connection. The decoration may be of a purely architectural character or it may combine sculptural or mural painting elements.

Number of drawings submitted—32.

AWARDS:

THIRD MEDAL:—E. R. Froese, Atelier St. Louis, St. Louis.

MENTION:—R. K. Galbraith, Chevy Chase, Maryland; E. E. Weihe, Atelier A. Brown, Jr., S. F. A. C., San Francisco; H. Webber, University of Pennsylvania, Philadelphia.



FIRST MENTION.

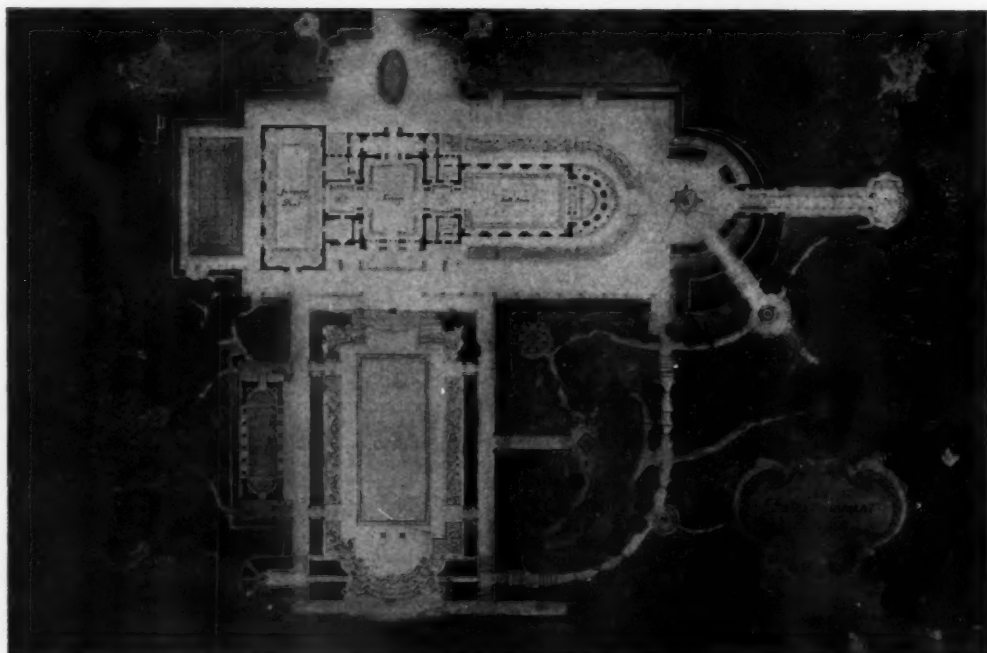
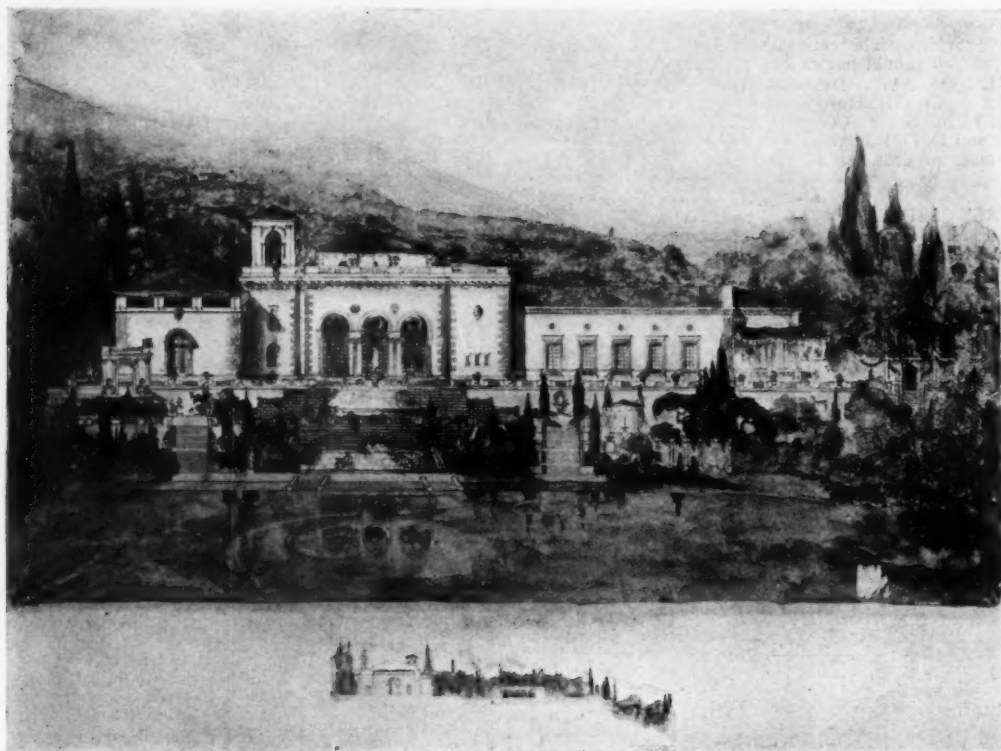
T. YOKOGAWA—CORNELL UNIVERSITY.

Class "B" Esquisse Esquisse.

A SIGN POST FOR TRAFFIC REGULATION

mond Wolcott, H. G. Marceau and K. C. Chang, Columbia University, New York; R. Bowers, Carnegie Institute of Technology, Pittsburgh; S. B. Baylinson, J. C. Janney and J. K. Smith, University of Pennsylvania, Philadelphia; E. Pickering, University of Illinois, Urbana; G. S. Underwood and H. I. Feldman, Yale University, School of Fine Arts, New Haven.

MENTION:—B. E. Irby, N. B. Hanes, S. Oxhandler, W. H. Wolcott, L. S. Henry, Florence Wingate, D. G.



J. M. HIRSCHMAN

FIRST MEDAL
Class "A. I." Projet

UNIV. OF PENNA.

A PRIVATE ENTERTAINMENT PAVILION IN A GARDEN
STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN.



In order to supply our readers with material of current interest, the news and comment appearing in issues of THE AMERICAN ARCHITECT delayed by the printers' strike will be as of actual rather than stated date of publication.

Labor Unrest and Americanization

THE Senate Commission on Education and Labor, will, it is announced in Washington despatches, frame legislation with a view to enforcing the Americanization of foreign-born citizens.

This proposed action is brought about as the results of the Committee's recent visit to the Pittsburgh steel district. The Committee found during this visit that a majority of the striking steel workers were foreigners, either unable to speak our language, or to so limited an extent as to render it impossible accurately to get the point of view of witnesses.

Two methods of procedure are proposed. One is the creation of a Federal department of education to co-operate with foreign embassies to educate immigrants to our standards of citizenship, while another proposes that the Secretary of the Interior co-operate with the various state governments in the education of foreigners.

As a result of the Senate Committee's visit to Pittsburgh, it was learned that at least 50 per cent of the workmen can neither read, write nor speak the English language. It has become necessary to publish orders regulating their duties and conduct in many different languages, and even this method is not always effective as many of the workmen cannot read or write even in their own tongue.

With these well proven evidences of illiteracy, it is undoubtedly time that the American people should give determined and well conducted effort toward complete Americanization of our vast foreign-born population. Why should not America become a one language nation? Why should our sense of pride in our American citizenship be constantly made to suffer by meeting foreign language signs and publications at every hand?

Just as long as our foreign-born residents have these helps and guides, just so long will Americanization be deferred. For now, whatever knowledge of our country, its institutions and aims can be gained must be through such media as will of

course present the matter largely from the point of view of the alien.

We shall need to give the suppression of the foreign language publications careful consideration. When the government starts the movement that will be possible if the legislation proposed by the Senate Committee on Education and Labor becomes law, it will probably be found that the greatest retardant to a steady progress toward the desired end will be the foreign language press.

LABOR composed largely of a class of people that cannot speak our tongue will at all times be hard to deal with in any spirit of co-operation that will lead to tangible results or to stability. As long as employers have to deal with a large part of their working force through the intermediary of padroni, or often self-appointed leaders, just so long will there be misrepresentation and a ready willingness to listen to the socialistic utterances of these loud-mouthed agitators.

The growing importance of Americanization cannot be longer ignored. The menace is one of constantly increasing magnitude. So large in fact has it now become that it will undoubtedly become a prominent "plank" in the platform of political parties.

When there shall more generally become realized the importance of this movement, the stabilization of labor conditions will be assured and the unrest, largely the result of ignorance, be overcome.

State Societies

OF the many problems which confront the American Institute of Architects, as through the operations of the Post-War Committee, none will be found more far-reaching in its importance than that dealing with the proposed organization of State Societies.

President Kimball's strong appeal for larger membership has not resulted in securing even a small proportion of the "thousand in 1919" that has

THE AMERICAN ARCHITECT

been considered necessary to securing for the Institute a more representative standing. In fact it becomes more and more apparent that the type of men whom the Institute regards as eligible have largely become members. If the proportion of the profession under Institute government is to become sufficiently large as to be representative of the entire profession, we shall have to gain that proportion through State Societies. There can be no doubt of this. In fact, it appears to be the unanimous conclusion of those who have given careful study to this question.

State Societies thus far organized have justified their existence in the most forceful way. There has only to be considered what has been accomplished in New York, Illinois and Michigan to become convinced that these organizations are valuable in their respective fields, that they do not in any way conflict with the Institute, and many will claim that they have made great progress in directions where it was logical to assume the Institute should have taken the initiative.

IT would be the height of unwisdom to seek to merge these State Societies with the Institute. President Kimball's suggestion of such a course, as made by him in his recent address before the Illinois State Society, did not at that time meet with strong approval, and there are reasons for the belief that such a policy is to-day regarded as even less desirable than at that time.

It would be inconsistent for this journal to urge a reform unless it was prepared to state a program that would exactly carry it to conclusion. *THE AMERICAN ARCHITECT* has in and out of season championed the cause of State Societies. It has favored State Societies as independent of the Institute and has set forth the belief that with the two organizations actively engaged, there would be a certain rivalry as to achievement that would rebound to the greatest good of the profession of

architecture. This journal continues in that opinion, but there are certain phases that have developed since the Nashville Convention that should have careful consideration. While these do not basically affect the general idea as many times outlined in these pages, they are of sufficient importance to merit careful study.

IF State Societies are to become organized in the various States, their organization should be along identical lines, so that they may work toward a common purpose. Just what confusion may arise through lack of a perfect co-ordination has been demonstrated in the various states where registration laws whose provisions are conflicting have been enacted. It is inevitable that this state of confusion will continue until the various states have what will be practically identical laws. It is therefore essential that in states where new societies are organized, their constitution and by-laws be of similar character, and in order best to effect this, it has been wisely suggested that the Institute assume, as it properly might, a supervisory attitude in this matter.

The plan proposed is that the Institute prepare a standard form of constitution under which shall be organized or reorganized all the State Societies. In this matter the Institute would act, as it properly might, purely in an advisory capacity. The State Societies would not be of the Institute, but following what might be termed a paternal course, there could be introduced provisions for the representation of State Societies in the councils of the Institute, and certain rights and privileges as to voting that would enable the Institute to become fully representative of the entire profession.

Such a basis for organization is clearly feasible and should have serious consideration. Its adoption would solve for all time one of the vexatious problems of the profession and would result in a welding together of every desirable man in practice, a most desirable thing to attain.



PLATE 171

THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK
THOMAS W. LAMB, ARCHITECT

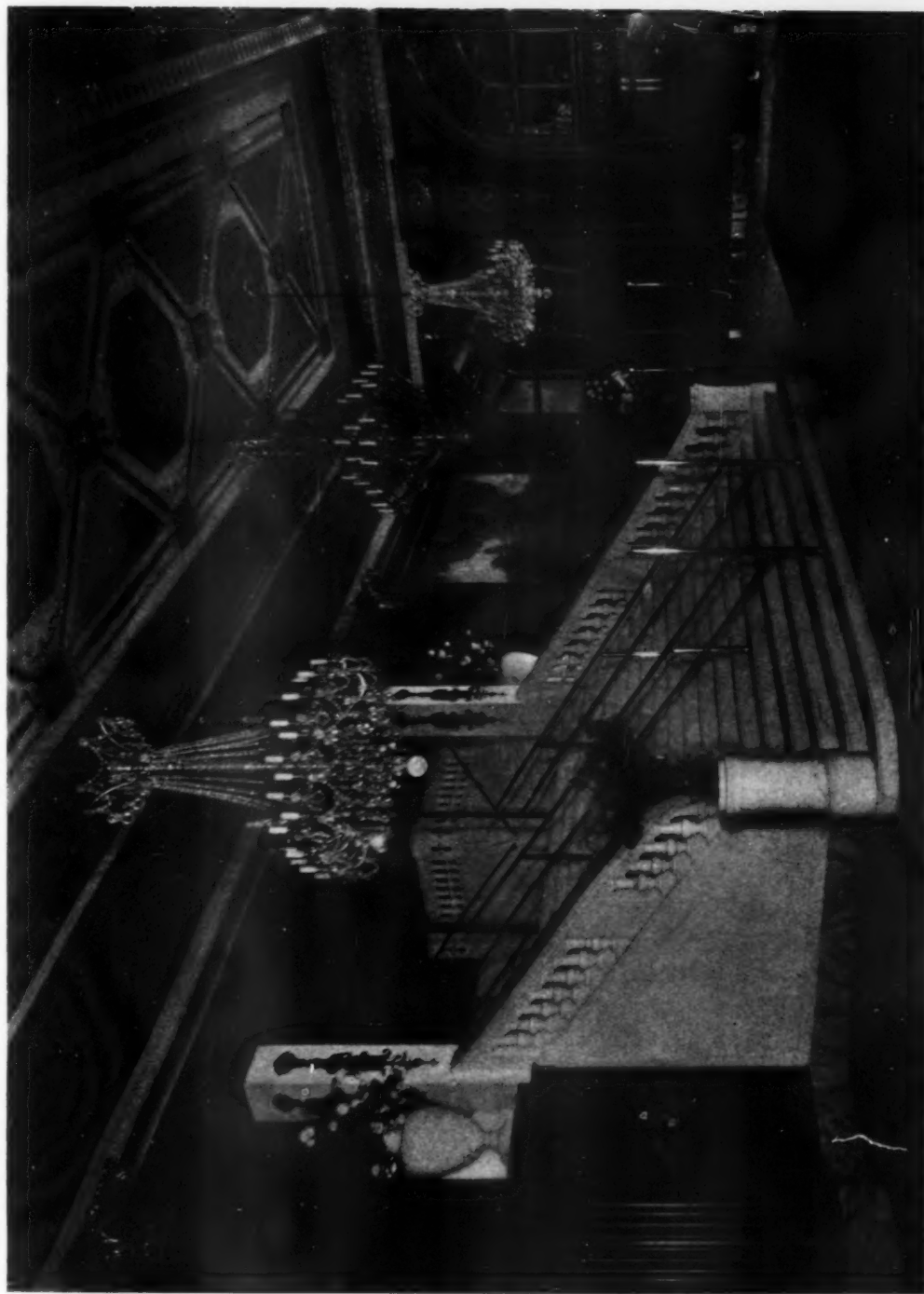


PLATE 172

THE FOYER
THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK
THOMAS W. LAMB, ARCHITECT





PLATE 173

DETAIL OF FOYER

THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK

THOMAS W. LAMB, ARCHITECT



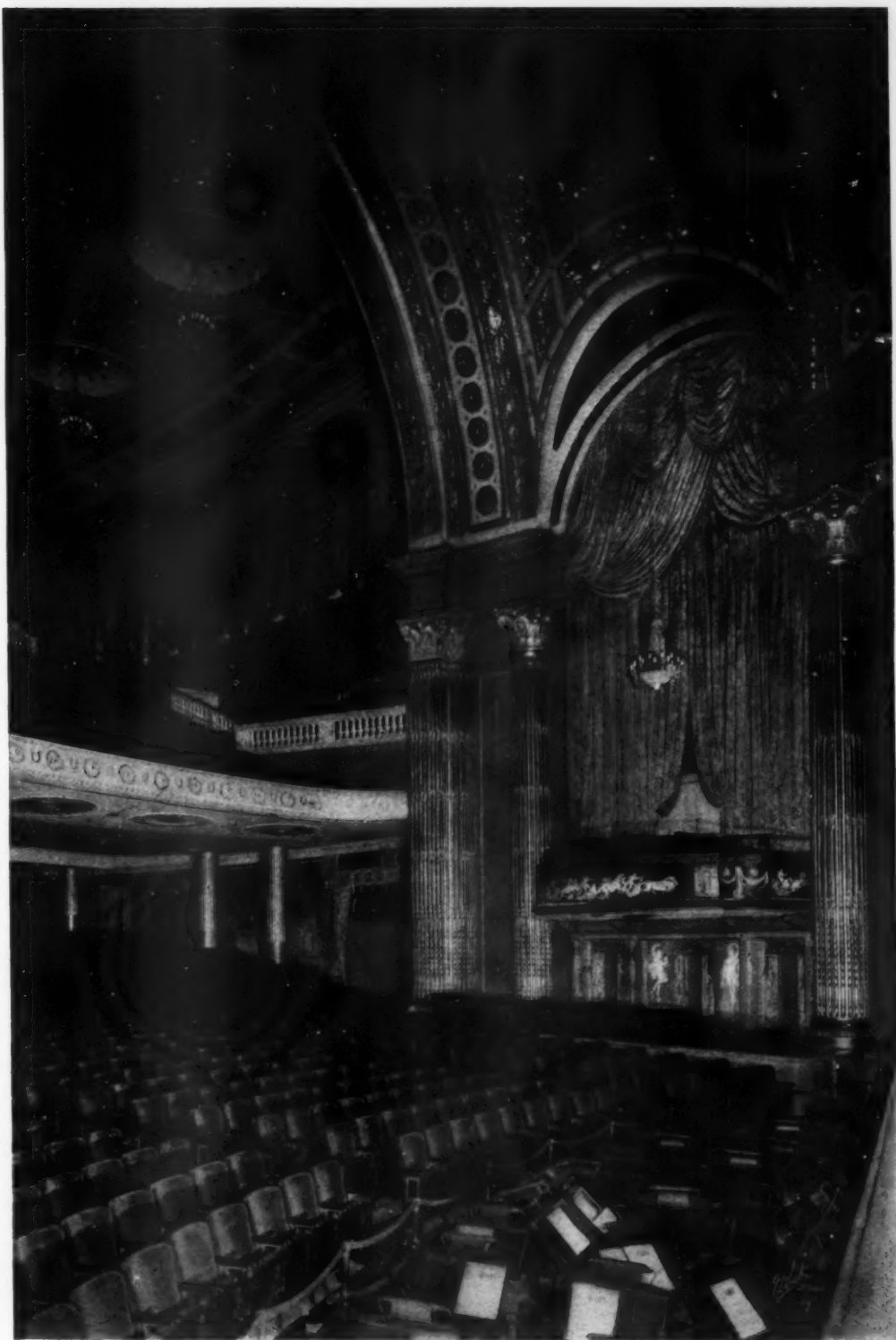


PLATE 174

PROSCENIUM ARCH AND BOXES

THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK

THOMAS W. LAMB, ARCHITECT





PLATE 175

ORCHESTRA AND BALCONY FROM STAGE
THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK
THOMAS W. LAMB, ARCHITECT

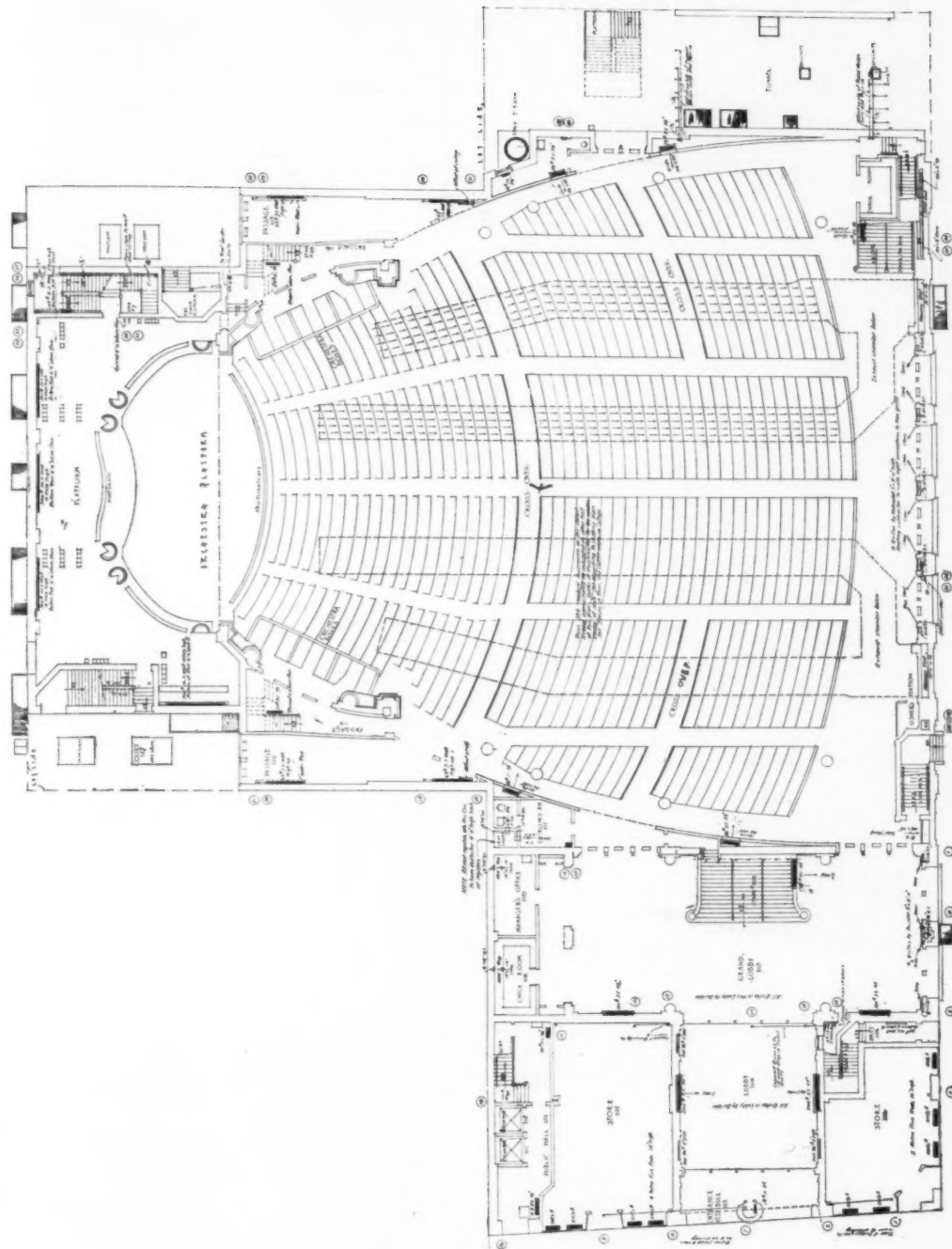


PLATE 176

PLAN OF ORCHESTRA FLOOR
THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK
THOMAS W. LAMB, ARCHITECT

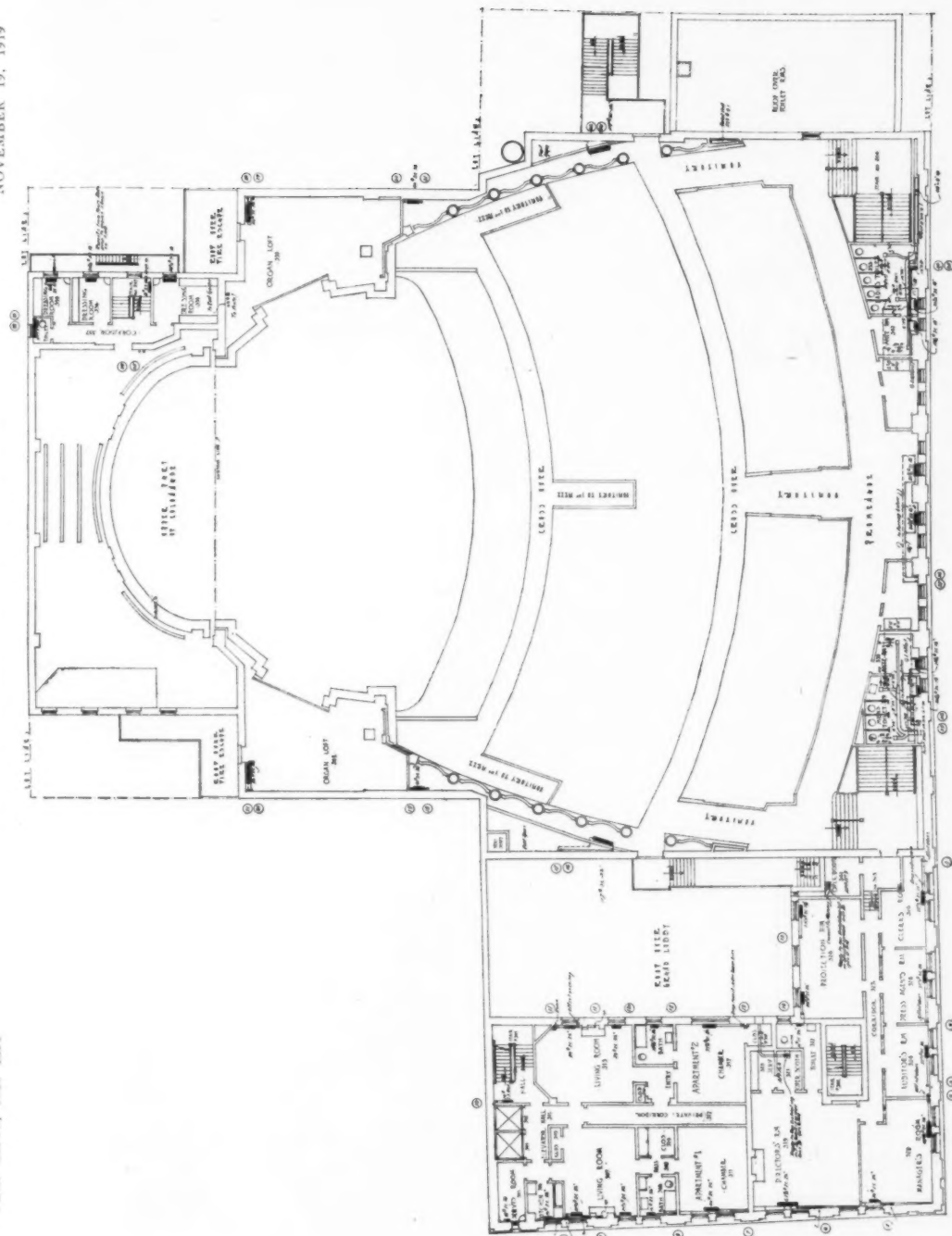
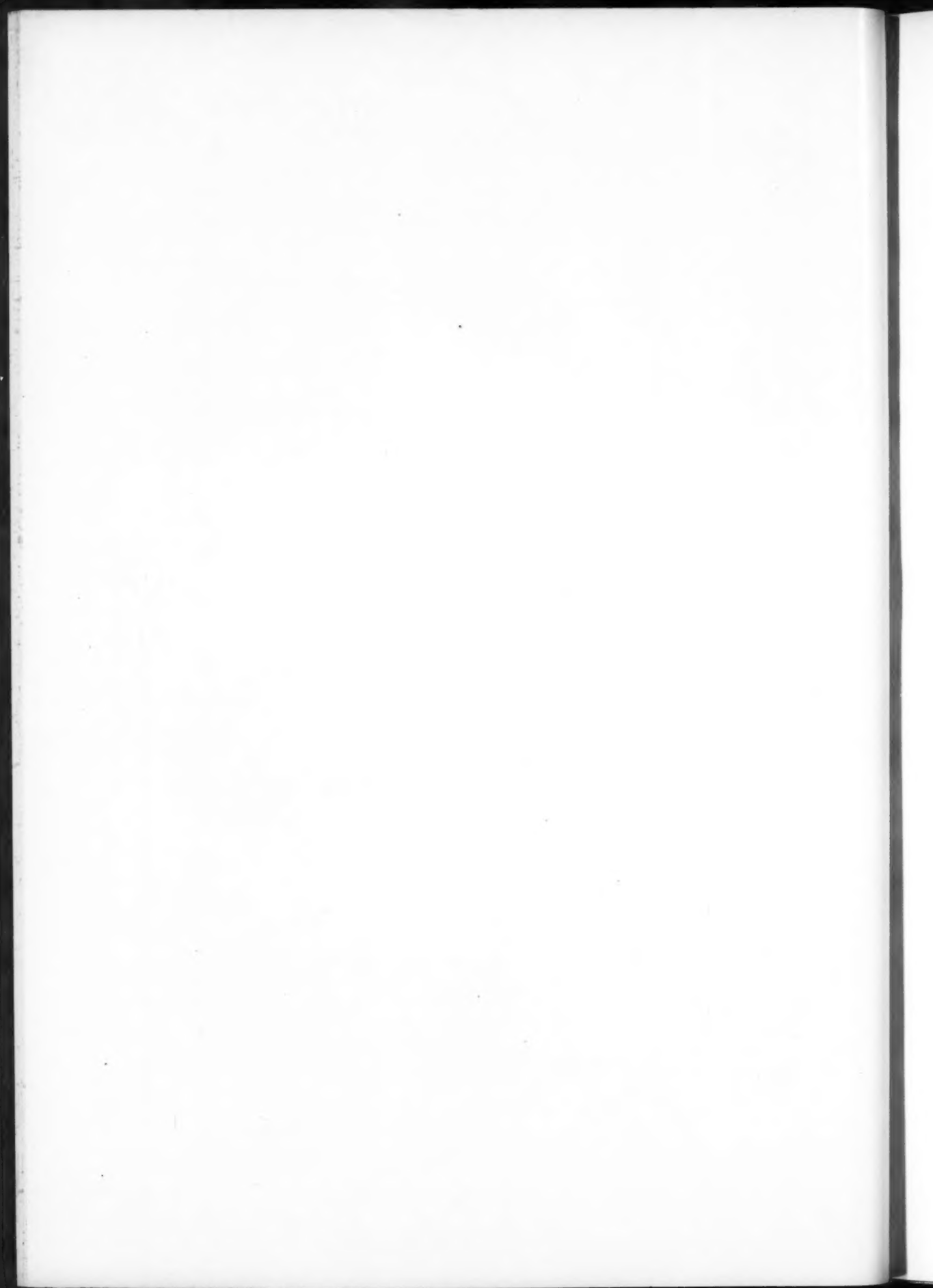


PLATE 177

PLAN OF 1ST MEZZANINE FLOOR
THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK
THOMAS W. LAMB, ARCHITECT



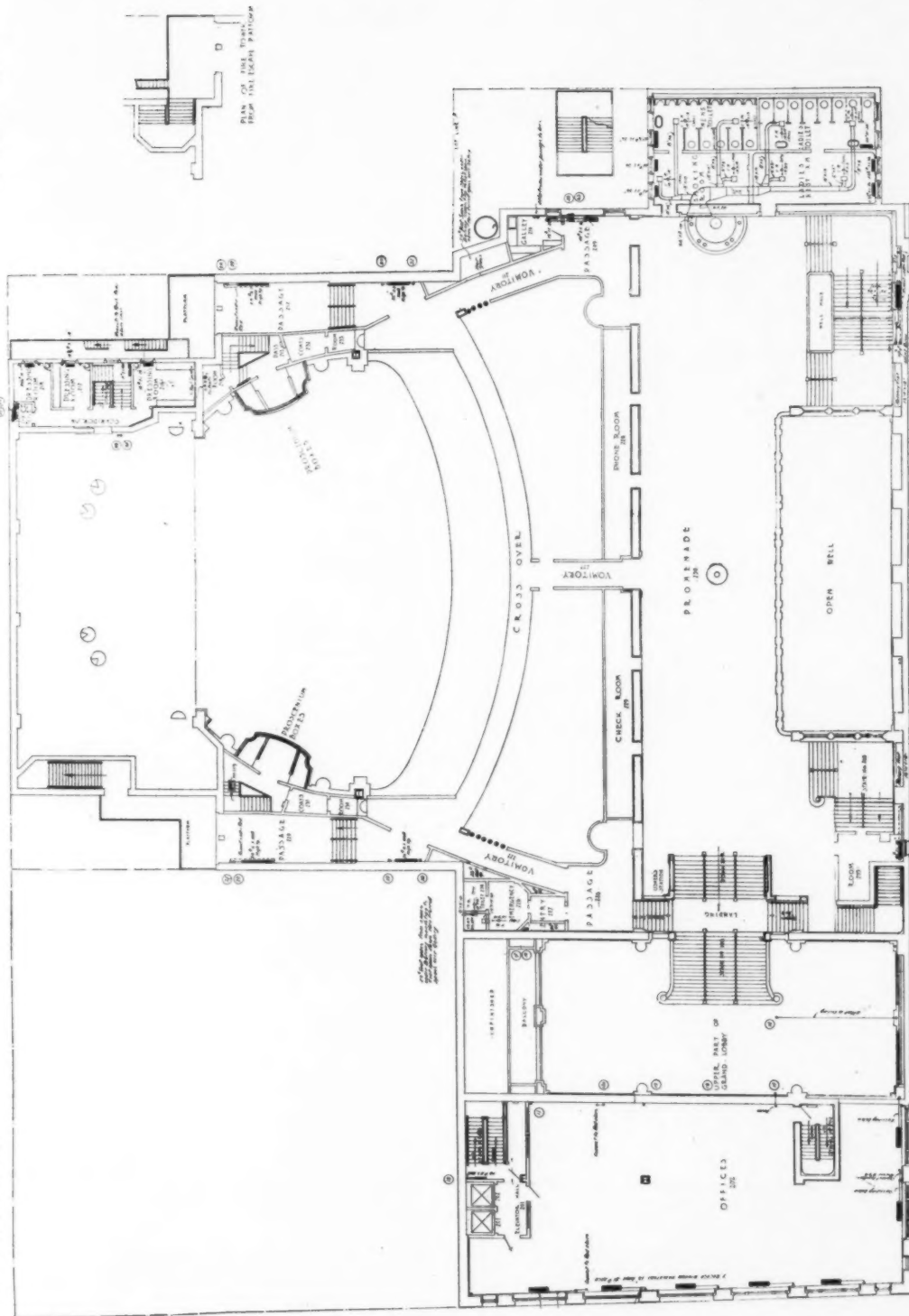
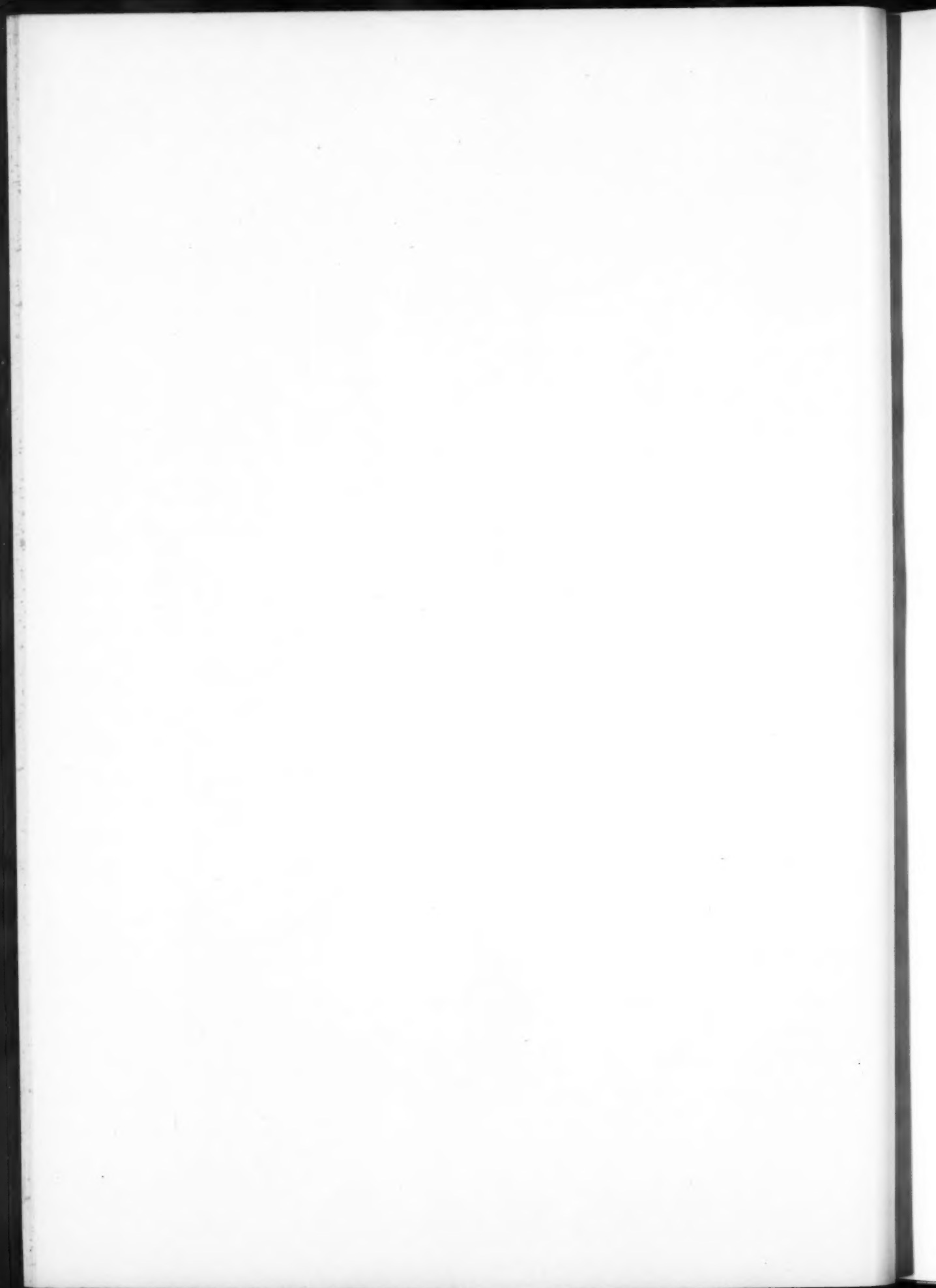


PLATE 178

PLAN OF 2ND MEZZANINE FLOOR
THE CAPITOL THEATRE, BROADWAY AT 51ST STREET, NEW YORK
THOMAS W. LAMB, ARCHITECT



Current News

Happenings and Comment in the Fields of Architecture and the Allied Arts

In order to supply our readers with material of current interest, the news and comment appearing in issues of THE AMERICAN ARCHITECT delayed by the printers' strike will be as of actual rather than stated date of publication.

Inter-Professional Conference in Detroit

With the purpose of bringing together the professional men of the country in order to plan more effective relations and act together on matters pertaining to the public good, an Inter-professional Conference is being called to meet in Detroit, Nov. 28 and 29. The conference was suggested by the Post-War Committee of the American Institute of Architects, which was established to study the new obligations thrust upon the architectural profession by the war.

It is the hope of those fostering the movement to perpetuate to an appreciable degree the enthusiasm of the war-time service rendered to the public by the professional men of the nation. The subjects which might well come before such an inter-professional organization have been classified under three heads:

A—The functions and inter-relations of professional organizations.

B—Relations of professions to the public.

C—Educational obligations of the profession.

The Detroit program provides for an opening session in which representatives of the various professions will give their views as to the desirable objects, scope, method of procedure and organization for an inter-professional body. Following this discussion, which will be opened by Thomas R. Kimball, president of the American Institute of Architects, the plan is to appoint a committee on plan and scope which will be asked to report on the succeeding day, when, if necessary, both sessions will be devoted to a discussion of the committee's report and to the permanent organization of whatever type of body may be agreed upon.

To date, among others, representatives of medical, legal, education and construction professions have accepted membership on the organizing committee. It includes Dr. Alexander Lambert, president of the American Medical Association, New York; Thomas R. Kimball, president of the American Institute of Architects, Omaha; Calvin W. Rice, secretary of the American Society of Mechanical Engineers, New York; Frederick L. Ackerman, New York; Felix Adler, New York; Charles A. Beard, New York; N. Max Dunning, Chicago; Henry W. Hodge, New York; Robert D. Kohn, New York; Arthur D. Little, Cambridge, Mass.; Basil M. Manly, Washington; Milton B. Medary, Jr., Philadelphia; George A. McKean, Detroit; E. J. Mehren, New York; Frank A. Waugh, Amherst, and Charles H. Whitaker, Washington.

The offices of the organizing committee of the Inter-professional Conference are at 56 West 45th Street, New York. The meeting in Detroit will be held at the Hotel Statler.

Widespread interest is being manifested in the conference by prominent architects and engineers all over the United States, and it is expected that a large attendance will mark the sessions at Detroit.

N. Y. State Architects' Association Favors Capitol Park Plan

(Special to THE AMERICAN ARCHITECT)

ALBANY, N. Y., Nov. 10.—Resolutions endorsing the suggestion for a park on the site cleared for a state office building to the west of the Capitol, and the erection of the proposed office building on the south side of State Street, to balance the State Education Building, were unanimously adopted by the New York State Association of Architects at a meeting held here this week.

More than 25 representative architects from all of the leading cities of New York State attended the luncheon and meeting of the State organization. A legislative committee to investigate and act upon all legislation of interest to the architects of the State was appointed. Thomas L. Gleason, of Albany, was named chairman.

The State association now has a membership of more than 200, it was reported at the meeting. Plans for the annual gathering of the State body at Rochester next February were discussed.

Mayor James R. Watt, in a brief address, welcomed the architects to Albany.

Robert D. Kohn, first vice president of the State association, responded to welcoming addresses of the mayor. President M. L. Emery, of the Albany Architects and Consulting Engineers' association, welcomed the visiting delegates in behalf of the Albany organization.

Thomas L. Gleason was appointed chairman of the special legislative committee, to work in co-operation with the regular legislative committee during the coming legislative session. Edward W. Loth, of Troy, and Charles R. Selkirk, of Albany, were named as the other members.

The Albany Society of Architects offered a silver loving cup to the member of the state association membership committee whose city or district should secure the greatest number of members in proportion to the number of registered architects in that district.

A resolution was unanimously adopted endorsing that part of the Reconstruction Commission's report, relating to the formation of a Department of Public Works, which would place the construction work of the state under a general board with sub-divisions. This subject should receive the consideration and endorsement of all the societies and chapters of the State of New York.

Merchants' Association Endorses Bureau of Housing Bill

The Merchants' Association of New York has given its approval to a bill in Congress which appropriates \$250,000 for the creation of a Bureau of Housing in the Department of Labor.

The bill was examined and endorsed by the Association's Special Housing Committee, of which Burt L. Fenner, of McKim, Mead & White, is chairman.

Chicago Chapter Discusses Zoning and Industrial Housing

At a meeting of the Illinois chapter of the American Institute of Architects, held Tuesday, November 11th, Henry K. Holsman, president, in presenting for discussion the subject of the evening, "Zoning for Chicago and Industrial Housing," said:

"I think I can best show the reason why the Illinois Chapter should devote itself to the discussion of this subject by reading a few clippings from the building press.

"Arthur S. Keene, president of the Kansas City Chapter, in a meeting of that Chapter said that he had accepted his office with a determination to obtain for the architects' organization greater public recognition through a greater co-operation with civic bodies and a greater public service from the Chapter and its individual members."

"At the same meeting E. J. Russell, of St. Louis, a member of the national board of the building industry for the settlement of jurisdictional disputes in the building industry, emphasizes the importance of architects being more than professional recluses in the following words:

"Architects should co-operate with engineers, the city council, the chamber of commerce and all civic organizations. They should become members, if possible, of these bodies, and make their power felt in all the plans for the betterment of the city."

"An incident in St. Louis is an example of what architects can do when they take an interest in public affairs, where they had been an important factor in defeating a ten million dollar so-called improvement project, because on investigation, it did not fit in with plans for harmonious developments of the city.

"In my judgment," said Mr. Holsman, "one of the greatest benefits that will be derived from the carrying out of the comprehensive zoning plan for the city of Chicago, as outlined by the Chapter at its last meeting, will be the common interest and fraternity that will be aroused among all classes of citizens working with each other in a common civic purpose. Communities, like families, are happiest when they associate with each other in some common task, exchanging ideas and viewpoints and giving and taking in a fraternal manner.

"There is a profound unanimity of opinion among sociological students and those who know that the three greatest graces of any civilized community are Faith, Hope and Charity. These graces may be paraphrased by the one term—get together. Charity has been comprehensively defined as the art of getting the other fellow's point of view, and it is said that the greatest of these is charity.

"It is very fitting, therefore, that we, a body of professional men, having the habit of mind and the custom of proceeding with an orderly arrangement of facts and factors known as planning, should get together for information and inspiration on a subject of such vital interest to our entire community, and thus be prepared to go out into the community when the time comes and help to educate the masses to the value of adopting a comprehensive zoning plan for the city of Chicago."

Harland Bartholemew, city planning engineer, of St. Louis, Omaha and Detroit, was then introduced. He gave a very instructive talk on the technical work connected with the zoning of a city.

He was followed by Ladislav Michalski, city architect of the city of Warsaw, Poland, who has been commissioned to study city administration and city planning in America with a view to making the new plan and zoning of Warsaw as good as possible. Mr. Michalski stated that the

city of Warsaw created a city plan commission composed of six architects, four engineers, one lawyer, one doctor and one or two other citizens. The fact that the people of an old, experienced community should place upon such a commission so many architects is significant and also prophetic as it indicates how the architects of America, when they have come into their own, may be recognized by public authorities for work that falls within their scope of training and activity.

Howard Shaw, F. A. I. A. and J. C. Llewellyn, F. A. I. A., both read interesting papers on their experience with industrial housing work.

The meeting was attended by about forty members of the Chapter and about the same number of engineers and others interested in city planning and industrial housing.

New York Architects Discuss Law for State Registration

The regular monthly meeting of the New York Society of Architects was held on Nov. 18 at the Society's headquarters, United Engineering Societies Building, West Thirty-ninth Street, New York, Henry Holder presiding.

Among the important topics discussed was the law for the State registration of architects. Efforts are now being made, with the aid of other organized bodies, to have certain defects in the present law remedied. A joint committee has been formed for the attainment of that end. At this meeting the present committee was reinforced by the addition of five new members, with instructions to take immediate action in the hope of expediting matters and giving practical effect to a most necessary measure for the protection of legitimate practitioners and the exclusion of irresponsible or fraudulent claimants to the title of architect.

The treasurer's report showed the financial standing of the Society to be better than in any previous year in its history.

Three new names were added to the Society's membership and one referred to the junior class.

Billion for English Housing

Ian Robertson, a Scotsman who stated that he was acting for a trust composed of Scottish and American millionaires, whose names he does not disclose, has offered a sum of \$1,000,000,000 to the Prime Minister for investment in housing at a rate below the current market rate. Mr. Robertson was introduced by Lord Willoughby de Broke and Sir Warren Fisher, Secretary to the Treasury, was present at the interview. This is not the first time Mr. Robertson has offered these mysterious millions. During the summer he offered large loans to Birmingham and other English municipalities. To no one has Mr. Robertson disclosed the names of those for whom he states he is acting. There is no evidence that he succeeded in convincing the Prime Minister or Treasury representatives of the existence of the money, but Mr. Robertson and Lord Willoughby both declared after the interview that it was satisfactory.

Some months ago "F. S. T." wrote to the *Times* saying that he was ready to surrender to the British Government \$400,000 of his fortune invested in British war loan securities.

The Treasury now announces that this English gentleman has made good his offer and has turned over the war bonds.

THE AMERICAN ARCHITECT

Southern California Chapter, A. I. A. Holds Monthly Meeting

The 129th regular meeting of the Southern California Chapter, American Institute of Architects, was held at the City Club, October 14.

As guests were present: Mr. Comstock, curator of the Southwest Museum, and Mr. John Bowler.

The secretary reported for the committee on competitions that it had succeeded in getting the program of competition for a city hall at Long Beach withdrawn, having induced the city to select an architect direct; that the competition at Fullerton had been concluded in a satisfactory manner.

For the City Planning Committee, Mr. Withey reported that Mayor Snyder had requested the City Council to take steps toward drafting a city planning ordinance for the city at once; that the Chapter's president and secretary had called upon the mayor, reassuring him of the Chapter's interest in this matter and offering its services in connection with the city planning work.

Under the head of "Papers and Discussions," Mr. Comstock was introduced and gave an interesting address on the early architecture of the Southwest, with a brief history of the early inhabitants of this region.

S. B. Marston, who had recently returned from Y. M. C. A. service in France, spoke briefly of his experiences.

Following these two speakers, Mr. Rosenheim presented a suggestion that the Chapter take steps to form a program for selecting what would be considered the best architecture in and about Los Angeles. This information, he thought, would be of much use to the Chamber of Commerce and like organizations. It was moved by Mr. Rosenheim, seconded by Mr. Krempel and duly carried, that a program thus outlined be instituted, and the president appointed Messrs. Rosenheim, D. C. Allison and Rea as a committee to take up this work.

Michigan Architects Form Thumb Tack Club of Detroit

The architectural men of Michigan have formed a club called "The Thumb Tack Club of Detroit." This club is planned along the same general lines of the Boston Architectural Club and the T Square Club of Philadelphia.

All persons engaged in or interested in architecture are eligible for membership, so that the club will have every opportunity for advancement of public appreciation of architecture. It is intended to carry on a campaign against all intrusions of the city and parks with hideous examples of buildings and monuments. There will be a Beaux Arts Atelier and other special classes for training the young men and lectures for the older men. Each year an architectural exhibit, at which examples of architectural work from all large cities will be submitted and medals awarded. A competition is now under way for the new emblem of the club and drawings are to be in the hands of the secretary on Dec. 20. Some of the architects are to start a scholarship next year for the successful entrant in a competition, the details of which are not yet arranged.

There should be a decided advance in the ability of the architectural student of Detroit, due to the activities of the club, as well as the organization proving of great benefit to the community.

The club rooms are located in an old house right in the business center of Detroit at 83 Fort Street. The

attic forms very interesting class rooms, the second floor is arranged for the club rooms, and the first floor is rented for offices.

The entire management of the club is vested in the hands of an executive committee which consists of the following men: Mr. Rowland of Albert Kahn's office, president, and the other six members are Mr. Murphy of the firm of Esselstyn, Murphy & Hanford; Mr. Keough of the firm of Van Leyen, Schilling & Keough; Mr. Leone of Smith, Hinchman & Grylls; Mr. Kapp of the Wills-Lee Automobile Company, and Messrs. Sukert and French of Albert Kahn's office. Club rooms are open at all times to out-of-town professional visitors.

Iowa Architects Convene

The seventeenth annual convention of the Iowa Chapter, American Institute of Architects, was held at Ottumwa, Iowa, October 23 and 24, with headquarters at the Ottumwa Hotel. An invitation was accepted by architects outside of the chapter who attended and participated in the meetings. The opening address was made by Allen Holmes Kimball, president of the Iowa chapter. Other interesting addresses were as follows: "The Present Trend in Industrial Housing," and "The Iowa Housing Law," by Parke T. Burrows; "Post-War Committee on Architectural Practice," N. Max Dunning, Chicago; "The Contractor and the Architect," J. E. Tusant, president of the M. B. A. S., Des Moines; "Landscape Planning in Small Cities," E. W. Ramsey.

The following standing committees reported through their chairmen: Professional Practice, Parke T. Burrows; Membership, George H. Washburn; Public Information, Walter H. Kruse; Legislation, William H. Steele; Institute Affairs, Eugene H. Taylor.

A banquet was held on the evening of October 24 at the Hotel Ottumwa. An exhibition of architectural work, open to the public, was held on the mezzanine floor of the hotel. Many non-attendants sent drawings and photographs for the exhibition and questions for the Question Box discussion.

Art Treasures Go To Public

A collection of books and art, believed to be the largest individual collection in the world, valued at \$2,500,000, will be given to the people of Los Angeles by Henry E. Huntington, it was announced, when a trust indenture conveying a site for the library to house the books, at San Marino, between this city and Pasadena, was recorded.

One of the largest and most extensive private libraries in the world is being built on the site in San Marino, and when this is completed it also will be conveyed to the public. As soon as the library is completed the mammoth collection of books and art, portions of which are now in New York being catalogued, and in other sections of the country in storage, will be given the public.

The library will be administered by a board of trustees under the name of the Henry E. Huntington Library and Art Gallery. The trustees named in the indenture are Howard E. Huntington, Archer M. Huntington, W. E. Dunn, George S. Patton and George E. Hale. The indenture set forth that the property is being placed in trust "for a free public library, art gallery and museum containing objects of artistic, historic or literary value."

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Personal

C. H. Keeber, architect, has opened offices at 705-709 North Dearborn St., Chicago.

J. H. Craddock & Co., architects, Omaha, have moved offices to Rooms 1 and 2, Elks Building.

Antrim & Conarroe, architects, have opened offices at 225 South Sydenham Street, Philadelphia.

Guy King, architect, announces the reopening of his office at 1513 Walnut Street, Philadelphia.

Architect G. W. Johnson has opened an office for the practise of architecture at 765 Line Street, Camden, N. J.

A. W. Burgren has associated himself with Mr. Mathew O'Brien, architect, in the Foxcroft Building, San Francisco.

W. A. Raymond, recently returned from France, has opened an office for the practice of architecture at Farmington, Minn.

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Houghton Sawyer has resumed the practice of architecture and has opened an office in the Hearst Building, San Francisco.

Clarence A. Tantau and John K. Branner have moved their architectural offices from the Clunie Building to 251 Kearny Street, San Francisco.

Felix A. Burton, Charles Lewis Pitkin, Dana Somes and Frederick W. Wead have associated for architectural practice at 119 Water Street, Boston.

F. C. Stauffen, plant engineer, Union Shipbuilding Co., Box 475, Baltimore, Md., desires samples and catalogs on building supplies and materials.

Stern & Tomlinson, architects, have just opened offices at Room 203, Real Estate Trust Building, Fourteenth and H streets, N. W., Washington, D. C.

Miller I. Kast and Thomas M. Kelker are practising architecture at 222 Market Street, Harrisburg, Pa. This was wrongly reported as Kast & Walker.

Arthur G. Doyle, architect, has been released from the civil service and has resumed practice at Guthrie, Okla. Catalogs and trade material appreciated.

R. A. Benjamin, architect, has opened an office at 2003½ Main Street, Dallas, Texas, where he will specialize in theatre design. Catalogues are desired.

Ward & Blohme, architects, have moved from the Alaska Commercial Building to offices in Canadian Bank of Commerce Building, 454 California Street, San Francisco.

Ernest Coxhead, having returned from France, has resumed the practice of architecture with his brother, Almeric Coxhead, in the Hearst Building, San Francisco.

Herbert B. Rugh and C. B. Zalesky, A. I. A., announce the new partnership of Rugh-Zalesky, architects, with Offices in the Security Building, Cedar Rapids, Iowa.

J. J. Haralson and E. C. Nelson have formed a partnership for architectural practice, to succeed A. Klingensmith, Merchants' National Bank Building, Fort Smith, Ark.

C. L. Hutchisson has moved his architectural offices to Rooms 32 and 33 Emanuel Building, Mobile, Alabama. He desires to receive manufacturers' catalogues and samples.

H. H. Turner, architect for the school board of Grand Rapids, Michigan, has resigned that office and opened an office for general practice, specializing in school buildings.

Bass, Knowlton & Graham, architects, of Indianapolis, have opened a branch office in Tulsa, Okla., 213 Kennedy Building, and would be glad to have catalogs from manufacturers.

Howard E. Jones, formerly of Los Angeles, is now located at San Bernardino, with office in room 404, Katz Building, that city. He desires to receive catalogs and trade literature.

J. A. Scherer, architect, formerly a member of the firm of Shannon & Scherer, Devils Lake, N. D., and but recently returned from government service, has opened an office for the practice of his profession at 412 Essex Building, Minneapolis.

John E. Davis and V. J. Ingold have opened offices for the practice of architecture at 2311 Dime Bank Building, Detroit, Michigan, under the firm name of Davis & Ingold. Messrs. Davis and Ingold were both previously with Louis Kamper, architect.

Harry Firminger, architect, 408 Oppenheim Building, St. Paul, will close his office November 15 and retire from the practice of his profession to actively participate in the management of the American Buckram Manufacturing Company, of Henderson, Minn.

Milburn Heister Co., architects, Union Savings Bank Building, Washington, D. C., have reopened their Southern office in the First National Bank Building, Durham, N. C., in charge of Capital T. Y. Milburn, who desires samples and catalogs.

Mott M. Marston, Los Angeles architect, for several years connected with the engineering department of the Salt Lake Railway, in charge of its architectural work, has resumed private practice of his profession, with office at 535 I. W. Hellman Building, Los Angeles.

Wm. Macomber has associated himself with E. T. Fallows and G. T. Huey, architects. The firm will henceforth be known as Fallows, Huey & Macomber, associate architects and engineers, with offices at 903 New York Life Building. Mr. Macomber will for the present maintain his office at 411 Essex Building, Minneapolis, Minn.

Oregon State Chapter, American Institute of Architects, Portland, has elected the following officers, the entire personnel of the board being changed: President, W. C. Knighton; vice-president, John V. Bennes; secretary, Folger Johnson; treasurer, O. R. Bean; trustees, Ellis F. Lawrence and Joseph Jacobberger.

The firm of Charles H. Higgins, architects and engineers, 19 West Forty-fourth Street, New York, wishes to announce that Capt. Joseph R. Greenwood having recently received his discharge from the army has renewed his association with the firm, which was interrupted during the war.

The firm of Netcott & Netcott, architects, has opened offices in the Black Building at Waterloo, Iowa. Harry E. Netcott, who formerly practised at Independence, Iowa, is from the University of Illinois architectural department. He recently returned from overseas, where he served for eighteen months as a captain of field artillery in the A. E. F.

Headed by Emil Lorch, professor of architecture in the University of Michigan, the State board of examiners of architects was appointed by the governor of Michigan on August 16th. Professor Lorch is appointed to serve one year; B. M. Walker, of Detroit, two years; J. A. Broad, Newberry, three years; John J. Cox, Ann Arbor, four years; George L. Harvey, Port Huron, five years; Joseph Lardie, Grand Rapids, six years; George Gerome, Detroit, seven years.

Paris Prize of the Society of Beaux-Arts Architects

The first preliminary competition of the 13th Paris Prize, open to all citizens of the United States under thirty-one (31) years of age on July 1st, 1920, will be held on January 10th, 1920. For full particulars apply to Chairman, 126 East 75th Street, New York City.

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News from Various Sources

Florida is spending more than \$2,000,000 on new hotel work in preparation for the greatest tourists' year in history.

* * *

With the close of the active building season the United States faces a housing shortage equal to the needs of 4,000,000 people.

* * *

Charles M. Schwab intimates that the railroads of the country will need approximately 5,000,000 tons of steel rails during the next twelve months.

* * *

Agricultural Section issues illustrated booklet on South Carolina for distribution among homeseekers. States that the settler who comes can choose any kind of land, from coastal to mountainous, and he may raise, with profit, cotton, grains, tobacco, rice, vegetables, fruits, live stock, poultry or dairy products.

* * *

Southern Pine Association states that lumber cutting in United States is now three times greater than annual growth, and that grave economic danger confronts country. Further states that 81.6 per cent of mills will cut out their

supplies in five years, 95.3 per cent in ten years and 99 per cent in fifteen years.

* * *

New York *Sun* states that building needs of United States include 1,000,000 homes, 128,000 factories, costing \$100,000 or over; 325,000 factories costing less than \$100,000 each; 6,000 hotels, 5,000 schools and public institutions, 50,000 apartments, 120 major freight terminals, 14,000 railroad stations and freight sheds, and 20,000 churches and theatres.

* * *

The American Academy of Arts and Letters, at its annual meeting yesterday at 347 Madison Avenue, elected three new members to the academy. They are Dr. Maurice Francis Egan, author and diplomat; Charles A. Platt, architect and painter, and Archer M. Huntington, author.

The promotion of public art museums in the twenty-eight States which have none at present was advocated. A prize for good diction on the stage was voted. Plans for obtaining a fund for a house on 155th Street near Riverside Drive were discussed.

The new officers of the Academy are William Dean Howells, president; William Milligan Sloane, chancellor; and Thomas Hastings, treasurer. The directors are Daniel Chester French, Nicholas Murray Butler, Augustus Thomas and Robert Underwood Johnson, who is permanent secretary.

Financial and Commercial Digest

As Affecting the Practice of Architecture

Government Ownership of Public Utilities

ACCORDING to the *Architect* of London the English public now generally realizes the mistake of Government control of public utilities. Apparently dissatisfaction over its conduct of the telephone industry in Great Britain has stirred up much adverse criticism and has diverted capital into other channels in much the same manner as in the United States. There is a strong demand abroad for the return to private hands of a service which the Government has proved itself incapable of handling. To quote from the *Architect*:

When the telephone was first invented it was for a time treated as an ingenious toy until demonstration proved how great a service to mankind it might become. We were at first behind other nations in adopting it, but in the hands of a well-administered public company we soon found it an indispensable adjunct of business which we could not do without. In those happy and far-distant days a subscriber was treated with courtesy and promptness; if he needed a second instrument it was fixed within a few days of the order being given; the service was excellent; the officials of the company efficient and civil, and we became dependent on the telephone for many of the ordinary operations of business. More than this, the company made large profits, which indirectly helped our national revenue in the form of income tax.

In those now distant but halcyon days, those cloaked with authority who sat in high places saw an opportunity of extending their authority; then, as now, the creation of new departments was dear to the official mind. It is true that the rapidity and extent of Government's interference with the affairs of the private citizen was less than we

suffer from to-day, but still ambition was there and the Government took over the telephones. Naturally we were told then, as we are told now, that the change was in our interests. Very soon, however, we learnt we were wrong.

Now, if the public service were piling up profits, which were devoted to the relief of the taxpayer, we might grin and bear the inconvenience in the public interest; but this is strangely not the case. Instead of profits, the service which used to pay in private hands is carried on at a loss.

Under these circumstances we cannot see why the representatives of the public should not insist on the Government's cutting its loss and restoring to private hands a service which they have shown themselves incapable of conducting in the public interest.

Naturally the war, like charity, has been used to cover a multitude of sins; but its mantle is not wide enough to conceal the fact that the less we allow Government to do for us the better our business will be done and the less we shall have to pay.

Revising Rents Downward

The State Commission on the Necessaries of Life in Boston is able to report progress in its campaign to abate unreasonable rent profiteering. The Commission declares that it now has on record numerous instances in which landlords who had announced excessive advances have consented, after hearings before the board, to reduce them. In circumstances such as these there cannot be too much commendation for the work of the Commission, says the *Boston Transcript*. There should be a good word also for the co-operating landlords. It is true that the reductions they have allowed are tangible proof of the unreasonable nature of the charges which they at first designed to im-

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pose. But that does not qualify the praise due them for their co-operative action after frank and fair discussion had carried them out of the befogging atmosphere of wholesale rent profiteering lately enveloping many sections of Greater Boston into the clear air of right and justice. When they reached it they did the proper thing—that is the essential point.

Home Needs of the Nation

An opportunity to use constructive initiative is afforded the real estate men and private building interests by the nation's pressing need for homes. If anything unusual is suggested by the Government's housing activities during the war, and by the present keen interest of municipalities in the housing and building enterprises, it is that the "ten-cent store idea" must be applied to the building industry. This is set down in the Seattle daily press.

The home-building problem of the country must be approached from a new angle. The central idea must be to build well, yet inexpensively, so that the opportunity of home ownership may be widened and extended to persons to whom, heretofore, it has been closed.

The problem can be solved by private interests. If they devote their time and bend their energies to the situation they will meet the same success that was theirs in the automobile and in the piano industries.

The paramount idea in all these industries is to increase sales. The task is accomplished by two means: (1) Decreasing the cost of manufacturing without seriously diminishing quality, and (2) devising ways and means whereby purchasers may easily pay for the product.

These are the two big questions confronting the home-building industry in the United States to-day. They must be solved and there is growing indication that unless they are solved by private interests, that governmental agencies will be forced into the field.

Teamwork as a Factor in Solving the Housing Problem

Excellent Results Obtained in Ohio City When Co-operative Methods Are Applied—
Temporary Deposits Provided by Manufacturers

COUNTRYWIDE interest is being manifested by architects and builders in methods being worked out in financing the building of homes, especially in sections where there has been considerable difficulty in obtaining sufficient funds to enable construction to proceed. Many plans to stimulate building have been tried out by communities, some of which have been successful, while others only partially so, in securing needed loans.

An admirable example of what can be accomplished by a municipality when there is 100 per cent co-operation by all interests concerned is shown by the record just made by Middletown, Ohio. That city, forced by an acute housing shortage, set out immediately with a thorough determination to solve its problems. There was no "hurrahing" or wasted energy in going about the matter, just a sane business-like handling by the interests concerned. But most important of all there was real co-operation between each element, a vital factor in the solution of a problem of this character.

In some of the larger cities in the United States it has been possible to secure state aid in building financing, and many efforts have been made to work out a Federal system of loans. Middletown, Ohio, however, had confidence in its ability to secure sufficient funds without going outside of its own boundaries for help. Fortunately, the city prided itself on an exceptionally live Chamber of Commerce, which with the progressive Middletown Real Estate Board shouldered the many responsibilities.

When the Mayor of Middletown issued the statement "We must interest local capital in solving our housing problem" all city organizations came forward with vigorous efforts. The manufacturers of the city, anxious to have their employees properly housed, responded quickly to the appeal for loans. With this start the plan went rapidly ahead.

It was at the close of the building season of 1918 that home builders in Middletown were first confronted with the difficulty of securing money on mortgage loans to complete the financing of their operations.

The Middletown Real Estate Board, with the co-operation of manufacturers, who were also vitally interested in having their employees satisfactorily housed, devised the plan to meet the situation. It was this: Through the Industrial Department of the Chamber of Commerce consent of all the manufacturers was secured to a plan of financing which provided for temporary deposits by the manufacturers in the building associations, such funds to be loaned to the constructing developers or to the purchasers of new homes on first mortgage.

The plan was unanimously approved, the deposits by the different industries made for refund within eighteen months. The situation was thereby relieved. The manufacturers were paid back their deposits with interest within six months. The operation will be repeated in the closing months of 1919, having proved a satisfactory solution of the local problem and one which is of direct benefit to all concerned.

A housing survey is now under way in Middletown under the direction of the Chamber of Commerce. This will undoubtedly disclose not only the actual shortage of homes, but through information supplied by the industrial plants concerning their plans for expansion for next year, will provide a dependable objective in planning a 1920 construction program.

The corporate limits of the city are about to be extended, following lines suggested to the authorities by the Real Estate Board, and includes such land as will be improved in the near future to provide these additional homes. All trade industrial and public organizations of Middletown are co-operating with pardonable pride in the city and its healthy and comprehensive growth, and the spirit of good fellowship and optimism is contagious.

It will, therefore, be seen that a plan conceived in the best spirit of co-operation and which has achieved 100 per cent of efficiency has resulted not only in supplying an acute demand for additional housing, but also has created a normal and healthy expansion of the city's limits.

Department of Architectural Engineering



INTERIOR VIEW, RIDING ACADEMY, BROOKLYN, N. Y.
WM. T. MCCARTHY, ARCHITECT

Economical and Efficient Roof Framing

By WM. T. MCCARTHY, Architect

THE one big problem constantly confronting the architect to-day is how to design a building which can be built within the price fixed by the owner. Unfortunately it is not being solved in a satisfactory manner in every instance, and thus millions of dollars are withheld, which otherwise would be invested in new buildings, because the bids when received are higher than the owner anticipated.

For this reason it is necessary that the architect

be constantly on the alert, and investigate and give due consideration to each new type of construction appearing on the market—and there are many of them—for which claims of economy over types of construction already in use are made.

While the use of automobiles increases by leaps and bounds and with it the construction of garages, yet here and there we still find that the horse is king. Hence the need of the building here shown.

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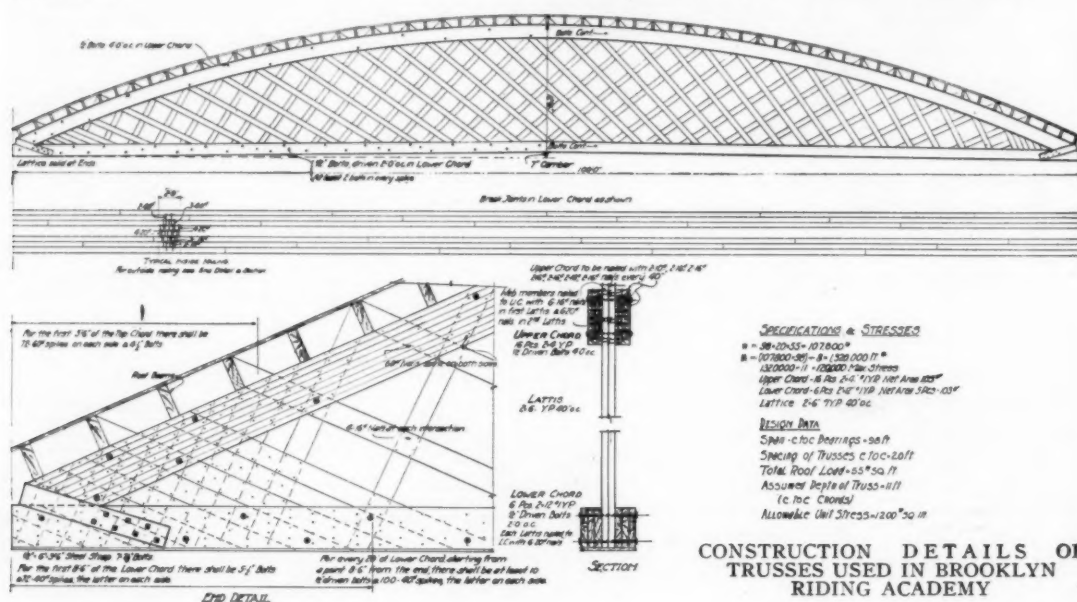


RIDING ACADEMY, BROOKLYN, N. Y.
WM. T. MCCARTHY, ARCHITECT

In Prospect Park, the largest park in Brooklyn, riding is quite popular, and thus several riding academies are located in the proximity of the park. Of course in the design of such a structure the elimination of interior columns is essential, necessitating the use of trusses. The riding academy here illustrated and described is located at the southerly entrance to Prospect Park. The building is one-story high, with riding ring 100 feet by 120 feet. At the Caton Place side, a section 25 feet by 62 feet 6 inches in area was partitioned off from the ring, and furnishes accommodations for lockers, showers, an office and meeting-room. This latter is provided with a fireplace, and is also used for instruction purposes. The walls of the building are constructed of hollow tile, built between brick piers, and stuccoed on the exterior. Rigid economy of construction had to be practised throughout. The roof beams are supported by five wooden "Lattis" (patented) roof trusses, spaced 30 feet on centers, with a span of 98 feet center to center of supporting brick piers.

Since the greatest economy of construction was effected by the use of these long span wooden trusses, a detailed description of their construction will be given.

This type of truss, illustrated both in the photographs and the drawing, are essentially a wooden lattice truss, constructed of Southern pine, with curved upper chord and horizontal lower chord. Perhaps the most important feature of their construction is the manner in which the chords are built. Instead of using single solid timbers, often hard to obtain in the local yard, a number of small-sized timbers are built up to form the member. Each of the trusses used in this riding academy has the upper chords constructed of 16 pieces of 2-inch by 4-inch yellow pine, and the lower chord of 6 pieces of 2-inch by 12-inch pine. As both these sizes are very common, and extremely long lengths are avoided, no difficulty is encountered in getting quick delivery of the material. Thus the principle of built-up members commonly used in steel construction, where the flanges of plate girders are made up of as many cover plates as required to obtain the necessary section, is here adapted to timber trusses. However, in using a number of individual pieces, the important thing is to have them all work together under load. In the plate girder this is accomplished by rivetting. In the wooden truss, rivetting is, of course, impracticable, and nails and bolts are made use of. A study of the drawing showing the truss details, will reveal the method of nailing and bolting the various members together, so that they act in unison when loaded.



CONSTRUCTION DETAILS OF
TRUSSES USED IN BROOKLYN
RIDING ACADEMY

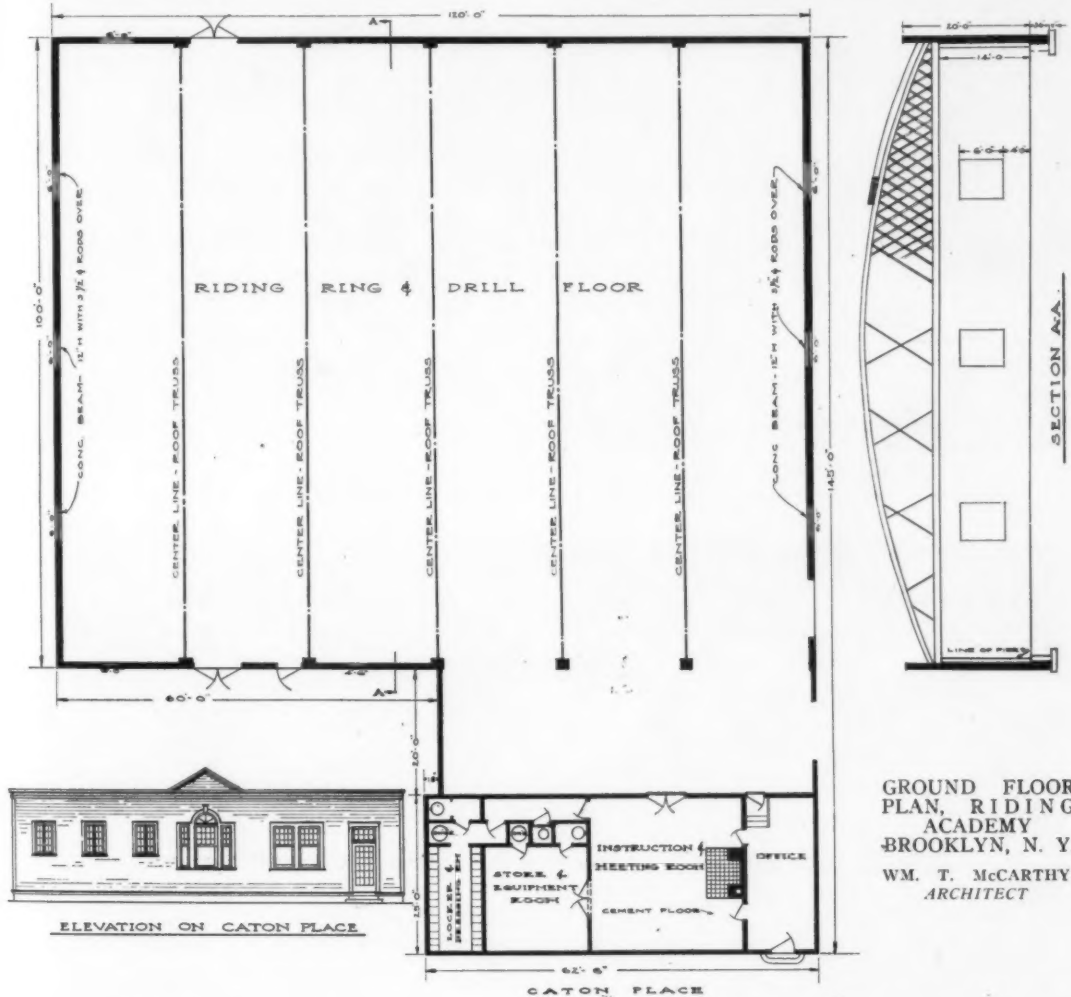
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In a multiple intersection lattice truss, such as was used, the stresses in the lattice web members are indeterminate, while the stresses in the chords can be easily determined by dividing the bending moment at any point by the depth of the truss. The maximum depth (at the center) for this type of truss is about one-eighth of the span.

The lattice members really act in a manner very

course of erection, designed by me, where it was also desired to use the same type of truss. This building is also 100 feet wide.

The Brooklyn Building Department fixed a maximum allowable deflection under test of $1/180$ th of the span, with a loading double the normal live load, i. e., 80 pounds per square foot. In order to provide against any accidents, two trusses were erected



similar to the web plate in a plate girder, that is, they distribute the stresses between the upper and lower chords and take shearing stresses.

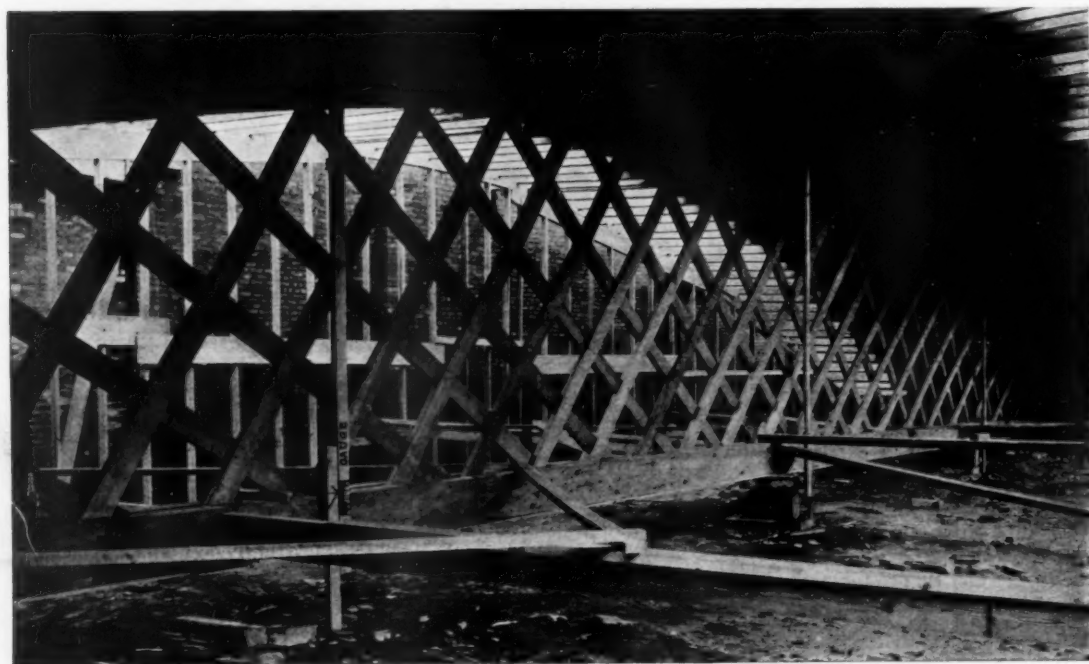
Due to the fact that the stresses in the web members could not be computed, the Brooklyn Bureau of Buildings refused to approve the plans, and accordingly a test was arranged, to determine the efficiency of this type of truss. This test was conducted at a garage building in Brooklyn then in

just above the ground, with lower chords about one foot above the floor level. Gauges were arranged on the test truss at the center and quarter points. Each of these gauges were constructed of two pieces of timber, 2 inches by 4 inches in section, one nailed vertically to the top chord of the truss and therefore moving with it, while the other was driven into the ground alongside, and remained stationary. A horizontal line was marked on this

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METHOD OF CONDUCTING TEST ON LATTIS ROOF TRUSS, BROOKLYN BUREAU OF BUILDINGS
Wet sand, weighing 87 lbs. per cu. ft., used for loading purposes. Total load on truss at completion of test 121 tons.



TRUSS UNDER TEST CONDUCTED FOR BROOKLYN BUREAU OF BUILDINGS
Note location of the three gauges used for reading deflections. Truss was fully loaded when this photograph was taken.

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fixed piece while a scale of inches with quarter-inch sub-divisions was marked on the movable piece. These gauges are clearly shown in the accompanying photographs.

Before loading, the zero of the scale was just opposite the horizontal mark on the fixed timber. The reading of the gauge at any time therefore gave the actual truss deflection. Notice the reading on the photograph showing a close view of one of the gauges.

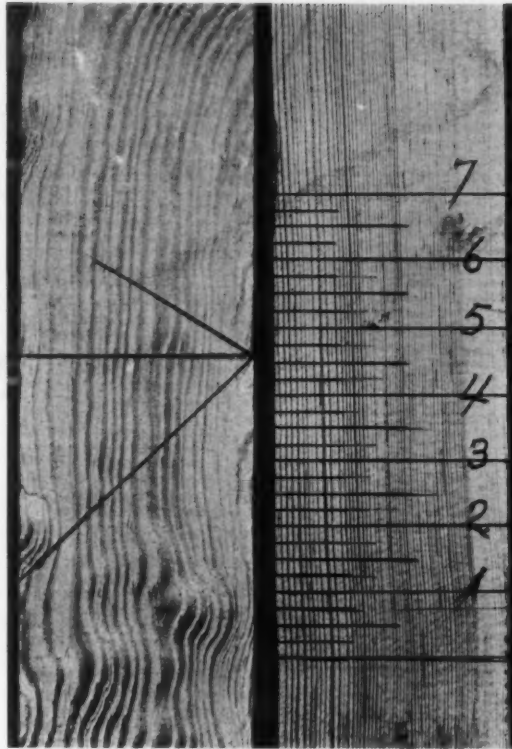
Temporary roof beams were put in place and sheathed for a distance of ten feet on each side of the test truss. These roof beams were supported at the wall end by temporary shoring and at the opposite end by the truss not under test.

The material used for loading was wet sand, found to weigh 87 pounds per cubic foot. A plank curb was constructed to retain the sand. One of the photographs shows the test truss when almost fully loaded. The area supported by this truss was approximately 102 feet (length of upper chord between walls) multiplied by 20 feet (the distance c. to c. of trusses) or 2,040 square feet. The live load was 80 pounds and the dead load 15 pounds per square foot. Thus the total load supported by the test truss was $95 \times 2,040$ or 97 tons. Under this load the deflection was $4\frac{5}{8}$ inches at the centre, or less than that allowed by the Building Department.

The live load was then increased to 104 pounds per square foot (total 119 pounds per square foot) or 121 tons, under which load the deflection increased to $5\frac{1}{8}$ inches, a trifle less than $\frac{1}{180}$ th of the span. Under this load the truss contracted $\frac{1}{2}$ inch in height.

The lower chord was originally given a camber of 7 inches and this camber was not entirely taken up under the maximum loading. After removal of the load the truss gradually came back some three inches.

The superintendent and engineer of the Brooklyn Building Bureau, as well as engineers and in-



CLOSE-UP VIEW SHOWING GAUGE READING
Deflection was $4\frac{5}{8}$ in. under the prescribed test load of 80 lbs. per sq. ft.

spectors from three of the other boroughs of Greater New York were present.

As a result of the test this type of truss has now been approved by the Building Bureau of the several boroughs of the Greater City.

One of the features of the roof framing was the ease with which the trusses were erected, and that without the use of any elaborate equipment.

The riding academy was erected in quick time, at a cost much below that estimated for steel trusses.

Heating Buildings by Fuel Oil

Shall It Supplement or Supplant Coal?

TWO recent events have served to focus attention on fuel oil as a possible substitute for coal—the strike of the bituminous coal miners, and the action of the Board of Standards and Appeals of New York City, the home of the skyscraper, in adopting rules permitting the use of oil-burning equipment, not only in the outlying sections, but in the heart of the city, when proper safeguards are provided.

Burning oil under heating and power boilers is not new, but up to the present time its use for these purposes has been limited. Many misconceptions exist with respect to this entire subject. Since architects will undoubtedly be called upon for counsel as to the advisability of such installations, this article will attempt to point out the possibilities and limitations of oil as a fuel. For years both locomotives and steamships have been successfully operated by fuel oil. The fast destroyers of our navy use oil-burning equipment. However, the factors which enter into the problems of locomotive and ship operation, and the reasons demanding the use of oil therefor, are in many respects different from those which relate to the modern building and industrial plant.

In the first place let us investigate the source of oil supply and the possibilities of obtaining an adequate and permanent quantity.

Practically all oils mined in the United States are unsuitable for fuel purposes as considered in this article, viz., for burning under boilers. There are two reasons for this: First, the derivatives from our "crude" oil, consisting of gasoline, benzene, naphtha, etc., command a large and profitable market. It would be manifestly uneconomical to sell such oil for fuel purposes at from three to four cents a gallon, when after refining it could be sold as gasoline for 22 cents a gallon; secondly, this oil is volatile and has a low flash point. In other words, it vaporizes at a low temperature. These vapors, constantly present with the oil at normal temperatures and mixing with air, form explosive mixtures at comparatively low temperatures. To bring into general use the storage and constant use of large quantities of such oil would tremendously increase the fire hazard. The present storage of gasoline in garages and oil-selling stations and of benzene in cleaning and dyeing establishments produces a hazard which should not be materially increased, although due to rigid rules governing its

storage in congested sections, fires and explosions from this source have been relatively few in number.

From whence then do we obtain this oil? In some sections of the country it consists of the residue after refining the lighter derivatives of the native product, but *the entire output of oil available for use in the Eastern states and many other sections of the country, suitable for fuel purposes comes from Mexico.* Due to conditions with which we are more or less familiar such oil has not been produced in great quantities by American concerns. There is reason to believe that in Mexico there are vast untapped sources of oil sufficient to supply the demand for many years to come, but between this presumably vast supply and the United States market many contingencies liable to cause shipments to cease may arise.

This Mexican oil is a heavy brownish oil which thickens at a low temperature. It vaporizes only at a fairly high temperature, and for use in heating equipment must be pre-heated before being fed to the burners. Due to its composition it is not suitable for refining, and at present the only practicable use for it seems to be for fuel purposes. The oil is sent to the nearest port, thence by tank steamers to the United States, transferred to tank cars and sent to the place of delivery. From the tank cars to the building it is transported by automobile tank trucks. During winter months, due to thickening, it is often necessary to heat the oil to bring it to a point of flowability. This is done by steam or hot water coils, and is not a particularly difficult or hazardous operation.

One other phase of the question of supply must not be overlooked. This oil is absolutely essential to the operation of our navy and to a part of our rail and water transportation system. Should the demand for such oil become so great as to menace the supply needed for the navy and railroads, it is only reasonable to assume that in such an event Congress would pass legislation restricting its use so that an adequate supply for the government would be assured despite any resultant loss or inconvenience to private enterprise. That this prediction is not a vague possibility can be seen by reviewing the action of the United States Fuel Administration in restricting the use of coal when a shortage was threatened for essential purposes, these latter including transportation by land and sea, and this regardless of the fact that hardship to

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private interests causing a financial loss running high into the millions resulted.

Now let us turn our attention to the merits of fuel oil and determine what characteristics it possesses that recommend it so strongly as to cause existing coal-burning equipments to be discarded and thousands of dollars to be invested by usually hard-headed business men in many individual plants in order to substitute oil-burning equipment. Many leading engineers have designated oil as the ideal fuel, basing this statement on several facts as follows:

1. In sections permitting the use of soft coal it is needless to emphasize the objectionable smoke nuisance attending its use. Oil burned in equipment adjusted to accomplish perfect combustion *produces no smoke.*

2. With the use of coal, the removal of ashes constitutes a serious problem. In New York City it is stated that this removal costs from eight to twenty-five cents a ton, depending on location and conditions. In a building burning 1000 or more tons of coal a year this constitutes a large financial item chargeable to operation. With the use of oil *there is no residue to remove*, consequently no such charge to operation.

3. The handling of coal to and in the boilers requires a crew of several men for a large boiler room. Since there exists a scarcity of such labor and the wages demanded are constantly increasing, methods which make its partial elimination feasible are desirable. With oil-burning equipment it is possible to reduce the boiler room force, except in cases where but one man is required.

4. Since the constant firing of the boilers requires frequent use of the firing tools to the detriment of the boiler setting, grate bars, etc., the substitution of oil burners reduces the cost of repairs usually made necessary from this source.

5. Increased cleanliness in the boiler room is attained when oil is used, due to the elimination of dust, ashes, etc. No cleaning of furnaces is required.

6. More complete control and regulation of the intensity of the fire to conform to varying load conditions is possible with the use of oil-burning equipment.

7. Increased boiler efficiency results when oil is used. The average efficiency of coal-burning equipment is 68 per cent, and of oil-burning equipment 75 per cent.

8. Coal when stored for any length of time loses its calorific value. No such loss is apparent in oil in storage.

9. More economic use of fuel is possible with oil, since in a battery of boilers several may be completely shut down when not needed, as during the

night, and again put into service in a very short time when required.

While there are other points of comparison favorable to the use of oil, the nine here mentioned form the strong argument in favor of the use of fuel oil.

Two questions are usually asked when the installation of oil-burning equipment is contemplated. They are:

1. What will be the relative costs of these fuels?

2. What will be the relative storage space required?

It is difficult to give an absolutely accurate answer to these questions, but the following can be used for all practical purposes.

Twice the price of oil in cents per gallon is the price in dollars per long ton at which coal should be obtained to produce an equal quantity of heat for the same cost. In other words, 200 gallons of oil will produce the same number of heat units when properly burned as one long ton (2240 pounds) of coal.

For example, assume oil can be bought for $3\frac{1}{2}$ cents per gallon. Then if coal is selling at seven dollars per long ton, the cost of fuel will be equal whichever is used, provided the boiler efficiency is the same for both fuels.

The question of relative boiler efficiencies is an important one. In a test made with oil and coal as fuels under the same boiler it was found that 160 gallons of oil produced the same results as one long ton of coal. In this case a boiler efficiency of over 80 was obtained with the use of oil. It is safe to assume that 150 gallons of fuel oil will produce the same results as one short ton (2000 pounds) of coal, due to the increased efficiency obtainable when oil is used.

In answering the second question and using the above figures as a basis of calculation the *net* storage space required for 150 gallons of oil is 20 cu. ft. One ton of coal requires 40 cu. ft. storage space. On the face of it these figures would indicate that oil will require but one-half the storage space required by coal. However, where oil is stored in tanks above the basement floor the necessary concrete enclosure adds considerably to the space required, so that the oil will take almost if not altogether as much space as the coal. However, if desired the oil tanks may be buried below the basement floor, and while this entails additional cost of excavation, it is often a desirable feature.

An investigation shows that in the city of New York the question of using oil for fuel is being seriously considered, not alone for contemplated structures, but also in existing buildings. For some months past experiments have been carried on in one of the largest commercial buildings in that city, and the results obtained indicated a saving of 27

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per cent if oil-burning equipment was substituted for the present coal-burning equipment. In this building there are four 400 H.P. boilers which at times are worked up to 2000 H.P.

The question of fire insurance rates naturally arises, and it is predicted that oil stored in the manner prescribed by the New York rules will cause no increase in rates. In fact, the National Board of Fire Underwriters are now considering rules for the installation of such equipment, which it is predicted will be less stringent than the New York City rules. The storage of fuel oil, due to its nature, is not hazardous, provided proper safeguards are introduced. The popular belief seems to be that such oil is explosive and dangerous to have around. This view is erroneous.

The equipment itself requires a storage tank, necessary piping, feed pump, pre-heaters and burners. Several good types of burners are now on the market. To successfully burn such oil it is necessary to completely atomize it or break it up into a fine spray at the burner. This object can be accomplished either by a steam jet or by compressed air. The former is the method most generally used. The air required for proper combustion should be admitted under the burners, either at the sides or through the ash pan door. The latter arrangement is entirely satisfactory. The size of the combustion chamber is an important item.

Inefficient burning is more liable to occur and more difficult to detect with oil than with coal. If an insufficient amount of air is admitted a great deal of smoking may result, due to incomplete combustion. This of course is liable to result in action by the health commissioner. The admission of too much air will cause inefficient operation, *i. e.*, too much heat going up the chimney. In either case it is difficult to determine the defect by inspection of the burners. Frequent flue gas analyses form the proper method of determining whether the combustion is perfect.

One important requirement in an oil-burning installation is that the oil must not be fed to the burners by gravity or by pressure, such as maintaining a compressed air cushion at the top of the tank. This prohibition eliminates any possibility

of flooding the combustion chamber. The oil must be drawn from the top of the tank, the feed to the burners being maintained by a suction pump. An anti-syphon feature must further be provided to prevent syphonic action being set up with the top feed. In preheating the oil hot water and not steam coils should be used.

In conclusion, all things considered, what is the correct answer to the question now so frequently asked: Is it advisable to install oil-burning equipment? The answer of course depends largely on individual circumstances. In existing buildings, where the boiler has a good efficiency rating, it is very doubtful whether in the average case the advantages of fuel oil would warrant making a change. If due to physical conditions at the premises such an alteration is not expensive, prompt oil deliveries are assured at a reasonable price for some time ahead, and a considerable saving in operation can be shown, there might be some justification in making the change, but any great increase in the use of such oil must necessarily produce a shortage, with a probable rise in price and restriction in use.

In new buildings it will often be advisable to install oil-burning equipment. Items 2, 3 and 7 as given on page 649 will in many instances justify this decision. However, the possibility of a restriction of the supply—even its entire cutting off which would follow any disruption of relations between this country and Mexico—are serious considerations. It would seem advisable in designing such installations to provide for a quick conversion from oil to coal-burning equipment should this become necessary. Space where coal could be stored in any emergency should be arranged for and provision made in the initial plan for its placement, also for ash removal.

It would appear that the best policy would be to supplement to some extent the use of coal, rather than attempt to supplant it by fuel oil. The greatest benefit results in the possibility of employing either type of fuel, and it is hoped that this may to some extent hold the present high price of coal within some reasonable bounds. The rules adopted in New York City will be published in full in an early issue of THE AMERICAN ARCHITECT.

