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CONTENTS.

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CONTENTS

IT is so difficult to overcome a fixed habit, that there is good reason for requesting our subscribers to take particular heed this year in filling out their checks for next year's subscription, to make the payee accord with the corporation's title as expressed in the subscription bill. A little care in this respect will go a long way to minimize the trouble which will naturally fall upon the former publishers and ourselves.

THE *Record and Guide* makes a very timely observation in regard to the grievances which so many people cherish against the Building Department in New York. It says that, in times past, many people have brought to it complaints of extortion and imposition on the part of the officials of this department, but such has been the universal terror of what these officials could, and probably would, do to revenge themselves upon any one who gained their ill-will, that in every case the complaining party refused to allow his name to be used, or to appear publicly in any way in regard to the matter. Until now, the fear inspired by this tyranny has been, no doubt, justifiable; and it has been, in many cases, a question whether an aggrieved person should bear his griefs in silence, or be driven entirely out of business, or out of the city, by the systematic persecution of the gang, against a member of which he had given information; but, as the *Record and Guide* well says, the danger is, for the present, past, and now is the time for those who know of the rascality of city officials to proclaim their knowledge for the public benefit. Scores of trembling scoundrels, no doubt, now await with terror the disclosure of their acts of extortion and corruption, and the disclosure should be made, so that the Department may be thoroughly cleared of dishonesty. If it is not made soon, the robbers will recover their nerve, and form new leagues for mutual protection, and it will then be infinitely harder to get rid of them, or avoid their vengeance. As the *Record and Guide* says, the popular movement against municipal corruption soon subsides. Already there are signs that the decent people of New York think that they have done enough, and want to get back to their own affairs again. This is just what the subtle and untiring schemers who fatten on corruption count upon. They have hidden their heads for the moment, but they are as busily at work as ever, cautiously insinuating their tools into places not sufficiently guarded, warding off attacks from officials, as yet not accused, whom they know to be useful to them, and making preparations to recapture, step by step, the power which has for the moment been wrested from them. New York went through exactly the same experience some twenty-three years ago, when the Tweed ring, which had ruled and robbed the city for many years, was overthrown at the polls. A few of the most prominent rascals fled to Europe, or suffered judicial penalties, but, after this sacrifice had been made to public sentiment, the threads of corrupt influence were soon gathered up, and the old system of extortion, blackmailing, terrorism and violence by degrees reëstablished, only to be overthrown again, after many years of impunity and success, by the recent election. How soon it will again revive remains to be seen, but architects and builders can do more, perhaps, than any other part of the unofficial community to prevent its reëstablishment, by denouncing immediately and unsparingly every attempt at bribery or unfairness that comes under their notice. Of all the decent sorts of business, those relating to building offer the best field for the blackmailer, and if the service of the inspection of building affairs is kept honest, the other parts of the public administration are not likely to go very far wrong.

IT will be remembered that, a few weeks ago, the contractor for paving the upper part of Avenue A, in New York, was prevented from fulfilling his contract, and the work that he had already done was ordered removed, on the ground that, by furnishing paving-stones split out at the quarries in New Jersey, he had violated a law of the State of New York, which requires that all stone used in State or municipal works shall be dressed within the State or municipality, and that none but citizens of the United States shall be engaged to labor on such stone. When his work was first interrupted, Quinn, the contractor, claimed that the statute did not apply to paving-stones, which are simply split out with a sledge-hammer, and not "dressed," within the meaning applied by the trade to that word; but he has, it seems, now taken more radical ground, and a petition was introduced the other day in his name into the Supreme Court, praying for a writ of mandamus to compel the Commissioner of Public Works to make, or renew, the contract with Quinn, on the ground that the statute, for the alleged violation of which his original contract was annulled, is contrary to both the State and Federal constitutions, as abridging the privileges of citizens, and impairing the obligation of contracts.

POLITICIANS, temperance workers and others will do well to take note of an ingenious scheme carried out by the trades-unions in Boston. For the last two or three years, as building in Boston has been almost at a standstill, the agitators of the building trades have had very little excuse for a display of activity, and the death of the most influential one among them served still further to reduce the apparent importance of the united organizations in the eyes of the public. This, apparently, was not to be borne, and, some weeks ago, it was announced with much solemnity that, at a meeting of the Building Trades Council, it had been resolved to instruct all the members to vote for no-license at the approaching city election. It must be remembered that Boston is quite closely divided on this point. Although the vote is always for license, it is usually carried by a small majority, sometimes not much over four thousand votes. A change of two or three thousand votes, which is much less than the number controlled by the Council, would thus change the result; and people interested in temperance observed the new movement with attention, mingled with surprise, while the liquor-dealers, it is needless to say, were thrown into a state of consternation. What private negotiations may have then taken place, we cannot say, but, a week before election day, the announcement was made that the matter had been happily settled, and that the instruction to members of the building trades to vote for no license was withdrawn. For the information of those who imagined that the building trades had been suffering under an attack of moral enthusiasm, it was explained that certain liquor-dealers had employed non-union labor in fitting up their saloons; or,

at least, had imported some fixtures which, although made by union labor, came from other States, and that the no-license instruction was given with a view to remedying this enormous wrong. Now, however, the public was informed, "assurances" had been given, and the controversy was at an end.

SOME of the liquor-dealers say that if any non-union labor was employed in any saloon, the cases must have been few, and the employment inadvertent; which is likely to be true, as the liquor-dealers know well enough that they could not afford to lose the support of the "friends of labor"; so that the plan for destroying at a blow a vast and lucrative business seems to have had the smallest possible pretext. We know that the "friends of labor" are renowned for their purity of motive, and that those in Boston stand at the very centre of the immaculate constellation; but one cannot help reflecting how easy it would be for the leaders of an association of labor organizations, in a place where such persons were capable of entertaining mercenary thoughts, and where the license vote was close, and fees for "organizing," and perquisites for handling strike funds, few and far between, to make a timely attack upon the liquor-dealers, and extort from them in private the supplies necessary to maintain worthily the champions of Labor in its everlasting struggle against the oppressions of Capital.

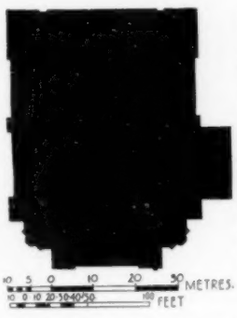
THE shock which city engineers must have felt in reading Professor Henrici's papers of a year or so ago on street-planning, in which he advocated the theory that city streets should not only be curved, but that they should vary in width in different portions of their length, will recur, with renewed force, when they learn what he thinks about street levels. It is needless to say that the ideal of rustic Highway Committees, and of all except the most enlightened town and city engineers, is a street-plan in which all the streets run in straight lines across a level plain. Where, as is frequently the case, Nature interferes with this scheme, by presenting hills and valleys in place of a level plain, the town engineer who can get the necessary appropriations digs off the hills, fills up the valleys with the excavated material, and happy at having got the better of Nature, runs his bee-line highways over the remodelled landscape; while the engineer who cannot get appropriations still lays out his roads in straight lines, and explains to people who grumble at the succession of ascents and descents which they present, that they must make their complaints to Nature, not to him. Professor Henrici's view, as in the cases which he formerly considered, is totally opposed to that of the average Highway Committee-man. Premising that, as every architect knows, a site somewhat raised above the surrounding level is of immense advantage to the appearance of public buildings, monuments and other important objects, it follows that a street-plan by which such elevated sites are provided in reasonable number is, architecturally, very desirable, and he says, with truth, that a man who can design a system of streets for a town in such a way that, by taking advantage of the topography, all the public buildings and monuments will appear to the best advantage, while the streets themselves are easy in grade, and cheap in construction, because of the small amount of cutting and filling required for them, will, sooner or later, find his art appreciated.

WE hope that this is true in Germany, for Professor Henrici's own sake, for he has certainly, by his writings and designs, revealed possibilities in city street-planning which no one seems to have dreamed of before; but even in his own country the genius of this great artist seems to be coming but slowly to recognition, and among us his doctrines would be greeted with a chorus of derisive howls from all the people who have anything to do with the establishing of city street-lines. It is true that, even here, men like Mr. Olmsted, or Mr. Vaux, or Mr. Bowditch, are occasionally allowed by municipal magnates, in deference to the demand of people of taste, to lay out a park, or even a single suburban street, but their design is generally received with a very ill grace, if, indeed, it is not surreptitiously obliterated as soon as they are safely out of the way; and the idea of committing to them the design of an entire quarter of a town is not likely to occur to any one. Nevertheless, it is not too much to say that the beauty and loveableness which could be given to a town, or a part of a town, by such skilful artists are absolutely inconceivable to people who, like the vast majority of mankind, have never thought of a city street as anything more than a streak on a map, or a mass of struggling mortals ploughed by strings of electric or cable-cars. As the artistic sense develops among us, no doubt the feeling for picturesque and beautiful streets will grow also, but we have so few examples to point to that it is all the more necessary to pursue the theoretical discussion of the subject by such means as we can.

SPEAKING of the best way in which to take advantage of the natural conformation of the ground for laying out streets, Professor Henrici says that, where the grade is gentle, the best effect is obtained by making the profile of the street form a slight concave curve. Of course, as this would make the upper part of the ascent the steepest, such a profile could not be adopted except for grades so gentle that no part would be fatiguing; but he says that, in the case of grades too steep for this profile, it is best to diminish the steepness by curving the street in plan, to suit the contours of the ground; and in this way, while the fall can be kept uniform, the perspective effect will be similar to that of a straight street with curved profile, and what he calls the "sterile, dead and stupid" air of a straight street with uniform fall will be avoided. Even this, however, he thinks is less displeasing than the hump-like aspect of a street which forms a convex curve in profile, or in which a steep ascent is followed by one less steep. As, however, every street must fall in some direction, to allow the water to run off, it is unavoidable that a comparatively steep ascent should occasionally be succeeded by one less steep. In these cases, the hump-like effect should be disguised by making a fork in the streets, at the point where the change in grade occurs, or arranging a curve in plan, or a slight break of some sort, by which the eye will be attracted away from the unpleasant profile of the street. Where steep ascents cannot be avoided, as in the case of towns situated on hills, Professor Henrici points out that a curved or zigzag ascent, with alternations of steeper and less steep grades, is far less fatiguing for horses than a straight road, but he suggests that a pretty effect may often be obtained, and the convenience of foot-passengers promoted, by carrying a foot-path, perhaps with steps in it, across the loops of the zigzag or curved road. Visitors to Rome, remembering the Scala di Spagna, with S. Trinità de'Monti at the top of it, will see how much could be made, architecturally, of such a disposition. Where public squares or open spaces are to be planned, anything like a hump in the ground is to be avoided even more sedulously than in a street. A park of small dimensions which has a hill in the middle, or which ascends, first steeply and then less steeply, is almost incapable of being made attractive. The best surface is a slight concave curve. With such a formation, the whole extent of the park, with its ornaments, its shrubbery or flower-beds, and its groups of visitors, is visible from all parts, while the variations of surface give agreeable curves to the lines of gravel-walks or hedges. Where the surface is thus varied, care should be taken not to lay out straight avenues or promenades, or symmetrical plantations, which, when transferred from the plan to the ground, present an appearance very unlike that which they offered on paper. If formal gardening is desired, which may often be the case in small city parks, the ground should be level, or graded to a uniform slope. In any case, the character of the surrounding buildings should be kept in mind in planning parks or squares. While an open space adds greatly to the beauty of a public building facing it, the public building adds equally to the attractiveness of the open space, and provision for the two things should be made together. If this is not done, the ground around the square or garden will be taken up for private purposes, and the beauty of the place thrown away, while the great buildings, which should have been placed there, will be crowded into narrow streets, where half their effect is lost. Nearly all our cities present many examples of this want of foresight, as well as of all the other sorts of miscalculation and misapprehension to which Professor Henrici refers, while specimens of streets which have been, even by accident, successful in effect are rare. We shall hope later, in referring to some further observations made by the same eminent authority, to be able to present some examples illustrating the subject.

THEATRES.[1] — VIII.

MUNICIPAL THEATRE, AMSTERDAM.



MR. JAN SPRINGER is the author of this late addition to the Continental municipal opera-houses, and by his kind permission the plans of his work form the subject of this article.

The Amsterdam Theatre is built upon piles with arched vaults resting thereon to form the foundations. Over these vaults is formed the ground-floor level which is devoted entirely, in the front part of the house, to the approaches, entrances and vestibules. Although the theatre is a large one, there is simplicity and symmetry about the arrangement of the plans, which are now often observed in modern Continental theatres and which students of theatre-planning would do well to follow. I have laid stress more than once on the advantages of a symmetrical plan on the score of safety: with duplicated means of escape from each section of the seating, and the exits situated in corresponding positions on either side of the house ready exit is easily arranged. Such a scheme is to be found in the drawings which form the illustrations of this article.

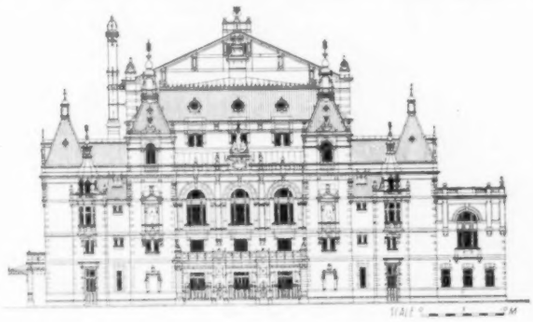
The usual covered carriage-approach is situated in the front of the building, the side or foot-passenger entrances being placed at the angles, an arrangement I have had to describe before. This gives the pedestrians an opportunity of entering the theatre without running the risk of being trampled upon by horses or having to dodge in and out under their noses.

The outer vestibule leads to an inner hall, in which are situated the two ticket-offices; beyond the hall and under the centre of the auditorium a large rotunda is placed. To the right and left of this rotunda are the two grand staircases which lead to the stalls and circle above. Each staircase is designed with two separate flights of steps, the one terminating at the stalls level, the other being continued up to the grand-tier seats above. The plans show that there are also side-entrances to these staircases leading directly from the two side streets. These afford ready means of exit without having to again traverse the rotunda, hall and vestibule to the front of the building.

In the front angles of the building are the entrances to the second tier of seats and the gallery; and an excellent *queue* arrangement leads the people past the ticket-office to the separate staircases provided for each tier. For convenience of exit, it appears to me that the staircases would have been more valuable if the last flight had been made to deliver in the direction of the street, instead of *inwards* towards the centre of the building.

Altogether, it must be acknowledged that the approaches to the auditorium are on an ample and luxurious scale, occupying as they do, the whole of the ground-level of this part of the building. A notable feature of this plan is the direct means of exit into the open air afforded to members of the orchestra, without having to traverse the mezzanine under the stage, as is usually the case. The orchestra floor is laid over a hollow space formed by an inverted arch: this is done for acoustic reasons, as it adds to the resonance and power of the music.

On the first-floor level the seats are arranged as stalls on the area, with a row of private boxes raised on a slightly higher level surrounding them. On the right hand of the "Salle," leading from the

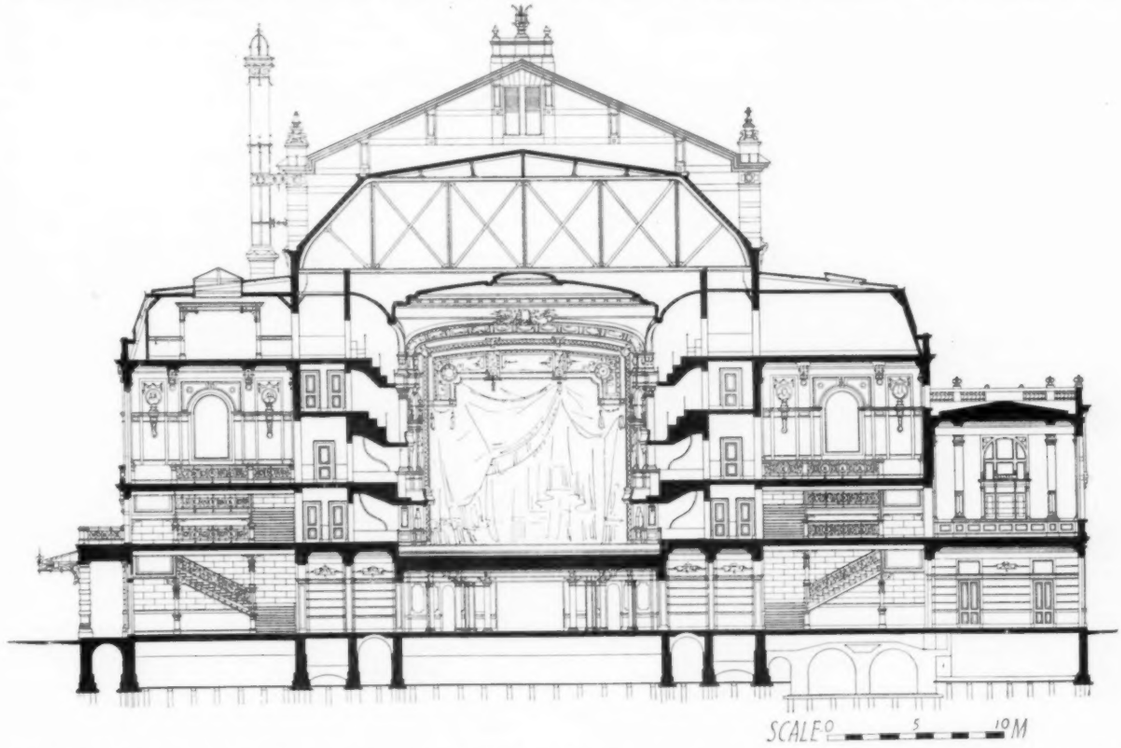


grand staircase on that side, is a large refreshment-saloon, while in front over the vestibule is a small foyer and open balcony, the large foyer being placed on the level of the grand tier boxes above.

The lavatory accommodation is one of the happiest features of this well-studied plan, as these rooms are placed in the angles over the gallery entrances and are approached from the main corridors by means of lobbies. They are of ready access from the auditorium, while at the same time they are sufficiently screened in by the manner in which their approach is arranged, and afford a privacy without actually hiding them away from those who want to find them. There is a decency exhibited in this arrangement, which at the same time does not detract from the convenience of these rooms by rendering them inaccessible.

Passing now to the grand tier, it is found that the central feature of the auditorium is the Royal box; a range of smaller private boxes support this on either side and two rows of stalls are provided in front of them. This is a happy combination of the opera-house and dramatic theatre and makes the building useful for either purpose.

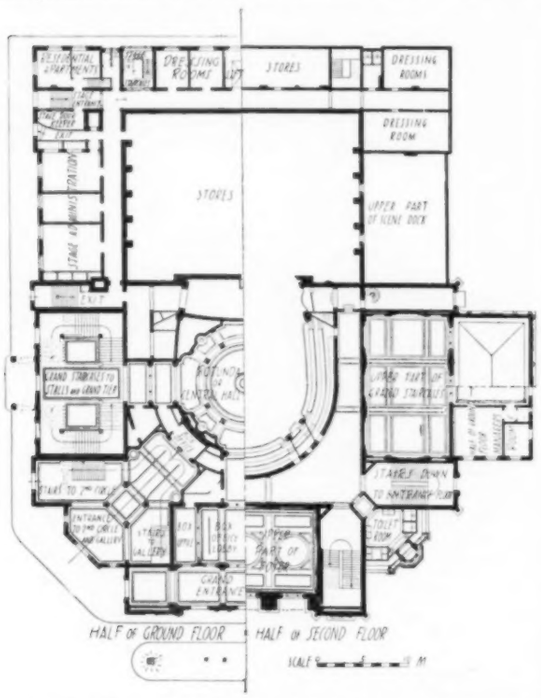
The second tier is planned with three rows of seats and no private boxes other than two between the main columns supporting



[1] Continued from No. 985, page 56.

the roof, of which I shall speak hereafter. The same symmetrical arrangement of planning is repeated on this level, as well as on the gallery tier, where there are most spacious refreshment-rooms, a foyer, and every convenience for the audience, on as large a scale as for those occupying the better parts of the house.

The general scheme of the interior decoration of the "Salle" calls



to mind the Haymarket Theatre, London: two columns, one on either side of the proscenium-boxes, support the proscenium-arch, while towards the back of the "horse-shoe" there are two private boxes, also marked by a column on each side; from these columns the arches spring which support the ceiling. This arrangement is similar to that which was carried out some years ago at the Haymarket by the London architect, Mr. Charles John Phipps, F. S. A.; its success bears this repetition.

The construction of the tiers is of steel cantilevers, but as the number of rows of seats is limited on every tier, these cantilevers are very short, and there is no special feature in their design to call attention to.

The completeness with which the part of the theatre behind the curtain is carried out can well be understood from the plans themselves. Generally, the principle upon which this portion of the building is designed is that while the ladies are accommodated with dressing-rooms on the one side of the stage and the men on the other, perfect symmetry and simplicity of arrangements are maintained, as in the "front" of the house.

There are two stage doors: the one from the street on the right, the other on the left. These lead to a broad corridor which runs round three sides of the stage and in case of fire completely cuts the stage off from all the administrative rooms. The stage is self-curtained by a thick wall, with only such openings in it as are necessary for the due performance of the business of the theatre. The stage, as the section shows, is very lofty, allowing for the raising of scenery without folding or rolling the cloths — a great saving in the wear and tear of the scenery, a great convenience in the quick manipulation of the flats, and a great precaution against fire.

On the ground-floor to the right of the stage are the stage administrative offices, to the left the manager's room, board-room and band-room in direct communication with the orchestra.

Behind the stage are two staircases leading to the dressing-rooms above; in the centre is a lift for luggage and the quick conveyance of the performers from the stage to their dressing-rooms. The caretaker's apartments are situated near one of the stage entrances, and two rooms are given to the "stage-doorkeeper" at the other entrance. This functionary has usually to be contented with a small cupboard-like compartment, wherein he is boxed from early morning till late night, checking in and out all performers, ballet, chorus, stage-hands, etc. — in all, some hundreds; and woe betide him if any unauthorized person finds his way past him into the sacred precincts of stageland. The stage-doorkeeper's facility for remembering faces needs to be phenomenal, considering his long hours and having to be constantly on the alert. His quarters should be comfortable and not a box taken out of a passage, as if an afterthought had revealed to the architect that such a person as a stage-doorkeeper was necessary to the due performance of the routine of theatrical business.

On the stage level are the chief dressing-rooms, offices and scene-docks, while on the floors above are stores, wardrobes, ballet and chorus rooms and dressing-rooms for the less important members of the "cast."

It will be noticed that the due regard for the safety of the performers has induced Mr. Jan Springer to provide on each floor of dressing-rooms external balconies, with ready access from the rooms, and escape by ladders from the higher balconies to the lower ones. This provision is in addition to the two broad staircases already mentioned.

The sanitary requirements of this part of the house are not overlooked: on each floor, separate accommodation is given for males and females; indeed, the architect has shown to a marked extent his desire to look after the welfare of those whose lives are devoted to the pleasure of others and of their art.

On the whole, Mr. Jan Springer must be heartily congratulated upon the planning of this addition to the municipal opera-houses of the Continent.

The treatment of the exterior is somewhat lighter in style, detail and grouping, than one is accustomed to see in the more severe Classic buildings which adorn other Continental cities.

Ernest A. E. Woodrow.

[To be continued.]

A NEW FIREPROOF CONSTRUCTION.

I AM now ready to make public the lecture delivered before the local Chapter of Architects on a new fireproof construction. The delay of three years has allowed me plenty of time to change the beginning, the middle and the end of the lecture to make it accord with late developments in the art of fireproofing.

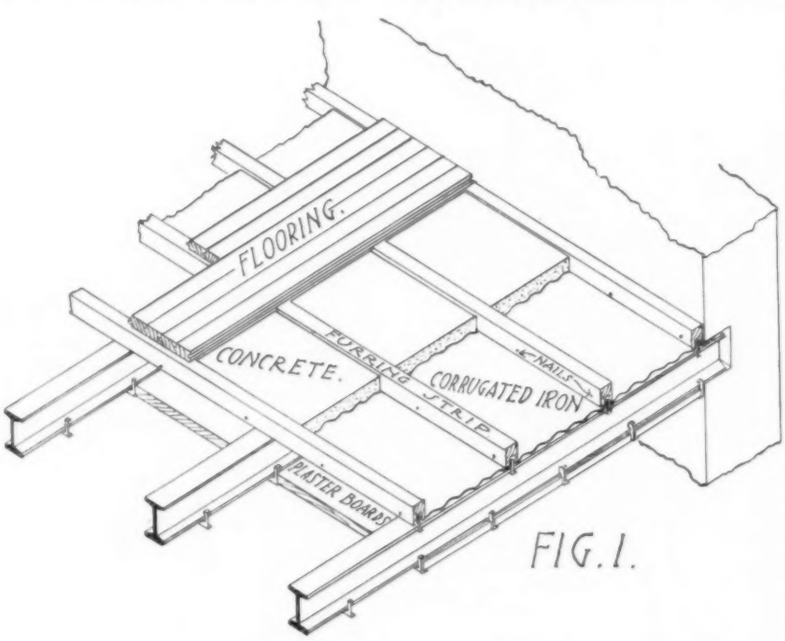


FIG. 1.

The old lecture began, like all lectures on the same subject printed in the *American Architect*, with a discovery that in imitating the Egyptian in his use of a beam and girder, we were foolishly using two beams when one would suffice. Some sad experiences have increased my veneration for the practice of the Egyptian, and I am ready to confess that the beam has come to stay, and that vaults and combinations of metallic straps, strings, brackets and meshes with "revolutionizing" concrete substances should be consigned to the category of constructions which may be said to be "interesting," but in which one should not become *interested* financially.

Instead, therefore, of offering a saving of beams as the result of abstruse calculation, I revise my system so as to show a surplus

of beams and a saving of floor and ceiling construction. Now that beams are cheap, it is possible for us to recognize the fact that, by setting them two to three feet apart, all we need is a flooring equal to a two-inch plank in strength and tenacity, but formed of incombustible materials and combined with a suspended heat-resisting ceiling. The loss of beam strength due to the diminished depth of this floor is more than offset by the diminished required strength due to the omission of the entire mass of material usually filled-in between beams. Is not the tile arch, after all, a most irrational device when we conceive of the possibilities indicated above? Its use has been developed by artificial and wrong relations of cost of materials, unthinking credence in misleading tests, and ignorance of the behavior of tile in actual fires. Recent fires prove that a fire which will not harm a wire-and-plaster or plaster-board construction will strip plastering off tile wherever it is exposed to heat or water. A severe fire quickly denudes beam flanges and girders and breaks off exposed tile surfaces. At this stage, the fire-department must intervene to protect the beams from damage.

The constructive error is apparent when repairs are made; since, for instance, a ceiling must be suspended over an entire area to get round the difficulty of patching the damaged portions of the tile arch.

In short, we must allow in fireproof constructions, as Mr. Atkinson allows in "mill construction," that it is economy to protect the frame from heat by a separate cheap device easily repaired at spots that may be damaged by intense heat or the efforts of firemen. Mr. Atkinson specifies for this purpose "plastering on wire-lath or dove-tailed lath, or plaster-boards, or ceilings of tin, or other suitable metal." The dove-tail lath and sheet-metal I reject as inferior to the other devices, because they permit a wood frame to char and a steel frame to expand, which means an expensive repair that could be avoided. Materials which protect wood will protect steel, but greater care must be exercised so that transmitted heat shall not unduly expand the steel frame, the expansion of steel beginning at a much lower temperature than the charring point of wood.

It will be noted that Mr. Atkinson does not quote tile as a protective device. Why? Because it possesses no advantage in cost or degree of protection that outbalances its disadvantages of weight, difficulty in cutting and fitting, and bad behavior in fires. If used at all where a real fire is to be expected, it must be used hollow, so that when the surface toward the fire flies off, the connecting ribs and remaining surface will shield the frame still. The firemen must be active as well, because an eleven-sixteenths-inch thickness of tile after six minutes' exposure to high heat increases in temperature fifty degrees per minute!

The tile construction is of use simply because there are classes of buildings in which any incombustible floor and partition will remove all former cause of serious fire; anything will answer the purpose that does not feed and convey flame. For other buildings its use should be condemned except as a suspended two-inch hollow-tile ceiling, in which shape other materials surpass it in cheapness, protection to the frame and cost of repair after a fire.

When we consider how the sensitive steel beam is protected (?) by the close contact of a material getting hot at the rate of fifty degrees per minute, while other materials in the same position and with the same length of exposure would be cool, we must accord a degree of truth to Mr. Atkinson's sarcastic views of our intelligent use of materials. A beam sixteen feet long and one hundred degrees hotter on the bottom than on the top *must* deflect four inches. If the higher temperature be applied to the whole section at the same time, no deflection, but a harmless expansion, takes place. A hollow space between steel beams is, therefore, a means towards their preservation. Heat from below diffuses in the air-space, and wall ventilating-flues will prevent expansion of the air and bring cool air to reduce temperature. The floor above, being more pervious to heat than the ceiling, will absorb and radiate heat as fast as received. The beam can expand but little, and cannot be distorted. The need of thus diffusing transmitted heat may be noted at the cooling-table of rolling-mills, where each beam must be turned until cooled in order to equalize the effects of air-currents which create slight differences in temperature in the glowing beam section.

For commercial uses the fireproof floor should be hollow and ventilated; the ceiling should use some form of plaster-board suspended on metal hangers, countersunk so as to be covered and protected from the heat. Circulation of air should be provided for by a space between beam and plaster-board. This ceiling costs no more than the one advised by Mr. Atkinson for slow-burning construction.

The steel frame is as economical as the wooden frame. It remains only to devise a satisfactory floor equal to a two-inch plank in strength, but composed of incombustible materials. In a floor, heat is of slight import when applied from above: the great need is a floor performing the office of a roof. If we take No. 24 corrugated sheets with one inch up-turned edges and clamp them to the beams and to each other, setting grooved wood furring-strips over the turned-up edges, so that nailing through the sides of these strips nails the whole floor together, we shall have a floor which will drain at the ends of the sheets and stop passage of water elsewhere. Cheap concrete is filled between the strips before the finished floor is laid. Wall gutters and outlets are provided. The water which seeps through the maple floor and the concrete and drips at the ends of the floor sheets may be drained very cheaply by small gutters beneath, leading to scuppers or flues at the walls. Satisfactory flashing at columns and pipes may be easily accomplished with this floor.

Mr. Carrère will find in this floor a working platform which requires a minimum of wood, affords a space for pipes and possesses ease of cutting and attachment.

Mr. Moore, of the Continental Insurance Company, will find his suggestion of the use of metal-sheets as a fire and water stop developed into a practical and economical roof. Mr. Atkinson will find some of his principles applied to the steel frame so as to make it superior to the slow-burning construction, even in cheapness; that is, if it is conceded that an incombustible hollow space is free from the objections inherent in the same space surrounded by combustible materials. In view of his late article in the *Engineering Magazine*, it will not be impertinence on my part to inform Mr. Atkinson that in all but buildings with a small amount of finish and equipment, a wooden frame is a disastrous factor, owing to its shrinkage and deflection. In commercial buildings of the better type, the frame must be treated for dry-rot, or that risk assumed, because tenants insist upon finish of plaster or paint, and the "one rough coat of plaster to avoid dry-rot" is just what they will *not* accept. The slow-burning building finished to suit merchants, while constructed to suit Mr. Atkinson, is a more expensive building than the one I have described. In warehouses, which require no finish, the steel construction may cost a little more, but it is worth more than the slight difference in cost. In mills there may be necessities connected with machinery and shafting that will decide in favor of slow-burning construction. That there is need of sending students abroad to study abandoned, supposedly cheap, but really expensive, methods of combining coal-ashes and plaster, hoop-iron and what-not to make an already detestable construction safe against little fires, may well be doubted.

My acquaintance with approximations of Mr. Atkinson's suppositious European devices is so intimate, that I feel justified in asserting that one can sink all the money he deems advisable upon them without adding the expense of a European trip.

In a pamphlet published by Mr. Moore of the Continental Fire

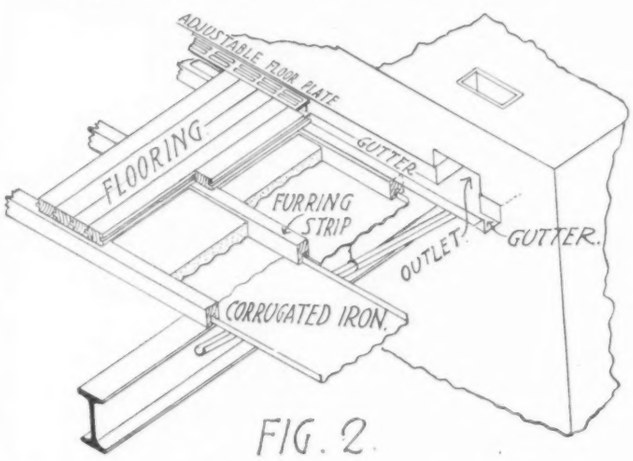


FIG. 2.

Insurance Company, all these constructions at all applicable to the country are fully described. They have been abandoned in foreign countries for the same reason that they will soon disappear in this country. They are attempts to make a construction safe from fire, which is already very undesirable on other accounts. Progress has evolved a better type, superior to the old in all respects. The balance of first cost against the better type has slowly disappeared. Only the old wood-lath type, which Mr. Atkinson so detests, may be said to be temporarily cheap. Any attempts to better it only increase the field for its ravages.

For years after buildings are completed, architects as coroners, and exasperated clients as jurors, hold inquests upon the disintegrating efforts of the wooden frame. The universal verdict is that any form of wooden frame is an evil to be abolished, except possibly Mr. Atkinson's slow-burning construction *in the mill*, for which it was designed and for whose needs it is perfectly adapted.

In many cases it is real economy to use the present type of fireproof construction at its present cost. Perhaps Mr. Atkinson can be persuaded to look upon the new type, which I respectfully submit to him, as an evidence that "the prosaic study," "the art of building at once safely and inexpensively," is receiving some share of attention from the architectural profession. Any carpenter in any part of the United States can erect this floor, and with it produce a fireproof building. The cost of a house floor, including the beams and ready for one coat of plaster and the finishing floor, ranges from fifteen cents to eighteen cents per square-foot, according to span. The mercantile floor, including the same items, will range from twenty cents to thirty cents per square-foot, according to span, strength and degree of fire and water proofing.

While the devices of this floor are patented, it is a general type and not necessarily the limit of progress in the same direction. I trust it may hold out sufficient hope to enable our travelling student

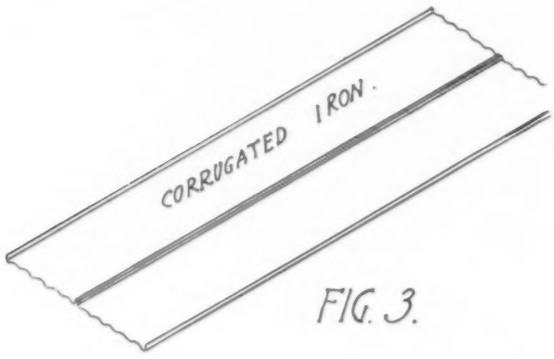


FIG. 3.

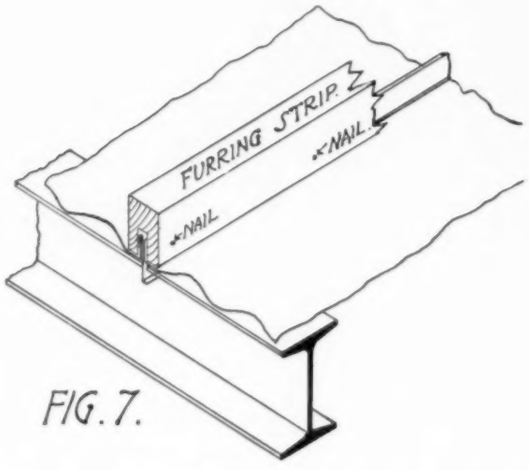


FIG. 7.

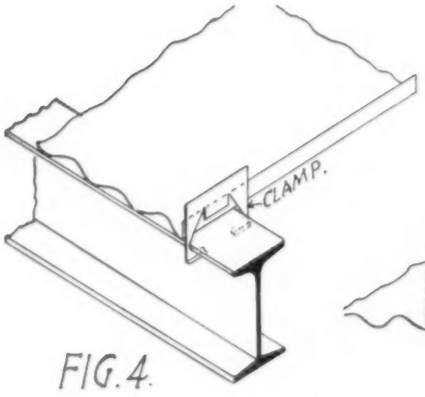


FIG. 4.

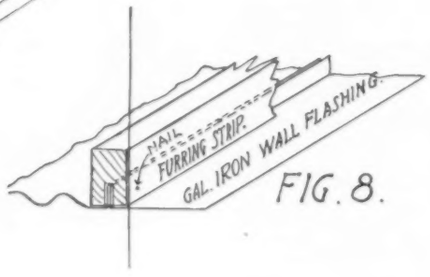


FIG. 8.

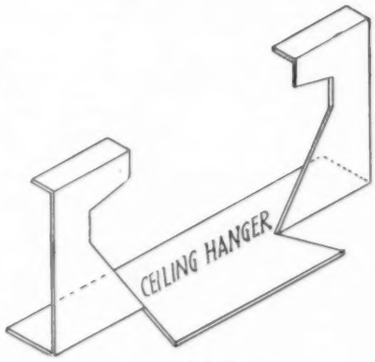


FIG. 9.

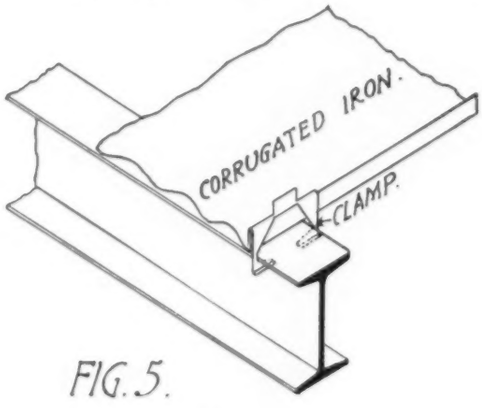


FIG. 5.

FIG. 10.

FIG. 11.

FIG. 12.

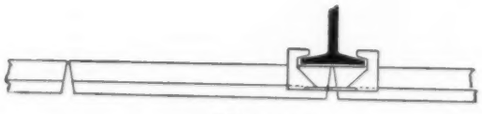


FIG. 13.

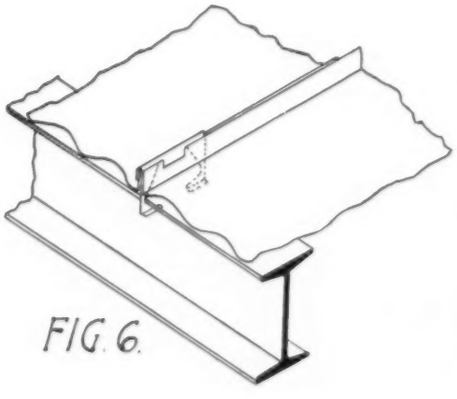


FIG. 6.

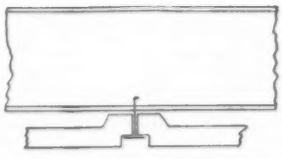


FIG. 14.

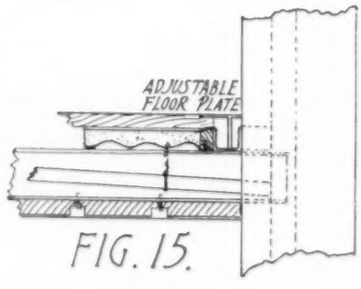


FIG. 15.

Fig. 1 shows a view of a completed floor and ceiling for ordinary uses, and Figs. 2 and 15 show the variety intended for commercial use where drainage of the floor is a requisite.

The struts and furring strips and method of attachment to the beams and each other are shown in Figs. 3, 4, 5, 6 and 7. Fig. 8 shows the wall strip and flashing. The clamps are formed of thin galvanized-iron. The sheets range from No. 25 to No. 20 in thickness and are 16″ wide by any length up to ten feet.

The strips are common pine, 2″ x 2½″ section. They may be had, treated for dry-rot, at twenty-five cents per square of floor extra.

Figs. 9, 10, 11 and 12 show the ceiling hanger and method of erection. They are very strong and light, formed of No. 20 galvanized-iron to fit all sizes of beams.

Figs. 13 and 14 show plaster boards laid upon the shelves of the hangers.

to maintain his search for inspiration among the masterpieces of the noblest of arts, confident that the constructors of his own country will furnish him all needed advice in the art of building at once safely and inexpensively. H. B. SEELY.

NOTES. — This floor is the old type, but composed of incombustible materials throughout, and it restores to fireproof construction the chief labor-working platform and constructive advantages missing in tile-arch devices. A scientific use of the construction involves the treatment of the sheet and concrete as a roofing device primarily, and supporting device in case of severe fire. The strip, in combination with the flanges of the sheet, supplies the element of stiffness for flooring purposes.

As in wood-framing, a fixed heavy parallel load should be taken directly by a special beam beneath, and uniformity of span conduces to economy in cutting floor and ceiling materials. Tables of strengths of sheets will soon be published. For the present they may be calculated according to the formula in the "*Carnegie Pocket Companion*," page 160.

THEATRE FIRE STATISTICS.[1]

It may be well to begin by giving briefly a few statistics regarding theatre fires and their causes. Here we at once encounter much difficulty in gathering and presenting accurate and reliable figures and facts.

There are numerous cases in which a fire breaking out in a theatre, on the stage, in the auditorium, or elsewhere, is at once extinguished by the stage-hands, or by the firemen on duty in the building. Many cases of this kind never become known to the public or to the press, and no accurate record is kept of them. In other instances again, blind fire-alarms are followed by a panic and often by loss of life. When a fire in a theatre breaks out during the night and destroys the building, the cause of the same often forever afterwards remains a mystery. Distinction must be made between occasional outbreaks of fire which are subdued before it can spread, and such fires as completely destroy the building. The data given below refer only to theatres which are entirely burned down.

Those fires, which break out during a performance when the building is crowded with people, are naturally the ones of greatest interest to us. If accompanied, as they unfortunately often are, with loss of life, the number of persons killed and wounded is difficult to ascertain with absolute accuracy, as many perish in the building who are not missed by friends or relatives. The tendency in these cases is usually, for the press, to exaggerate the number of victims, whereas, on the other hand, the theatre officials or the municipality often try to keep the figures below the actual number. The curious mistake is sometimes made of counting both the dead and the wounded in the same figure of victims, obtaining thereby largely increased and incorrect figures.

We are principally indebted for theatre-fire statistics to the works of Herr August Foelsch, a German civil engineer, recently deceased; of Herr Franz Gilardone, a retired German fireman; of Captain Shaw, of the London Fire-Brigade; to Dr. Choquet, physician to a French Life Insurance Company, and to the labors and reports of John C. Hexamer, Esq., a civil engineer and insurance surveyor, of Philadelphia. Their figures and statistics do not, by any means, agree, and it is difficult to account for the discrepancies. Taking the work of Herr Foelsch as, on the whole, the most complete and reliable guide, although it is not brought quite up to date, being published in 1878, with a supplement issued in 1882, shortly after the Vienna Ring Theatre fire, we find a list of 516 theatres enumerated which, up to and including the year 1877, were completely destroyed by fire.[2]

Out of these, 460 theatres were burned in 100 years. The list contains of theatres in the principal cities the following:

London	31	Boston	11	Venice	6
Paris	29	Glasgow	11	Baltimore	6
New York[3]	26	Cincinnati	9	Cologne	5
San Francisco	21	New Orleans	8	Edinburgh	4
Philadelphia	17	Bordeaux	7		

Among the 516 theatres we find —

37 theatres which were burned twice.
8 " " " " three times.
4 " " " " four times.
1 theatre (the Bowery Theatre in New York) which was burned five times; also one theatre in Spain which burned down seven times.

Regarding the average life of theatres, the records are confined to 252 theatres, and show that —

5	theatres	burned	down	*before*	the opening.
70	"	"	"	in the first	5 years after opening.
38	"	"	"	between	6-10 " " "
45	"	"	"	"	11-20 " " "
27	"	"	"	"	21-30 " " "
12	"	"	"	"	31-40 " " "
20	"	"	"	"	41-50 " " "
17	"	"	"	"	51-60 " " "
7	"	"	"	"	61-80 " " "
8	"	"	"	"	81-100 " " "
3	"	"	"	after over 100 years' existence.	
Total... 252					

Out of a total of 252 theatres, 70, or more than one-fourth of them, are destroyed before they reach an age of five years.

Theatres, therefore, as a rule, do not attain an old age, and Herr Foelsch figures the average age of these 252 theatres as $22\frac{3}{4}$ years. For the United States, the average life of a theatre is said to be only from eleven to thirteen years, but it should be remarked that these figures were reached some years ago, before the more strict theatre laws of some of our large cities (New York and Boston, and quite recently Brooklyn and Philadelphia) were enacted.

Recent analytical studies of the question have elicited the fact that there are two periods in the life of a theatre-building, when it is most endangered or subject to destruction by fire, namely, one from the time of its construction up to and including the first five years, and the second period, after the theatre has been opened from forty to fifty years. This may be explained first, by the fact that in a new theatre the safety appliances, the arrangements for lighting, the scene-hoisting devices, the fire-protection appliances, are rarely in perfect working-order, and the theatre employés have not as yet become accustomed to handling them and are likewise unfamiliar with the rules of management.

The second period of renewed danger is explained by the fact that after the number of years quoted above, much of the apparatus in a theatre has become worn out or useless, and is not always kept in repair or replaced by new apparatus, and it may also be attributed to the fact that after the lapse of many years the theatre management and inspection are apt to be less strict, and that often interior alterations are made which unfavorably affect the safety of the building.

From the middle of the last century to the present day, nineteen theatres, on the average, have been destroyed annually by fire. For those who are interested in more detailed figures, I quote the statistics gathered by Herr Foelsch and Dr. Choquet, the latter's figures being placed in brackets.

In the years	1751–1760	there were	4		theatre fires in all countries.				
" " "	1761–1770	" "	8		" " " "				
" " "	1771–1780	" "	9	[11]	" " " "				
" " "	1781–1790	" "	11	[13]	" " " "				
" " "	1791–1800	" "	13	[15]	" " " "				
" " "	1801–1810	" "	17		" " " "				
" " "	1811–1820	" "	16	[18]	" " " "				
" " "	1821–1830	" "	30	[32]	" " " "				
" " "	1831–1840	" "	25	[30]	" " " "				
" " "	1841–1850	" "	43	[54]	" " " "				
" " "	1851–1860	" "	69	[76]	" " " "				
" " "	1861–1870	" "	99	[103]	" " " "				
" " "	1871–1880	" "	181	[169]	" " " "				
" " "	1881–1885	" "		[174]	" " " "				

Taking each year from 1871 we have the following numbers:

In 1871	there were	20	theatres	destroyed.	
" 1872	" "	13	"	"	
" 1873	" "	15	"	"	
" 1874	" "	15	"	"	
" 1875	" "	14	"	"	
" 1876	" "	19	"	"	
" 1877	" "	17	"	"	
" 1878	" "	20	"	"	
" 1879	" "	25	"	"	
" 1880	" "	23	"	"	
" 1881	" "	28	"	"	
" 1882	" "	25 [37]	"	"	
" 1883	" "	22	"	"	
" 1884	" "	9 [40]	"	"	
" 1885	" "	9	"	"	
" 1886	" "	7 [8]	"	"	
" 1887	" "	12 [18]	"	"	
" 1888	" "	15	"	"	(up to November.)

The fire-loss represented by these figures reaches many million of dollars' worth of property.

The hour of the day in which theatre fires started is of considerable interest. Out of 289 fires —

56	theatres burned	during the day between 7 A. M. and the afternoon, or...	19.4%
15	" "	one hour before beginning of performance, or.....	5.2%
36	" "	during performance, or.....	12.4%
66	" "	within two hours after close of performance, or.....	23.9%
113	" "	during the night and before 7 A. M. next morning, or..	39.1%

Later on, when the records of 373 theatre fires were available, Herr Foelsch found this percentage to remain nearly the same, viz: 19.9; 5.6; 11.6; 22.6 and 40.3% respectively. It will be seen from these figures that the greatest danger from fire to a theatre is during the two hours following a performance, and not during the performance, as would naturally be supposed. The reason for this is, partly, that during the performance a greater watchfulness exists as regards open lights, the sources of heat, and the other usual causes of fire, and partly because many fires while actually started during a performance, for instance, by carelessness in the use of fireworks, or by the use of firearms, do not break out at once, but smolder for a while in the inflammable scenery and woodwork of the stage, and break out during the hours following the performance. The risk from fire immediately before the performance and while the audience is admitted, is found to be three times as great as during other hours of the day, which is explained by the fact that at this time the gas flames are lit which illuminate the scenery.

Theatres are, therefore, safest in the day-time; the danger is increased threefold during preparations before the performance because of lighting up, etc.; it is reduced during the performance on account of the careful inspection and greater watchfulness on the stage, but is still two times as large as during the day; the danger reaches a maximum (7 times the day risk) during the two hours after the close of the performance, and it remains during the night

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[1] Extract from a paper by Mr. Wm. Paul Gerhard, read before the National Association of Fire Engineers.

[2] This figure, in the supplemental edition of 1882 to the work, was corrected to 523.

[3] Since 1821, up to the present day, 29 theatres have burned down in New York City.

nearly 3½ times as great as during the day (sparks from fireworks or pistol wads may remain glowing for hours after the performance).

The theatre fires which break out during the performance are often accompanied with loss of life of both spectators and actors, and are therefore of particular, though sad interest to us. The life of firemen is often greatly endangered at theatre fires at all hours, and the list of instances where firemen have been killed while engaged in their duty in trying to save burning theatres is quite large.

Herr Foelsch describes in detail 36 theatre fires between 1770 and 1877, which began during the performance, and out of this number not less than six were accompanied by appalling loss of life. From 1877 to 1889 six other deplorable theatre calamities have occurred. In the twelve years from 1876 to 1888, not less than 1,600 people have been killed in the six well-known theatre disasters of Brooklyn, Nice, Vienna, Paris, Exeter and Oporto, nearly all of the victims being dead within ten minutes from the time when the flames and the smoke from the stage reached the auditorium and the galleries.

Dr. Choquet, in his statistics, enumerates a total of 732 theatres destroyed by fire from 1751 to 1885, with a total number of victims, *i. e.*, both killed and wounded, of 6,573. This list includes fires where firemen lost their lives in the performance of their duty. Since the beginning of this century 536 theatre fires occurred, and from 4,500 to 5,000 persons have been killed or wounded.

Here are in detail, in periods of ten years, some of the figures of victims of theatre-fire calamities given by Dr. Choquet:

In the years	1751-1760,	10 victims.	
" "	1761-1770,	4 "	
" "	1771-1780,	154 "	(Amsterdam, 1772, 25 d.; Saragossa, 1778, 77 d., 52 w.)
" "	1781-1790,	21 "	
" "	1791-1800,	1,010 "	(Capo d'Istria, 1794, 1,000 v.)
" "	1801-1810,	37 "	
" "	1811-1820,	85 "	(Richmond, Va., 1811, 72 v.)
" "	1821-1830,	105 "	(Philadelphia, 1829, 97 v.)
" "	1831-1840,	813 "	(St. Petersburg, 1836, 800 v.)
" "	1841-1850,	2,114 "	(Canton, 1845, 1670 v.; Carlsruhe, 1847, 63 d., 203 w.) Quebec, 1846, 200 v.)
" "	1851-1860,	241 "	(Livorno, 1857, 43 d., 134 w.)
" "	1861-1870,	104 "	
" "	1871-1880,	1,217 "	(Ahmednuggur, 1878, 40 v.; Brooklyn, 1876, 283 v.; Shanghai, 1871, 120 v.; Sacramento, 1876, 110 v.)
" "	1881-1885,	628 "	(Nice, 1881, 70 v.; Richmond, 1885, 100 v.; Vienna, 1881, 450 v.)
In the year	1887, Paris,	150 "	
" "	1888, Oporto,	140 "	
" "	1887, Exeter,	200 "	
" "	1892, Philadelphia,	Central Theatre, several dead and wounded.	

Before proceeding to study the causes of theatre fires, I will give a brief list of twelve prominent theatre-fire calamities of this century, the horrors of many of which are probably fresh in your mind.

LIST OF TWELVE PROMINENT THEATRE-FIRE CALAMITIES OF THIS CENTURY

1. *Theatre in Richmond, Va.* — Date: December 26, 1811. Time of fire: During the last act of the evening performance. Number of people in audience: About 600. Cause of fire: Careless hoisting of a stage chandelier with lighted candles, whereby a border became ignited. Panic, jam at exits. Number of victims: Seventy persons killed, many injured. No data available as to location, plan, construction and equipment.

2. *Lehman Theatre and Circus at St. Petersburg, Russia.* — Date: February 14, 1836. Time of fire: During the afternoon performance, at 4 o'clock. Number of people in audience unknown. Cause of fire: Stage lamp, hung too high, ignited the stage roof. Panic, jam at exits. Number of victims: About 800 persons killed. Location: In an open square. Construction: Temporary wooden structure. Exits obstructed by the panic-stricken crowd.

3. *Royal Theatre, at Quebec, Canada.* — Date: June 12, 1846. Time of fire not stated. Number of people in audience unknown. Cause of fire: The upsetting of a lamp on the stage ignited a wing. Number of persons killed: About 100. Construction: Of combustible material. Chief defects: Insufficient exits, narrow stairs; one wooden staircase broke from overweight of the crowd, and thereby obstructed one of the exit doors.

4. *Grand Ducal Theatre, at Carlsruhe, Baden, Germany.* — Date: February 28, 1847. Time of fire: Just before beginning of evening performance. Number of people in audience: About 2,000. Cause of fire: The careless lighting up of the gas-lights in the Grand-Ducal box ignited the draperies. Number of victims: Sixty-three persons dead and 200 injured. Location: Entirely free on open square. Construction: Wooden interior, the four exits ordinarily effected the emptying of the house in six minutes. Chief defects: The main entrance to the theatre was bricked up (!). Of the four exits mentioned, only one was open; the other three were locked and barricaded. The gas was turned off in the street after the fire broke out, but the oil-lamps in corridors were kept burning. The occupants of the parquet and of the balconies escaped. Most of the victims were gallery spectators, who became suffocated by smoke. Many were saved by breaking-in the locked exit doors.

5. *Teatro degli Aquidotti, Leghorn, Italy.* — Date: June 7, 1857. Time of fire: About 8 o'clock in the evening. Number of people in the audience: About 3,000. Cause of fire: A rocket, part of fireworks on the stage, ignited the scenic decorations. Number of victims: From 43 to 100 killed, and 134 to 200 injured. No details.

6. *Conway's Theatre, Brooklyn, N. Y.* — Date: December 5, 1876. Time of fire: During the last act of the performance of "The Two Orphans." Number of people in audience: About 1,000, viz: 250 in parquet, 350 in balcony, 405 in the gallery. Cause of fire: A border caught fire from the border-lights, perhaps owing to a sudden draught, caused by opening a window. The fire was increased by the opening of a large door at the back of the stage. Number of persons killed: 283, all from the upper gallery. Location: Building stood detached on three sides. Construction: Ordinary, but with well-arranged exits, permitting the emptying of the theatre in from 5 to 6 minutes. Plan of theatre: Considered comparatively good at the time. Chief defects: No fireproof curtain, no water available for fire-purposes. No fire-hose at the fire-hydrants, nor any other fire-extinguishing appliances available. Auxiliary exit doors for the gallery kept closed. Only one staircase for the gallery. Stage overcrowded with scenery. Lofts over the auditorium filled with much inflammable scenic material. Proscenium of wood. During fire the gas was turned off in the street.

7. *Theatre Municipal, at Nice, Italy.* — Date: March 23, 1881. Time of fire: At 8.30 in the evening, immediately before the beginning of the performance. Number of people in audience not known. Cause of fire: In lighting the border-lights, an explosion of gas took place, igniting at once the scenic decorations. Number of persons killed: From 150 to 200, nearly all from the upper gallery. Location: In an open square. Construction: Substantial. Plan and arrangement: Fairly good. Chief defects: No fireproof curtain, no oil-lamps in corridors and exits. Auxiliary exit door from gallery to the safety stairs could not be found on account of darkness, the gas-lights having been extinguished. The lower part of gallery stairs steep and with winding-steps. The exit doors obstructed by the jam.

8. *Ring Theatre, at Vienna, Austria.* Date: December 8, 1881. Time of fire: About 6.45 in the evening, just before the beginning of the performance. Number of people in the audience: About 1,800. Cause of fire: The careless lighting of the border-lights by means of an alcohol torch (the usual electric flashlight apparatus being out of order) ignited a hanging border. Number of persons killed: At least 450, many from the upper gallery. Location: Standing free on three sides. Construction: Substantial, but stairways bad. Plan and arrangement defective. Chief defects: Iron fireproof curtain could only be lowered from the rigging loft, and could not be lowered at the time of the fire. Special exit doors locked, keys and locks rusty. Gas-lights extinguished, oil-lamps provided in corridors, but not lighted. The exits insufficient, and obstructed by the jam. This fire was very similar to the Brooklyn Theatre fire. The fire caught in each case among the flies, from a border-light. The bursting open of a large door in rear of stage let in a blast of air, which drove the flames and the suffocating fire-smoke through the proscenium-opening into the auditorium.

9. *Circus Ferroni, at Berditscheff, in Russian Poland.* — Date: January 13, 1883. Time of fire: During evening performance. Number of people in the audience: About 600. Cause of fire: A stableman working in the stable adjoining the circus, was smoking a cigarette and was lying on straw which ignited; a fellow laborer ran for a pail of water and left a door open, which created a strong draught and thus fed the flames. Inside of twenty minutes the whole circus stood in flames. Number of victims: Official figure, 268 persons burnt to death; other reports state 430 dead, 80 mortally injured, 100 persons missing. Many children crushed and suffocated in the jam of people. Both stable-laborers who caused the fire burned to death, 27 horses and 11 trained dogs burned. Construction of building: Of double walls of wood, with an interior filling of straw (!) between the boards as a protection against the cold. No safety measures against fire. One safety exit, but not known to the public. Owing to the extreme cold weather there was scarcity of water, and a fire-engine, in running to the fire, was delayed by breaking through the ice.

10. *Opera Comique Theatre, Paris, France.* — Date: May 25, 1887. Time of fire: About 9 P. M. Number of people in audience: About 1,600. Cause of fire: Scenery ignited from the gas-lights. Number of persons killed: From 70 to 110, largely from the upper gallery, and stage people. Location: Standing free on three sides. Construction: Good, although not fire-resisting. Plan and arrangement faulty. Chief defects: Exits for about half the stage people over a narrow wooden bridge over upper part of stage. Iron curtain not lowered, fire-hydrants not used; gas extinguished in the exits and corridors.

11. *Exeter Theatre, Exeter, England.* — Date: September 5, 1887. Time of fire: During evening-performance. Number of people in audience not stated. Cause of fire: Scenery caught fire from the gas-lights. Number of persons killed: From 166 to 200, mostly from the upper gallery. Location: In an open square. Construction: Bad. Plan and arrangement: Fairly good, but the upper gallery had only one exit, which was badly arranged and obstructed. Chief defects: No fire curtain; insufficient fire-appliances on stage; stage overloaded with scenery; insufficient and badly arranged exits.

12. *Theatre at Oporto, Portugal.* — Date: March 31, 1888. Cause of fire: A rope in the rigging-loft came too near the border-lights and caught fire, which quickly spread. A panic broke out, and the safety exits being closed, a jam resulted in the corridors. Many persons jumped to the street from the windows, others followed on top of those lying wounded and killed in the street. Sailors and marine soldiers in the upper gallery are said to have used their knives to kill persons standing in their way. Number of victims: 240 persons. Chief defects: Theatre built entirely of wood; all stage gas-lights were open and unprotected lights. No safety-appliances of any kind.

It may be noted that in nearly all the catastrophes briefly described, fire broke out high up in the inflammable scenery, near the borders, and was caused by gas-lights coming into contact with the combustible scenery.

Besides the twelve theatre fires briefly mentioned, in which alone about 3,000 people lost their lives, there is a large list of other fires, full of horrors, about which, however, the details are meagre.

Among these I mention the fire in a theatre at Canton, China, on May 25, 1845, where 1,670 persons are said to have perished; the fire of the theatre at Whampoa, China, in 1853, caused by fireworks, and killing 30 persons; the theatre at Tientsin, China, burned in May, 1872, with 600 persons dead; the fire at a theatre in Ahmednuggur, East India, on May 11, 1878, when 40 persons were killed; the fire of the Gayety Theatre, in Milwaukee, on November 15, 1869, caused by the upsetting of a kerosene-lamp on the stage, whereby 2 persons were burned to death, and about 30 injured; the fire in a theatre at Tschernigow, Russia, on December 24, 1882, caused by a gas-metre explosion, and resulting in a panic, wherein several people were killed and 100 injured; the theatre fire at Dervio, Como, Italy, on June 25, 1883, where 47 persons lost their lives; and the fire at the Central Theatre, in Philadelphia, Pa., in 1892, causing the death of several persons.

Again, there are numerous instances of large loss of life during panics in public halls and places of assembly, of which I will mention only the panic at the Victoria Hall, in Sunderland, England, where of 2,000 children present, 183 were crushed and trampled to death, and the panic in a circus at Richmond, (State?) in 1885, whereby 100 persons were killed.

CONSTRUCTION.[1]—XXVII.

MILITARY CONSTRUCTIONS.

Fig. 141. From a Bas-relief, Notre Dame la Grande, Poitiers, France.

COMPARING the military constructions of the beginning of the Middle Ages and those of the Romans, there is to be noted only a somewhat decreased perfection in the use of materials and the execution; the processes are the same; the curtain-walls and the towers are merely composed of masses of rubble-work, protected with a facing of small stones either rough or sparely dressed. It seems that the Normans were the first to introduce certain improvements in military works unknown before their time, and which from the eleventh century on give to these constructions a marked superiority over those which existed in Eastern Europe. The most notable among these improvements was the rapidity with which they erected their strongholds. William the Conqueror covered England and a part of Normandy in a very few years with strongholds built of masonry executed with perfect solidity which is attested by the great number of them still standing.

It is to be supposed that the Normans established on Western soil the methods in use by the Romans, that is to say, requisitions for building their fortresses and this is, indeed, in a completely subjugated country, the best method of raising massive structures requiring only large amounts of materials and many hands. There is to be found, in short, in the primitive military constructions of the Normans no trace of art; everything is sacrificed to the prime need of defense. Buildings of this sort furnish no material for analysis; they have no interest for us, except from the defensive point-of-view.

It is scarcely before the end of the twelfth century that we find special methods of construction applied to defensive works, forming an art by itself. For masses of rubble-work offering equal and continuous resistance, are substituted supports united by discharging-arches, and thus forming in the curtain-walls as well as in the towers some parts more resistant than others, each independent of the other, so as to avoid the fall of large portions of the masonry if they should be undermined. It is about this time also that they attached great importance to the site of military works, that constructors chose rocky soils difficult to undermine, and that they frequently benched out the rock in order to obtain indestructible escarpments, for during the grand sieges undertaken at this epoch, notably by Philip Augustus, sapping and mining were the means most often employed for overthrowing walls.

One of the bas-reliefs which decorate the western façade of Notre-Dame-la-Grande at Poitiers, which dates from the commencement of the twelfth century, already shows us city walls, composed of discharging-arches carried by slightly projecting exterior buttresses (141). But it is not necessary to stop too long over these representations of monuments which do not always conform to reality. The discharging-arches when they exist habitually appear on the interior of the walls to carry the *chemin de ronde* and masked by the exterior facing. Common sense would, in fact, indicate that discharging-arches on the exterior would mark to besiegers the point where they should begin to undermine, and that the projection of the buttresses would hide the advance guard. The above examples should therefore be considered as the reverse of the wall used on account of necessities of sculptural decoration.

The intelligence which we see displayed by the French constructors toward the end of the twelfth century in religious and civil edifices is also found in military edifices; they endeavor to replace the passive forces of Roman construction by active forces; but military architecture is concerned not alone with existing exterior agencies and the natural laws of gravity; it has to offer resistance to the destructive hands of men.

The logic of the artists who develop the art of architecture in the Middle Ages and raise it out of the Romanesque rut, is rigorous; we have had occasion to demonstrate this to our readers in the first two parts of this article. It will be understood that this logical and truthful spirit found a fine chance to exercise itself in the construction of military edifices, where everything must be sacrificed to the necessity of defense. Sapping and mining carried out by means of a system of shoring, which was set on fire, being the most ordinary principle of attack in the twelfth century, it was necessary to oppose this system by a principle capable of rendering futile the works of the assailants. If, then, we construct a tower on the plan *A* (142), and if the miners succeed in attacking it, in two adjacent points of the exterior face, and make the two cavities *B C* shoring them with small struts, when they set these struts on fire, all the portion *E F* of the tower will fall outside and the work will be destroyed; but if, using the same cubic quantity of materials and covering the same superficies, we take the trouble to build in place of a solid wall a series of niches included between interior buttresses as plan *G* indicates, there is an even chance that the miner will happen upon a void instead of a solid, and then his plan of burning struts will produce no results; but if he hits upon a solid wall this will offer him a greater thickness than in the plan *A*, and his work will be longer and more difficult; in addition, the recesses *H* allow of countermining, if he works below these niches. In addition, the niches *H* themselves can be shored on the inside, so as to make the fall of a part of the tower impossible, even admitting that the excavations of the mine have been made at *I*, and at *K* underneath the piers. Thus as early as the end of the twelfth century with a cubical quantity of materials equal to that previously employed and even a less quantity, the military constructors had succeeded in giving a much stronger foundation to their works. In addition, the constructors buried in the thickness of the walls tough pieces of wood bolted together with iron so as to encircle their towers at different levels. The principle was excellent but the method very bad; for these pieces of wood completely deprived of air, rapidly dried and rotted. Later they noticed the rapid destruction of wood so used and replaced it by a system of anchors made of iron cramps built-in between two courses.

There is one observation which might occur to any one and which is not devoid of interest. The mortars generally employed during the twelfth century and the beginning of the thirteenth, in churches and most religious constructions are bad, wanting in body, imperfectly mixed and frequently even the sand itself gives out and seems to have been replaced by stone dust; while the mortars employed in military constructions at this epoch, as well as before and after, are excellent and are frequently as good as Roman mortars; the same

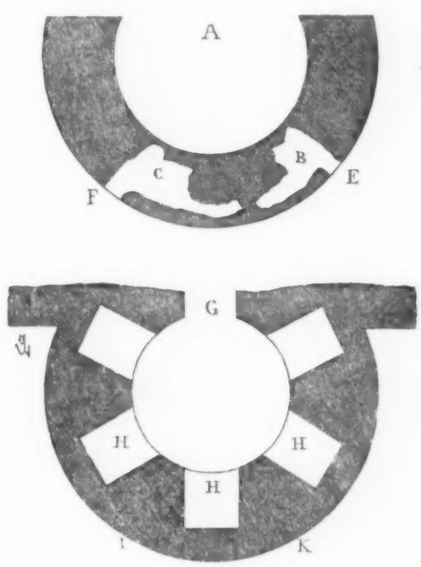

Fig. 142.

may be said of materials. The stones employed in the fortifications are of a superior quality, well chosen and worked in large masses; they emphasize, by contrast, the great negligence or painful economy in the greater part of religious constructions.

[1] From the "*Dictionnaire raisonné de l'Architecture Française*," by M. Viollet-le-Duc, Government Architect, Inspector-General of Diocesan Edifices, translated by George Martin Huss, Architect. Continued from No. 989, page 104.

Evidently the lay noblemen when they built fortresses had kept the Roman method of requisitions and apportionments which the abbots and bishops were unable or unwilling to maintain. It would seem that the Norman seigneurs were the first to reorganize the building system employed by the Romans,[1] and their example has been followed in all the northern and western provinces. Enthusiasm produces great things, but it is of short duration. A sentiment of reaction against barbarism caused the erection of abbey churches and the vast constructions surrounding them; a desire for liberty and an awakening of faith brought about the building of cathedrals; but these moments of effervescence past, abbots and bishops found only a cold devotion left; hence negligence or scamping in the doing of work. With the lay nobility it could not be thus; the peasants were not asked for devoutness, they were required to do regular tasks under rigid supervision. This method was certainly the better one for the regular prosecution of considerable undertakings. So we ought not to be surprised at the hatred which has been transmitted among us from generation to generation against the feudal fortresses and the affection for their cathedrals which the people have retained through these hundreds of years. At the end of the last century it is true that many churches were destroyed, more particularly conventual churches — because these belonged to feudal establishments; but not many cathedrals have been destroyed, while all the châteaux, without exception, have been devastated — many, even, had been ruined under Louis XIII and Louis XIV. So far as we constructors are concerned, we have only to state here facts, from which each one can draw conclusions in accordance with his own manner of looking at things; we are obliged to admit that from the point-of-view of workmanship, there are found in the fortresses of the Middle Ages, uniformity and sureness of execution, a regulated progression and an attention which are wanting in many of our religious edifices.

In the construction of churches there may be noticed interruptions, boggling, frequent modifications in the original projects, which are to be explained by lack of money, more or less flagging zeal of bishops, canons or abbots, new ideas which crowded into the brains of those who ordered and paid for the work. All that is benevolently laid to the account of the ignorance of the master-workman, the inefficiency of their methods.[2]

[To be continued.]

SOCIETIES

ARCHITECTURAL LEAGUE OF NEW YORK. — REPORT ON THE BEAUX-ARTS COMPETITION, NO. 1. — SUBJECT, "A SMALL THEATRE FOR CANTATAS."

The following awards were made:

NAME OF COMPETITOR.	ATELIER.	ORDER OF MERIT.	
F. R. Mann	Mass. Inst. of Tech.	Awarded a Medal.	
Karl Richardson	Masqueray-Chambers.. / Sketch-Club of N. Y..	First	Mention.
H. H. Thorndyke	Mass. Inst. of Tech.	"	"
Wm. Berger	Masqueray-Chambers..	Second	"
Lester A. Cramer	Masqueray-Chambers.. / Sketch-Club of N. Y...	"	"
W. B. Faville	Mass. Inst. of Tech.	"	"
Fullerton & Maccafferty	Earnest Flagg. / Sketch-Club of N. Y...	"	"
H. B. Pennell	Boston Arch'l Club ...	"	"
W. J. V. Randolph	Howard & Cauldwell..	"	"
Emery Roth	Ernest Flagg. / Sketch-Club of N. Y...	"	"
F. Whiting	Ernest Flagg.	"	"
M. M. Fuerstman	Phila. T-Square Club..	Third	"
Arthur Gilkes	Ernest Flagg.	"	"
Nelson Goodyear	Masqueray-Chambers..	"	"
Miss Fay Kellogg	Carrere & Hastings.	"	"
Albert Kelsey	Phila. T-Square Club..	"	"
Richard L. Leo	Columbia College.	"	"
Habert Ripley	Boston Arch'l Club...	"	"
"Sigma"	Phil. T-Square Club...	"	"

Eighteen other drawings were presented which received no award, making a total of thirty-seven competitors.

The medal offered by the Society of Beaux-Arts Architects for the best design for a small theatre for cantatas and light plays was awarded to Mr. F. R. Mann, of the Massachusetts Institute of Technology, in consideration of the special excellence of his plan and section.

The elevation of this design, while well composed and rendered, is somewhat too heavy and out of character for a small building demanding rather lightness and grace than monumental repose. The plan, however, is excellent, both in arrangement and indication, and the section is well drawn and in character.

First Mentions were awarded to Mr. Karl Richardson, pupil of Messrs. Masqueray & Chambers, and to Mr. H. H. Thorndyke, of the Massachusetts Institute of Technology. The former of these is good, alike in plan and in the general character of the elevation. The plan is somewhat lacking in charm and interest, though logical and well drawn.

Mr. Thorndyke's plan is especially brilliant and well characterized, the elevation being less happy in these respects.

INTER-CLUB COMPETITION.

NAME OF COMPETITOR.	ATELIER.	ORDER OF MERIT.	
Karl Richardson	Sketch-Club of N. Y...	First	Mention.
H. B. Pennell	Boston Arch'l Club....	Second	"
Albert Kelsey	T-Square Club of Phila.	Third	"
Claude Fayette Bragdon	Rochester Arch'l Club.	Fourth	"
T. Laist	San Francisco Sketch-Club.....	Fifth	"

Among the designs representing the Sketch-Club of New York, the Architectural Club of Boston, the T-Square Club of Philadelphia, the Rochester Architectural Club and the Sketch-Club of San Francisco, the first place was accorded to the design submitted by Mr. Karl Richardson, representing the New York Sketch-Club, which has been already noticed as receiving a First Mention in the general competition. The prize offered by the Inter-Club League will, therefore, be awarded to this design. The second place was given to the design submitted by H. B. Pennell, representing the Architectural Club of Boston, on account of the clever treatment of the plan, which, however, was out of scale and larger than the programme demanded. The detail of this design is noticeable for its excellence, but the elevation is a little too severe to be in good character for a problem of this sort.

The design submitted by Mr. Albert Kelsey, of the T-Square Club of Philadelphia was placed third. The plan in this case is too complicated. The elevation, good in idea and general character, is insufficiently studied; the detail is good.

Eight Second Mentions were accorded to several designs showing good work; some of which presented noticeably good details, as in one submitted by Mr. W. B. Faville, of the Massachusetts Institute of Technology, and that of Mr. F. Whiting, pupil of Mr. Flagg.

Eight Third Mentions were awarded to designs showing praiseworthy effort and promise of mature work in the future.

As a whole, the drawings sent in showed a gratifying degree of excellence, and a marked enthusiasm and ability on the part of the contestants.

New programmes will be issued immediately for the succeeding competitions.

The authors of the drawings which have received a medal, the two First Mentions, and the eight Second Mentions, are requested to allow these drawings to be exhibited at the Architectural-League Annual Exhibition and to send their consent in writing, immediately upon receipt of this notice, to Mr. John M. Carrère, 44 Broadway, New York.

Respectfully submitted by
John M. Carrère, *Chairman.*
John G. Howard.
Ernest Flagg.
For the Jury. *Committee on Education.*

THE ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

CHURCH OF ST. MARTIN IN THE FIELDS, WISSAHICKON HEIGHTS, PHILADELPHIA, PA. MESSRS. G. W. & W. D. HEWITT, ARCHITECTS, PHILADELPHIA, PA.

[Gelatine Print issued with International and Imperial Editions only.]

THE 71ST REGIMENT ARMORY N. G., S. N. Y., AT PARK AVENUE AND 34TH STREET, N. Y. CITY. MR. J. R. THOMAS, ARCHITECT, NEW YORK, N. Y.

Although this building is known as the 71st Regiment Armory, it is also the home of the Second Battery and the Signal Corps, and the headquarters of the First Brigade. It is built of rock-faced granite from Mount Hagen, Me., the basement being laid in courses, and above in random-range ashlar with red mortar joints. While it has not the defensive strength of a fort to resist modern artillery, it is strong enough to withstand the attack of any ordinary unorganized street mob, and could be easily defended against such an enemy. The Second Battery has its quarters in what is the basement on the Thirty-third-Street side of the building, but what is really the first floor on account of the difference in the grades of the streets. There is on this floor a drill-room, 150 feet by nearly 200 feet, without any supporting columns to interfere with the movements of the Battery. Immediately above this battery drill-room is the drill-room of the 71st Regiment, nearly 200 feet square. This arrangement led to the solving of a somewhat unusual problem. To have put up supports below would have interfered seriously with the value of the artillery drill-room: without such supports the ordinary drilling of the regiment of infantry above

[1] In Normandy there existed during the Middle Ages a class of peasants called by the general name of *Bordiers*. These *Bordiers* were compelled to do the hardest sorts of work — among others — those connected with the building, such as the transport of materials, terracing, etc.; in other words they were masons' helpers. (See *Etud. sur la condit. de la classe agric. en Normandie au moyen âge*, par Léop. Delisle, 1851, p. 15, 20, 79, 83, and notes p. 709.)

[2] For instance, it is always impressed upon us that such a cathedral was two centuries in building, without taking into account that out of these two hundred years they actually worked only ten or twenty years.

would have created so much vibration, that usual methods of construction would have been inadequate. The architect conceived the idea of making the ceiling of the artillery-room, which is the floor of the infantry-room, so strong that its dead weight should preponderate any possible living weight. On any ordinary bridge, troops in passing over are required to break step, because the cadence of men in regular motion creates a most destructive vibration. To obviate this, arched wrought-iron trusses were designed, between the spans of which are rolled-iron beams with double brick arches between, and then filled on top with concrete of sufficient depth to make the dead load something over three hundred pounds per square foot. Over this concrete are the wooden sleepers and floor of the drill-room. With this method of construction, the live load is so small in comparison with the dead weight that any movement, however rhythmical and provocative of vibration, is inconsiderable. There are the usual executive offices in the basement for the Battery, and also for the Regiment on the first and mezzanine and a portion of the second story, and for the Brigade headquarters on the second floor. The Signal Corps will also have quarters in the building, and from the turrets and the balconies surrounding them the members will have opportunity for drill and practice. Entirely around the regimental drill-room is a gallery from which visitors will see the manœuvres. The ten company-rooms are suspended from the roof-trusses across two sides of the drill-room, and above the main galleries, each room having a gallery or balcony of its own. The cost of the building and equipment, exclusive of the land, was about $450,000.

HOUSE AT PRIDE'S CROSSING, BEVERLY, MASS. MESSRS. LONGFELLOW, ALDEN & HARLOW, ARCHITECTS, BOSTON, MASS.

SHELTER AND LOOK-OUT AT CASTLE ISLAND, BOSTON, MASS. MR. E. M. WHEELWRIGHT, CITY ARCHITECT, BOSTON, MASS.

THE CALIFORNIA STATE BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL.

COMPETITIVE DESIGN FOR A PRIMARY SCHOOL-HOUSE, WOBURN, MASS. MR. A. H. GOULD, ARCHITECT, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

CHOIR-SCREEN IN THE CHURCH OF ST. LUKE, GERMANTOWN, PA. MESSRS. COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA, PA.

[Gelatine Print.]

DOORWAY OF STA. ENGRACIA, SARAGOSSA, SPAIN.

THIS plate is copied from *Teknisk Tidskrift*.

DOOR IN THE FÜRSTENZIMMER, VELTHURNS.

THIS plate is copied from *Architektonische Rundschau*.

A CHÂLET IN THE CANTON OF BERNE.

THIS plate is copied from the *Schweizerische Bauzeitung*.

MONUMENTS TO M. PAMARD AT AVIGNON, FRANCE, BY M. GUIMINEL, ARCHITECT, AND TO M. H. MAZE, AT VIROFLAY, FRANCE, BY M. H. GUILLAUME, ARCHITECT.

THESE subjects are copied from *La Construction Moderne*.

BARODA AND CENTRAL INDIA OFFICES, BOMBAY, INDIA.

THIS plate is copied from *Indian Engineering*.

THE NEW PARLIAMENT BUILDING, BERLIN, GERMANY. HERR PROFESSOR PAUL WALLOT, ARCHITECT.

THIS plate is copied from the *Deutsche Bauzeitung*.

MEMORIAL TO C. W. COPE, R. A. MR. J. W. SIMPSON, ARCHITECT.

THIS plate is copied from the *Building News*.

THE ENTRANCE FRONT OF THE BISHOPSGATE INSTITUTE, LONDON, ENG. MR. C. HARRISON TOWNSEND, ARCHITECT.

THIS plate is copied from *The Builder*.

QUEEN'S HALL, LANGHAM PLACE, W., LONDON, ENG. MR. T. E. KNIGHTLEY, ARCHITECT.

COMPETITIVE DESIGN FOR ST. AIDAN'S CHURCH, WALTON-LE-DALE, ENG. MESSRS. EDEN & WILLIAMS, ARCHITECTS.

THE illustrations of this design represent alternative schemes — one with a single arcade (shown in the interior perspective) and the other with the usual arrangement of nave and aisles. It is demonstrable that the piers of a single central arcade "obstruct the view of altar and pulpit" far less than do those placed in the ordinary way, though this is seldom an advantage. The design was exhibited this year at the Royal Academy.

INTERIOR OF THE SAME.

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

THE UNION LEAGUE CLUB-HOUSE, CHICAGO: A CORRECTION.

CHICAGO, ILL., December 4, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — In your advertisement of Urban Club-houses, Chicago, you have Union League: Cobb & Frost, architects. This is an error. The Union *Club* is by Cobb & Frost., The Union *League* by W. L. B. Jenney. Very respectfully yours,

W. L. B. JENNEY.

JETTIES.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — The "*Promptorium Parvulorum*," Shakespeare, and the early records of Boston, Mass., prove conclusively that "jetty," denoting projection, is Tudor English. A modern importation from France, therefore, was not necessary. But if that importation has taken place, where is the evidence? Surely, the origin and the migration of words may be traced like the origin and migration of persons. Neither persons nor words float mysteriously; their travels can be traced, and it is the business of etymology to trace them, as well as to abstain from guesses.

Of engineering I know nothing. But when I am told that our forefathers knew nothing about jetties meaning long piers projecting into the sea, I demur, though anxious to honor Mr. Clark. I thought that ancient Tyre, Alexandria, Syracuse, Athens and Rome built jetties to secure safe anchorage for their shipping, and that the founders of Massachusetts knew their classics quite as well as we do. Nor were they afraid of large engineering. In 1673, the men of Boston began the great pier, or jetty, twenty-two hundred feet long and "20 foote broad at ye topp," which gave us the inner harbor, and surpassed all similar works previously undertaken in England. All the maps of early Boston show this huge work, which the decline of the Province allowed to go to decay. But even the Province created Long Wharf, which extended some two thousand feet into deep water. Boston built more wharves in the seventeenth century than in the nineteenth, when we change them into parks.

Undoubtedly Boston went through a period of decline, which lasted from about 1720 to 1780; but from 1630 to 1720 Boston was rich, opulent, ambitious and engaged in vast engineering. It built the best ships afloat, it had more wharves than to-day, and it perfected some hydraulic engineering that entitles the Tudor era of Boston to the admiration of this age. As I am a mere student of language, or a student of mere English, I cannot undertake to discuss the engineering and architecture of Boston from 1630 to 1720; but the language in which the great enterprises of the time were discussed is within my province. I repeat that *jetty* is Tudor English, that the founders of Boston spoke the Tudor English of Shakespeare and the Bible, and that they were great engineers, because they used the language of great engineers and executed works not approached by the country they had left. They did great things, and had names for them; and I do not see why we should import in the nineteenth century what the fathers planted here in the seventeenth. American history still owes a debt to the founders of Massachusetts, who were indifferent theologians, but good men of affairs, good merchants and good engineers. C. W. ERNST.

[OUR correspondent asks us to suppress this if it seems to us likely to provoke an etymological discussion, of which there are too many useless ones. It seems to us that this explanation has the same sort of historico-architectural flavor and interest about it that led us to publish the original communication, and it is now published on that account and not as part of a controversy over the derivation of words. — EDS. AMERICAN ARCHITECT.]

EXHIBITIONS

BOSTON, MASS. — *Exhibition of Millet's "Sower" and other Paintings loaned by Quincy A. Shaw, also, Ancient Chinese Buddhist Paintings, the Works of Adolf Menzel, and Drawings by John Trumbull:* at the Museum of Fine Arts.

Eighth Exhibition of the Water-color Club: at J. Eastman Chase's 7 Hamilton Place, closes December 15.

Exhibition of Pictures of New England Life by New England Painters: at Jordan, Marsh & Co.'s, opened November 27.

Dielman's "Marriage of Dr. Le Baron," and Water colors by William Adam: at Williams & Everett's, 190 Boylston St., opened November 26.

Exhibition of Paintings by J. H. Hatfield: at the Boston Art Club, December 10 to 22.

Chicago, Ill. — *Seventh Annual Exhibition of American Oil-paintings and Sculpture:* at the Art Institute, October 29 to December 17.

Water-color Exhibition: at F. Keppel & Co.'s, 1 Van Buren Street.

Cleveland, O. — *Eighteenth Annual Exhibition of the Cleveland Art Club:* December 17 to 22.

New York, N. Y. — *Thirteenth Annual Autumn Exhibition of the National Academy of Design:* opens December 10, closes January 5.

Loan Exhibition: at the Metropolitan Museum of Art, New North Wing opened November 5.

Fifth Annual Exhibition of the New York Water-color Club: at the Galleries of the American Fine Arts Society, 215 West 57th Street, December 1 to 22.

Zschille Collection of Arms and Armor: at Tiffany & Co.'s, Union Square.

Exhibition of Historical Book-bindings: at the Grolier Club, December 6 to 27, also, *Etchings and Drawings by Whistler*, until December 22.

Pastels after Celebrated Originals in European Galleries, by J. Wells Champney: at Knoedler's, 170 Fifth Ave., closes December 23.

Pictures by Adolph Artz: at William Macbeth's, 237 Fifth Ave., December 1 to 22.

"Little Girl Pictures" by Miss Maria Brooks, and Water-colors by Dutch Artists: at H. Wunderlich & Co.'s, 868 Broadway, opened November 24.

Exhibition of Du Maurier's Original Drawings for "Trilby": at the Avery Galleries, 368 Fifth Ave., December 3 to 15, also, *Paintings by A. C. Howland:* December 4 to 22.

Norwich, Conn. — *Exhibition of Book-bindings:* at the Slater Memorial Hall, closes December 20.

Philadelphia, Pa. — *Sixth Annual Exhibition of the Art Club of Philadelphia:* opens November 19, closes December 16.

Sixty-fourth Annual Exhibition of the Pennsylvania Academy of Fine Arts: opens December 17, closes February 23.

NOTES AND CLIPPINGS

A Collection of Bricks. — I once described in this paper an old gentleman, of my casual acquaintance, who had a mania for collecting relics of catastrophes. If a house tumbled down or blew up and burnt, if a boiler exploded, or anything else terrible happened around town, he gathered in some souvenir in the way of a brick or a chunk of wood or a scrap of metal — it didn't matter what, in fact — and labelled it and added it to his museum. Now another New Yorker turns up whose tastes run in a somewhat similar direction. He is Andrew Saul, Superintendent of the New York Merchant Police and member of the Maritime Exchange, and he has presented the museum of the Exchange with a collection of sixteen venerable brickbats, respectively derived from old St. George's Church, which was built in 1748, on Chapel Hill, now Beekman Street, at the corner of Van Cliff Street, since called Cliff Street; from Fraunce's Tavern, corner of Broad and Pearl Streets, where Washington bade farewell to his officers and delivered his immortal address in 1783; from the Walton House, which stood until recently at 326 Pearl Street, where the Bank of New York, the first bank established in this city was started; from the Middle Dutch Church, which was built in 1729, and stood in Nassau Street, between Cedar and Liberty Streets, where the Mutual Life Insurance building now stands, and which served the Government many years as the Post-office; from the house at 82 and 84 Jane Street, in which Alexander Hamilton died; from the Washington Hotel, which stood on the site of the Washington Building, at the foot of Broadway. The hotel was for a time the residence of Washington when he was President, and was later known as the Kennedy Mansion. Several British generals occupied it successively during the Revolution. Nathaniel Prime lived there also, and it was there that he committed suicide. Memories of Dr. Talmage's ill-fated Tabernacle are evoked by three bricks, each from one of his burned edifices. There is also a brick from the Brooklyn Theatre, which was destroyed by fire on the night of Tuesday, December 5, 1876, and another is from the old Sands Street Methodist Episcopal Church, which stood on the site of the bridge plaza in Brooklyn. Other bricks are from the old Maritime Exchange, the old Produce Exchange, Clinton Hall, and other buildings of minor historical interest which have been demolished. These local landmarks are enclosed in a cabinet whose frame is made from the cap rails of pews of the old Forsyth Street Methodist Episcopal Church, which was the second edifice of that denomination built in New York. The church was erected in 1789, and part of it is still standing and is used as a place of worship. Its first pastor was the Rev. Thomas Morrell, who was one of Washington's staff during the Revolution.

Even this liberality has not cut deeply into Mr. Saul's treasures. "I have always had a hobby for collecting bricks," Mr. Saul said to a reporter. "Those that I have presented to the Maritime Exchange are only a few from my collection. I have bricks from almost every old house with a history that has been pulled down in New York during the past thirty-six years. When I read that an old landmark is to be demolished, I watch it, and when the time comes I get possession of a few of its bricks. I have several houses now on my list which I am watching. Of all the interesting buildings that have been torn or burned down, there is only one from which a brick can be got now. That is Talmage's Tabernacle, in Brooklyn. One can get all the bricks from that church he wants. I have another curious brick. It is one that formed part of an old Dutch well, which was discovered while workmen were digging for the foundations of the new Produce Exchange. It is shaped like a keystone, and is double the size of an ordinary brick." Mr. Saul's office, at 67 South Street, is a veritable curiosity shop. He has several pieces of timber from the "*Morning Star*," a ship that was sunk off the Battery a century ago. The planks are of oak, hard as iron, and are studded with oak nails. He has several sections of the old wooden water-pipes which supplied New Yorkers with water before iron pipes were used. He also has many mementoes of river pirates, who flourished along the water-fronts thirty and forty years ago. He has an armory of daggers, knives, pistols, sandbags, and other piratical weapons. Among these are several from China and Japan. One is a Japanese dagger, with an ornamental black handle, and a long, keen, finely-tempered blade. Another is a Chinese razor, which looks like an oyster-knife. He has also a fiendish Chinese garrote. It is made of leather, and is studded with little projections of short black wire. The wires are dipped in deadly poison, and the garotter encircles the neck of his victim with the garrote. The wire stubs penetrate the skin, the poison gets into the flesh, and in a few minutes the victim is dead. A gruesome curiosity in Mr. Saul's collection is a long, tightly-braided string of black hair. "That is a Chinese pirate's queue," Mr. Saul explained. "An American ship was attacked at Hong Kong by pirates one night, and the ship's carpenter caught one of them by his queue and clipped it off close to his crown. That ended that pirate's career. Without his queue he would be an outcast among his own people, and he jumped into the water and drowned himself. There was nothing else for him to do." — *The Collector.*

William II and Herr Wallot. — A decision of the Emperor William has, a correspondent says, caused great sensation and is much commented upon in the Berlin art world. His majesty has bestowed the large gold medal upon Mme. Vilma Parlaghi, the painter, although the jury of the exhibition did not propose her. Further, he has annulled the decision of the committee of artists to bestow this medal upon Professor Wallot, the architect of the new House of Parliament. All attempts to induce his majesty to confirm the award are said to have been in vain. Professor Wallot enjoys a great reputation among the German artists, and it might still be remembered what a sensation was caused two years ago when the Emperor, speaking in Rome of the new German House of Parliament, said it was the acme of tastelessness. In another affair the difference of opinion between the Emperor and the committee of Berlin artists came also to expression. Mme. Vilma Parlaghi wished to exhibit her works in the Berlin Academy, but room was refused her. Her pictures will now be exhibited in the Royal National gallery by order of the Emperor. On the other hand, German artists are resenting the Emperor William's censorship of art. The club to which all artists of reputation in Berlin belong has by a unanimous vote conferred honorary membership upon Herr Wallot, the architect of the new German House of Parliament. This honor is evidently meant to be a sort of set-off against the action of the Emperor in crossing out his name from the list of candidates for the gold medal. A similar occurrence happened a few years ago, when the Emperor at Rome spoke in disparaging terms of Herr Wallot's work. Shortly afterward, the club of German artists at Rome elected the architect an honorary member. There are other differences between his majesty and the artists. There exists an official committee to promote the cultivation of art. Its members are men who have made a name in the art world. This committee passed a resolution asking the Prussian Diet for a contribution of a considerable amount from public funds for the purchase of objects of art for the Schack gallery at Munich; Berlin art life was in some degree damaged. All the members of this committee have now received letters from the minister of public instruction, in which is expressed the displeasure of his majesty at the members meddling with the Schack-gallery affair. As is known, this gallery is the Emperor's private property, which he inherited. The minister for public instruction has also sent a note to the higher schools, suggesting that the Emperor's "Song to Aegir" should be generally made the subject of discussion. — *Boston Herald.*

Condition of the Building-trades in London. — The threatened struggle in the building-trades of London seems to be developing, with what future results no one can foresee. Singularly enough, it has begun with the same firm as that which finally led to the lock-out in 1859, Messrs. Trollope and Sons. It is somewhat curious to observe that no reference is made to the dispute in the November number of the Amalgamated Society of Carpenters' and Joiners' report. So far, indeed, the whole matter seems to have originated with, and has been carried on by, the body called the Building-Trades Federation, a committee consisting of members of the various building-trades unions. The dispute originated, it is alleged, over the discharge of two unionists, both bricklayers, one originally discharged, and then the other, when it was found that he, too, was a unionist. The original strike extended to six jobs of the same firm, some three hundred men being out. Messrs. Trollope state that there has been no difficulty in filling their places, not a single society man having been employed since the strike began. So far, the whole matter is little better than a storm in a teapot. But the result appears to be likely to be far more serious. It seems to be drifting into a struggle in which the agreement of 1892 will have to be revised, or at least reconsidered. It is said that the employers contemplate a withdrawal of the agreement hitherto existing, unless some amendments are introduced. The following appear to be the proposed amendments: (1) No distinction is to be made on any job between union, non-union, or independent workmen; (2) one week's notice to be given of intention to strike; and (3) sub-letting not to be objected to if the conditions as to wages and hours of labor are complied with. — *Engineering.*

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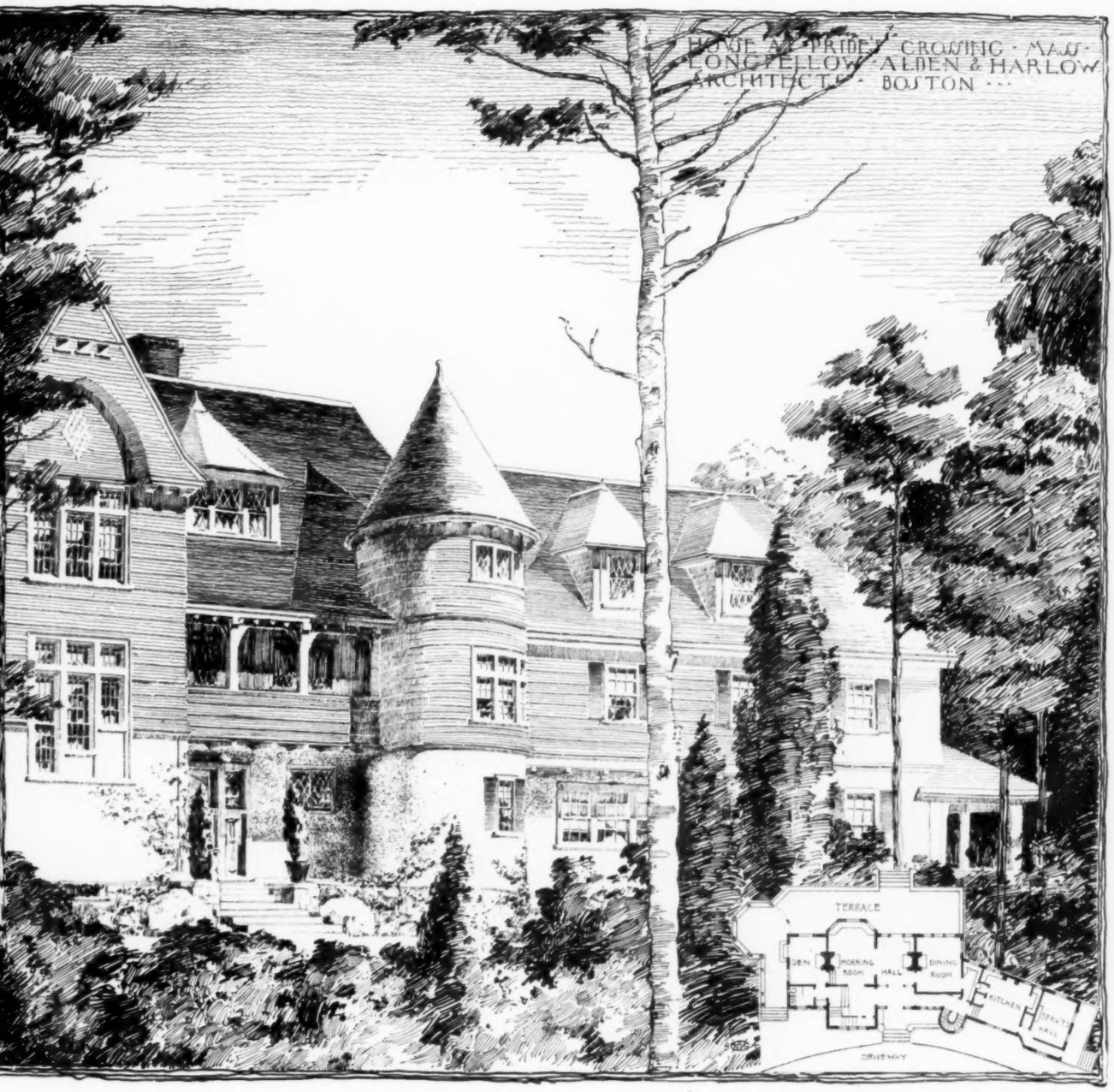

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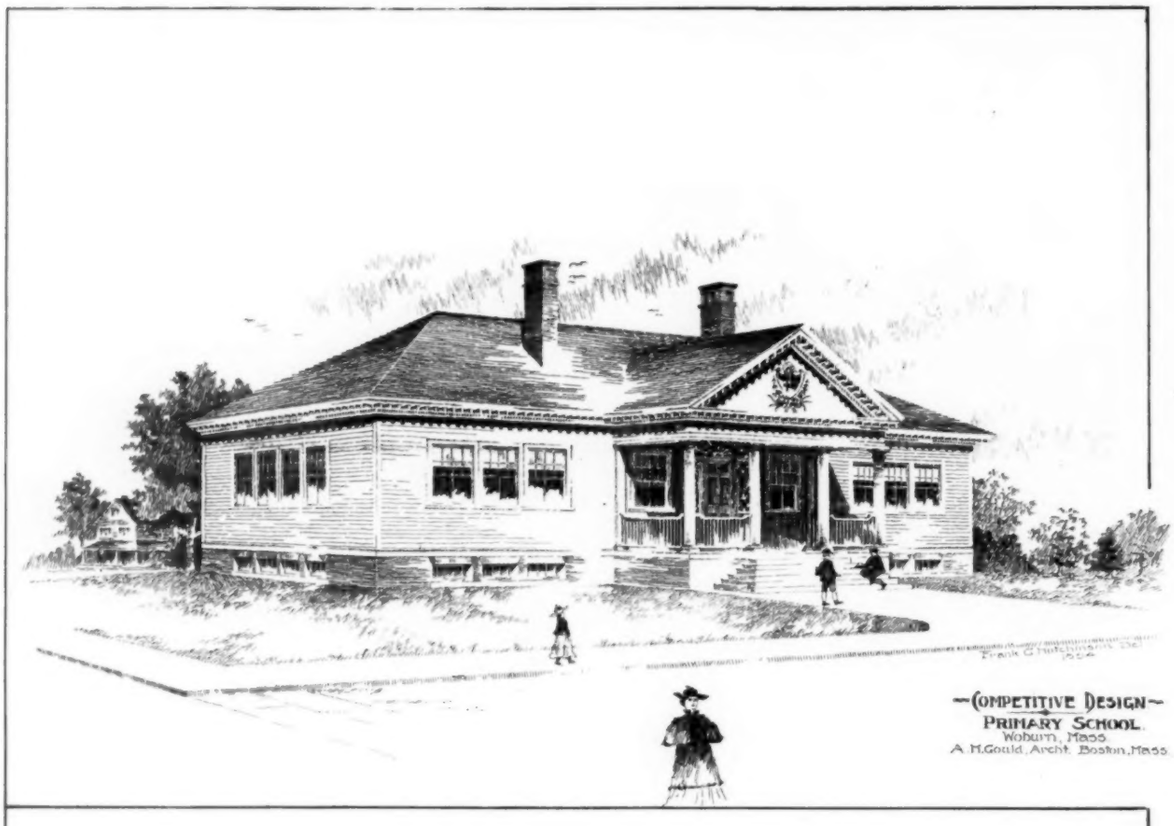

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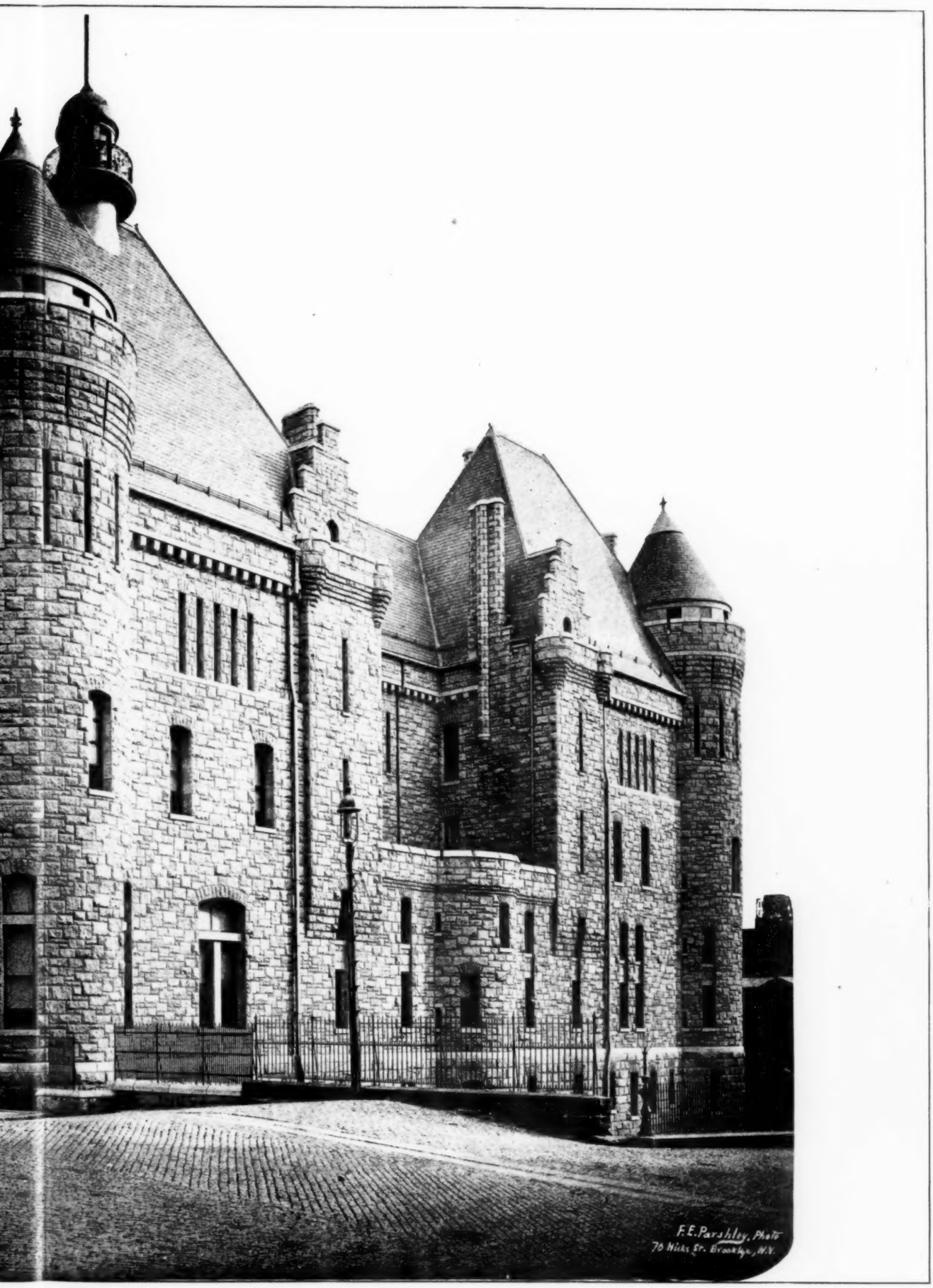

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