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could not conscientiously give him a more responsible position. The politician was furious, and vowed that he would get Mr. Olmsted out of the Park. Whether he succeeded in having him called upon to resign, or whether he only managed to make his position so disagreeable that he resigned voluntarily, we do not know; but, not long afterwards, he severed his official connection with the Brooklyn park system, and re- moved to Massachusetts, where, in his house in Brookline, and with the aid of assistants, among whom have been, at various times, his two sons, the late Charles Eliot, and other men of great skill and talent, have been planned most of the great park systems of the country.

**M**R. PARKS has, at the request of his counsel, been sen- tenced to State prison for three years, as the result of his conviction for extorting two hundred dollars from Josephus Plenty, of Hoboken, the well-known horticultural builder, through threats of a strike. It is not usual for lawyers to insist on having their clients sent to prison; but, in this case, it is said that three other indictments have been found against Parks for similar offenses, besides a probability that five more will be added to the list when the evidence is in shape for presentation to the grand jury, and his counsel is presumed to have thought that his immediate seclusion would make it more difficult to try him for the other cases. Mean- while, a prominent union man, who had been a leader in the opposition to Parks, was found dead in the street one morning this week. He had complained to his friends that he was being followed, and it is not impossible that, if the matter were taken up in earnest, his violent death, like that of so many other men, might be traced to the "champions of labor."

**I**N the death of Mr. Frederick Law Olmsted this country has lost not only a great artist, but the pioneer, we might almost say, in the great American art of landscape-gardening. We are so accustomed to the magnificent parks which now adorn every American city of importance that it is hard to realize that when the quiet and studious Connecticut farmer, known to the public only as a writer of books on agricultural matters and methods, was invited to take charge of the laying-out of the proposed Central Park, in New York, Boston Common was the largest public park in America. Even in Europe, although parks existed, they were mostly palace gardens, opened by courtesy to the public, like the Luxembourg and Tuileries Gardens, in Paris, or vast, uncared-for spaces, avail- able for fresh air, but with little pretension to artistic effect. In the Central Park Mr. Olmsted found a tract two miles long, and half a mile wide, diversified with hills and valleys, meadows and pastures, rocks and streams, uninviting enough in its actual condition, but presenting to the artist an oppor- tunity which he seized with enthusiasm. Every one knows what use he made of it. We have been at various times familiar with many parks, but none that we have seen com- pares in poetical sentiment with the New York Central Park. The nearest approach to it is, perhaps, to be found in the Boston Fens, also, in its conception, Mr. Olmsted's work; but the Fens landscape is not yet matured by the growth of the trees, and it still lacks the contrast of architectural formality which is made, with such exquisite skill, to enhance the natural beauties of the Central Park.

**T**HE public was not slow to appreciate the revelation of a new art which the New York park afforded, and Mr. Olmsted was soon called upon to design a great park for the sister city of Brooklyn. The plans were made, and carried out in their essential features, when his connection with met- ropolitan improvements terminated, as the result of an incident which he has himself described to us. One day, when he was in his office, busy over his work on the Brooklyn park, a stranger made his appearance, and handed him a letter from a noted local politician, directing him to give the bearer a position in the Park, at five dollars a day. Mr. Olmsted, willing to oblige the magnate, questioned the man, and, finding him grossly ignorant and incapable, assigned him a place as a laborer, at a laborer's wages. The man went back indignantly to his patron, and soon returned with a peremptory demand for a position at five dollars a day. Mr. Olmsted, who, though gentleness personified in manner, was firm enough in what he regarded as his duty, sent back word that the man was not fit for anything but a laborer's work, and that he

**L**ABOR matters are wearing a somewhat more cheerful look in New York, although Mr. Parks has secured a stay of proceedings and has left Sing Sing on bail in the sum of \$16,000. Still it is evident that his activity will be, at least, somewhat restricted until his sentence expires; and, in the meantime, large numbers of men have deserted the unions which have refused to sign the arbitration agreement, and have gone back to work. Whether the arbitration agree- ment will itself be very efficient remains to be seen, although its adoption is a long step in advance in the relations of em- ployers and employed. In Chicago, where arbitration agree- ments have been in force for some time in many branches of industry, the decisions of arbitrators are openly repudiated by the unions and their walking-delegates if they do not happen to be satisfactory to them. Already, many of the most in- fluential employers have decided that an arbitration agreement which only one side pretends to respect is not worth making, and will not enter into any more; while a dozen or more, who have suffered by the breach of arbitration contracts, have brought suit for damages, proposing to seek indemnity either from the union funds, or from the property of individual mem- bers of the unions. It is said that claims of this kind, aggre- gating more than a hundred thousand dollars, are now before the courts. The Federation of Labor has appointed a "law bureau" to defend these cases, thereby bringing itself, we should say, into further trouble. As we understand the law, even a corporation cannot, in this country, undertake to aid its members in defending themselves in the courts, and it is for this reason that the American Institute of Architects was obliged, some years ago, to abandon the idea of forming a fund to be used, like the Caisse de Defense Mutuelle, in France, in assisting members in cases where a committee of the Institute judged that injustice or oppression was intended. If a cor- poration cannot help its members to fight their battles, an unincorporated association can hardly do so, to say nothing of the personal liability which would be incurred by the directors of any body, incorporated or not, if they should convert the funds entrusted to them to purposes for which they were not intended. However, the judges know more than we do about the subject, and, whatever the decisions may be, the public will gain, through their effect in showing that union men, like other men, are expected to keep to their contracts, and that, if they break them, to the injury of others, they must pay the damage, whether they like to or not.

**M**R. JAMES MULCAHY, an architect of some fifteen years' practice, has been appointed Commissioner of Buildings for the city of Boston, replacing Mr. Montague, who has been Acting Commissioner since the resignation of Captain Damrell. Mr. Mulcahy is still a comparatively young man, being only forty-three years old, but he has carried out a large number of important buildings. The architects of Boston will take much satisfaction in the appointment of one of their own number, already so favorably known, to a position in which professional skill is of great and increasing importance; and Mr. Mulcahy's frankness and courtesy of manner will materially assist in maintaining cordial relations between him and those who are interested with him in the firm and intelligent enforcement of the building laws.

**T**HE Boston Museum of Fine-Arts has erected on the site of its new building on the Fens an experimental structure, consisting mainly of a large movable skylight, some fifty feet above the ground, which is to be used for determining the best position, and the best lighting, for the skylight of the future picture-gallery. This proceeding is very similar to that carried out, some years ago, by the German Government, which, before constructing the new Parliament House, in Berlin, had a full-size model made, in wood and plaster, of the assembly-hall of the Parliament, as shown in the architect's designs, in order to study its acoustic qualities before carrying it into execution. Besides these experiments on the ground, the direction of the Boston Museum of Fine-Arts will endeavor to collect information on the subject from the custodians of other picture-galleries, here and in Europe, so that the new building may combine all the excellences that experience can suggest.

**T**HE problem is not an easy one, in any case, and the collection of the Boston Museum of Fine-Arts is particularly difficult to provide for, as it contains works of such different types. At the Louvre, the pictures of the cinque cento can all be beautifully lighted in the Salon Carré, and the earlier Italian works in the Galerie de Sept Mètres, but they could hardly be transposed with advantage; and, in the same way, in the Luxembourg gallery the impressionist pictures are carefully put in a room by themselves; while, in the most modern galleries in Europe, the smaller pictures are kept apart, and are shown in a succession of "cabinets," with side light. In Boston, where the collection of pictures is not large enough to admit of much subdivision, and where dependence must always be placed to a great extent upon loan collections of very varied character, much ingenuity will be required, even with the aid of experimental data, to secure good effects. The "Turkey Pasture," for instance, charming as it is, could hardly be placed in the same room with a Daubigny or a Corot without injuring both, and Turner's "Slave Ship," though faded, could be almost transformed by proper lighting and surroundings. How to get such suitable lighting and surroundings for all the beautiful, though varied works which the Museum now possesses, without scattering them through a multitude of different and specially arranged rooms, and, at the same time, to provide favorable accommodation for the Manets, the Rousseaus and Duprés, the Rembrandts, the Sargents, the Fragonards and Ribieras which are likely at any time to be precipitated at once upon the authorities of the Museum, as a loan collection, the owners of which wish it to be kept together, is a question of vital importance, for half the effect of a picture depends upon its being seen under proper conditions.

**T**HERE are indications that wages, in the trades concerned in building, have reached their highest point, and that the tendency is now downward. Three or four weeks ago, the machinists employed by the Boston & Albany Railroad struck for a reduction of working hours from ten to nine, with the full ten hours' pay for nine hours' work. The usual bluster was indulged in, the boiler-men and others employed in the machine-shops were appealed to, and the threat was made to "paralyze" the operation of the road. The officials of the railroad took the matter calmly, and, after discussing it with the men, the latter, a day or two ago, went back to work in a body, having secured, it is true, a nine-hour day, but with only nine hours' pay instead of ten, so that their income is cut down ten per cent, while Saturday, which, before the strike, was a short day with full pay, has its pay proportioned to the work done. The outside labor champions are furious at the result, and threaten to "close the shops"; but the men employed in the shops probably know their business better than the outsiders

do, and, unless some sort of terrorism is brought to bear upon them, they will probably keep at work. The strike of carpenters in Eastern Massachusetts for three dollars and a half a day, about which so much was heard three months ago, seems to have come practically to nothing, good carpenters being in plentiful supply at the old wages, although no official action has been taken.

**S**LOWLY, but surely, the right of men to earn a living without buying a union card of a saloon-keeper or black-mailer is beginning to find recognition in this country. The very fierceness with which the non-union "scab" is now attacked in the public prints, and before public commissions, by the "champions of labor" shows that the latter feel their power in danger. Nearly every strike this year has been settled on terms which secure the right of non-union men to work by the side of union men without objection or molestation from the latter, and the strikes which have been undertaken for the purpose of "unionizing" industrial establishments, that is, of compelling their proprietors to discharge all non-union men, and not to employ any more of them, have almost uniformly failed. The last important struggles of this kind have occurred in Pittsburgh, where the ten mills of the McKeesport Tin-plate Company and all the vast Westinghouse establishments, employing twenty thousand men, are now running on full time, notwithstanding strikes instituted against them to compel the "recognition" of the union.

**T**HE story of the way in which the attack upon them was contrived is instructive. Both the tin-plate mills and the Westinghouse establishments have been conducted from the beginning on the most enlightened principles of care for the health and comfort of the working people, and recognition and reward of faithfulness and skill. As usually happens in such cases, they were soon marked for attack by the envious and treacherous labor element. In the manoeuvres of this element the ordinary course is to obtain a foothold by blarney, before utilizing it for assault, and Mr. Shaffer, of the Amalgamated Society of Iron-workers, approached the workmen of the Tin-plate Company, out of working hours, with honeyed words, and succeeded in forming several small local unions among them. When he had enough men under his control to make him confident of being able to distress the Company, he went to the managers, and demanded that they reduce the output of their machines. As the men are paid by the piece, some of them earning ten to fifteen dollars a day, to comply with this request would be an injustice to the men, as well as to the Company, and the demand was refused. A strike of the union men in the mills was then ordered, and a hint was given to the ruffianly element by an editorial in the *Amalgamated Journal*, calling upon "Brothers" to support the "manly stand" of the McKeesport union. We all know what a "manly stand" means in union circles. Three days later, an old man of sixty, employed by the Tin-plate Company, was assaulted by union men in front of his house, and his wife, who came to his rescue with a paving-stone, was knocked down and kicked in the head by the gang. Even now, assaults are still committed on the non-union workmen, but the tin-plate mills are running to their full capacity, and the strike has utterly failed.

**I**N the case of the Westinghouse Company, Mr. Gompers opened the campaign by some beautiful utterances, in a letter to Mr. Westinghouse, on the "wisest and most practical course" for establishing "harmonious relations" between "enlightened employers" and their employes, at the same time complaining that representatives of the union had made "unavailing efforts" to obtain an interview with the manager of the establishment for discussing these valuable subjects. Mr. Westinghouse made inquiries, and discovered that a committee from the Machinists' Union had called on the manager, and proposed to discuss the discharge of a certain employé. The manager replied that he could not discuss this matter with outsiders, but would be happy to talk it over with the man himself, if he wished. One of the committee then announced that he was the man in question, and asked why he had been discharged. The manager told him that it was for absenting himself, without excuse, five days out of the two weeks during which his employment had continued. The man then endeavored to talk about abstract labor matters in general, but the manager declined to discuss them with him, and he withdrew, and a strike of all union men in the works was then ordered, fortunately, without serious result.



# BUILDING CONSTRUCTION FROM A FIRE-BRIGADE OFFICER'S POINT-OF-VIEW.<sup>1</sup>

IN taking up as my subject "Building Construction from a Fire-Brigade Officer's Point-of-view," I have clearly before me the fact that most architects and builders are fully alive to the necessity of fire-resisting construction, and that legislative and local enactments make stipulations and recommendations with the view of preventing destruction by fire. Such efforts are worthy of praise; but my experience in combating fire leads me to the conclusion that what is intended as a safeguard too often becomes a danger, and what is theoretically meant for strength is found in the hour of need a source of weakness.

I do not presume to dictate, but I feel it my duty to sound a note of warning regarding certain widely spread and much cherished convictions as to fire-resisting materials employed in public buildings.

Speaking as I do under the auspices of the Fire Prevention Committee, I address myself more particularly to those who are responsible for the construction of buildings, but I appeal also to those of my colleagues who are responsible for dealing with buildings after the fire has begun its work. The question of the general arrangement or architectural planning of buildings does not enter into my argument; what I propose to deal with is the type of building usually described as being constructed entirely "fireproof," and to offer from my practical every-day experience suggestions which may perhaps induce building constructors to reconsider certain accepted theories in connection with so-called "fireproof" materials.

From the fireman's point-of-view these "fireproof" buildings have an element of danger added because of their construction, both in the way of increased risk to the fire-brigade and the destruction of property. If such buildings were to remain unoccupied and to be subject to no risk beyond the combustibility of their own non-inflammable construction, then certainly they could with propriety be described as "fireproof." But when (as is universally the case) such buildings are stored with goods readily inflammable the buildings cease to be "fireproof," for the action of the fire plays havoc with that portion of the material which is theoretically "fireproof."

Sufficient attention has not been paid to the bearing these so-called "fireproof" materials have in relation to the calorific effects of the burning materials stored in the buildings, for, after all, it is the contents rather than the structure which in a large majority of cases commence to burn, and which will continue to burn, no matter in what kind of building they are stored. Sufficient attention has also not been paid to the effect of water applied to building materials after they have been subjected to extreme heat.

How do these "fireproof" materials assist the salvage of either the buildings or their contents? Do they assist entrance with safety to those combating the fire?

On each of these points I shall endeavor to prove a negative from my own personal experience, which I feel confident is not singular but is common to the fire profession.

Materials principally considered to be "fireproof" and which are so styled by the Legislative Acts are iron, concrete and stone. The latter is particularly mentioned in most Acts as "stone or other fireproof material." We have to ask ourselves whether these materials are "fireproof"? When employed in the internal fittings of a building we may unquestionably give a decided negative to that question. My decided opinion is that the materials which meet the requirements are those which are not subject to the laws of expansion and contraction when suddenly exposed to the effects of heat. What are such materials? If we may take for our guidance the results of the tests of time we find them principally in timber, bricks, mortar and good plaster.

**Floors and Ceilings.**—It is the common experience of every fireman that an ordinary wood floor with a thin plaster ceiling underneath has stood the effects of a fire for probably an hour, and though burned through in places still remained in position and with sufficient stability left in the joisting to admit of the fireman passing over it in the course of his operations in extinguishing the fire. If such a floor survives the effects of fire with its slender remains still in position, how much better would a well-constructed wood floor resist the effects of fire under similar conditions. No extraordinary precautions are necessary to construct such a floor, but I suggest that the ends of the joists should be well bedded in the walls, flooring boards of not less than 1 inch thick be well tongued together, the spaces between the joisting be filled with pugging or other deafening, the underside or ceiling coated with 1 inch of good plaster on wire-lath. Such a floor will resist a fire either from the top or underside sufficiently long to enable any ordinary fire-brigade plenty of time to complete their toilet before turning out and arrive in time to do some good work and prevent the floors from collapsing. Where supports are required, owing to the large superficial area of floor space, built timber supports or columns have been known to remain in position and to serve the purpose a second time after having resisted the effects of a severe fire. If these wood posts or columns are wire-lathed and coated with good plaster and treated in a manner similar to that often adopted with iron columns they would come out practically unscathed. It will perhaps be argued that this method by no means gets rid of the difficulty with large spans, where iron must of necessity be introduced, but in such cases wrought-iron columns and girders

(well protected) should be used to carry wood flooring and joisting, which latter, being impervious to the effects of heat and cold, remain in position, whereas the concrete floor falls in sections and often wrecks the lower floors which would otherwise not have been affected by the fire. I have known it to be argued that the burning of a wood floor gives off so much smoke that the inmates of a building would be suffocated before being reached. To properly understand this point it is necessary to compare the results of fire on both classes of flooring. We must remember that a partly burnt but intact wood floor always affords a means of reaching the inmates, and that before the floor surface commences to burn the fire must have been very severe and the contents of the apartment would almost certainly have been involved. It frequently happens that the flooring in "fireproof" buildings begins to break away at the early stages of a fire, preventing the firemen entering to attack it, with the result that the operations must necessarily be conducted from the outside, thus giving the fire a chance to make some headway. On the other hand when the water can be got onto the wood floor and supports, there is the possibility of keeping the floor intact.

I will specify a few instances in support of my contentions. The first instance is that of a fire on a carriage-builder's premises of five floors, which were built upon fireproof principles, the floors consisting of transverse 24-inch plated girders and floors of 9 inches of concrete, without protection on either side. The fire commenced in the paint-shop on the ground floor (a chamber built expressly for the purpose and having no communication with the upper floors). Upon the arrival of the brigade it was possible to see that one end each of the first and second floors was gone, and that the vehicles on the third floor were alight. The upper windows were blown out, and immediately the cold air and water got onto the third floor; the whole of this floor went down by the run, carrying everything through the building to the basement. As a result, only a portion of the top floor remained; the iron girders were somewhat twisted, though not displaced, but the concrete collapsed and fell, leaving nothing but the bare walls. The firemen could not be sent into this building. Had the upper floors been of wood they would undoubtedly have been saved.

The second instance is that of a fire on the second floor of a five-story warehouse built on a similar principle, wherein the third-floor sections of concrete fell while the firemen were directing the hose upon the second floor, with the result that its weight carried the second and first floors through into the basement. This fire would have been stopped on the second floor but for the collapse of the floors above.

The third instance is an illustration in favor of timber floors: At a riverside warehouse in the city of London I attended three fires on the same premises in three successive years; the first two were serious outbreaks, but I noticed on the last two occasions that the same wooden uprights still supported the floors, and many of the exposed wood joists bore evidence of their reliability on their charred surfaces.

**Partitions.**—I now come to the question of partitions. The reliability of partitions between the different sections and rooms of a building, whether dwelling-house or warehouse, to resist fire, is of the utmost importance, and often determines the fate of the building. The progress of a fire is often regulated by the area of the compartment in which it originates and the internal partitions; therefore much depends upon the time during which the latter remains intact. The wooden-lath and plaster partition may be immediately thrown out of court, the light laths with rough edges and the space between being a ready conductor of fire from one part of the building to the other. Internal partitions should be solid, preferably of brick, and continued up right through the building, the joisting at the different floors running through them, so that they practically form an internal wall from the basement to the roof. The advantages of such a partition would be many, apart from being a factor in fire-prevention.

**Stairs.**—Great stress is laid upon the idea of employing stone for staircases as a safe and reliable exit for a large number of persons from a building on fire. This is a very good principle under certain conditions, and these are that a stone stair should be built in a well, apart from the general building and in such a manner that fire or heat cannot possibly get at the underside of the stair. Where a stair-case must necessarily run through a building, stone or concrete should be avoided in its construction, but good solid wood (hard wood by preference) is the most reliable under all circumstances. If the underside of the treads be filled in with "deafening" and coated with good plaster, such a stair will remain in position during the progress of a fire long after it has been impossible for any human being to traverse it. If the stair should actually get alight, and the fire fed by an open door should even cause it to burn fiercely, so soon as the hose is applied by the fire-brigade the fire will be almost immediately extinguished because the actual burning is only superficial and there will remain sufficient substance to admit of persons passing over the stair.

It may be argued that a stone stair would not take fire at all, and therefore would always remain passable, but every fireman knows that when there is sufficient heat and flame to ignite the wooden structure of a hard-wood staircase it is quite impossible for any one to pass either up or down a stone stair under similar circumstances.

In my preference for wood in the construction of stairs I specially exclude light and flimsy wooden flights of stairs which are so very frequently found in some dwelling-houses, warehouses, etc., and the wooden step-ladder almost invariably found in factories. I speak of

<sup>1</sup> A paper by Arthur Pordage, Firemaster of Edinburgh, Scotland, prepared for the International Fire Prevention Congress, held in London, England, July 6-11, 1903.

a well-built staircase with hard-wood treads and facings, the underside filled in with deafening and coated with plaster.

Stone, as employed in stairs in ordinary buildings, cannot in any sense of the word be considered to be "fireproof," because it succumbs to the effects of heat and fire more readily than any other material employed in the construction of buildings. That portion of the stone tread which is exposed to the fire readily expands under its influence, while the ends, which are embedded in the wall, remain normal, the natural consequence being a fracture near the wall and the collapse of the projecting portion.

I am continually told in Scotland that the reason so many lives are lost at fires in London is on account of wooden stairs, and that there is less loss of life in Scotland owing to the almost universal practice of putting in stone stairs.

Having had considerable experience at fires in both countries, I am in a position to say that the idea is entirely erroneous. Most of the lives lost at London fires are at small fires in small dwellings, and in the majority of cases in dwelling-houses situated over shops, where the access to the house is through the shop, thence by a very frail, unprotected and flimsy wooden staircase. When the shop takes fire, the exit from the house is immediately cut off by the fire and smoke rushing up the staircase. The same conditions apply to the ordinary London dwelling-house, which is let out to a large number of families — the open staircase runs from the street-door through the interior of the house, and every room opens onto it, and escape by this stair is cut off by the first rush of smoke or flame. The system which is almost universal throughout Scotland is very different.

Take a block of buildings consisting of shops with flats above: There is no communication between the shops and the houses. The proprietor of the shop does not necessarily live above it; in the majority of cases he lives in another part of the town. What are the circumstances when a fire takes place in one of the shops? It may be burned out, but, given that the ceiling is fairly good and the fire-brigade receives a good call, the fire will rarely pass the boards which support the 4 or 6 inches of deafening which is universal in Scottish buildings, and forms a splendid barrier to the fire.

The approach to the houses above being by a stair-well, built quite apart from any connection with the business portion of the block does not allow the fire to be communicated to the dwellings by the stair-well, for in order to do so it must first pass through the wall dividing the stair from the shop. It rarely happens that a shop fire in tenement blocks spreads to the house immediately above, and when it does, the inmates of the house have had time to escape by the independent staircase.

By way of justifying these contentions in relation to stone stairs, I recall a few instances observed at buildings after fires:—

At a fire in a large suite of offices with a spacious stone staircase some 6 feet wide, waste paper stored in the cupboard space under the stair leading from the ground to the first floor caught fire and was destroyed, a bucket of water was capsized over the stairs, and the whole flight immediately collapsed, scarcely leaving a fragment in the wall to indicate where the stone had been, while the thin wooden panelled door enclosing the cupboard remained intact, with the exception of the charring on the inside.

At a fire in a large music warehouse an unprotected and lightly constructed wooden stair led from the basement to the ground-floor, terminating on a stone slab 5 feet square and 5 inches thick, from which a handsome wooden stair led up to the first-floor show-rooms. The fire originated in the basement, and flowed up over the stairs to the first floor. When the fire was extinguished, both wooden stairs, which had been exposed to the full effects of the fire, were found much damaged, but sufficiently substantial to admit of the passage of the firemen; but the stone landing had collapsed into a thousand fragments.

Still another instance of the unreliability of stone for a staircase. At a fire in a fine old mansion-house which was partially destroyed, the stairs in the end wings were of stone from the basement to the second floor, while those from the second to the third floor and from the latter to the roof were of white-wood with wooden hand-rails. Practically no actual flame got into the staircase, but the heat passed up the stair-well, with the result that the whole of the stone stair collapsed, leaving heavy jagged ends projecting from the masonry, while the wooden stairs, where by far the greatest temperature must have been, were merely blistered and scorched.

*Iron Stairs.*—It has been equally demonstrated that iron, and especially cast-iron, is utterly unreliable under the influence of fire; while wrought-iron will buckle and twist itself out of position, cast-iron will collapse entirely. I gave an instance which very recently came under my notice at a fire in a manufacturing stationer's warehouse; the offices were situated on the first floor, to which a cast-iron spiral staircase had been erected in a specially constructed well as a safety exit for the office staff. The fire originated on the ground-floor. At the first rush several of the office staff made for the iron stair, but only a few were able to get down this stair; the others were cut off by the very first flow of flame and were rescued from the windows. The fire was speedily extinguished near this point, but the whole stair collapsed within ten minutes of the outbreak.

*Roofs.*—The matter of the general arrangement of roofs deserves to receive more serious attention than is usually given to this most important part of the modern building. Unfortunately a fire-preventive roof does not appeal to the artistic eye, especially in large modern country-houses, where the old English style of architecture

with its long sloping gables has found so much favor of recent years. These high roofs admit of the fire running all over the building, and their construction prevents a fire being attacked from the outside until a hole has been burned through the roof. In all buildings where fire prevention is aimed at, the division-walls should be carried at least 3 to 4 feet through the roof, with a ledging of at least 24 inches round the edge, which would admit of men working upon it in case of fire. Such a ledging affords a ready means of both saving life and attacking a fire.

The roof is one portion of a building where iron may be used with advantage by reason of the light weight which it has to support and the necessarily exposed condition of its construction. A lightly constructed trussed iron roof reduces the risk of a fire originating and spreading in the roof to a minimum.

*Conclusion.*—The opinions I have expressed in this paper are facts well known to the fire-service and recognized by some architects, and are worthy of the most serious attention by the building profession generally. There are very many points in building-construction which are continually presenting themselves to the fireman, but which the architect rarely sees and has, therefore, no opportunity of studying, and these points when advocated, being so foreign to accepted ideas, are naturally very adversely received and criticised by the building profession.

As a case in point, some time ago while in conversation with the authorities responsible for an important historical building, I suggested that certain additional precautions should be taken from a fire-prevention point-of-view, and as a precautionary measure in dealing with a possible outbreak. I knew there were very bad risks, especially in the roof, which I pointed out, but was told that the building was perfectly safe, the roof was not an old one, it had been renewed not more than forty years ago, and that iron doors had been put in to divide the different sections of the building. Now every fireman knows that a long continuous roof which exposes a forest of unprotected and rough edged and dried timber is a very dangerous risk; also that iron doors have long proved a failure as a protection against the spread of fire, and that they are inferior to a solid heavy wooden door which remains in position long after the iron door has buckled out of its frame and ceased to fill up the opening.

Whether or not I have made my meaning clear or overstated my views I think you will at least agree that the subject is one of more than passing importance, and that exchange of views and experience is most desirable. To prevent possible misunderstanding I desire to say in conclusion that while advocating the more general employment of timber in buildings, I do not include in this category the light pine and deal stairways, thin wooden doors and match-board lining partitions, but the employment of substantial timber well protected where possible and, of course, the avoidance of all exposed edges.

The conclusion I have arrived at after much observation during a long experience of fires in London and Edinburgh is that "fireproof" construction as generally understood is a source of danger; that wherever possible good timber flooring, supports and stairways should be employed together with brick partitions; a liberal application of plaster and an avoidance of air-spaces would result in a lesser destruction of buildings by fire, insure easier manipulation of fire-appliances and a more effective use of the same, and result in a greater salvage of property during the progress of fires.

In a word, I advocate the study and use of fire-retarding, rather than non-combustible, materials as the direction in which safety and fire protection may more certainly be found; while where the more modern forms of planning necessitate provision for big spans and very heavy loads, the systems of construction now erroneously termed "fireproof" must be so protected as to become fire-resisting.

#### HOW TO MAKE EXISTING LONDON BUILDINGS MORE FIRE-RESISTING.<sup>1</sup>

AS you may imagine, the subject of this paper is not one which I should have chosen, and if it turns out that it has no fresh information to offer you, the excuse must be that nearly all that can be said on the subject has already been dealt with. Still, renewed consideration of the subject may bring out some fresh points, and if I cannot give any useful hints I always console myself with the hope that the discussion may bring out forgotten or overlooked information.

One might admit at once that to make all existing buildings in London fire-resisting is a practical impossibility, so that you must take my remarks only as suggestions as to what might be done towards making buildings less inflammable than they are at present; even this might involve such an enormous expense that the owners of all classes of property would, I fear, look on my ideas as not in their particular interest; however that may be, we all have a duty to do towards our neighbors, and that consists partly in making buildings as safe as can reasonably be expected against danger to life and property therein contained.

To carry out the idea of this paper in a logical manner I should begin by dividing up the districts of London into risks, and then the buildings in these districts into subdivisions of risks, but this sort of work, I think, I may safely leave to those whose particular business this is, from an insurance point-of-view; my chief concern will be to

<sup>1</sup> A paper by Max Clarke, A. R. I. B. A., prepared for the International Fire Prevention Congress, held in London, Eng., July 6-11, 1903.



deal with constructional details only, combined, of course, with the inherent danger there always is in the proximity of one building to another — always a source of real danger in large cities such as London. For instance, particular portions of the city of London have unfortunately got the reputation of being what are called dangerous areas. This may be due not only to the buildings themselves, but also to the nature of the goods stored therein, and for this class of building I am afraid little can be done. The only thing we can hope for in this division of the subject is to render them less liable to communicate fire to those adjoining.

On the other hand, large numbers of buildings not having within them goods or materials of a particularly inflammable nature are built or fitted up, and particularly the latter, in such a manner as to render them very dangerous when by some unfortunate accident they do get on fire.

Many of these buildings in their construction contain all the elements of danger, both to themselves and to their surroundings, and it is more particularly with regard to these that I consider a paper of this nature should call your attention. The idea of pulling down London wholesale, or converting all its buildings at one time into what are erroneously called "fireproof" structures, is eminently absurd. Still, much might be done at a moderate expense, which would render buildings and whole areas much less dangerous than they are at present.

*Match-board.* — For instance, take the one item "Match-board-ing." It is used in all sorts of places, in most of which it could very well be done without as regards the construction, and it is a material which, so far as safety in case of fire goes, should not be allowed under any consideration whatever. And yet one hears very little against it probably because no one thinks of the extra danger involved in its use, or does not want to think, simply because it has been used heretofore and it is convenient, easily put up and just as easily removed, requires no time to dry, and is easily painted or decorated. Its use on walls and ceilings, particularly the latter, is much to be deprecated. I am now speaking more particularly of boarding made from soft woods, which when dry and painted or varnished is highly inflammable, the fire passing along it at a high speed, often rendering escape from a building impossible, even in the early stages of a fire.

The limited use of hard woods as wall-covering for decorative purposes is not objectionable, particularly if fixed without any air-space at the back. In all discussions of the present nature we should be most careful not to advocate views which would prove to be what may be called so excessive as to frustrate the very object intended. I would only make one further remark with regard to this class of material, and that is how fatal the results are when it is used as a ceiling-covering with plenty of air-space behind, seemingly specially arranged to create rapid and intense combustion.

In making these remarks I am quite aware that in the opinion of many this class of wall and ceiling covering possesses certain advantages, being suitable for buildings in which certain trades are to be carried on. My object is to impress upon you that these ideas are already antiquated, and that for every class of building and every trade some form of covering can be found equally suitable from all points-of-view, without any of its special element of danger.

*Naked Ceilings.* — We may now pass on to a form of construction which, alas, is even more common in London than the one above mentioned, viz: leaving large areas of the floor-joists of buildings without any covering whatever on the underside. This is done, of course, with the clearly defined object of saving money in first cost, and it does save a certain amount; but whether that saving is commensurate with the greatly increased risk such a system of construction involves is for you to decide.

I hope it will not be one of the arguments during the discussion that numbers of buildings constructed in this manner have never had a fire in them. This does not seem to me to be discussion at all; at any rate it is not "Fire-preventive" discussion.

There is one aspect of the case which must not be overlooked, viz: "What is Fire-protection worth?" In these days of commercial speculation, most buildings have a remunerative value, beyond which the speculator will not go; his idea is that given a building which can be insured at a reasonable rate, it would pay better to build it in the cheapest manner than to expend a larger sum on a more fire-resisting building. The risk of its being burned down is taken as a quantity worth so very little consideration that in many cases it is accepted in preference to the safer building. This, of course, is the difficulty met with in any attempt to make fire prevention general. But for this, London would be fire-resisting and I should not be before you at this moment.

However, I have to try and bring to your notice items in everyday construction which could be brought into line with modern ideas without wholesale reconstruction.

The cure for the evils which I have already pointed out is, that in future match-boarding should not be used in new buildings, and after a certain date it should be removed from all old buildings. The naked joists in ceilings could easily be corrected and the ceilings made fire-resisting by covering them with wire netting or some form of expanded metal and plaster.

*Studded Partitions.* — I need hardly remind you that the ordinary wood partition with its wood-lath and plaster covering, leaving hollow spaces from top to bottom, should be a thing of the past. Unfortunately such is not the case, in spite of the numerous forms of light partitions made which are non-inflammable and have no open

spaces. Why the latter are not used it is hard to say, but if after a certain date stud partitions were to be abandoned it would render London as a whole much more fire-resisting than it is at present, and at a moderate cost.

*Lift Enclosures and Doors.* — I must now turn to a matter which seems to me to be most important in buildings of the warehouse class, namely, the means adopted at present for the prevention of the spread of fire in lift-wells and generally in vertical shafts of this class. There is no doubt that this particular risk is not sufficiently considered, and great improvement could be made as regards retarding the spread of fire if all lift-shafts were properly enclosed with some form of non-combustible material. The particular nature of the material I need not attempt to specify, as it would largely depend upon whether the building was an old one or in course of construction. If the latter, there is no doubt brickwork would be the most suitable, but some other enclosing material would be efficacious, at any rate for short periods, and it is these short periods which in the initial stages of a fire are of the utmost importance.

The doorways or openings to the lift-shafts should not be mere openings, as is so often the case at present, or if the openings are fitted with doors they are too often of an open type, not in any degree preventing the passage of smoke and flame up the shaft. Iron doors are often fitted to openings, in cases where there is a solid enclosure; but the doors are not close fitting and the fastenings are not designed with a proper regard to ease in opening and closing, and quite regardless as to their adequacy for preventing the doors bending or twisting when heated to a high temperature. Where the latter is possible of course flame and smoke pass through the small openings and ignite inflammable material on the other side, thus contributing to the spread of fire to an alarming extent.

*Fire-resisting Doors.* — Another small matter I have observed in connection with iron doors, which should be avoided, if proper fire-resisting qualities are to be obtained, is the total neglect displayed in keeping inflammable material at a sufficient distance from iron or other forms of fire-resisting doors. Only by exercising proper attention to this point can the full value of such doors be obtained. A door may in itself be a good stop against fire, though it become red hot; but it is useless if in contact with, or in close proximity to, combustible material on one or both sides. Attention to this matter is sadly wanting at the present time. Wood floors should not be carried up to the iron door-frames, but a fairly wide threshold of concrete, stone, or the like should be formed on each side, and the same remark applies to the whole of the opening on both sides, as it is impossible to foretell on which side of the opening or shaft the fire may occur.

*Fittings.* — The same remark applies to fittings in shops and warehouses, not to say public buildings. Often after the building has been left fairly secure in the direction above mentioned, shop or other fitters come on the scene and fix woodwork everywhere as trade-fittings, totally regardless of the fact that a fire might occur — and I presume we are all agreed that they do occur — when least expected, from one form of accident or another, and it is only by bearing these facts in mind always when designing, constructing, altering or fitting up a building that the fire-resisting qualities of a structure, district or city can be improved.

*Fireplaces.* — I shall now call your attention to some of the defects in fireplaces and flues which are being repeated every day in modern building work, and I hope you will understand that throughout my paper my attempt is to show the defects in London building, as it is only by deciding what the defects are that remedial measures can be taken.

Few know the number of fires caused by defects in and about the fireplace. Personally, I am disposed to think that most of the causes are brought about by careless workmanship, and a few perhaps by the use of methods which were quite adequate in former times, before the invention of what are now called slow-combustion stoves, close-ranges, boilers and the like. I place first in point of danger the practice of building half-brick trimmer arches to carry hearths in wooden floors, the arches having the centring left in and forming an open space under the brickwork. The underside of this space is lathed with wood laths and plastered in the same plane, as a rule, as the rest of the ceiling. This form of hearth should give place, in my opinion, to a concrete or other self-supporting hearth, the full depth of the floor-joists, having a flat soffit upon which the plaster could be applied direct. Next I should like to advocate the use of fireclay linings to all flues, a common practice in many districts, but not in use as a rule in London. Improperly bonded and badly built flues, the brickwork of which is only  $4\frac{1}{2}$  inches thick, and in which bad mortar forms a considerable component part, and which after a time drops out leaving the joints open. This is often assisted or caused by the nails, spikes, or plugs, driven in for the purpose of fixing inflammable finishings. All these defects lead to a considerable number of fires annually, the details of which I am sure my insurance friends know a great deal more about than I do. Wood finishings should not be fixed with iron spikes in front of flues unless the brickwork is of a greater thickness than  $4\frac{1}{2}$  inches; in fact, it is probable that a great safeguard against fire would be effected if woodwork in such proximity to flues was abandoned altogether. It seems to me a cause of danger that flues built with only half-brick surroundings are at times used for high-pressure boilers, kitcheners and the like, the brickwork being quite hot when the day's work is in progress, and in many cases much too hot for safety.

New types of stoves of either the "slow combustion" or "well fire" classes should not be fixed in old houses, unless a thorough examination of the hearth and its surroundings is made, numerous fires having been caused from timbers being in close proximity to chimney-breasts, quite unknown to the people who fixed new and powerful stoves in old openings.

*Areas, Light-wells and Narrow Streets.*—In cities like London, where land is of such great value, the size of areas and light-wells will always be reduced to the smallest possible dimensions, thereby greatly increasing the risk of fire spreading from one building to another. The same remarks hold good with regard to narrow streets and courts. In cases such as these the only precautions which can be adopted are of a protective nature.

Windows in light-wells should not be directly opposite each other, should be fitted with metal, or at any rate with hard-wood frames, the glass should be wired or armored so that when cracked it would not drop out of the frames at once, thus allowing the passage of flame from one building to another with fatal rapidity. In more dangerous cases, blinds of non-inflammable material might be used with advantage, or, better still, shutters which would fit the openings closely, constructed in such a manner as to prevent much twisting or buckling, and provided with fastenings, which while admitting of rapid adjustment would be secure against opening by accident or from falling bodies on the outside.

Shutters or blinds for use in courts or areas might be made of woven wire mounted on frames. This form would admit of a certain amount of expansion or contraction without damage to the frame; would admit a certain amount of light, which is always an advantage, and could be seen through from the inside, also a benefit in many cases.

In connection with any form of shutters, such as above advocated, the objection to having wood finishings near them cannot be too strongly brought before your notice. Any real advantage the shutters might be in case of fire in an adjoining building would be largely discounted if inflammable material was close to the openings supposed to be protected by the shutters.

My paper is practically at an end. I hope you did not expect startling theories, for most certainly you have not heard any, and for this omission I suppose I should ask your indulgence.

My opinion on these matters is that we do not take advantage of the information we possess. Knowledge is of no use whatever unless properly applied, and my contention is that there is a vast store of information on this particular subject which is not made the least use of. What has been done before is repeated without properly examining the new methods with the object of applying any which might suit particular cases.

I have not dealt with any of the modern forms of fire-resisting construction; many types are so well known that they need no words of mine either of praise or condemnation. All I would say is that, as a rule, the details are not sufficiently attended to. In the case of sanitation we have for many years had good pipes, but even now we sometimes have not good drains, and only by the very closest attention to the minor details shall we ever get them. It is exactly the same with every form of fire-resisting construction and any attempt to make buildings or districts safer than they are at present. If I may digress from the subject for a moment I would like to address a word to "the man in the street," if any such be here, as to the saving of life from fire. Has he ever thought of the value of fifty yards of moderately stout rope and a block or pulley with a hook in the ceiling in front of a window? Why such a modest equipment should not be in every house I cannot imagine. A stout belt with its ring and spring catch would be an advantage; but I say, given the rope and block, there is no reason why escape should not be practical for men — and for women also when there are men to assist them — from every building in London. With regard to such places as Eton or other public institutions, each individual should provide himself with his own rope, as he does his cricket-bat or fountain-pen. It might be years before it was required, but when required it should be in perfect order, ready for use at a moment's notice. We are desirous of helping all sorts and conditions of men and women, but it is also expected that they should do something to help themselves.

#### STRIKE OF THE ENGINE-DRIVERS OF VICTORIA.

WHAT so speedily broke the recent strike of engine-drivers on the State railroads of Victoria, Australia, was the fact that it was a strike against the public, and thus was robbed at the outset of any support from public opinion.

The State of Victoria prohibits its employés on the railroads from affiliating themselves with any labor or political association. The central organization of unionism in the State is the Victorian Trades Hall, which is deep in politics and seeks control of the Government. It undertook to bring the State railroad employés into the union, and the engine-drivers yielded to the persuasion. These employés are all well paid, given pensions on retirement and otherwise treated considerably by the State, which, as in the case of the other States of the Australian Commonwealth, is notoriously radical in its policies as favorably affecting the working-classes. When the engineers made known their intention of joining the central labor organization, the Government promptly forbade the step on the ground that it was contrary to the service regulations, and that the State could not recognize the authority of any outside private organization over

its employés. But the engine-men persisted, and were then told they must leave the service and forfeit their pensions, or forego their intention. So the strike came, many of the engineers quitting their locomotives in the midst of a journey. Only ten drivers remained loyal to the State.

For a few days traffic was much demoralized, but the general public rose heartily to the support of the Government. Premier Irvine called a special session of the Parliament, which entered at once on the consideration of a bill to suppress strikes on the part of public servants and employés — participation therein being made an offence punishable by fine or short imprisonment. The public temper was shown in the crowds of people of all classes who gathered outside the Parliament houses and cheered the Government. In one case, says an account of the affair in the *New York Sun*, "where an interstate express train was abandoned by the engine-driver — at a country crossing — the passengers tramped in a body to the nearest telegraph station and promptly wired Mr. Irvine, exhorting the Government to remain firm." So general was the uprising in favor of the Government — including all classes and parties except the comparatively small body of Trades Hall unionists — that the latter became alarmed. They found that they had gone too far in adopting a dictatorial policy toward the State, and in further fear that Parliament would enact the drastic measure under consideration, they made haste to back down. Within nine days of the beginning of the strike the engine-drivers voted to give way absolutely, and went back to work. It is safe to say the State of Victoria has experienced the last strike among its own employés for a good many years to come.

The case is illuminating in regard to the relationship between public ownership in industry and the labor or strike problem. The strike can gain no permanent foothold in that quarter, and this for the reason that the State is not in business for the profit of any one, except the whole people, and that the whole people as an employer of labor will not tolerate measures of force and dictation from any particular class of interests. A strike in such cases is a strike against the public, and public opinion will invariably and most effectively antagonize it. Nor is there in this any unreasonable interference with the conduct and rights as citizens of public employés. As an employer the State or the municipality in a democratic country will always and necessarily prove — and has always proved in this country — a generous and considerate employer, adopting higher standards as to wages and hours than obtain as a rule in private employments; and there is no lack of justification for the State in prohibiting the employment of coercive measures on the part of its own labor such as are tolerated in private industry, where other means of securing for labor fair remuneration are less available. But the time is not distant when even in private employment the State will insist upon other methods than the strike of adjusting questions in dispute between employer and employed. — *Springfield Republican*.

#### THE SISTINE CHAPEL.

THE condition of the roof of the Sistine Chapel in Rome has for some time been unsatisfactory, and the late Pope, just before he was seized with his fatal illness, gave orders that the necessary works of repairs should be taken in hand at once. The gravity of this statement will be appreciated by those who realize the unique place in religious art occupied by the chapel that Prinetti built for Sixtus IV more than four centuries ago. There are said to be several fissures in the plaster, and some of the wooden supports of the vault are giving way. Iron cross-bars are to be substituted and the cracks made good, and we are assured, with the familiar Italian optimism, that all danger will then be at an end. We trust it may be so, since any disaster to the immortal Sibyls and Prophets with which Michael Angelo enriched the world would be a much more serious matter than the collapse even of a Campanile. But this is not the first occasion on which the Sistine roof has been matter of concern. Before now water has even trickled through cracks in the dome, while the paintings themselves, once so resplendent, have become faded by time and dimmed by the smoke of tapers and incense. On the whole, the Popes have taken good care of the treasures which art and ambition have lavished upon the buildings under their care, and it is impossible to imagine that any pains will be wanting to preserve the monumental conceptions that we owe to the magnificent ideas of Julius II. The vault of the Sistine is, indeed, the most conclusive instance in history of what art owes to the patron.

When he began the work in 1508 Michael Angelo regarded himself as a sculptor only. Color was strange to him, he was persuaded to the task with difficulty, and the payment he received for it would be despised by a fashionable decorator. Yet in this narrow and lofty fane, which, before it was overlaid with the work of his genius, must have been gloomy in the extreme, he poured out his soul in a new revelation. In travail and weariness, with no companions save his color-grinder and the impatient pontiff, who would not be denied, and with little relaxation except the sermons of Savonarola, he painted his way to immortality.

Even so great a man as he had to cope with troublesome material difficulties. Bramante failed to devise an appropriate scaffolding, and the creator of this grandiose Old Testament cycle, who gave life to the statuesque forms of the mysterious Sibyls, had to invent his own. In his lack of experience with the medium he made the plaster too wet, and would at first have despaired. It was a Titanic work,



with its great surface, its sternly splendid imaginings, the sense of awe and immensity that broods over it, the technical illusions which convert a mere ceiling into a limitless vault peopled by patriarch and oracle. Botticelli and Perugino, Pinturicchio and Ghirlandajo have made the walls of the Chapel glow with their frescos, but they are all a mere preparation for the dome, which seems to typify art and eternity. Nor does this ceiling exhaust all that Michael Angelo accomplished in the then detached building which finally became part of the corpus of the Vatican.

Late in life, "The Last Judgment" was to come as a frescoed altar-piece for which the reckless Papal magnificence destroyed the three Peruginos that occupied its place. But who that enters the Sistine, and reflects that the great Florentine spent thirteen years of his life within these solitary walls, has much thought for any other man? The place is his monument. Not even the prudery of Paul IV, who clothed the female saints in vesture of hues as crude as the puce and magentas and solferinos of the early sixties, could destroy the noble austerity of the picture which its author refused to paint in oil, as being a mere vehicle for the idle and the lazy. It is difficult to smile at the grim revenge which placed the Pope's artistic mantua-maker in the pictured hell. As the scene of ceremonies gorgeous or touching, the Chapel is famous in religious history.

Mme. de Staël has left a graphic description of the gradual extinction of the candles during the chanting of the Lenten Miserere in the Sistine, when the Sibyls look like phantoms in the twilight, and the ear can hardly support the mournful cadences. She was afraid to listen once more to the vulgar sounds of that world which seems so far away when the silver trumpets are hushed and the Pope-King is no more upon his throne. — *London Standard*.

## BOOKS AND PAPERS

THE art and architecture of England prior to the Norman Conquest is but little appreciated when compared with the much richer developments which follow the inroad of French art and civilization. The period ending with the middle of the twelfth century, however, is one of which a surprising quantity of remains are still in existence, and about everything that can be said upon the subject has been collected under the title of "*The Arts in Early England*"<sup>1</sup> in two volumes which constitute a most interesting introduction to the study of English art. Indeed, an acquaintance with these volumes is almost essential to an understanding of the early work in England and of the spirit which even to this day exists in so large a measure in the country life of our cousins across the sea. The first volume is chiefly archaeological in its nature. It describes very carefully the Saxon and Danish village, the forms of government and the social fabric, besides giving a very succinct account of the ecclesiastical history of the British Isles up to the time of the final conversion of the immigrant Saxons at the close of the seventh century. The second volume takes up in detail ecclesiastical architecture in England from the conversion of the Saxons to the Norman Conquest. It is not, however, strictly a history of pre-conquest architecture, for a history implies development, and in Saxon architecture, as in Saxon civilization generally, there was neither continuous progress nor evolution. It is a descriptive survey rather than a history and embraces examples from all periods and all parts of the country with an excellent outline map and an index list giving the names and positions of examples. The illustrations of the volume are worthy of especial praise. The plans, with very few exceptions, are all drawn to the same scale and appear on the page to a scale of  $\frac{1}{16}$  inch to the foot, a method of procedure which is often ignored in architectural treatises, but it is a great advantage to the reader as affording a means of appreciating both absolute and comparative dimensions of the building discussed. The drawings, of which there are several hundred in the work, are stated to be based on the writer's own measurements and notes. While they are by no means remarkable as mere pictures they serve their purpose quite as thoroughly as Viollet-le-Duc's most admirable architectural drawings. We are unable to judge of their absolute correctness, but they have the appearance throughout of being made by one who regarded drawings entirely as illustrations of fact and who sought to convey in the drawings the exact conditions of the subject. The typography and the general make-up of the volumes is very satisfactory in every respect.

We are apt to think of the Saxon period in England as one which was not marked by a great deal of building activity. While this is undoubtedly true it was at the same time true of a great portion of the world. Even Rome, the mother of ecclesiastical statcraft, was in matters of art the most unproductive of all the centres of the West during the mediæval period and the best thought of architectural critics to-day inclines to ascribe the origin of even the Italian Romanesque to extraneous influences. The experiments which were being made during that period in construction and planning which transformed the early Christian into the mediæval style had their rise more in centres like Cologne or Tours or even in parts of Eng-

While the early Saxon architecture was influenced but little by the surviving examples of Roman art, on the other hand some of the principles and methods of Roman constructions persisted in early English work in much the same manner as they endured through all the changes of French architectural development.

Considering the fact that the Romans governed Britain for a period of several centuries, it is altogether surprising how little trace they left upon the manners and the arts of the inhabitants. Whether the Saxon and Danish invasions obliterated everything that went before or whether the Roman work in Britain was of too provincial a nature to be worth observing, it is impossible at this date to ascertain. There are fragments of masonry scattered throughout Great Britain which are classified as Roman by origin, but none of these indicate any great architectural achievements, and the Saxon architecture is singularly free from the kind of Roman influence in design which is so marked in the mediæval French work.

In their technical aspects the Saxon churches exhibit a mingling of the Celtic and the Roman traditions. The masonry, commonly of irregular rubblework, was compacted in walls, generally of remarkable thinness, which are of the same character as the Roman work in which large square stones were used wherever available for quoins and special features, and it was a familiarity with these that gave the Saxon builders a liking for the megalithic. The materials and technique were for the most part Roman, but the Saxon used big material however he could procure it, and the large square stones of his quoins, flat lintels and slabs of large superficial area that line his door-jambs were not always Roman stones reused. The work shows in many cases an initiative, a seeking after architectural effect and a consistency and method in both design and planning which under more favorable circumstances would undoubtedly have worked out into a completed style. The best of the work is the latest. The German ideas were introduced into England at the time of the marked activity in church building which signalized the reign of Edgar, 157 to 175 A. D. The Norman invasion did not at once obliterate the Saxon sentiment, and much of the early Roman work shows that if they had been left to themselves the Saxon architects would have developed some very interesting qualities in design.

The Danish influence in England seems to have been entirely negative. They were never builders by instinct and their influence is measured by matters of language and custom rather than architecture. The Anglo-Saxon architecture, at any rate in its later phase, represents the direct influence of the Austrasian Romanesque, and belongs by origin to German rather than French Romanesque, but while closely allied to the work of Germany it has at the same time its own individual features, and though its development as a style was extremely slow and has proved very difficult to trace, the volume under consideration shows a decided development at times. The great majority of the existing remains are those of the village or parish type, though fragments exist of at least two bishop's churches, Rochester and Sherborne, and one abbey church of an important establishment at Peterborough. The Saxon village church was fairly up to the general mediæval standard of structures of the time. In regard to the matter of imposing edifices they of course never reached the standard of the late Norman and Gothic structures both from lack of means and from lack of desire. All of the large churches have been replaced by the structures which the Normans erected so lavishly throughout the land.

The second volume contains also a very interesting and careful study of the remains of the early Irish architecture which shows a remarkable development such as, we imagine, is little suspected by the average student of architecture.

It is a pleasure to read this work. The author at times allows his antiquarian instincts to come pretty sharply to the front, but he is always an enthusiast and his interest in his subject never flags nor is wearied by detail, so that the reader is insensibly carried along with the continued interest of the recital.

## ILLUSTRATIONS

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

THE NEW ENGLAND CONSERVATORY OF MUSIC, HUNTINGTON AVE., BOSTON, MASS. MESSRS. WHEELWRIGHT & HAVEN, ARCHITECTS, BOSTON, MASS.

DETAIL OF THE FRONT OF THE SAME.

A COMPETITIVE DESIGN FOR THE IMPROVEMENTS AT THE U. S. MILITARY ACADEMY, WEST POINT, N. Y.: THE ACADEMY. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

A COUPLE OF NEW YORK DOORWAYS: NOS. 6 AND 8 EAST 62D ST.

<sup>1</sup> "*The Arts in Early England*." By G. Baldwin Brown, M.A., Watson Gordon Professor of Fine-Art in the University of Edinburgh. New York: E. P. Dutton & Co. 1902.

## Additional Illustrations in the International Edition.

THE EBEN D. JORDAN ORGAN: NEW ENGLAND CONSERVATORY OF MUSIC, HUNTINGTON AVE., BOSTON, MASS. MESSRS. WHEELWRIGHT & HAVEN, ARCHITECTS, BOSTON, MASS.

OFFICERS' QUARTERS: A COMPETITIVE DESIGN FOR THE IMPROVEMENTS AT THE U. S. MILITARY ACADEMY, WEST POINT, N. Y. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

CAVALRY AND ARTILLERY QUARTERS AS ARRANGED IN THE SAME SCHEME.



THE RAILROAD DRAIN ON OUR FORESTS. — According to a recent estimate of the *Railway Age*, the railroads of the country are using ties to replace those worn out by use at the rate of 110,000,000 a year. This estimate, which may be taken as fairly authoritative, suggests some interesting conclusions. It does not, of course, include those laid for new mileage. At the prevailing average rate per tie (fifty cents) the cost aggregates \$55,000,000 annually. To secure ties even at the present market price, railroads often transport such supplies 700 miles. It appears, therefore, that the use of the class of timber now being purchased cannot long continue. As a consequence, the Government has taken up the question of experimenting upon available wood by treating each specimen with preservatives in order to add years to the average period of usefulness. The railroads in France have been so successful in this direction that beech ties are made to last thirty-five years. Many of those in use in this country, even of supposed standard qualities, must be relaid in from between three to five years. The American Telegraph and Telephone Company used 150,000 telephone poles and 3,000,000 feet of timber in cross-arms last year, therefore it can be readily understood that the subject of seasoning and preserving wood is not confined to railroad companies alone. The matter was brought to the attention of a railroad officer familiar with the subject this week, and in going over the cross-tie problem he said: "Experiments now being made will doubtless end in the use of cheaper timber, as the cost of treating several grades of pine, for instance, is comparatively small. The best results obtained, so far, from natural timber has been from oak, but present prices prohibit the use of such wood for ties. Cedar brings a good result, if tie-plates are used. These are necessary, however, as the wood is soft. Those people who ask and keep on asking for a larger dividend rate have no idea what it costs to run a railroad. At the average rate per tie, the cost of replacing such material annually is \$55,000,000. Mention ties to an ordinary investor and he will say, 'What do ties amount to?' Ahead of ties as an actual operating expense comes labor, coal, iron, lumber and rails. Our troubles are many."

STONEHENGE OFFERED TO THE ENGLISH GOVERNMENT. — Sir Edmund Antrobus has, through Lord Edmund Fitzmaurice, chairman of the County Council of Wiltshire, made a definite offer to sell Stonehenge and eight acres of the land occupied by these magnificent Druidic ruins to the English Government for \$250,000, on the understanding that they will be preserved for the nation. Some years ago Sir Edmund made an offer to dispose of Stonehenge and twenty acres of the land on which the great stones stand for \$750,000 to any one who was willing to pay that price, and great alarm was expressed lest some American multi-millionaire might purchase the celebrated megalithic monuments and carry them off to the United States. But this fear has not been realized. Sir Edmund's desire to get rid of Stonehenge is in no small measure due to the annoyance to which he has been subjected in the last few years in connection therewith. It was shortly after his accession to the baronetcy and estates on the death of his father in 1899 that he determined to surround Stonehenge, which forms part of his property, with a barbed wire fence, and to charge an admission fee of twenty-five cents, his object being to protect the stones from the injurious treatment to which they were being subjected by people without any reverence for the hoary past. Moreover, as some of the stones were in danger of falling he feared that in the event of anybody being injured thereby he might be held financially responsible. Exception, however, was taken to his attitude. It was said that inasmuch as Stonehenge had lain open to all the world since English history began, the public had acquired a right-of-way through every portion of the grounds on which the stones stood, and likewise a proprietary interest in the stones themselves. Then, too, it was pointed out that anything in the shape of a modern inclosure destroyed the spell created by the aspect of those immense stones standing alone in strange circles far from human habitation in the midst of a vast, open, rolling plain. And the result was that not only the general public, but likewise men of culture interested in the preservation of national monuments raised a fund with the object of testing in the courts not Sir Edmund's proprietorship of the ruins, but his right to inclose them with a wire fence. — *Marquise de Fontenay* in *N. Y. Tribune*.

THE MAXIMILIANEUM, MUNICH. — The Maximilianeum is one of the modern adornments of Munich, though built in an ancient style of architecture. The western façade is seen from the liveliest part of the city and has large frescoes by Carl von Piloty, Michael Echter and Feodor Diez. Unluckily for these onetime masters, the frescoes have

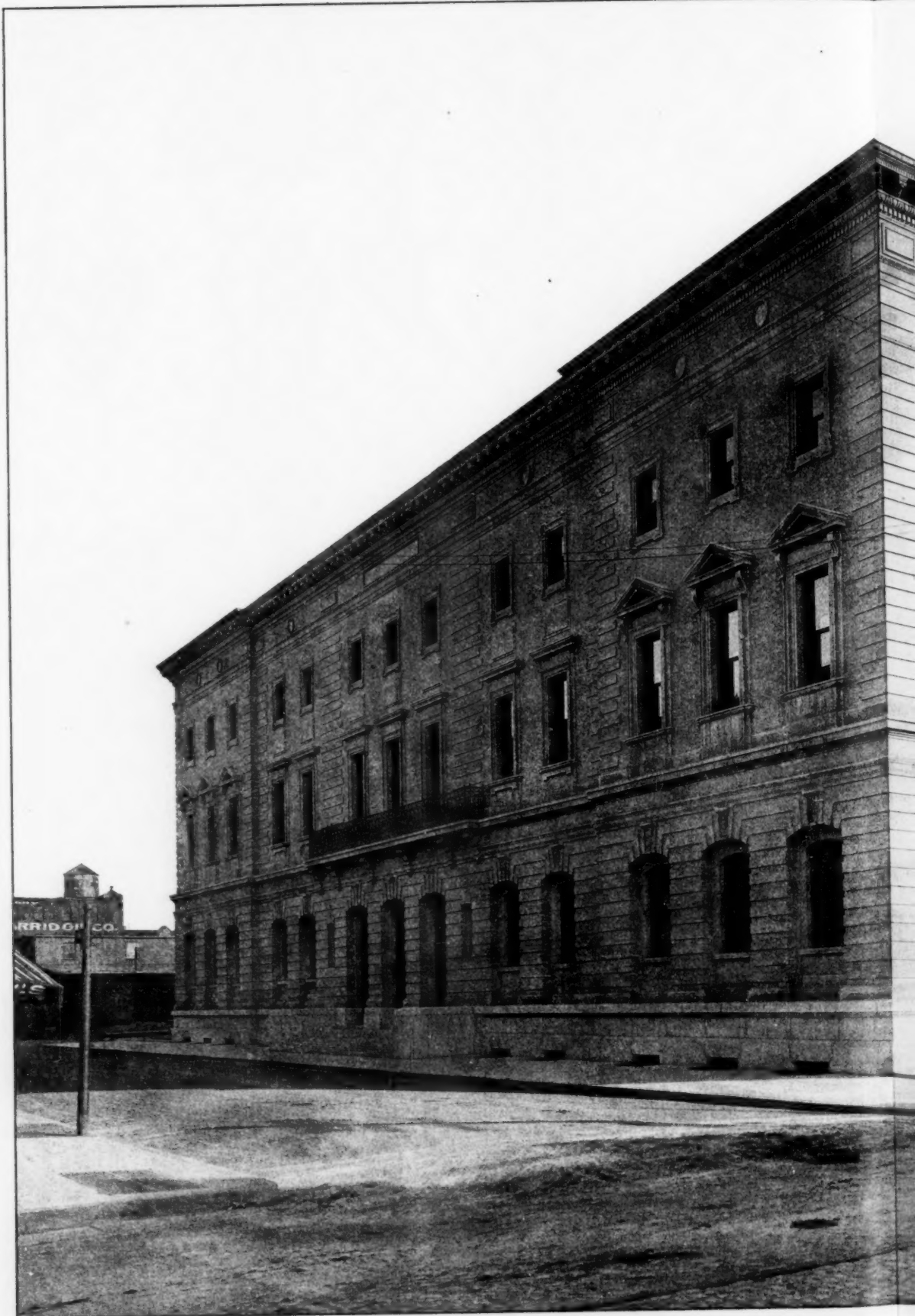
not withstood the attacks of the climate; for many years they have only faintly indicated their meaning. Piloty painted in historical style the founding of the "Ettal Monastery," the "War of Minstrels in the Wartburg," and the foundation of "Ingolstadt University." Among those by Diez is the "Raising of the Turkish Siege of Vienna," and among those by Echter the "Treaty of Pavia." After long deliberation, the Ministry of Interior for Bavaria decided to renew these pictures in glass mosaics, using for the purpose the Royal Institute of Art Mosaics, whose Director is the painter Ranecker. Seven of the nine pictures have been translated into glass mosaics, and the other two will soon follow. Objections are made to such reproductions on the ground that they were not architectural enough and also on the ground that the brilliant, unchanging mosaic fails to give the spirit of fresco painting. But as these pictures have become part of the decorative whole in Munich, it was decided to replace them as nearly as possible in the color scheme they had when new. Visitors of Munich will be surprised to find a building which seemed to be very old, because of the faded frescoes on its west front, shining with all the brightness of unalterable mosaic. — *N. Y. Times*.

OUR FOREIGN TRADE IN FOREST PRODUCTS. — A notable exhibit of this country's trade in forest products is contained in a report just issued by the division of foreign markets in the Department of Agriculture. It appears that during the fiscal year 1902 we imported \$50,000,000 worth of such products and exported \$49,000,000. The tendency indicates that the balance may before long turn in favor of the export account. Ten years ago the imports were valued at \$50,000,000 and the exports at only \$28,000,000 — a gain of more than \$20,000,000 for the latter and less than \$10,000,000 for the former. The imports are chiefly of things that, by their nature, must come from abroad, while the exports are mostly products that our forests yield in greater abundance and cheapness than is the case in other countries. The principal item among the imports is formed by the several gums from which rubber is made. The value of these was in excess of \$25,000,000. Other gums imported in considerable quantities, chiefly from tropical lands, were copal, shellac, gambier and chicle. Lumber is imported to the amount of over \$12,000,000, mainly from tropical countries of the temperate zone, with Canada at the head. Nearly a million dollars worth of timber, mainly in the round — that is, in the form of logs — also came in. Cabinet-woods to the value of \$3,361,000 came almost exclusively from the tropics, with mahogany as the most important item. Dyewoods, with logwood as the principal article, also came from the tropical sources. Over 67,000 tons of wood-pulp, worth more than \$2,000,000, came from Canada, Sweden, Norway and Germany. Cork-wood and cork-bark, valued at \$1,816,000, came mostly from Spain and Portugal. Among various other forest products were cinchona bark, vegetable ivory and ground sumac. In exports, wood was by far the most important factor, the combined shipments of lumber and timber amounting to \$36,000,000, the lumber having a value of \$26,000,000 and the timber \$10,000,000. Boards, deals and planks went chiefly to the United Kingdom, Canada, Mexico, the Netherlands and Argentina, and there were also large sales to Belgium, Cuba, British Australasia, Germany and British Africa. Staves and headings to the value of \$3,954,000 went extensively to France, the United Kingdom, Spain, Portugal, the Netherlands, Germany and Italy. Other leading items were shooks, joists and scantlings and shingles. Timber went abroad in the shape of round, hewn and sawed. The only other item of much importance in our forestry exports was what is known as "naval stores," comprising spirits of turpentine, rosin, tar, turpentine and pitch. The spirits of turpentine were valued at \$7,431,000 and the rosin at \$4,202,000. In all these exports the United Kingdom was our best customer. Other forestry exports were wood pulp to the value of \$740,000, tan bark worth \$288,000, going chiefly to Japan, and a small amount of charcoal, valued at only \$5,000. — *Boston Herald*.

NATURAL GAS IN ENGLAND. — In the August number of *Cassier's Magazine*, Inverness Watts gives facts regarding natural gas in England. He speaks of the first discovery of gas in East Sussex as long ago as 1875, and of subsequent discoveries, the most important having been made in 1896 at the Heathfield Railway-station of the London, Brighton and South Coast Railway. The railway company desired to obtain a better quality of water for their engine-tank than that afforded by the present surface spring supply. Accordingly a 6-inch bore-tube was sunk, commencing at the bottom of a sump 73 feet deep, into which the surface water had been allowed to flow. Gas appears to have been discovered a long time before its inflammable properties were tested, a strong odor of gas having been noticed for some days; but the smell was attributed to the presence of "foul air" in the bore-tube. At a depth of 312 feet from the level of the permanent way the smell and rush of the gas were so pronounced that (by way of experiment) some one applied a lighted match to it, when a body of flame sprang up, the height of which is variously stated, the maximum estimate being 16 feet. It was extinguished with great difficulty, by means of damp cloths thrown over the mouth of the tube. The gas continued to increase during the remainder of the depth bored. The boring was abandoned at a depth of 377 feet, no useful amount of water having been obtained. The wrought-iron tubes were withdrawn from the bore hole, with the exception of one length, which still remains in the ground, the tube being continued upward to near the top of the sump. A cast-iron cap has been secured onto the top of the bore-tube, with a 1/2-inch bend and stop-cock affixed thereto, and Heathfield Station has been lighted throughout by gas from this boring since 1898, consuming about 1,000 cubic feet each night. More recently many other borings have been successfully made for natural gas in various parts of Sussex, and are likely to have an important influence in attracting and developing new industries. — *N. Y. Evening Post*.







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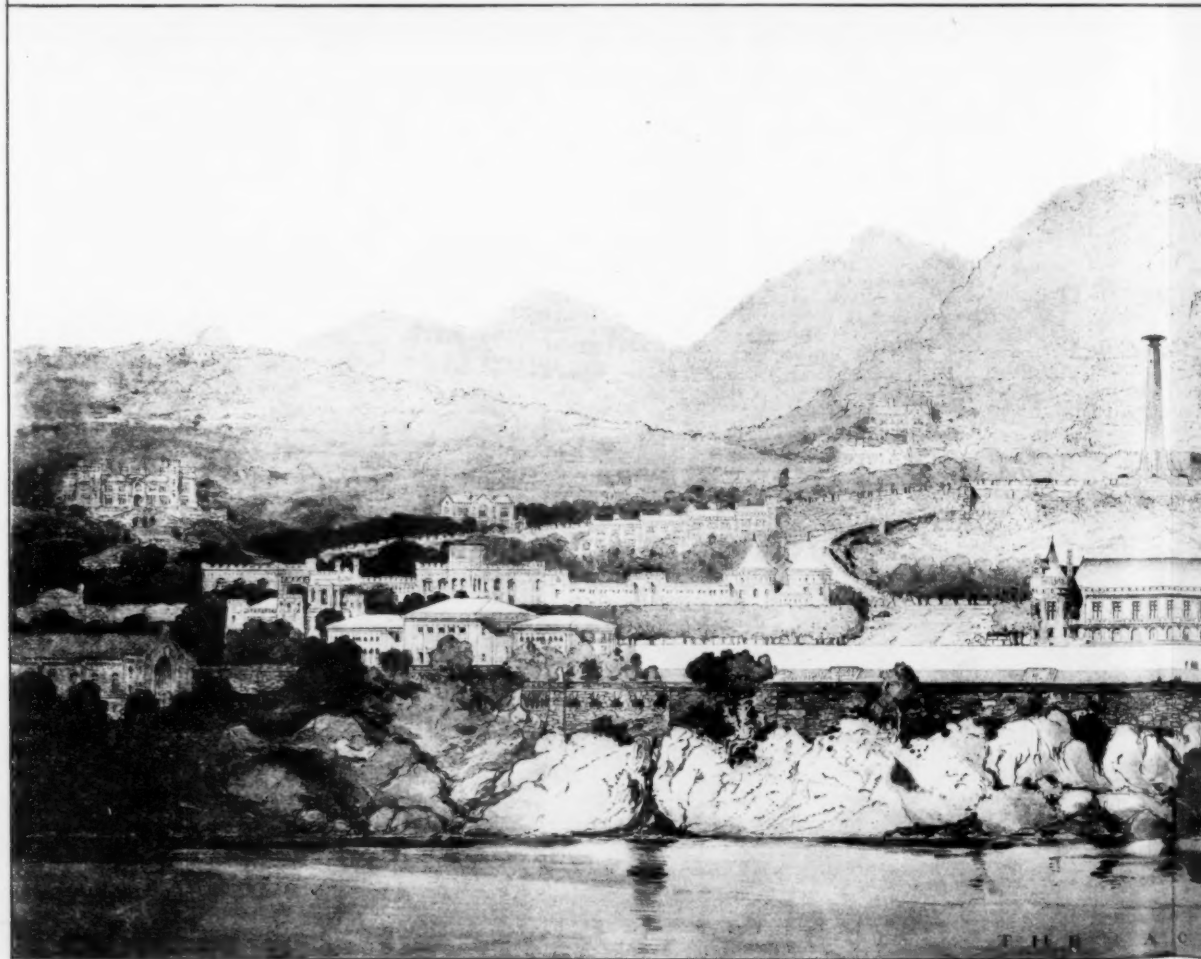
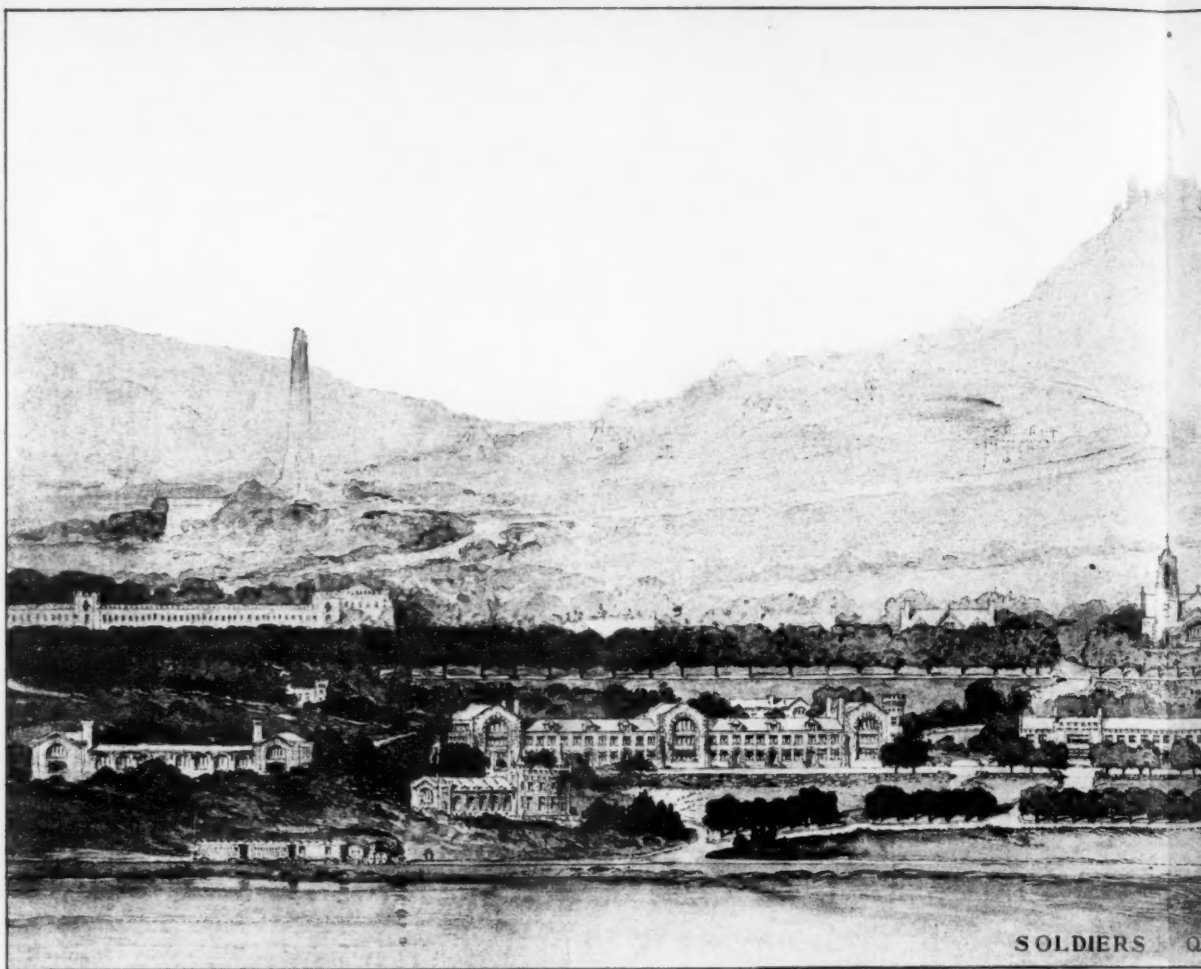




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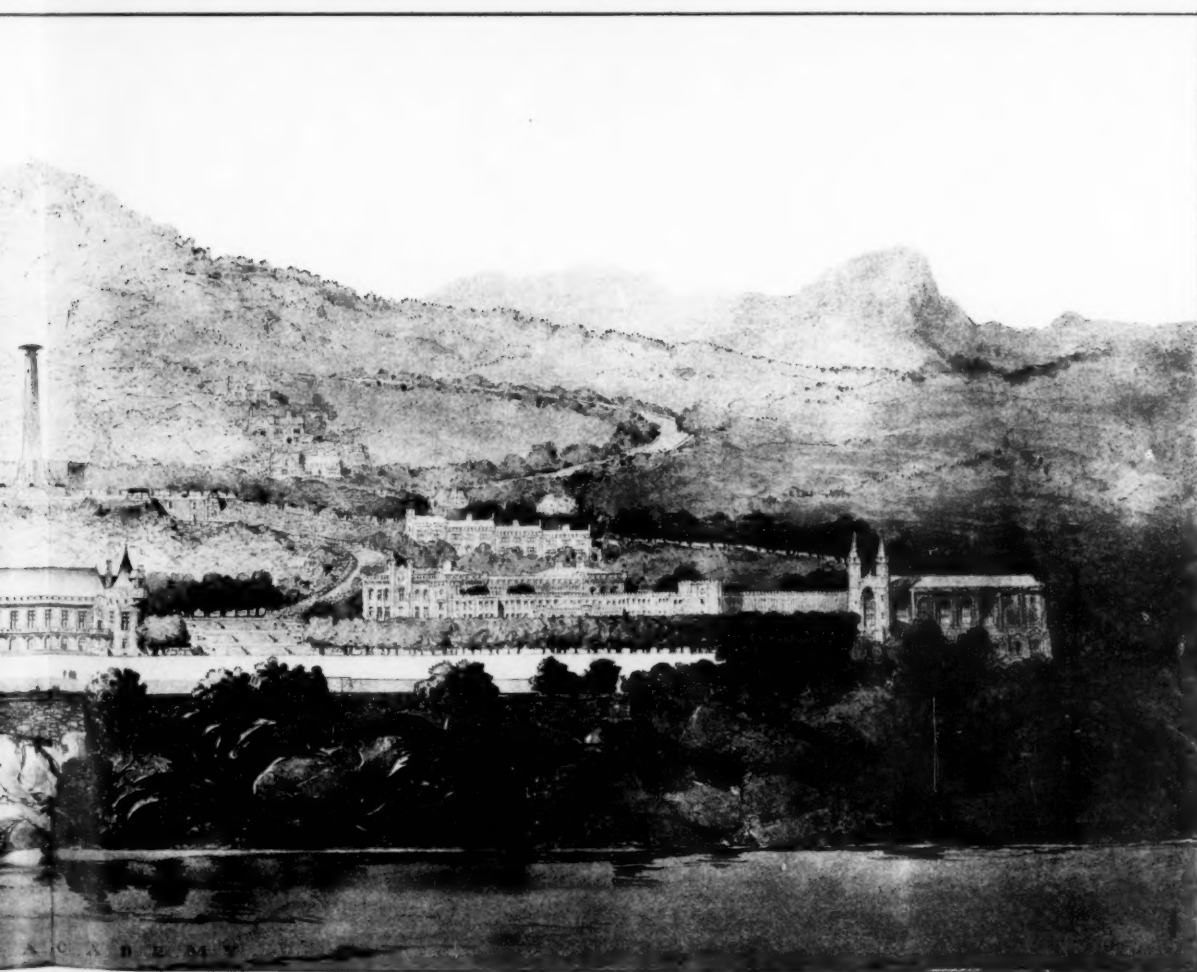
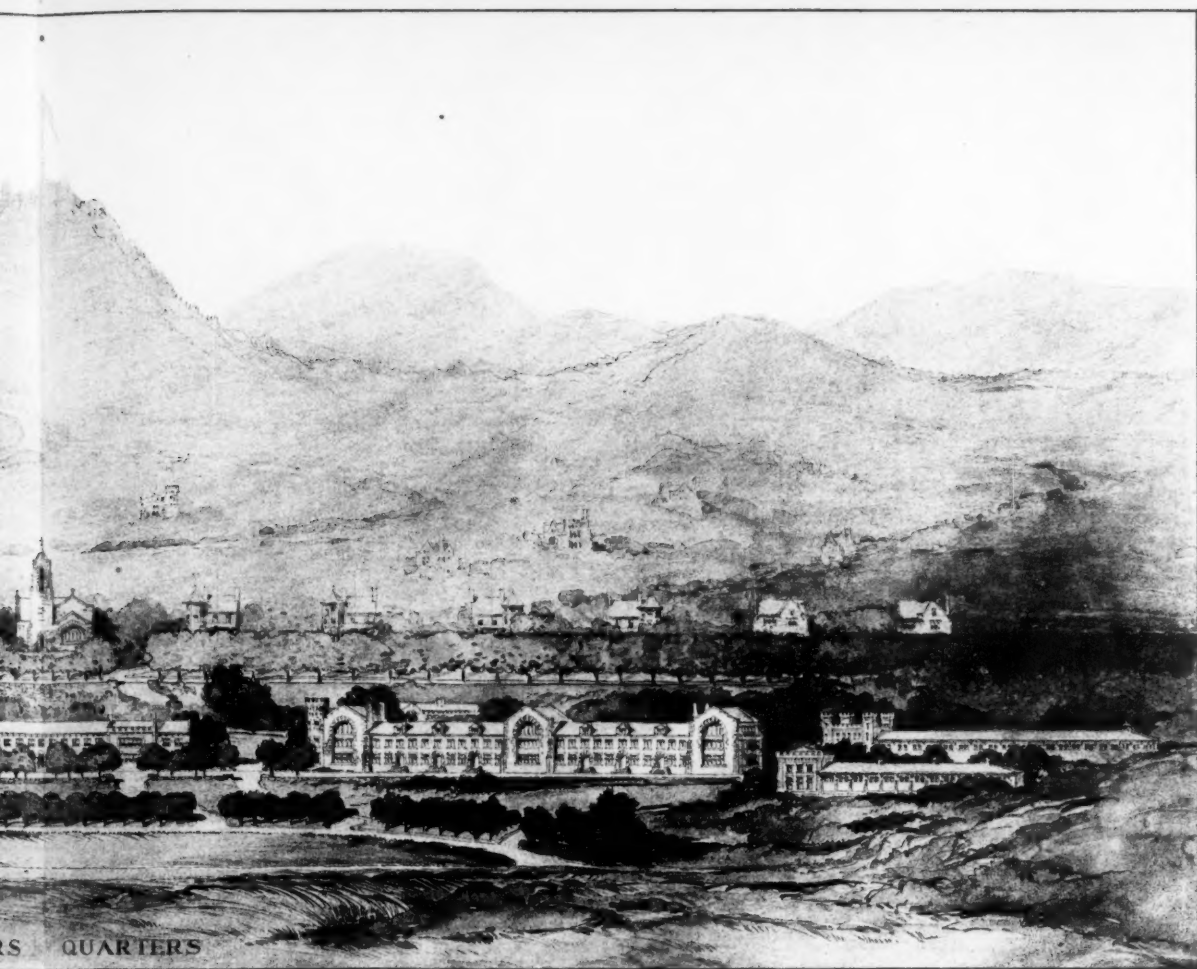
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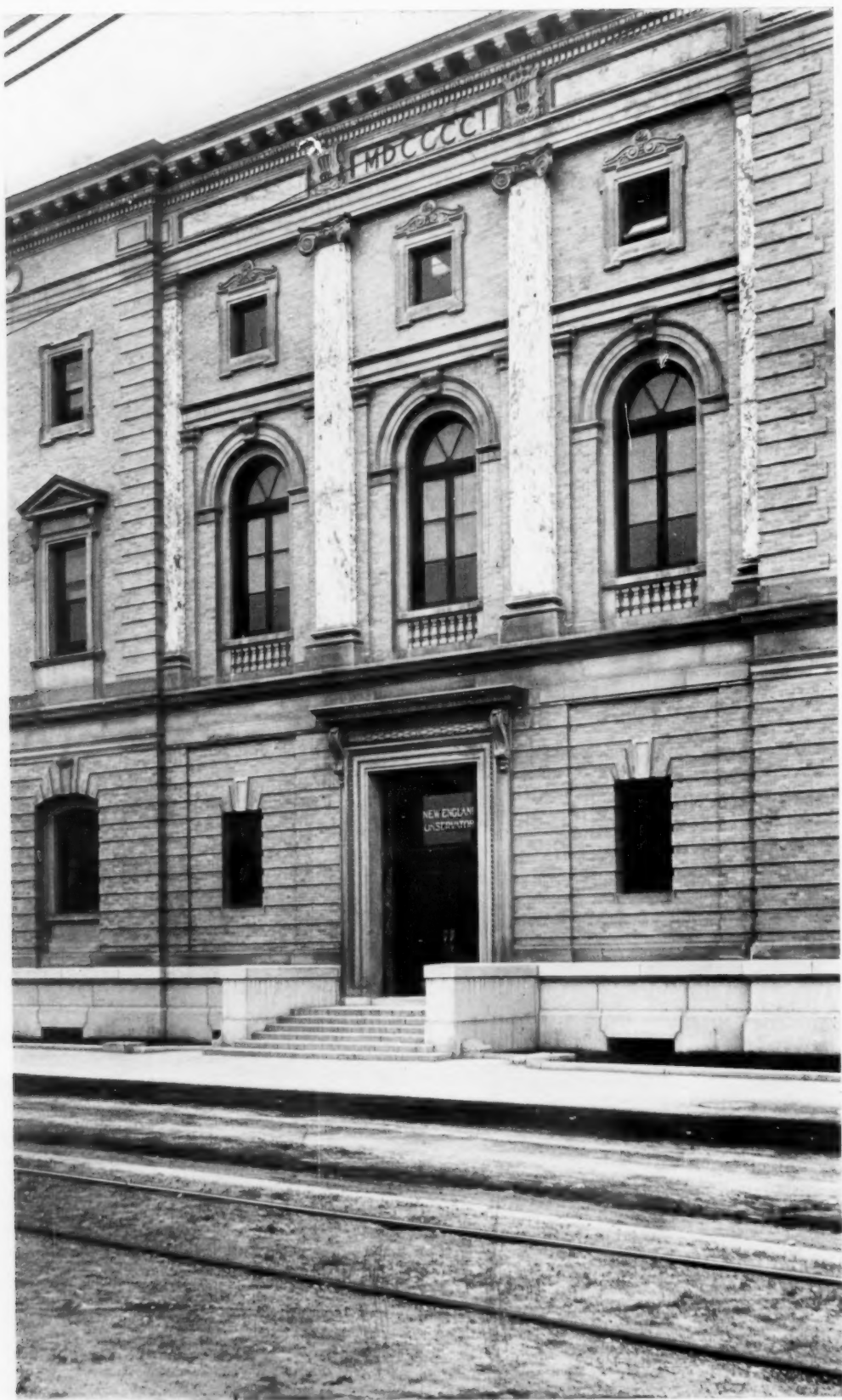




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DETAIL OF FRONT OF THE NEW ENGLAND CONSERVATORY OF MUSIC, BOSTON, MASS.  
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NO. 6, EAST 62D STREET.



NO. 8, EAST 62D STREET.

A PAIR OF NEW YORK DOORWAYS





# THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT

No. 256

SATURDAY, SEPTEMBER 5, 1903

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No. 1445

## THE NEW ENGLAND CONSERVATORY OF MUSIC, BOSTON, MASS.

THE EBEN D. JORDAN ORGAN.

THE concert organ in Jordan Hall, at the New England Conservatory of Music, Boston, represents not only a product of the organ-builders' art which is not surpassed in this country, but is unique in its method of selection. Messrs. George W. Chadwick, musical director of the Conservatory, Henry M. Dunham, composer and teacher, and J. Wallace Goodrich, organist of Trinity Church, Boston, were appointed a committee to prepare specifications for such an instrument as would fill every requirement and desire. Having in mind the ultimate fitness of the instrument for concert work and its use with orchestra and chorus, as well as the prestige which such an organ would give the Conservatory in this and other countries, the committee determined to provide an instrument which might stand as a model in every detail in specification, action, voicing and general mechanical construction.

Attention was first of all given in the plan of the hall to the necessary accommodations of the organ. A space, wide and not too deep, with ample height, was selected at the rear of the stage. To insure against dampness, this space was properly sealed and provision made for thorough ventilation. The Hutchings-Votey Organ Company, builders of the organ for Woolsey Hall, Yale University, were chosen to construct the organ. The large number of church and college organs which this concern has built deserves more than passing attention. Mr. George S. Hutchings, President of the Company, has probably done more during the past quarter of the century toward the development and perfection of pipe-organs both mechanically and tonally than any other individual. The conferring of the honorary degree of A. M. upon him by Yale University, at its last commencement, establishes a precedent which might well be followed in other lines of skill.

The exterior of the organ is elaborately finished in gold. It is of the Italian Renaissance style of architecture and many of the details remind one of the organ-case of Sta. Maria de la Scala, Siena, Italy. The portion below the belt on which the front or display pipes stand is of simple panel-work;

the upper portion which forms the framework of these pipes is more elaborate. The four great pillars and the heavy entablatures which they support give the exterior a squareness of outline which is a distinct feature of the Italian Renaissance, and serve to divide this portion of the case into three sections, the centre section being the widest. These three sections have heavy arched tops and are subdivided into smaller divisions by smaller pillars and cornices. The tops of the pipes are kept clear of canopies and arcades.

The key-desk of the organ is not built in

the names of the stops shows plainly the exceptional judgment used in their selection. There is a marked absence of stops of the Mixture variety, which, while adding to the number of pipes in the organ, rather decrease than increase the harmoniousness of the organ. The preponderance of 8-foot stops is very evident. The various devices for bringing on whatever stops are desired without touching the stops themselves are carried to a greater perfection in this organ than has ever before been attained. In addition to the piston combinations of the manuals, are pistons operated by the feet, the stops effected by these pistons being optional with the player.

The advantages of electric-action have already been hinted at in the detached key-desk. By means of several hundred insulated wires the various stops are drawn and the keys played instantaneously. Unlike organs of tracker action, the full power of the organ may be played without making it difficult in the slightest degree to press the keys. It is this fact which has made possible transcriptions for the organ which were formerly thought to be too difficult for execution. The bellows of the organ is supplied with air by means of a Sturtevant pressure-blower, propelled by a five horse-power electric-motor made by the General Electric Company.

That the organ is all that was expected of it cannot be gainsaid. The educational value of the instrument is not only of local importance, but to the hundreds who go yearly from the institute to the various parts of the world, the organ will be associated with the work of the Conservatory. To Boston, the importance of the organ is especially great because so many of her musicians

are trained at the New England Conservatory of Music. And to the musical public is offered another opportunity of hearing an organ constructed as those at Symphony Hall and Trinity Church, perfect in mechanical details, satisfying in tone, constructed with its specific purpose in view.

### SEATING.

THE American School Furniture Company furnished the opera chairs for the auditorium and lecture-room of the New England Conservatory of Music building. The chairs have



Main Entrance: New England Conservatory of Music, Boston.

the case, but is constructed in front of the stage, 50 feet away, and the organ played from this distance. The exterior of the desk harmonizes with the color-scheme of the hall. The fittings are of mahogany. The proportions and details of the key-desk show extreme care and reveal the long experience necessary in producing a result both practical and artistic. There are three banks of keys, the pedal key-board being concave and radiating, a form derived from the natural movement of the feet in playing and used rather exclusively in Europe. A glance at

noiseless ball-bearing seat hinges. They are patterned in the modest good taste of the Colonial ideas, are beautiful in their simplicity and classic in their lines. Our illustration cannot express the harmonious coloring effects. The chairs in the main auditorium are a product of the Grand Rapids factory of the Company and of the type catalogued "911 B," and those in the Lecture-room or small Auditorium are from the Thos. Kane & Co. Works, of Racine, Wis., and No. 100, with writing-shelf pattern.

Many theatres, churches and public halls throughout the country have been fitted with chairs by this Company. Its furniture is pre-eminently high-art furniture, and in opera-chairs seemingly the highest pinnacle has been reached.

With sales offices in Boston, New York and Chicago, and its various plants, the American Company is in position to handle business in any section of the country without a moment's loss of time; its arrangements for expediting the filling of orders, and the meeting of customers personally at any point, are as nearly perfect as is possible; and these, together with the enormous facilities of the Company for doing its work, enable the management to meet usual and unusual demands satisfactorily to its patrons.

#### DECORATING.

The firm of L. Richmond & Co., Brockton, Mass., did the interior decorating at the New England Conservatory of Music Building, and it has met with the highest sort of praise from architects and artists who have visited the building; the dull, soft Roman gold lines and clear colorings of the walls, together with the soft brown and tan shades, giving an effect entirely differing from that shown in any other public building in New England. Messrs. Richmond & Co., however, have had a sufficiently wide experience in their work of painting, decorating and hard-wood finishing, throughout the Eastern States to be able to produce, as they have in this and other instances, work of high character and original in conception.

#### MARBLE WORK.

To the Columbian Marble Quarrying Co., of Rutland, Vt., much credit is due for their part in producing the beautiful interior effects in the New England Conservatory of Music building. The work here is, however, only in keeping with that which this Company has done in many other places; namely:—

Essex County Court-house, Lawrence, Mass.; Majestic Theatre, Boston, Mass.; Library of Congress, Washington, D. C.; Stock Exchange, Chicago, Ill.; Hon. Chas. N. Fowler's residence, Elizabeth, N. J.; and in many other prominent public buildings, residences, etc., throughout the country. The New England Conservatory of Music is a strong addition to this list.

This Company since completing their work in most of the above-mentioned buildings and with the steadily-increasing business which their faithful execution of contracts has brought about, have been compelled to alter their method of placing their goods on the market in this territory. Instead of by a local agent, on a commission basis, orders are now receiving

attention through their office at 186 Devonshire St., Boston, which is being maintained as a branch office of their main offices and mills at Rutland, Vt.

#### SOUNDPROOF PARTITIONS.

The following account of tests made by Prof. C. L. Norton of the Massachusetts Institute of Technology for Mr. Edward T. Barker, architect of the dormitories of the New England Conservatory of Music, will



Auditorium Chair: N. E. Conservatory of Music, Boston.

show the relative values of some of the typical partitions as soundproof separations between rooms:—

There were built upon the concrete floor of the B. & A. warehouse, East Boston, fire-rooms 7 feet square, whose side walls were made of the several partitions. The rooms were built upon a floor of the same kind as that which is to be used in the buildings for the students of the Conservatory, for which the results of these tests were especially desired.

The rooms were built near one another on the fifth floor of the warehouse, in a large loft or room about 50' x 70' long and 9 feet high. The ceiling of each room was the under surface of the concrete ceiling of the large room. Each room had a floor of two thicknesses of seven-eighth-inch floor boards, with two thicknesses of Cabot's Sheathing Quilt between the floor boards and the concrete slab of the main floor. On one side of each room was a door with a glass panel, the door-jamb



Vestibule: N. E. Conservatory of Music, Boston.

being faced with soft felt, and the bottom of the door was fitted with a stop or "weather strip," operated when the door closed, making a tight joint at the bottom.

The side with the door will be referred to as the front in the following description.

**Room A.**—This room was submitted by the National Fireproofing Company, and its four sides were made of terra-cotta blocks. The front and back walls were made of blocks 4 inches thick; the sides of 2-inch and 3-inch blocks. After the blocks were in position the room was given two coats of plaster inside and out.

**Room B** was submitted by the Keystone Block Company, and its four walls were made of the blocks of the Keystone material, of the nature of plaster-of-Paris, with a fibrous bond. The front wall was of blocks 4 inches thick, and the left side was of blocks 2 inches thick, the back of blocks 3 inches thick, and the right side of two 2-inch blocks, with a 2-inch air-space between them. The entire room was given two coats of plaster inside and out, except the front, which had no plaster on the outside of the blocks.

**Room C** was submitted by the Sackett Wall Board Company, and was built of Sackett plaster-board  $\frac{1}{2}$ -inch thick, wired upon both sides of 3-inch steel channels. The channel truss or studs of the back and right side were wrapped with felt about  $\frac{1}{2}$ -inch in thickness before applying the plaster-board. The Sackett plaster-board is a composite board of alternate layers of paper and plaster, the whole being about  $\frac{1}{2}$ -inch thick. This room, like the other, was plastered inside and out, but to a slightly less thickness.

**Room D** was submitted by J. Russell & Co., and was of a more complex construction. The left side was a solid partition of metallic lath and plaster. The  $\frac{3}{4}$ -inch steel ties were spaced 16 inches on centres, metal-lath was applied to one side only of the ties, and then plastered to a thickness of 2 inches. The rear wall was built upon two rows of  $\frac{7}{8}$ -inch studs, staggered. Between them was placed one thickness of waterproof paper about  $\frac{1}{2}$ -inch thick, and metal-lath was wired to both sides of the row of studs and given two coats of plaster. The right side was of the same construction, with a layer of  $\frac{1}{2}$ -inch felt between the two thicknesses of waterproof paper. The front wall was of metal-lath on two rows of staggered studs, with Cabot's seaweed quilt between the rows of studs.

**Room E** was submitted by Mr. Samuel Cabot, and was wholly of metal-lath and plaster double partitions, with the space between the lath filled with Cabot's Sheathing Quilt. The front and left sides contained three thicknesses of quilt, and the right side and rear two thicknesses. The quilt was placed between the studs and the metal-lath, and where three thicknesses were used, one was between the row of studs as well.

The rooms had been vigorously dried for several days, none longer than a week, but the whole building was so damp and the time so short that no considerable part of the plaster and none of the interior portions of the partition were dry. The Sackett-board room was the driest, and Cabot's was the least dry.

The preliminary trials showed so great a range of efficiency of the several constructions, that the microphonic apparatus, which was designed to make rapid comparisons of sound-intensity possible, could not be used. Reliance had to be placed wholly on listening with and without a felt-mouthed stethoscope at the outside of the partition to



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sounds of various quality and intensity from within. The notes of the piano, violin, cornet and the human voice were carefully tried throughout wide ranges of pitch and intensity. The performers and the instruments were interchanged; every possible chance of unfairness, due to the variations of intensity in the sounds used, was eliminated. Of course, no interchange of the positions of the room was possible. No electrically-driven tuning-fork could be used for producing sounds of constant loudness. The insulating property of some of the partitions was so good that not even the blare of a cornet or the overpowering tones of an Italian tenor, drawn from the ranks of the laborers on the building, could be heard through the partition, except by careful listening within a few inches of the wall.

After much consideration, the writer has given the following ratings to the different partitions. The order of their standing upon the list indicates their efficiency as compared with those above and below them.

| APPROXIMATE EFFICIENCY ON ARBITRARY. |       |       |        |                                                  |
|--------------------------------------|-------|-------|--------|--------------------------------------------------|
| No.                                  | Room. | Side. | Scale. | Composition.                                     |
| 1                                    | E     | Left  | 100... | Cabot's Quilt, 3 thick + metal-lath.             |
| 2                                    | E     | Right | 95...  | Cabot's Quilt, 2 thick + metal-lath.             |
| 3                                    | E     | Rear  | 95...  | Cabot's Quilt, 2 thick + metal-lath.             |
| 4                                    | C     | Rear  | 85...  | Sackett Board, 2 felt on s.                      |
| 5                                    | C     | Left  | 85...  | Sackett Board, 2 felt on s.                      |
| 6                                    | C     | Right | 80...  | Sackett Board, 2 felt.                           |
| 7                                    | D     | Rear  | 75...  | Metal-lath + paper.                              |
| 8                                    | D     | Right | 75...  | Metal-lath + paper + felt.                       |
| 9                                    | B     | Right | 60...  | Two 2-inch Keystone Block with 2-inch air-space. |
| 10                                   | A     | Rear  | 50...  | 4-in. National Terra-cotta Blocks.               |
| 11                                   | B     | Rear  | 50...  | 3-in. Keystone Blocks.                           |
| 12                                   | A     | Right | 45...  | 3-in. National Terra-cotta Blocks.               |
| 13                                   | B     | Left  | 40...  | 2-in. Keystone Blocks.                           |
| 14                                   | A     | Left  | 40...  | 2-in. National Terra-cotta Blocks.               |
| 15                                   | D     | Left  | 30...  | 2-in. Metal-lath, solid plaster.                 |

Nothing more is to be inferred from the numerical efficiencies than that the first partition is about three times as good as the last,

and that the numerical interval between any two partitions on the list merely indicates the order of magnitude of the difference between the partitions.

The partitions making up the rooms submitted by Samuel Cabot and the Sackett Wall Board Company were the most efficient; but it is distinctly to be borne in mind that no other room had so easy a test as did these, in that each of the others had one thin and ineffective side which transmitted sound to the sides adjacent to it. The thin side of the Keystone room was noticeably resonant, and plainly rendered it impossible to make a fully satisfactory test of the air-space partition. The solid metal-lath plaster partition of the room submitted by J. Russell & Co. acted in the same way in that room.

I do not believe, however, that this defect in the structures has caused any changes in the position on the efficiency list of the Cabot and Sackett rooms.

The efficiency of the Cabot quilt as a material for rendering the partition "soundproof"



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is so clearly demonstrated in these tests that I recommend it for use in the partitions for which these tests were made. The nature of the material in which the quilt is encased should be carefully considered. I do not think it within the province of this report to discuss the partition from other than acoustic considerations, and as an encasing medium the most effective material is Sackett board and adamant plaster.

I would, therefore, give as my opinion that the best acoustic results would be attained by using a partition of Sackett board and plaster, with two thicknesses of Cabot's quilt between the plaster board.

I should recommend a wooden stud rather than steel channels, if the fire-risk is not materially increased thereby.

As later tests showed, some sort of a suspended ceiling will be needed, as the concrete slab transmits the sound across the top of the partition readily. No trouble will be given by the sound passing through the concrete to the rooms above or below; but, unless a layer of Cabot's quilt, with under-lath and plaster, or of Sackett board and plaster, be put on the under side of the concrete ceiling, the efficiency of the partitions will be diminished somewhat.

The front walls could not be tested because of the leaks around the door and through the door frames, even where covered with a large shutter padded with Cabot's quilt. It is evident that a double glass door will be needed. The floor construction is acoustically good.

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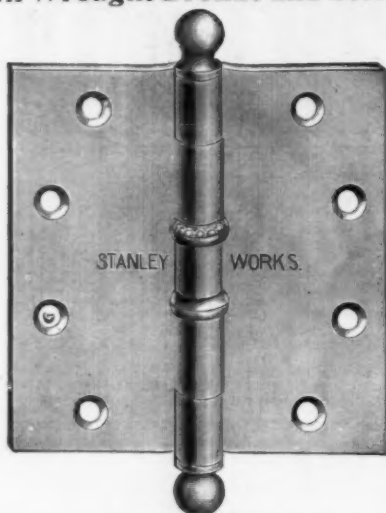
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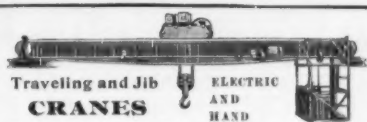
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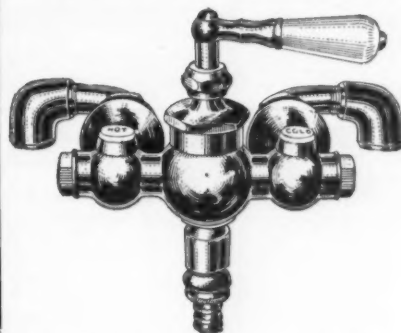
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## CODE OF PRACTICE FOR SUB-ESTIMATING AND SUB- CONTRACTING

Adopted by the Master Builders' Association of the City of Boston, Aug. 2, 1894.

### ARTICLE I.

#### Obligation of Principal Contractor to Sub-Contractor.

A principal contractor is under obligation to treat upon an equal basis all estimates which he "receives" prior to putting in his own bid. Estimates must be considered as "received" when they come into a principal contractor's possession, either by his direct solicitation or by being accepted by him. The opening of a bid, knowing it to be such, constitutes receipt of the same.

A principal contractor is under no obligation to use a bid which he has not solicited, accepted, or received, but if he does not wish to use the estimate of a sub-bidder he should decline it, if proffered personally, or should return it unopened if sent to him by mail or otherwise. The retention of a bid should be construed as a receipt of the same.

A principal contractor, when making up his estimate, is not entitled to receive bids from sub-contractors if he is at the same time making himself their competitor by figuring their portion of the contemplated work. It is legitimate for a principal contractor to figure all portions of work, depending upon no one for what are usually known as sub-estimates, but it is not legitimate for him to receive bids from others for sub-work if he is himself figuring those portions independently.

### ARTICLE II.

#### Award of Sub-Contracts.

The principal contractor having been awarded a general contract should immediately award the sub-contracts to the lowest bidder in each branch.

### ARTICLE III.

#### Penalty for not Awarding Contract to Lowest Sub-Bidder.

A principal contractor failing to award a sub-contract to the lowest sub-bidder to whom he is under obligation as previously provided should be liable to pay damages to the said lowest bidder, in amount not less than ten per cent of the amount of the estimate.

Payment of such damages will not relieve the principal contractor from liability to discipline under provisions of Article X of the By-Laws of this Association.

### ARTICLE V.

#### Payments to Sub-Contractors.

Unless the contracts made with sub-contractors otherwise provide, payments during the progress of the work should be made by the principal contractor to the sub-contractors upon the same basis of payment, in relation to amount of work performed, as is prescribed in the contract made by the principal contractor with the owner.

Final payment to a sub-contractor should be considered as due at the expiration of thirty days after the completion of his work and its approval by the architect or owner, unless otherwise provided by the sub-contract or agreement.

### ARTICLE VII.

#### Obligation of Sub-Contractor to Principal Contractor.

Should a sub-contractor refuse to contract at the amount of the estimate he has given to a principal contractor who has used the said estimate in good faith, he then should be liable to the said principal contractor for damages in amount not less than the difference between the amount of the estimate which was submitted by him and the amount at which the principal contractor may be obliged to contract the work.

Payment of such damages will not relieve the sub-contractor from liability to discipline under provisions of Article X of the By-Laws of this Association.

### ARTICLE X.

#### Bids to Architects or Owners.

When bids for separate departments of work on a building are solicited by the architect or the owner, they should be submitted with the understanding that they are direct estimates, for which direct contracts are to be made by the owner with the lowest bidder, and no other disposition of such bids should be permitted without consent of the bidder submitting the same.

Sub-bids should be given only to the principal contractors who are estimating the work in question, and should not be left with architects or owners for the inspection and information of principal contractors. Sub-contractors must understand that bids thus left with architects or owners are in great danger of losing their confidential character, and that if they so leave them they cannot claim protection or redress under the first article of this Code.

### SUGGESTIONS.

Members of this Association having sub-contracts to let, or material to buy, should, as far as may be consistent with business principles, deal only with members of the Association, or at all events give their fellow-members an opportunity to compete, and then give them the preference, other things being equal.

All bidders should take cognizance of the danger they may be subjected to through the practice, so prevalent in some architects' offices, of making change in plans or specifications, or in both, during the progress of estimating. Correction of this pernicious practice can only be obtained through refusal by contractors to estimate under such conditions.

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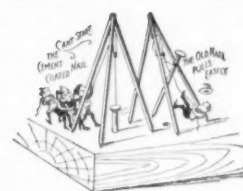
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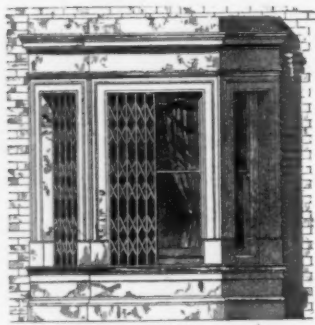
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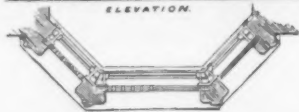


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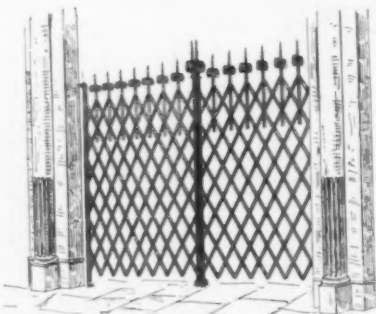
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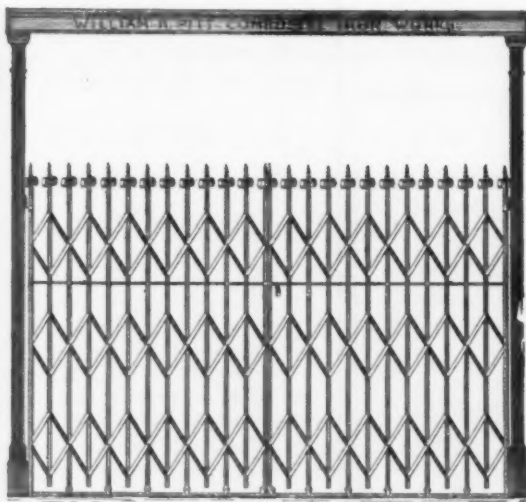
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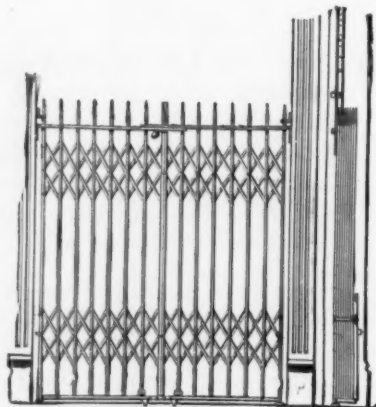


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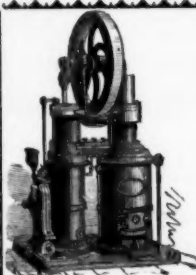
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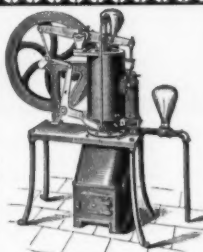
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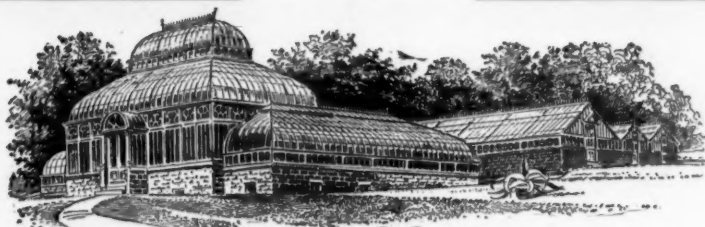
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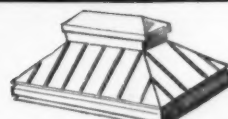
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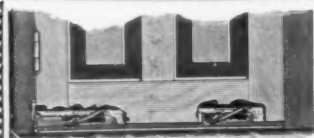
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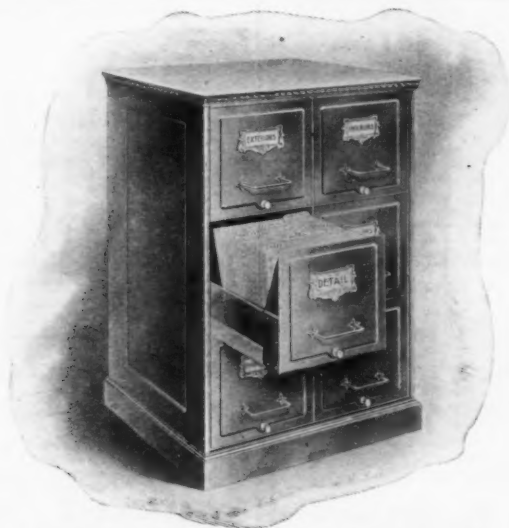


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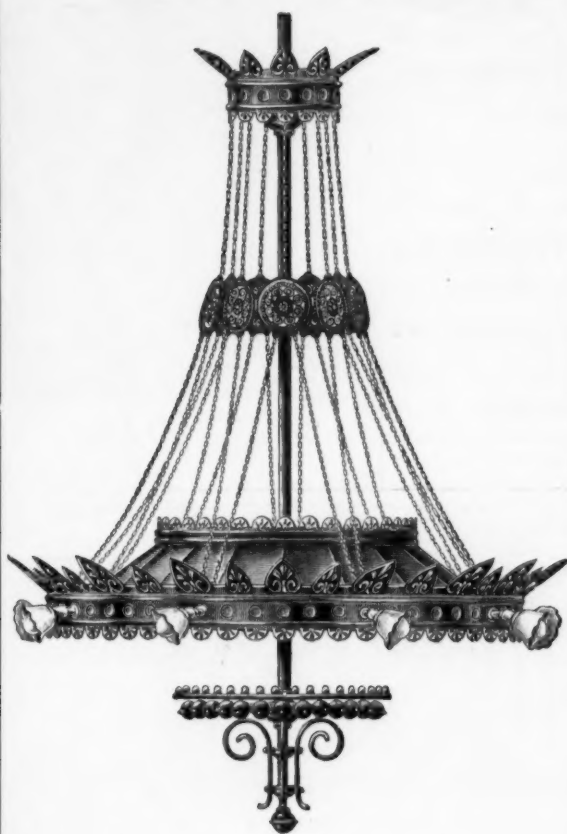
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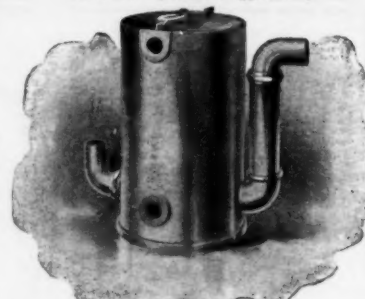
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(Advance Rumors Continued.)

building to be erected here. It will be of brick and cut stone, shingle roof, two stories and basement. Cost, \$25,000.

**Boston, Mass.**—Plans have been made by Geo. F. Newton, of Beacon St., for the new building to be erected for the Massachusetts Automobile Club in Boylston St., Back Bay, near Fairfield St. It will be 80 feet front, 80 feet on the rear line and 96 feet 9 inches deep. It will be three stories high, constructed of stone, terra-cotta, brick and galvanized-iron, and will cost above the land, \$40,000. The Boston Wharf Co. are to erect a one-story brick and stone building on lots numbered 47 and 49 Stillings St., from plans by M. D. Safford, the company's architect. It will be 53' x 62' x 120' in general dimensions, and will cost \$12,000.

Plans for the group of buildings to comprise the new medical school of Harvard University, which are to be erected between Brookline and Boston, near Huntington Ave., have been filed with the Boston Building Commissioner by Messrs. Shepley, Rutan & Coolidge, the architects. The structures, which will be five in number, are to be erected on

### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Huntington Ave., Francis St. and Longwood Ave. at an estimated cost of \$2,088,000. They are described as follows: Administration building, five stories in height, estimated cost, \$535,000; physiological building, \$421,000; bacteriology and pathology, \$390,000; histology and anatomy, \$396,000; pharmacology and hygiene, \$346,000. The buildings, which are to be of white marble in exterior construction, will be of fireproof quality. The contract has been awarded to the Norcross Bros. Co.

**Bridgeport, Conn.**—Plans have been completed and some of the contracts let for the new hospital to be erected for the Sisters of Charity of St. Vincent de Paul, to cost upwards of \$200,000. The great building will be constructed of mottled brick and stone, with granolithic floors, slate roof, copper cornices, elevators and a complete electric lighting and power system, the latter to be installed by an electric construction company of Brooklyn.

**Brookline, Mass.**—Architect Chas. E. Parks has designed plans for another large and handsome hotel to be known as Hampton Court to be erected here. The building which will be four stories

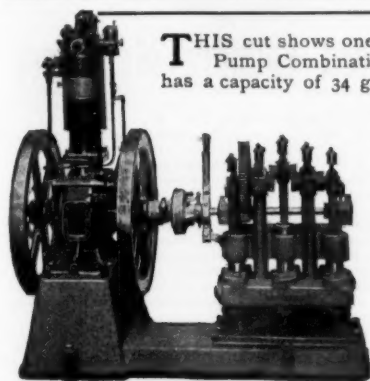




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### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

high, will be of first-class fireproof construction with steel frame and terra-cotta floors and partitions. When completed it will cost the owners, Wm. E. Lincoln and John L. Behnke, trustees, between \$350,000 and \$400,000.

**Brooklyn, N. Y.**—Plans have been drawn by Architect R. F. Almirall for a mortuary chapel to be built in Calvary Cemetery. The chapel will have an underground cavern, resembling the catacombs of Rome, for the burial of priests, and only priests will be allowed to contribute toward the expenses, which, it is estimated, will be \$200,000. This imitation of the catacombs for a burial vault will be the first in America.

J. B. McElfatrik & Son, architects, 1402 Broadway, N. Y., state that contracts for the decorations to the new Broadway Theatre, at Broadway and Myrtle Ave., have been awarded to Rambusch & Co., 160 Fifth Ave., New York, at \$6,500.

**Cambridge, Mass.**—A six-apartment house is being erected at 56 Boylston St. for Mrs. Spaine. It will be a wooden building three stories high, and will cost \$20,000. The builders are the McDonald & Vatcher Construction Co., of Boston.

**Centralia, Ill.**—Chas. W. Rapp, 100 Washington St., Chicago, has completed plans for a new high school to be erected here. It will be a two-story brick and stone building and will cost about \$40,000.

### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

**Chicago, Ill.**—Plans have been drawn by Architect Frank B. Abbott, 225 Dearborn St., for a new factory to be erected on Wabash Ave., near 13th St., for the Coca-Cola Co., 2131 Wabash Ave. It will be a six-story brick and stone building covering 68' x 145', and will cost about \$50,000.

Architect A. R. Williams, 160 Washington St., has designed plans for a three-story brick factory for the Plano Harvester Co. to be erected in connection with their plant at West Pullman. The building will be 53' x 229', and will cost \$30,000.

Rumor states that the Standard Office Co. is about to erect a seventeen-story fireproof structure to be known as the Railway Exchange Building, at Michigan Ave. and Jackson Boulevard, at a cost of \$2,500,000.

Plans are being prepared by Fred Ahlschlager, 70 La Salle St., for a four-story mercantile building, 60' x 160', to be erected at 1267 and 1269 Milwaukee Ave., for Chas. Zank & Co., at a cost of \$20,000.

**Chippewa Falls, Wis.**—The Wisconsin Sugar Co. will erect a beet-sugar factory here to cost \$600,000. The main building will be four-story, 500 feet long, of steel and brick.

**Columbus, O.**—John S. Woollacott, 109 Randolph St., Chicago, Ill., has prepared plans for the six-story Lincoln family hotel, 60' x 160', to be erected in this city. It is stated that the building will accommodate 40 families, and will cost \$125,000.

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### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

**Dorchester, Mass.**—This city is to have two more new school-houses this fall, one at Meeting House Hill and the other on the site of the old Gibson school-house, in addition to two new ones already built there. There will be 28 class-rooms in the Meeting House Hill building, the structure to be occupied by grammar school grades. It will be three stories in height, with playrooms for the boys and girls in the basement. A 24 room school building will be erected on the site of the Gibson School-house, now occupied as a primary school. The work of building will probably be begun about November 1.

**Ducktown, Tenn.**—A new plant for the Tennessee Copper Co. is to be erected here at a cost of \$100,000.

**El Paso, Tex.**—A union passenger station is to be built here for the Southern Pacific, the Mexican Central, the Rock Island, and the El Paso & Southern Railroads at a cost of \$250,000. D. H. Burnham & Co. are the architects.

**Goshen, N. Y.**—Plans have been filed for a two-story freight warehouse of brick and metal, 400 feet long, to be built in the freight-yards of the Erie R. R. at 11th Ave. and 28th St. It is to be part of the proposed railroad improvement on the West Side to be made by the Erie Land & Improvement Co., and is to cost \$135,000. The plans provide for the addition of a four-story extension in the future.

**Huron, S. D.**—The Elks have secured a site and will erect a lodge hall. It will be a two-story brick or cement block and is to cost \$12,000.

**Independence, Ia.**—A rumor states that the St. John's Catholic Society will erect a \$25,000 church.

**Jersey City, N. J.**—Jos. Millbank, who last June gave the First Congregational Church at Bergen and Boyd Aves., \$56,000, to enable the pastor, Rev. John Seudder, to erect a large parish building, has increased his gift to \$150,000.

Plans have been drawn by C. F. Long, 76 Montgomery St., this city, for the erection of a new city hospital on the site of the present one at Montgomery St. and Baldwin Ave. and an adjoining tract to be bought for the purpose. The main building will be 40' x 121', and three stories high. It will be a stone and brick structure, and will cost \$200,000.

**Joliet, Ill.**—A press report states that Chas. T. Lester and John A. Manley, of Chicago, intend erecting in this city a two-story brick and stone theatre on N. Chicago and Webster Sts. Probable cost, \$30,000.

**Kansas City, Mo.**—W. H. Collins is to erect an apartment-house at Tracy and 10th Sts. Cost, \$50,000.

**McKeesport, Pa.**—A press report states that a number of McKeesport business men are about to incorporate a company to be known as the McKeesport Office Building Co., with a capital of \$500,000, to erect a sixteen-story office, flat and store building on 5th Ave. and Sinclair St.

**Mexico, Mex.**—Plans have been prepared by Architects Lemos & Cordes, Fulton and Nassau Sts., N. Y. City, N. Y., for the erection of a \$400,000 office-building here for the Mutual Life Insurance Co. General contractor is A. R. Whitney, Jr., & Co., 135 Broadway, N. Y. City.

**New Haven, Conn.**—Plans have been made by the authorities of Yale University for the construction of a huge glass house in which her athletes will practise during the winter months. It is planned to construct a roof over a lot near the Yale gymnasium which will be 40 feet from the ground and 160' x 220' in dimensions. Under this glass roof there will be laid out a baseball diamond and a first-class running track. The cost will be \$50,000.

A fine new dormitory for the Sheffield Scientific is the Vanderbilt, which is to be erected on Wall St., between the academic quadrangle and the Scientific School. It is the gift of Frederick W. Vanderbilt and will cost \$200,000.

**New York, N. Y.**—Plans drawn by the official architect have been approved, and work will begin at once on the six-story public school-house which will be erected on Hester St., at a cost of \$400,000. The structure will stand opposite Seward Park and will have a ground-floor area of 75' x 200'. It will contain 97 rooms. A series of escalators will be installed for the use of the smaller children and as a means of escape in case of fire. There will be also four elevators.

Lienau & Nash, 1133 Broadway, have completed plans for a large stable which is to be built on the south side of 56th St., 78 feet east of Lexington Ave., for H. P. Anderson, 58 E. 57th St. The plans call for a three-story building, 22' x 38', of brick and stone, to have composition roof and thoroughly modern equipment. Cost, \$50,000.

McKim, Mead & White, architects, of 160 Fifth Ave., have completed plans and specifications for a handsome residence to be built at the corner of 52d St., near Madison Ave., for T. H. M. Lydig, 319 Fifth Ave. The plans provide for a five-story building of brick and stone, measuring 25' x 30'. Architects will receive estimates on the general contract.

Clarence Luce, architect, 242 Fourth Ave., states that the general contract for the World's Fair, New York State Exposition Building, which will be erected at St. Louis, has been awarded to Coldwell & Drake, of Columbus, Ind., at \$56,000.

Plans have been filed by Clinton & Russell, 32 Nassau St., for the fourteen and twenty-six story office-building which the corporation known as Sixty Wall St. (Clarence Cary, president), will erect at 60 and 62 Wall St., and 63 to 67 Pine St. The building will be leased to the International Banking Corporation. The new structure will be twenty-six-story on Pine St. and fourteen on Wall, of skeleton steel construction, with exteriors of granite, white brick and terra-cotta, and will cost

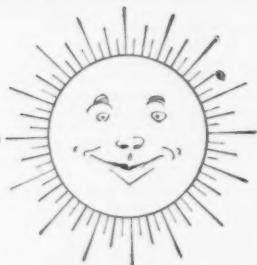




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#### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

\$1,250,000. C. T. Willis, 156 Fifth Ave., has the contract to build the proposed structure.

**North Smithfield, Mass.**—The B. F. Smith Co., of Pawtucket, R. I., has been awarded the contract for constructing the new \$400,000 cotton-mill which the Blackstone Manufacturing Co., Goddard Bros., of Providence, agents, agreed to build here if exemption from taxes could be secured. Ground will be broken for the cellar next week, and the work of construction will be pushed.

**North Tonawanda, N. Y.**—Wm. Allen is stated to have secured the contract for erecting the Carnegie Library, for \$18,000.

**Oakland, Cal.**—The corner-stone of the First Baptist Church was laid on August 15 at the corner of Telegraph Ave. and Jones St. The church proper will be 99 feet wide and 148 feet long. The structure is to be made of granite and will be as near fire-proof as it is possible to make such a building.

**Omaha, Neb.**—Dr. C. C. Allison will erect a frame and pressed brick residence and barn at 39th and Harney Sts., on plans drawn by F. A. Henniger, architect. Cost, \$16,000.

**Paso Robles, Cal.**—Architect W. H. Weeks, of Watsonville, has about completed plans for one of the finest bath houses in this country, which is to be erected here for the Paso Robles Hotel Co. The building will be 230 feet long and 65 feet wide and will be of the mission style of architecture. The total cost of the building will exceed \$50,000.

**Pawtucket, R. I.**—The plans, draughted by the Building Committee of the Young Men's Christian Association for the new building to be built on the Summer St. lot, in this city, have been sent to a selected list of architects to submit competitive designs for a four-story structure to cost not exceeding \$55,000. A prize of \$500 will be given the author of the design receiving first award, and to those who draw the plans rated as second and third among those submitted, a prize of \$250 each will be given.

**Philadelphia, Pa.**—John N. Gill, builder, is about to start work on additions to be built to the Children's Homeopathic Hospital at Franklin and 8th Sts., at a cost of about \$45,000. The addition will consist of building a new wing on Franklin St. and an isolating ward on 8th St.

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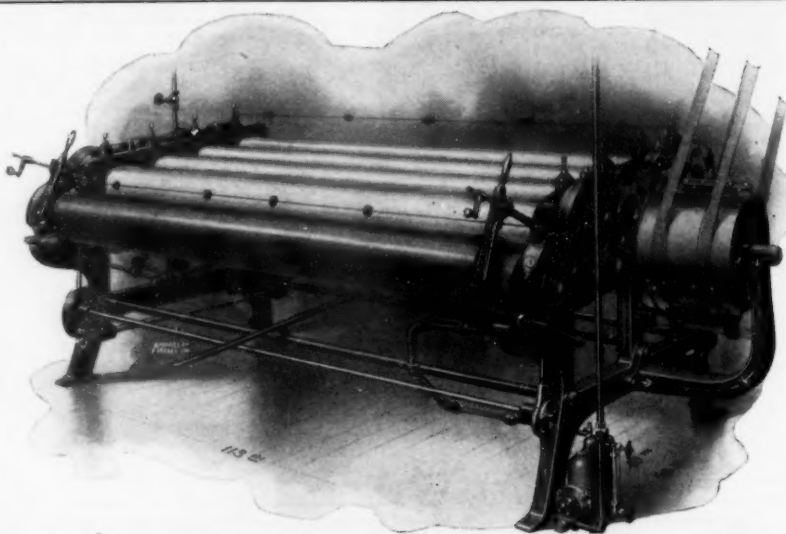
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#### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

**Armstrong & Latta** have secured the contract for erecting the buildings for the Mantua transfer station of the Pennsylvania R. R. at 50th St. and Columbia Ave. They will consist of a freight-house, office-building and sheds, 1,200 feet long and 100 feet wide. Cost, \$50,000.

**Pittsfield, Mass.**—Cebra Quackenbush is contemplating the erection of a \$50,000 theatre in the rear of the present Academy of Music.

**Pottsville, Pa.**—The Eastern Steel Co. has adopted plans for a new blooming mill to be erected in connection with their steel plant here, which will cost \$1,000,000. The plant will be started by December 1.

**Princeton, N. J.**—A press report states that the University Power Co. is about to be incorporated, with a capital of \$500,000, to provide heat and light both to the University and to the town.

**Raleigh, N. C.**—The plans of Hook & Sawyer, of Charlotte, have been accepted for an auditorium and conservatory of music for the Baptist Female University, to cost about \$25,000.

**Rome, Ga.**—The contract for the new passenger depot has been let to a South Carolina firm and the work will be begun at once. The plans call for a building 160 feet long and two stories high. Besides the depot structure, there is to be a steel shed under which the trains will stop for convenience of passengers. The cost is estimated at \$25,000.

**Rosemont, Pa.**—Builders Lewis Haven's Sons are about to start work on the erection of a large stable which is to be built here for John Converse. Wilson, Harris & Richards are the architects and plans provide for a two-story building, measuring 60' x 102', to have thoroughly modern fixtures and to cost about \$30,000.

**San Francisco, Cal.**—The South End Rowing Club has accepted the plans for a new club-house, drawn by Frank S. Van Trees. It will be located on the bay at the foot of 18th St., and its outside dimensions will be 30' x 65'.

**Santa Barbara, Cal.**—The Santa Barbara Improvement Co. is stated to be contemplating the erection of a theatre at State and Mason Sts., at a cost of \$100,000.

**Sault Ste. Marie, Ont.**—O'Boyle Bros., of this city, have a contract for a new turntable for the C. P. R., two section-houses and other work to cost \$35,000.

**Seattle, Wash.**—Plans by P. J. Weber, architect, of Chicago, have been accepted for the Carnegie Library building. Cost, \$200,000.

**St. Louis, Mo.**—The Anheuser-Busch Brewing Association are to erect a six-story building here. Cost, \$80,000.

**Washington, D. C.**—Architect Appleton P. Clarke, of Baltimore, Md., has prepared plans for an apartment-house with 25 apartments for Mrs. L. C. Plant, of this city. The building will be erected on the south side of M St., and will be modern in every particular. The vestibules and halls will be finished in marble, and the building complete will cost \$100,000.

**Waverly, Ia.**—The Paulist order of the Catholic priesthood will erect a home here to cost \$50,000.

#### PROPOSALS.

##### FIRE STATION.

[At Houston, Tex.]  
Sealed proposals will be received until Monday, September 14, 1903, for the construction of a two-story brick central fire station, corner of Texas Ave. and San Jacinto St., according to the plans and specifications on file at the office of Cooke & Co., architects. D. D. BRYAN, City Secretary. 1445

##### ADDITION TO SCHOOL-HOUSE.

[At Gaylord, Minn.]  
Sealed proposals for the erection of an addition to school-house at Gaylord, Minn., including all labor and material, will be received by the Board of Education until the 10th day of September, 1903. All bids must be in strict accordance with the plans and specifications, prepared by F. D. Orff, architect, of Minneapolis, which may be seen at his office, and may also be seen on application to the Board of Education at Gaylord, and the Builders' Exchange, St. Paul. 1446

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 31, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 7th day of October, 1903, and then opened, for the installation of a conduit and electric wiring system for the U. S. Custom-house and Post-office at Newport News, Virginia, in accordance with the drawings and specification, copies of which may be obtained at this office, or at the office of the Superintendent of Construction at Newport News, Va., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1446

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 26, 1903. Sealed proposals will be received at this office until 2 o'clock P. M. on the 5th day of October, 1903, and then opened, for the installation of a conduit and electric wiring system for the U. S. Post-office at Butte, Montana, in accordance with the drawings and specifications, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Butte, Montana, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1446

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 29, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 30th day of September, 1903, and then opened, for the installation of two electric passenger elevators in the U. S. Appraiser's Warehouse, New York, N. Y., in accordance with the drawings and specification, copies of which may be obtained at this office at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1446

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 29, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 30th day of September, 1903, and then opened, for the installation of two electric passenger elevators in the U. S. Appraiser's Warehouse, New York, N. Y., in accordance with the drawings and specification, copies of which may be obtained at this office at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1446

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## PROPOSALS.

### PUMP STATION.

[At Kansas City, Mo.]

Sealed bids will be received by the Board of Public Works, at the office of said Board, in City-hall, Kansas City, Mo., until 2 o'clock P. M., Thursday, September 17, 1903, for the furnishing of all material and labor necessary for the erection and completion of a fireproof boiler and pump house for the Turkey Creek Pumping Station, Kansas City, Mo. Plans, details and specifications can be seen at the office of the Superintendent of the Water Department at the City-hall. ROBERT E. KING, Secretary Board of Public Works. 1446

Treasury Department, Office of the Supervising Architect, Washington, D. C., September 1st, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 7th day of October, 1903, and then opened, for the installation of an electric wiring system for the extension of the U. S. Post-office, etc., Seranton, Pa., in accordance with the drawings and specifications, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Seranton, Pennsylvania, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1446

### BRIDGE.

[At Canton, N. Y.]

Sealed proposals will be received by the Town Board at the office of the Town Clerk in the Town-hall, in the village of Canton, N. Y., until Saturday, September 26, 1903, for the construction of a stone arch bridge across Grasse River, on Main St., in the town of Canton, N. Y. Plans and specifications may be seen at the office of the Town Clerk on and after August 27, 1903. F. J. WHEELER, Town Clerk. 1447

### BUILDINGS.

[At New Orleans, La.]

Sealed proposals will be received by the Board of Commissioners of the Port of New Orleans at their office, No. 337 Carondelet St., New Orleans, until September 15, 1903, for the construction of the Celeste Street Steel Shed. Plans, specifications, proposal forms, etc., are on file at the office of the engineers, Coleman, Maloche & Villere, No. 1109 Hennen Building, New Orleans. HUGH McCLOSKEY, President. 1446

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 22, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 28th day of September, 1903, and then opened, for the low pressure steam heating apparatus, complete in place for the U. S. Court-house and Post-office building at Fergus Falls, Minn., in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Fergus Falls, Minn., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1445

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 23, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 29th day of September, 1903, and then opened, for the installation of a conduit and electric wiring system for the U. S. Court-house, Post-office and Custom-house at Tampa, Florida, in accordance with the drawings and specification, copies of which may be obtained at this office, or at the office of the Superintendent of Construction, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1445

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 22, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 8th day of September, 1903, and then opened, for the installation of an elevator plant in the U. S. Court-house and Post-office at Minneapolis, Minn., in accordance with the drawings and specification, copies of which may be had at this office at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1445

## PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 20, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 23rd day of September, 1903, and then opened, for the installation of a conduit and electric wiring system for the U. S. Post-office at Joplin, Mo., in accordance with the drawings and specifications, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Joplin, Mo., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1446

### PUBLIC LIBRARY.

[At Cleveland, O.]

Sealed proposals will be received at the office of the Secretary of the Public Library Board of the city of Cleveland, Public Library Building, Wood St., Cleveland, O., until September 14, 1903, for furnishing all the material and doing all the work necessary to complete a public library building near the intersection of Willson Ave. and Broadway, in accordance with plans and specifications being prepared by Charles Morris, architect. Said plans are on file at the office of the said Charles Morris, architect, 625 Garfield Building. C. D. WILLIAMS, President. HARRY DIXON, Secretary. 1446

### SCHOOL.

[At Manchester, N. H.]

Sealed proposals will be received by the trustees of the Industrial School for the erection of an isolation hospital upon the grounds of the school in Manchester, N. H., until September 17, 1903. Plans and specifications may be obtained of the Superintendent at the school and all proposals may be left with him. JOHN C. LINEHAN, President for Board of Trustees, Industrial School. 1445

## PROPOSALS.

### PAVING.

[At Wilmington, Del.]

Sealed proposals will be received by the Delaware State Highway Commission, at its office, No. 1011 Market St., Wilmington, Del., until September 8, 1903, and then publicly opened, for building a macadam or gravel road in New Castle County and State of Delaware, and known as the Middletown and Odessa Road. Plans and specifications can be seen at the office of the Delaware State Highway Commission, No. 1011 Market St., Wilmington, Del. C. J. HOB-RIGAN, Chairman. 1445

### SCHOOL-BUILDING.

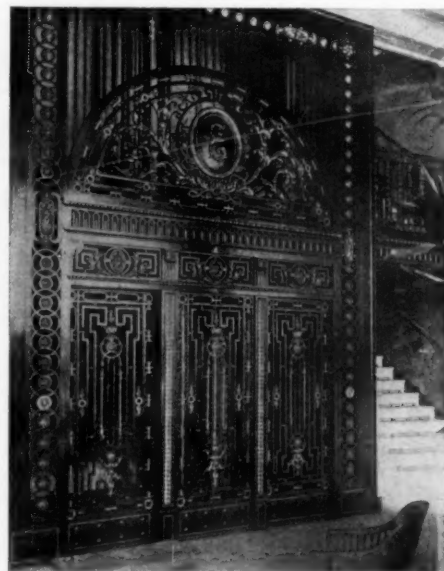
[At Lehigh, Pa.]

Sealed proposals will be received by the School Board of the Independent School District of Lehigh, Pa., to be sent to J. C. Retallick, President of the Board, Lehigh, Pa., until September 26, 1903, for the erection and completion of a school-building at Lehigh, Pa., in accordance with plans and specifications which will be on file on and after August 26, 1903, at J. C. Retallick's office in Lehigh, Pa., and at the office of Murphy & Ralston, architects, Waterloo, Pa. Sealed proposals will be received at the same time and under the same conditions for the construction and installation of a hot air heating plant and also for all necessary plumbing for such proposed school-buildings as per specifications. J. C. RETALLICK, President. N. J. WILLIAMS. 1447

### SCHOOL-BUILDING.

[At Penacook, N. H.]

Sealed proposals will be received on or before September 7, 1903, for the erection of a four-room wooden school-building at Penacook, N. H. Plans and specifications may be seen at 26 Crescent St., Penacook, N. H. HENRY A. BROWN, Clerk of Com. 1445



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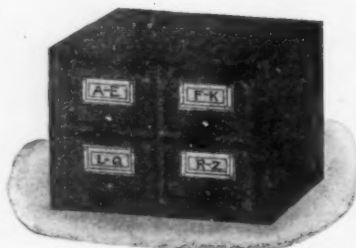
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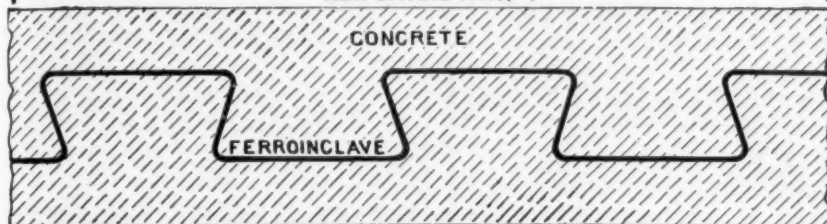
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SECTION 1. No Member should enter into partnership, in any form or degree, with any builder, contractor, or manufacturer.

SECTION 2. A Member having any ownership in any building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

SECTION 3. No Member should be a party to a building contract except as "owner."

SECTION 4. No Member should guarantee an estimate or contract by personal bond.

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SECTION 6. It is unprofessional to advertise in any other way than by a notice giving name, address, profession, and office hours, and special branch (if such) of practice.

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SECTION 9. It is unprofessional for a Member to criticise in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

SECTION 10. It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

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SECTION 12. The American Institute of Architects' "schedule of charges" represents minimum rates for full, faithful and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

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