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CONTENTS

THROUGH the generous gift of one hundred thousand dollars by the Duc de Loubat, Columbia University has been enabled to establish a chair of archæology, and Prof. Marshall H. Saville, formerly curator of the archæological collections of the University, has been appointed to fill it. The Duc de Loubat has given similar endowments to the University of Paris, and the University of Berlin; and it remains to be seen which of his beneficiaries will make the best use of his gift. This country, while it is at a certain disadvantage in not possessing such incomparable collections of antiquities as those of the British Museum, the Louvre, and those of Berlin and Munich, seems to make up in enthusiasm what it lacks in material; and we have reason to pride ourselves on the fact that the modern revival of interest in archæology is due in a very great measure to the enthusiasm, energy, and astounding success of a single hardworking and self-trained American. Columbia University cannot be expected to turn out Schliemanns by the dozen; and if it could, his successors have hardly left any such virgin field as that in which he found fame; but, until the Tiber is dredged down to the virgin soil; until Sybaris is freed from its covering of mud; until the language of the Etruscans is translated, and the origin and present affinities of that strange race made clear; until the history of ancient Mesopotamia is written, and until Thibet is thoroughly explored; there will be quite enough for American students to do on the other side of the Atlantic, to say nothing of what remains to be accomplished on this side. Although we have not heard much of late about Isis and Osiris in Yucatan, an important discovery is said to have been made, at the time when the allied army of rescue entered the Sacred Enclosure of Pekin, not many months ago, in the shape of a manuscript, giving a circumstantial account of the landing of a colonizing party of Chinese on the coast of Peru, centuries before the arrival of the Spaniards, and the establishment of a settlement, with a temple. Although traces of inscriptions in the ancient Chinese character are said to have been found in Central America, and some, at least, of the North American tribes are more than suspected of having had a Mongolian origin, this is the first evidence, so far as we know, of Chinese colonization in South America. How the brave adventurers crossed the Pacific Ocean; whether they took what must have been a year's voyage directly to Peru, or crossed at Behring's Straits, and made their way by land over the mountains and through the deserts, are questions of the greatest interest and importance; and our American explorers are likely, for the present, to have them to themselves.

A GRATIFYING commotion has been excited in New York, not only among the newspaper editors, but, apparently, in the public mind, by the attempts which are being made in the Legislature to modify or annul the present tenement-house law. One bill for the purpose, which Senator Marshall, without reading it, had good-naturedly undertaken to introduce, proved to be so bad that he withdrew his consent to be sponsor for it; but others, nearly as objectionable, are ready to succeed it. Meanwhile, the New York Academy of Medicine has passed formal resolutions, which ought to have great weight with the Legislature, deprecating any attempt to destroy the good effects of recent legislation, and pointing out that eight thousand people die every year in New York city from pulmonary tuberculosis, the principal predisposing cause of which is the lack of light and air in dwellings which the present tenement laws are just beginning to correct. Besides the eight thousand who die, twelve thousand more young persons annually are attacked with the disease, and rendered helpless at the time when they should be of the most advantage to the community; so that the drain upon the resources of the city due to this cause alone amounts, reckoned in money, to many million dollars a year; and everything that is done in defence of the compulsory reform of tenement-house construction counts as a financial benefit to the city, as much as a moral and physical one.

THE Trustees of the Boston Museum of Fine-Arts have, according to the newspapers, taken a rather unusual, but, to our mind, commendable course in arranging for the plans of their new building on the Fens. Mr. R. C. Sturgis, who was one of the architects of the new wing of the present building, and is very familiar with the main structure, which was designed by his uncle, has been, very properly, commissioned to prepare sketch plans for the new structure; and Mr. Edmund M. Wheelwright has been associated with him in the preliminary work. Together they have been requested to study existing galleries and museums, so that the best arrangement and lighting may be secured for the collections now belonging to the Museum, or likely, in accordance with the general policy of its authorities, to be acquired hereafter. As every one knows, galleries of fine art present great diversities of lighting, very few being entirely successful in this respect; while objects of different kinds require lighting in different ways, the usual rule being that pictures should be lighted from the top, statues from the side, and jewelry, coins, and such small affairs, from a window directly in front of the cases. There are, however, exceptions to all these rules, some of the German museums, for instance, placing their small and highly-finished pictures in a succession of little rooms, with side light; while the Louvre and the British Museum exhibit much of their finest jewelry and goldsmith's work in cases in the middle of a room with windows only on one side. To provide for the peculiar needs of the Boston Museum in these respects, and to combine perfect lighting, suitable size of rooms, and convenience of arrangement, both for the public and for students, with architectural dignity and beauty, is a problem of great difficulty; and the profession will look with interest for the solution which Messrs. Sturgis and Wheelwright may decide upon.

A CURIOUS illustration of the way in which combinations of employers provoke combinations of those whom they employ is to be observed in Chicago. Some time ago, a Building Managers' Association was formed, consisting of the administrators of a large number of the great office-buildings in the city. The organization was hardly in working order before it was notified that a similar association had been formed among the elevator-boys, janitors, window-washers and other persons employed in the buildings concerned; and that dealings must be held thenceforth with the association, instead of with individuals. The members of the Managers' society found that the beauties of organization did not appeal to them so strongly under this form, and they declined to recognize the new association; whereupon the members of the latter struck, to enforce their request. It is conceivable that the tenants of an office-building might get along without having their windows washed, or their floors swept; or might secure these advantages from their private resources; but to walk upstairs a dozen times a day to an office in the twentieth story is a different matter. Meanwhile, the elevator-boy and janitor

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combination enlisted the good offices of the Coal Teamsters' Union, the members of which were instructed not to deliver coal at the buildings suffering from the strike; so that the tenants of the latter are threatened with suffering from cold and darkness, as well as fatigue and dirt. While we do not approve of the use of innocent tenants as clubs, wherewith janitors and managing trustees endeavor to beat each other into submission, it does not distress us much to see combination on one side met by combination on the other. On the whole, the community suffers more from the combination of the rich and powerful than it does from that of the poor; and, although the associations of the latter are rougher and less polite in their attempts to gain their ends, those of the rich are quite as unscrupulous, and, in the end, more pernicious.

THE official investigation into the cause of the fall of the Venetian Campanile has shown, as most architects expected would be the case, that the foundations are still in excellent condition, and that the "rotting of the piles," the "earthquake cracks" under them, and the general "decay" of the subsoil, about which we heard so much at the time of the catastrophe, however alarming they may be in other parts of Venice, have not affected the foundations of the Campanile. On the contrary, the fall is clearly shown to have been due to the reckless folly with which the old building, erected at the period when the art of construction was at its lowest ebb in Italy, with miscellaneous materials, put together with the poorest apology for mortar, has been cut into and mangled in modern times. Our professional readers will remember that, just before the catastrophe, a longitudinal channel, some eight inches deep, had been cut in the face of the tower, for the purpose of inserting a flashing, to protect the junction of the wall with the roof of the Loggetta. This channel, it appears, actually cut into a sixteen-inch flue, which had been cut vertically out of the wall of the tower, near the corner which first gave way, so that the custodian could have a fire in his room near the entrance. When we remember that "repairs" of this kind have been going on for several years, we shall be disposed to wonder, not that the tower fell, but that it held out as long as it did.

THE plans of the new Manhattan suspension-bridge, which have been prepared by Commissioner Lindenthal, with the help, presumably, of the consulting architect, Mr. Hornbostel, provide for a very novel structure. It is hardly necessary to say that engineers, who generally have a poor opinion of novelties which they do not themselves invent, have already begun to criticise the plans; but architects, who are more accustomed to the consideration of a variety of suggestions, are likely to find much that is interesting in them. One of the most startling novelties consists in making the towers which support the cables movable about a pivot at the base, so as to accommodate themselves to the expansion and contraction of the cables. Most suspension-bridge towers are vast masses of stonework, carrying at the top an iron saddle, over which the cables slide as the exigencies of expansion may require. Of course, the friction on the saddle is enormous, so that there is still a severe lateral strain on the stonework; and Mr. Lindenthal's plan, of eliminating altogether the stonework, which is unsuited to such strains, and making his towers of steel columns, which simply rock on their base to accommodate themselves to the movement of the cables, seems to us both logical and sensible. Of course, the designing of steel columns to carry such huge loads, acting sometimes at an angle with the axis of the column, is not an easy matter, but it is certainly within the capacity of an engineer so accomplished as Mr. Lindenthal.

ARCHITECTURALLY, the steel towers are treated very frankly. No attempt is made to disguise them in any way, but they are utilized to support balconies, which will afford pleasant resting-places in summer, and the top of each is carried up into a pinnacle, three hundred and sixty feet high, which is to support a cluster of electric lights. The anchorages, which are necessarily of masonry, instead of being solid masses of stonework, are formed into ornamental arcades, which serve as entrances to the various roadways crossing the bridge. This feature we imagine to be due to Mr. Hornbostel. An engineer always looks at masonry as mere dead weight, while an architect's instinct is always to distribute it so as to enclose or cover something; and, in this case the latter view seems to have prevailed, naturally, with excellent results, so far as the artistic effect of the bridge is concerned.

WHAT the newspapers call the "Bloomington Declaration of Independence" deserves attentive consideration, not only by the citizens of the Australian provinces, and other portions of the British Empire, hopelessly ruined by trades-unionism run mad, but by the citizens, particularly the politicians, of this country, too many of whom imagine that the proper, or, at least, the prudent, course is to abet the schemes of the cruel and treacherous tyrants who, by alternate cajolery and threat, seek dominion over workingmen and their families. The occasion for this Declaration was the successful attempt of the union tyrants to establish the system which they tried, unsuccessfully, to set up in Chicago, and which is in full operation in the Australian colonies, to which it has brought insolvency and decay. Under this system, as practised in Bloomington, business was carried on under the dictation of the union rulers, and every attempt to escape from their control was punished by the succession of strikes, boycotts and terrorism which long practice and assured impunity have made so effective.

THE responsible citizens of Bloomington endured all this, and finally, being brought to the alternative of either rebelling against their tyrants, or abandoning their residence, like the Australians, and seeking a new one in some place where freedom still prevailed, chose the former course, and formed an association, all the members of which pledged themselves to see that every young man in Bloomington desiring to learn a trade should be "permitted to do so unmolested, in perfect freedom, and without paying tribute, or a license for the privilege, to irresponsible bodies of men not known to the law"; and to "give their united support and sympathy to all victims of persecution and the boycott, and exhaust every resource of the law and the courts to punish all illegal conspiracies, boycotts and other unlawful acts." For people engaged mainly in manufacturing, this Declaration made, undoubtedly, with full knowledge of the power of the labor tyrants, of their close alliance in defence of their profitable profession, and of the enormous fund which they keep in reserve for supporting their campaigns, indicates that American courage and love of liberty still survive in Bloomington; and it may be hoped that the example will be extensively followed. The whole system of union management, as now carried on, in all its cowardly details, its conspiracies, evasions, dishonesty, tyranny and brutality, reeks of slavery, and should have no place on American soil. So long as Americans, when they want a thing, ask for it, and, if they think they are unjustly refused it, take it by force of arms, they are in the way of liberty; but from the moment that they begin to scheme to get what they want by conspiracy and indirection, they prepare the way for the advent of some greater tyrant, who will find the little tyrannies an excellent foundation for his throne.

LA CONSTRUCTION MODERNE gives an interesting description of the way in which the annual prizes for city fronts are awarded in Paris, as explained in the report of the last award, prepared by M. Bartaumieux. The jury of award was composed, last year, of the Director of the "Services d'Architecture," an official who has no counterpart in any English-speaking country; with five members of the Paris Municipal Council, all of them men of distinction; the chief city architect; and MM. Vaudremer and Bartaumieux, chosen by the competitors. Fifty-seven street-fronts were entered for competition in various quarters of Paris, and the first work of the jury was to lay out a route by which they could examine them all in three days, without wasting time in going twice over the ground. This done, carriages were engaged, which conveyed the jury to the buildings in turn, and each was carefully examined. At the end of the examination, each member of the jury marked in his notebook his judgment of the merits of the design, on a scale of twenty, and the carriages then proceeded to the next building. At the final meeting of the jury the points were added up, and the award made in accordance with the totals. The inspection seems to have been made with the utmost care and conscientiousness; and judging from M. Bartaumieux's report, the architects and the laymen on the jury seem to have agreed very well in their opinions.

ARCHITECTURAL PARTNERSHIPS.

GENERALLY speaking, architectural partnerships may be classified in one of two ways: the partnership may include two or more men of varying capacities, the work being divided among them so that one man does all of the real architecture while the others attend to the business or constructive details; or the partnership may be a simple combination of two or more architects, each following his own bent in a way, but working in harmony and aiding each other by mutual criticisms. As regards the second form of partnership, its desirability is purely a matter of temperament. Some men need backing and friendly endorsement to enable them to do their best, and such a species of coöperative partnership does not imply any lessening of architectural individuality nor any desire to ignore or evade the various and exacting conditions under which architecture is or should be practised to-day. But as regards the first species of partnership, that in which the work is divided and one man does all the designing, another all the construction, and perhaps a third does the business or "the hustling," it is or is not justified entirely by the point-of-view which is taken of architecture as a profession.

We hear a great deal nowadays about specialization and it is frequently asserted that considering all the advance in electrical-engineering, heating-work, specialized sanitation, steel-construction, quite aside from the complicated problem of the successful manipulation of a large business, it is physically impossible for an architect to understand sufficiently all the details now required of him to be able properly to handle his business alone, and that therefore he must, if he is to be successful, associate himself with specialists as partners. The writer assents to neither the statement of alleged facts nor the conclusion drawn therefrom. The modern problems involved in large building-constructions have come into being within a very few years. It is beyond dispute that they found most of the members of the architectural profession unprepared to meet them and that the requisite architectural training of twenty or twenty-five years ago was quite inadequate to the demands which are made upon the profession of to-day. But to assume that an architect cannot in the course of the years which are usually given to preparatory studies equip himself to properly handle all of the problems with which he will have to deal in the most extensive business, is to assume that he is either deficient in mental endownment or is not willing to work. The engineering problems involved in even the largest architectural construction are, after all, quite elementary. One does not require an engineering education in order easily and intelligently to design a modern steel building and the mere methods of calculation can be acquired by an intelligent university-bred man in a few weeks. In the same way also the problems of heating and ventilation can be mastered in a relatively short time, while the acquisition of a working knowledge of all that has to do with ordinary electrical work need not consume more than six months of the time spent in preparatory studies by the educated architect. It is not necessary that the architect be an expert electrician any more than he be an accomplished bricklayer or carpenter. It is essential that he should know what can be done with electricity and how it can be done right, just as he must know when masonry is well laid or when carpentry is successfully put in place, and the same reasoning applies to all of the so-called practical and technical branches of our profession. It goes without saying that these are not the most attractive branches to the man who is a born designer. They are the parts of his profession which he would most gladly lose sight of or entrust to others and for that very reason they are the parts upon which he ought to force himself to be posted. This brings us to the real point of the whole objection to a partnership in which the work is divided. Shall we look upon architecture as an art or as a business? If we are to consider it simply as a business there is every reason for dividing the work, for forming an aggregation of partners, so that the designer shall only design, and the constructor only construct, and the scientist consider only science; but that is not architecture, that is business pure and simple. A subdivision of work means a greater ease in executing it, it means an economy in production, and a rapidity in carrying out and developing schemes which commends itself entirely from a purely mercenary or mere business standpoint, and if architecture means no more than doing our work with the least possible expenditure of thought and money, of getting our work completed in such manner as will show the largest cash dividends, if it is only a question of increasing the volume of our business and reducing the volume of our expenses, then, by all means, a partnership is the correct and only businesslike procedure. But architecture never has in the past been developed on any such lines. A division of architectural responsibilities means inevitably a one-sided result. It means, furthermore, that in the partnership there is no real architect at all. The designer is bound to lose sight of the practical conditions and the practical man, the scientist or the business-manager, has absolutely no part in architecture as such, but becomes a mere cog, a very important cog and a very desirable cog to be sure, but still only a one-sided factor in the machinery which grinds out something that may pass for architecture and may very often be excellent of its kind, but which has a lowering rather than an elevating tendency and which is sure in the end to dwarf the individuality of those concerned in it.

Architecture at its best is not a money-making profession. In this respect it is like all arts. The artist is called upon to sacrifice worldly advancement for an ethical idea. The advancement of his profession, the realization of his ideals, ought to be to him far more than mere pecuniary gain. It is pretty hard sometimes to be true to such ideals, to see the modern commercial architect who cares for nothing quite so much as for large commissions step in and capture the rich plums, while the artist has to content himself with nothing but his ideals. If an architect has not the courage of his convictions and is not willing to sacrifice for these ideals it simply means he is not of the stuff of which great designers are made. He is not the kind who is to help, even though silently and obscurely, in lifting his art to a higher position. It need not be assumed from this that the architect who looks upon the profession simply as a money-making business is necessarily a man to be wholly condemned. From an artistic standpoint his point-of-view is wrong; and the architecture which he produces will be based on at least incomplete principles, but his very commercialism may be a stimulus to the architect who holds different if not higher ideals, teaching the latter to make his work more thorough, inciting him to better business methods and showing him what art is not. But the real question of whether an architectural partnership with divided responsibility is right or wrong can be settled wholly from the standpoint of whether a man goes into architecture primarily to make money or whether he goes into it primarily to do the best work the Lord will let him accomplish. The expediency of such a partnership from a financial standpoint is indisputable. Its necessity, from an artistic standpoint, is absolutely denied. If the architect really has the creative spirit, if he has it in him to be all that the word architect might imply, it is no one's fault but his own if he is unable to handle all of his work alone. There are plenty of opportunities for study; it is not impossible for him to keep easily abreast of scientific growth and structural development, and the very fact that he will have to work hard to keep up with the times will help him to make his work well rounded and comprehensive and more truly fitted for its purpose. Architecture which is mere designing is often as one-sided and false as the so-called architecture which is mere construction. Book-keepers, superintendents and specialists in every department can always be had for the asking, and can be used intelligently so long as the architect knows thoroughly what he wants, but the moment he resigns any one portion of his work wholly to some one else, whether it be the artistic, the practical or the business side, he by so much deprives himself of just right to the title of architect and to a corresponding extent he imperils the full measure of his real architectural success. A partnership which is an association of two architects working together, mutually encouraging one another, in sympathy with one another's aims and endeavors, is quite another affair, but the partnership in which a man deliberately relinquishes an essential part of his profession can be justified only when architecture is considered a mere means of earning money.

GERMAN REGULATIONS RELATING TO ARMORED CONCRETE.

THE increasing use of armored concrete upon the Continent, and the necessity for some uniform system to be adopted, has induced the various societies of engineers and architects to formulate rules for the guidance of builders and contractors who have undertaken constructions in armored concrete. The following synopsis, which is also a translation of the Regulations issued by the Office of Building Inspectors (Germany) with regard to work being carried out under the Hennebique System, recently appeared in our Swiss contemporary, *La Bulletin Technique*.

In order to undertake any work in the Hennebique System, the special authorization of the Inspectors of Buildings must be obtained. The request must be accompanied by copies of the plans, static calculations, and an account of the properties and composition of the materials to be employed. The authorization will, in general, be granted upon the following conditions: —

1. The execution of work shall only be confided to experienced workmen, who shall be under the superintendence and permanent control of a trustworthy manager, who must be able to prove, by means of certificates, that he has a perfect knowledge of the Hennebique System.

2. The concrete must be composed of a good brand of cement, sharp sand and gravel. The proportions of the mixture are to be such that the resistance of the concrete to crushing shall not be less than 150 kilogrammes per square centimetre (2,062.5 pounds per square inch), after hardening for twenty-eight days. The resistance to tension, *i. e.*, the tensile force at which the concrete breaks, must not be less than 40 kilogrammes per square centimetre (about 550 pounds per square inch). The admitted force to compression must not be less than 30 kilogrammes per square centimetre (about 412.5 pounds per square inch).

3. The coëfficient of force exerted by the armatures must not exceed 875 kilogrammes per square centimetre (about 12,031¼ pounds per square inch) to tension or compressing; and 700 kilogrammes per square centimetre (about 9,625 pounds per square inch) to shearing.

4. The net weight for Hennebique constructions shall not exceed 2,500 kilogrammes per cubic metre (about two-and-one-half tons per cubic yard). For the static calculations the following bases are admitted in general: —

5. The tensile or compressional force of the armature must be in proportion to the modulus of elasticity of the iron and the concrete.

As the modulus of elasticity in a concrete answering to the above requirements is generally taken at 200,000 kilogrammes per square centimetre, and that of the iron at 2,000,000 kilogrammes per square centimetre the equivalent will be "$a = \frac{1}{10}$." In general, the maximum moment shall be taken as equal to $\frac{P\,l}{10}$ (P = the total load, and l the span of the arch or beam). Where arches or beams are surmounted by weight-bearing slabs or floors, a portion of these slabs (not more than one-third of the span of the latter) may be considered as forming part of the arch or beam, thus forming a T section. If the beams are supported on trusses, one-third of the span of these secondary supports may also be considered as belonging to the flooring or arch slabs; in which l will equal the span of the secondary beam or truss. In order to avoid a possible "bulging" in columns or supports, the construction of these last must be such that all harmful tension is avoided. In working out the equation for these, not only must simple compression be allowed for, but, also, "bulging." The equation must, therefore, be $J = 60 \times P \times l^2$ for an axial load, and $J = 100 \times P \times l^2$ for an eccentric load. In the equations J, expressed in cubic metres, represents the minimum moment-of-inertia of the section of a column, P the load in metric tons (1,000 kilogrammes = 2,200 pounds), and l the length in metres.

6. An arch, beam, or truss, having a span equivalent to 3.2 metres (about 9½ feet) must bear a load of at least 1,800 kilogrammes per square metre (about 3,960 pounds per square yard). With a section of $Om^2.2$ (about 1 inch), its net weight will be $.2 \times 2{,}500 = 500$ kilogrammes per metre (about 1,100 pounds per yard), its total load per metre, $1{,}800 \times 1.5 \times 500 = 3{,}200$ kilogrammes (about 7,040 pounds), and the moment-of-curve equals

$$M = \tfrac{1}{10}\ 3{,}200 \times 3.2^2 = 3{,}276 \text{ m. kg.} = 327.6 \text{ cm. kg.}$$

The section of a bar of iron being $\frac{1}{4}\ 3.14 \times 2.8^2 = 6.2$ cm². The coëfficient being $a = \frac{1}{10}$, the total section will be $F = 16 \times 35 + 134 \times 10 + 10 \times 6.2 + 10 \times 6.2 = 560 + 1{,}340 + 62 + 62 = 2{,}024$ cm².

The static-moment of this section in relation to the upper curve equals

$$S = 560 \times \tfrac{1}{2} \times 35 + 1{,}340 \times \tfrac{1}{2} \times 10 + 62 \times 28 + 62 \times 32 = 9{,}800 + 6{,}700 + 1{,}736 + 1{,}984 = 20{,}220 \text{ cubic centimetres.}$$

The moment-of-inertia equals

$$J = 9{,}800 \times \tfrac{2}{3} \times 35 + 6{,}700 \times \tfrac{2}{3} \times 10 + 1{,}736 \times 28 + 1{,}984 \times 32 = 385{,}439 \text{ cm}^4.$$

Distance of the centre-of-gravity from the upper curve equals

$$s = \frac{20{,}220}{2{,}024} = 10 \text{ cm. (about 4 inches),}$$

and the moment-of-inertia with regard to the axis passing through the centre-of-gravity equals

$$J\,s = 385{,}430 - 2{,}024 \times 10^2 = 183{,}030 \text{ cm}^4.$$

One, therefore, obtains as resistance to compression in the concrete,

$$Sd = \frac{10 \times 327.680}{183{,}030} = \text{about } 18 \text{ kg. per sq. cm. (about 247 pounds per square inch).}$$

The resistance to tension in the concrete will equal

$$Sz = \frac{25 \times 327.680}{183{,}030} = 45 \text{ kg. per cm.}^2 \text{ (618 pounds per square inch).}$$

Distance from the compressional centre to the tensional centre equals

$$35 - \tfrac{1}{3}\ 10 - 5 = 26.67 \text{ cm. (about } 10\tfrac{1}{2} \text{ inches).}$$

The tension borne by the iron equals

$$z = \frac{327.680}{26.67} = 12.286 \text{ kg. (about 27 pounds).}$$

The tensional force on the iron equals

$$Se = \frac{12.286}{2 \times 6.2} = 9.91 \text{ kg. per cm.}^2 \text{ (about 136 pounds per square inch).}$$

In columnar work a column 7 metres high (22.9 feet) is supposed to support an axial load of

$$P = 65{,}000 \text{ kg. (143,000 pounds).}$$

The section equals

$$F = 30 \times 60 + 10 \times 6\ (n) \times 1.8^2 = 1{,}800 \times 611 = 2{,}411 \text{ cm.}^2$$

Moment-of-inertia in relation to the axis passing through the centre-of-gravity equals

$$J = \tfrac{1}{12}\ 60 \times 30^2 + 611 \times 10^2 = 196{,}100 \text{ cm.}^4$$

Minimum moment-of-inertia required equals

$$J = 60 \times 65 \times 7^2 = 191{,}000 \text{ cm.}^4$$

Resistance to compression equals

$$Sd = \frac{65.000}{2{,}411} = 27 \text{ kg. per cm.}^2 \text{ (about 371 pounds per square inch).}$$

The same column submitted to an eccentric load equals

$$P = 15{,}000 \text{ kg. (33,000 pounds),}$$

parallel to the axis of the column and acting at 20 cm. (8 inches) from the centre-of-gravity of the section.

Maximum force of compression in the concrete equals

$$Sd = \frac{15{,}000}{2{,}411} + \frac{15{,}000 \times 20 \times 15}{196.100} = 6.2 + 22.9 = 29.1 \text{ kg. per cm.}^2$$

(about 400 pounds per square inch).

Distance of the neutral line to the axis passing through the centre-of-gravity equals

$$e = \frac{196{,}100}{2{,}411 \times 20} = 4.07 \text{ cm.} = \left(\frac{M = P}{W = F}\right).$$

Compressed section equals

$$F = 19.07 \times 60 + 3 \times 10\ (n) \times 1.8^2 = 1{,}144 + 306 = 1{,}450 \text{ cm.}^2$$

Static-moment of the section in relation to the neutral axis equals

$$S = 1{,}114 \times \frac{19.07}{2} + 306 \times 14.07 = 10{,}908 + 4{,}305 = 15{,}213 \text{ cm.}^3$$

Moment-of-inertia of the same section in relation to the neutral axis equals

$$J = 10{,}908 \times \tfrac{2}{3} \times 19.07 + 4{,}305 \times 1{,}407 = 138{,}677 + 60{,}571 = 199.248 \text{ cm.}^4$$

Distance of the centre-of-compression to the neutral axis equals

$$d = \frac{199.248}{15{,}213} = 13.1 \text{ cm.}$$

Distance from the tensional centre to the armature equals

$$z = 10 \times 13.1 - 4.07 = 19 \text{ cm.}$$

Distance from P (total load) to the tensional centre equals

$$p = 24.07 - 13.1 = 11 \text{ cm.}$$

Total tension of the iron equals

$$Z = \frac{Pp}{z} = \frac{15{,}000 \times 11}{19} = 8{,}700 \text{ kg.} = (18{,}040 \text{ pounds}).$$

Resistance of the iron to tension equals

$$Se = \frac{8{,}700}{3 \times 10.2} = \text{about } 280 \text{ kg. per cm.}^2 \text{ (about 3,850 pounds per square inch).}$$

Load Tests. — The trials for the load must be made each time that a story or stage of the work is completed, and when the concrete has acquired a sufficient hardness. The building-inspectors must be notified of the time at which the trials will take place in order that they may superintend the said trials.

The floors, arches and principal beams shall be loaded with three times, and the columns with five times, the surcharge allowed in the above calculations. If the building-contractors and others engaged in these constructions fail to carry out the rules as herein stated, the inspectors reserve the right to interdict the contractor or contractors in question from carrying out any subsequent work under the Hennebique System.

Translator's Note. — "The principal cities where these rules are at present in force are Dresden, Düsseldorf, Frankfort-on-the-Main, Hamburg and Carlsruhe."

THE WELLINGTON MONUMENT AT ST. PAUL'S.

A FOREIGNER who wished to exemplify the tendency towards confusion which is supposed to be inherent in England could not find a more striking instance than is afforded by the history of the Wellington Memorial. That noble work cannot be considered as completed, and as every stage of its existence has hitherto been marked by error, there is no knowing what may happen to it. There is a tragedy also accompanying it, for the life of the sculptor was clouded and, indeed, shortened by the unworthy treatment he received from representatives of the Government who were in power during its creation. A recent event suggests the propriety of a brief narration of the strange history.

Wellington died in 1852, a year after the Great Exhibition in Hyde Park, which was imagined to initiate a new era in which war would be unknown. He was buried in the crypt of St. Paul's. In 1856 it was resolved to make arrangements for the erection of a monument in the Cathedral. A competition, that might be called international, was organized. It excited so much interest that no less than five hundred applications were received for the conditions, which were accompanied by a plan of St. Paul's. The site selected was not that now occupied by Stevens's work, or that in which it was originally set up, but under the most eastern arch on the north side of the nave, the space allotted measuring 13′ x 9′. The cost of the memorial was estimated to be £20,000, an inadequate sum for so important an undertaking. The nine premiums offered amounted to £2,200. Eighty-three designs were sent in.

Muddle prevailed as soon as the designs had to be considered. The judges were the Marquis of Lansdowne, Lord Overstone, Dean Milman, Mr. Edward Cust, Mr. Gladstone and Professor Cockerell. The last, as a professional artist, felt he was out of place, especially as his suggestions were not accepted. He therefore resigned. The business was consequently left in the hands of amateurs. One of their first steps was to express, but rather indefinitely, disapproval of the site. They said: "We have not considered ourselves bound to take into exclusive consideration the peculiar fitness and adaptation to that spot in St. Paul's Cathedral which appears to be in contemplation for the erection of the proposed monument, which consideration might possibly have led to some difference in the selection." The judges assessed designs for the different prizes which varied in amount from £700 to £100, but suggested that before one was chosen for

execution the opinion of some experienced artists should be obtained. After the awards had been made the test was applied of placing the premiated models under a small copy in wood of the arch in the nave, although that position was thought to be unsuited. The design by Alfred George Stevens, to which one of the £100 prizes had been adjusted, appeared to sustain the test most successfully, and Lord John Manners, as First Commissioner of Works, gave him the commission.

The name of Alfred Stevens was mainly known in connection with industrial designs, and there was much discontent expressed over his appointment. This did not, so far as can be made out, produce any effect in Whitehall. Stevens was not, however, recognized as one of the grandees of art, and, as if with a desire to diminish any pride he might feel at his success, the insufficient sum assigned for the work was further reduced. A pair of bas-reliefs were ordered to adorn the spot set apart for the memorial on the southwest instead of the northeast side of the building, and the £6,000 which they cost, with other expenses, were deducted from the £20,000 which was supposed to be applicable to Stevens's work alone. Stevens was allowed the liberty of altering his design to suit the diminished price, but the unprecedented condition was imposed on him that he must deposit with the Office of Works a full-sized model of the memorial as it was to be carried out. Eventually he found that not more than £10,000 was at his disposal.

A work of such extreme importance, which was expected to embody the most advanced art of the time, and to express the national admiration for Wellington, could not be modelled and wrought with expedition. Stevens wished to brood over his task, and he altered and realtered, regardless of the fact that however much he might elaborate it and come nearer to perfection, there could be no increase of profit to himself. He was, unquestionably, a bad accountant, and, as such, was an undesirable contractor. The different parts of the memorial were not completed in the order which would be believed most satisfactory by ordinary men of business, and eventually it was necessary to make arrangements with another contractor for completing the work to such an extent as would enable the public to realize that the Office of Works was not wasting money on an illusion. The result is to be seen in St. Paul's. The materials used are bronze and marble. It is satisfactory to know that throughout it is an Englishman's design which is before us. It is also gratifying testimony to English skill that the complicated castings, than which none more difficult can be seen in Europe, were carried out in an English foundry by Mr. H. Young.

In the original design, Stevens intended to have the monument surmounted by an equestrian figure of Wellington. He wished to suggest the victorious warrior who gained one hundred fights and never lost a gun, as well as the honored chief who had to succumb, like the meanest, to death. Stevens had studied Renaissance art too deeply to be unaware of the advantage of the pyramid arrangement. The equestrian figure formed a climax to the composition. That he was slow to realize so important a part of the memorial is easily understood. Da Vinci, we know, went long in quest of the central head for his "Last Supper." Dean Milman bad objected in a humorous way to the Duke riding into the Cathedral on his own monument, and in consequence Stevens had prepared a dome-like termination. Any modification of that kind, which, by the bye, was never realized, did not cause the annihilation of his project of a conquering Wellington. His pupil, Mr. Hugh Stannus, tells us how Stevens, "after his affliction by paralysis, and when his mind had become somewhat warped, began to prepare a model for an equestrian statue. This is very rough and incomplete, being a mere full-sized sketch in plaster."

Everyone knows that for the last quarter of a century much has been said and written concerning the statue. It is a question which bristles with difficulties. Stevens's rough sketch is less suggestive of the slim "Copenhagen" which was employed at Waterloo than of such a horse as Mr. G. F. Watts has modelled, and which can portray the dominant power of the rider. Mr. Stannus put one side of the case when he said: "A first-rate sculptor accustomed to equestrian groups would doubtless find it (the model) very useful to fix the size and general attitude in making a group, should the Government decide upon going to the expense, and if the Cathedral authorities revoke the late Dean's decision and allow of it. This would, however, at once take away from Stevens the credit of having completed the work. The truest respect to his memory will be shown by leaving the monument as he arranged it at the climax of his judgment, instead of calling in another sculptor to divide the credit with the dead." On the other hand, we have the late Lord Leighton advocating the worthily crowning of the magnificent conception of the memorial by an equestrian statue of the Duke. The rough, unfinished model, he considered, would "serve as a sufficient guide to the artist who shall be privileged finally to carry out this portion of the cenotaph; that artist should be a man whose genius will carry him worthily through such a task, and whose reverence for the name of Alfred Stevens will ensure that close adherence to the leading lines and features of the first design which the public voice would justly demand; such a man, both in his gifts and in his reverence, the Dean and Chapter of St. Paul's have seen in Mr. Gilbert, R A., whose selection for so noble a task will command, I cannot doubt, universal approval."

Lord Leighton endeavored to collect the funds which would be requisite for the production of the statue. Sir E. J. Poynter vainly attempted to induce the Government to give £2,000. Last year the President considered he was justified in believing the Government would be more favorable to the proposal. Meanwhile, another effort was being made by a few private donors to raise the money, and with better results. The Dean and Chapter have agreed to the project, and the commission for the equestrian figure has been entrusted to Mr. John Tweed.

In our days it is almost impossible to make a selection of an artist which will gain general approval. There is so much equality among painters and sculptors, it is assumed that the preference for any individual is a slight on the others, as if it were intended to convey that there is no longer a common average among all. It was inevitable that when a sculptor who was not even an Associate of the Academy was selected for so important an undertaking his capability should be questioned. Mr. Tweed can point to, at least, one trial-piece which is meritorious. We published some panels in June, 1900, which were prepared by him for the base of a statue of Cecil Rhodes, and any one who will look at them with impartial eyes must allow that the mounted men and their steeds have been modelled with much vigor. The sculptor made no attempt to imitate, much less to rival, the Panathenaic frieze. He had to represent improvised soldiers without any common uniform, and their horses were not of the heroic type. The figure of Cecil Rhodes is also without any idealization. It is the portrait of a vigorous man who wished to be represented in his everyday attire, which, it must be allowed, is not suggestive of Bond Street. What must strike every one is that the sculptor was, above all things, truthful, and faithfully realized the class of men who were the pioneers of empire in South Africa.

Is it to be taken as a universal axiom that a young sculptor who makes individuality predominant in his works must necessarily fail when he attempts to be imaginative? To say, as one of the Academicians does, that to put Tweed upon Stevens is to put Salisbury spire upon St. Paul's, and that the result would be lamentable, because the incongruity would be lasting, and remain an eternal discredit to the art judgment of this generation, may be very vehement; but it is only a new version of the attacks made against Stevens nearly fifty years ago, when the superior beings of art pointed out the incongruity of employing the work of a modeller of fenders and fire-irons for a national memorial. Why should Mr. Tweed be denied the opportunity of producing an heroic figure of Wellington because he had been successful in representing miners on horseback and undrilled infantry? A man who is a devoted admirer of Stevens's work is not likely to be regardless of the spirit of the memorial.

At the same time, we consider that as the memorial is a national treasure it should not be made the subject of hole-and-corner arrangements. A few men may believe they are entitled to public gratitude because they subscribed among themselves the £2,000 for the completion of the Wellington Monument, which Lord Leighton, with all his influence, was unable to raise, and which the Government was afraid to grant. But they would show a wise and generous spirit if they did not insist on being the dispensers of the money. Many a fine church in England has been ruined because subscribers insisted on the carrying out of pet schemes of restoration. Sculptures can be as easily disfigured as buildings. We do not suppose Mr. Tweed's work would be out of harmony with Stevens's. As he obtained the commission, let him retain it. But, for the sake of principle, we consider he ought to allow his model of the equestrian statue of Wellington to be subjected to the scrutiny of some artists of standing. If there is any apprehension of jealousy affecting impartiality in England it would not be impossible to obtain a judgment from Frenchmen which could not be impugned. But what artist would equal Mr. Watts for such a purpose?

We cannot close without remarking on the conduct of the Dean and Chapter of St. Paul's. For years past it was believed that Dean Milman's dictum about the unfitness of an equestrian figure was still accepted as law. Now there has been a startling change, and arrangements have been entered into which are enough to disturb the repose of the author of "*Fazio*." The Bishop of Stepney, although chairman of the committee, was not aware of what was transacted between his own committee and the Dean and Chapter. The President of the Royal Academy was no less ignorant on the subject. All this is very serious. It reveals that the Cathedral authorities need supervision, and that to ensure protection for the building and its contents Parliamentary interference is urgently demanded. — *The Architect.*

HEATING AND COOLING HOUSES.

PLANS have been completed by the Baltimore Heating and Refrigerating Company by which the houses in that city may be supplied with heat and cold as desired, through pipe-lines to be laid under the streets. Power-houses and plants have already been secured, and within a short time the system will be in operation. Contrary to general belief, the refrigerating pipe-mains will not be cold, but will be at the same temperature as other mains, such as gas and water; the pipe-lines carry a "cold potential," that is, a means of producing cold, or, correctly speaking, a means of taking up heat. The pipe-line supplies the means of continually taking away heat from enclosed areas, which is accomplished by means of liquid anhydrous ammonia, which is sent out through a main pipe and connected by branch or service pipes with the customer's refrigerator or other space to be cooled. This liquid is held under pressure in the pipe, so it cannot expand or boil or take up any heat, and thus is at the same temperature as the ground through which it passes. At the refrigerator the liquid service-pipe is connected to a coil of piping

inside of the refrigerator, called the "expansion coil." This coil connects at its other end with a second service-pipe and second main laid alongside of the liquid line. This is called the "vapor line." By the action of the machinery at the central station a low pressure is maintained in the vapor line and the expansion-coils connected with it.

A specially constructed valve allows the liquid to trickle from the liquid line where there is pressure into the expansion-coils, where the pressure is about the same as the atmosphere. The amount of pipe-surface and feed of ammonia is so adjusted that all of the liquid is boiled to a gas in the expansion-piping, and all of the refrigerating effect of the liquid is used up in the refrigerator; the gas which leaves the expansion-piping by way of the vapor-line service-pipe has practically no refrigerating power, hence, the vapor line is also at or very near the temperature of the ground. The refrigerating-machine at the central station is continually sucking back the gas and compressing it into condensers, where the heat is squeezed out of it and taken away by cooling water, and it is recondensed to a liquid and again sent out through the liquid line on its cooling mission. It will thus be seen that the cooling methods are exactly the reverse of steam-heating operations.

The steam-heating is on a new plan. In the early days a return main was used to carry back the condensed water from the radiators of customers, but as pipes were destroyed by the return water in a few years these mains were abandoned, and in their place are used economizing-coils. These coils are really hollow corrugated castings, through which the water runs after being condensed in the radiators. These coils are placed in tin-lined boxes with fresh-air inlets and tin-pipe outlets to a register in the floor above, just the same as in furnace practice. In this way a continual current of warm fresh air is introduced into the building, and all the available heat that remains in the water of condensation is utilized to supplement the work of the radiators, at the same time securing perfect ventilation. Modern methods are used to prevent the leakage caused by expansion and contraction. The experience of a quarter of a century has gradually developed a system of insulation which has practically reached its commercial limit and has reduced the loss of heat by radiation to from one-fourth of one per cent to five per cent, depending on the amount of steam used through a given length of main, the percentage, of course, decreasing as the amount of steam delivered increases. — *N. Y. Evening Post.*

COOLING AN AUDITORIUM BY THE USE OF ICE.[1]

TWO days previous to the commencement exercises in the Scranton High School, June, 1901, the writer was requested by the Board of Directors to devise some means by which the auditorium could be kept at a comfortable temperature during the exercises and not become overheated. Time being short, the only resource left was by the use of ice.

A rack was constructed in the fresh-air inlet large enough to hold about eight tons of ice, with several shelves having slatted bottoms, the frame being made from 2″ x 6″ hemlock studs. At 6 o'clock in the evening the ice was placed in the rack and staggered in such a way that the air was compelled to pass around and between the cakes of ice until discharged by the fan through the flues into the auditorium above, to mingle with the sultry atmosphere, tempering, diffusing and maintaining a temperature that was most invigorating. The bottom, or floor, of the rack was made from matched pine lumber and lined with No. 28 galvanized-iron, and drained by a 2-inch gas-pipe. Two fans of the disc-type are employed to ventilate this building, one 11 feet diameter, and an 8-foot diameter exhaust-fan, located in the attic, the air being forced into the auditorium through a vertical flue at each side of the stage and from above the dressing-rooms, foul air making its exit through the registers in the floor, and which are located in the aisles. The construction of this system admits of by-passing all the air intended for the building through the auditorium.

That such an arrangement is necessary can readily be seen from the fact that the seating capacity of this room is 900, but on occasions of this kind about 1,400 persons gain admittance, filling every available space to overflowing. The outside temperature was 90 degrees Fahr., while the inside temperature was maintained at 76 degrees Fahr. The humidity was normal, and at no time reached a point of saturation. That it proved satisfactory can best be demonstrated by the fact that the directors were so well pleased that they desired the method to be used for the coming exercises, June, 1902.

The size of the anditorium is 80′ x 80′ x 20′ high. The amount of ice melted was, on June 11, 13,600 pounds; June 12, 11,800 pounds; June 13, 13,000 pounds, making a total of 38,400 pounds melted during the three nights. The fans were designed to deliver 3,000,000 cubic feet of air per hour under the friction of the ducts; the speed of the plenum-fan was 100 revolutions per minute and that of the exhaust-fan 120 revolutions per minute. By the use of calcium-chloride an absolute control of the moisture was maintained. In the case of rooms cooled by means of ice, or by direct ammonia expansion, or by any refrigerating-plant, calcium-chloride permits of an easy regulation of the percentage of moisture, as it has a capacity to absorb three times its own weight in moisture before becoming fully dissolved. The method of applying calcium-chloride for this purpose is to dispose the same in shallow pans with perforated false bottoms, so as to allow the accumulated moisture to drain off and deposit in the bottom of the pans, and they should be placed in the ducts where the rapid currents of air pass over the surface of the calcium. The commercial calcium-chloride should be practically chemically pure, containing no chloride of sodium or chloride of magnesium which, with the above purpose in view, are absolutely useless, having comparatively little affinity for moisture.

[1] A paper by John J. Harris read at the semi-annual meeting of the American Society of Heating and Ventilating Engineers at Atlantic City, N. J., June 16, 1902, and presented with additional data and illustrations at annual meeting, New York, January 20-22, 1903.

BOOKS AND PAPERS

ARCHITECTS, young and old, will read Mr. Van Pelt's delightful book[2] with both pleasure and profit. Perhaps the profit will be greater among the young architects, to whom the practical suggestions, many of which are familiar to their more experienced brethren, will be quite new; but the pleasure will be keener among the older men, who do not often have the happiness of following, under such able and earnest guidance, a discussion of the æsthetic aspects of the art which they love. It is not that critics and sentimentalists have forgotten to write about the art of architecture; on the contrary, there is no subject, perhaps, which has called forth more unintelligible maundering in print; but a book on architecture as a fine art, written by some one who has studied it thoroughly as an art, for people who also understand and practise the art, is a novelty in this country, and the profession is to be congratulated on the contribution which Mr. Van Pelt has made to the literature of the subject.

Naturally, as an old and distinguished pupil of the Paris School of Fine-Arts, our author refers for his illustrations mainly to French and Italian examples, and he modestly acknowledges his indebtedness for much of his material to the instructions of his own teachers, Guadet, Thièrry and Deglane; but nowhere in the world is such a mass of artistic tradition collected for the use of architects as in Paris, and Mr. Van Pelt could not confer a greater benefit upon the younger men in the profession here than by collecting for them with such intelligence and discrimination the principles of planning and design current in the best circles of the School. Besides doing this, he has, however, done much more, in presenting a learned, thoughtful and extremely interesting view of the intellectual sources of æsthetic pleasure, as applied to architectural design. The chapters devoted to this are the more important for the reason that the mental action involved in such design is so refined that it is difficult for any one, however gifted, to keep his mind long concentrated upon it; and the rules deduced from experience in regard to unity, balance, concentration and so on assist the architect in very much the same way that the rules of harmony assist the musician. No musician would think of composing without having learned the rules of harmony, even though, like Handel, he ventured sometimes to transgress them; and the architect, however prejudiced he may be against what he supposes to be formality and routine, will design far more rapidly, and with much greater security of success, by familiarizing himself with the principles which Mr. Van Pelt presents so clearly, and with such convincing illustration. What he says about the preservation of scale, for instance, reminds us of a story about the late H. H. Richardson. Richardson, faithful to the traditions of the Atelier André, in which he was trained, was devoted to "bigness" and "stuff," and one day brought into the office a sketch for some building, furnished with a tower which he thought of satisfactory proportion, but which measured eight hundred feet in height. To reduce it to practicable dimensions changed the proportions of the group completely, and the design had to be made over. This mishap, which is very common with inexperienced designers, was the more singular with Richardson, for the reason that he was perfectly aware of the necessity for keeping the scale of a design in mind, as well as of his own inclination to the colossal, and he was never tired of admonishing his own pupils to draw a figure of a little "*bonhomme*" at the side of their paper, not, as Mr. Van Pelt advises, for correcting a design already made, but as a preliminary step to the first sketching of the design.

The subject of scale, in its various relations, occupies, as it should, a long chapter in the book, and is followed by the discussion of more complex rules of composition. After this we find a multitude of suggestions, very much of the sort that a benevolent *ancien* in a Paris *atelier* would retail for the benefit of his younger comrades, but extremely valuable to students in this country; and the book ends with a treatise on the requirements of special classes of buildings, such as schools, hospitals, commercial and railway buildings, and so on, which, although condensed, is admirably done. Throughout the book, the illustrations really illustrate the text, and in the most effective manner, the only exceptions to the rule being, possibly, the Prize of Rome plans of MM. Pascal, Deglane, Tournaire, Chaussemiche, Bigot and Duquesne, which are introduced as studies of arrangement and rendering, but in which experienced architects will delight to trace the consummate skill of those great masters of their art.

[2] "*A Discussion of Composition*," especially as applied to Architecture. By John Vredenburgh Van Pelt, Architecte Diplomé par le Gouvernement Français. Illustrated by the Author. New York: The Macmillan Company. 1902. Price, $2.00 net.

COMMUNICATIONS

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

THE OLD CITY-HALL, HARTFORD, CONN.

[DESIRING to include in the last Part of "*The Georgian Period*" some account of the old State-house, later the City-hall, at Hartford, Conn., we applied to Mr. George Keller for information. But the researches he was good enough to make took longer than was anticipated, and the subjoined data did not come to hand in time to be put to the intended use. — EDS. AMERICAN ARCHITECT.]

HARTFORD, CONN., January 7, 1903.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — I have been several times at the Secretary of State's office until I have finally succeeded in having the records searched, but the result is very disappointing, as the clerk could find no report of the Old State-house Building Committee, nor any reference to the architect in the proceedings of the Legislature. I enclose the clerk's letter.

In the Comptroller's office I discovered that Jeremiah Halsey had received some money for furniture for the State-house, September 30, 1796, and knowing that his family belonged in Norwich I wrote to a friend there to hunt up the family papers, but there, too, the last of the line had been dead several years and there was no one left there to throw any light on the subject. Mr. Flagg, the artist, tells me that he got his information that Bulfinch designed the old State-house from the memorial history of Hartford in an article written by Mr. Brocklesby on the subject of "Architecture."

I asked Brocklesby where he got his information, but he could not tell me positively, but thought that Mr. Charles Hoadley, State Librarian, told him so. Hoadley is dead, and his successor has ransacked the State Library, but cannot find anything to throw light on the subject. I have also hunted in the City Library and the Historical Library, but there is nothing to confirm the statement that Bulfinch was the architect.

The building was begun in 1794 and occupied in 1796. It cost $52,480, which was partly paid for by lottery.

The balustrade was added in 1815 in order to protect people who might have to go upon the roof to extinguish fires, an alarm about that time having demonstrated that, unprotected, "the roof was so very dangerous that volunteers were scarce."

The cupola was added in 1822, Hartford having voted $300 with which to purchase a bell, which it gave to the State, and the Legislature ordered the cupola to be built for its accommodation, "modelling the structure after that on the old City-hall, New York." The first story of the building was of Portland (Conn.) brownstone and brick above, with brownstone for the window caps and sills. In 1827 it was painted white. About six or eight years ago the paint was hammered off from the brownstone, and the whole building repainted, including the stonework; the stone in imitation of itself (!), and the brick a yellowish-cream color.

West Front: City-hall, Hartford, Conn.

The pediment on the west front was decorated with a spread-eagle, shield and scrolls by the sign-painter who had the contract for doing the whole work. At the dedication of the old State-house building when it was converted into a city-hall Alderman Wm. E. Cone, in his address, also attributed the building to Bulfinch, but on applying to him he could give me no authority for the statement.

The principal front originally was the east front, of which I send you a small print. It had an open loggia, used for public addresses to the crowd who stood where the United States Post-office now obstructs the view.

When the old State-house was in its original state, without either balustrades or cupola, it was a very simple, plain building and quite within the ability of many of the builders of that time.

Truly yours, GEORGE KELLER.

A QUESTION OF COMMISSION.

CLEVELAND, O., Feb. 6, 1903.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Will you kindly answer the following question either by letter or your journal:

"What is the recognized standard compensation for architects on a building costing over $2,000,000 in Government and in private work?"

Trusting to receive a favorable reply, I remain. X. Y.

[THE standard compensation recognized all over the world, in the absence of a special agreement, is five per cent on the cost of the work. In this country, a special sliding scale of compensation to architects for Government work has been considered by the Treasury authorities, but we do not know whether it has been adopted. — EDS. AMERICAN ARCHITECT.]

ILLUSTRATIONS

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

A COMPETITIVE DESIGN FOR THE CRESCENT ATHLETIC CLUB, BROOKLYN, N. Y. MESSRS. C. I. BERG AND D. G. MALCOLM, ARCHITECTS, AND MESSRS. C. H. GILLESPIE AND H. C. CARREL, ASSOCIATED, NEW YORK, N. Y.

PLANS AND SECTIONS OF THE SAME.

PLANS OF THE SAME.

Additional Illustrations in the International Edition.

THE "DORCHESTER HEIGHTS" MONUMENT, SOUTH BOSTON, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

HOUSE OF E. V. R. THAYER, ESQ., NO. 1 RALEIGH ST., BOSTON, MASS. MESSRS. LITTLE & BROWNE, ARCHITECTS, BOSTON, MASS.

HOUSE OF CHARLES S. HAMLIN, ESQ., NO. 2 RALEIGH ST., BOSTON, MASS. MESSRS. LITTLE & BROWNE, ARCHITECTS, BOSTON, MASS.

NOTES & CLIPPINGS

LABOR-UNIONS AND THE RIGHT TO WORK. — In referring in this journal last month to the case of Read *vs.* the Friendly Society of Operative Stonemasons, the opinion was expressed that this case would have a far-reaching effect. It seems to have been speedily turned to account in the shipping world. For the first time, it has been authoritatively declared by a court of law that a conspiracy which results in preventing a man from doing what he has a legitimate right to do exposes those who are associated in such conspiracy, whether they are trades-unions or other societies, to be cast in damages. The opinion has been expressed that this case established a precedent for an action by shipowners who have been damaged by the action of the South African shipping ring. This, as is well known, is a combination of shipowners who have combined to keep up the rates and to prevent outside competition. A competing line of steamships having been established, the ring refused to carry the goods tendered by any merchant which had been made by a manufacturer who shipped by the opposition. The result is that a test case is likely to be brought before the courts of law, and if decided in favor of the plaintiffs, will only reaffirm the principle on which the House of Lords based its decision in the stonemason's case. — *Stone Trades Journal.*

WATER-POWER OF THE WORLD. — In a paper read before the Frankfort congress of German naturalists and doctors, Mr. A. Gradenwitz makes an estimate of the water-power now utilized in various countries for the generation of electricity. About 180,000 horse-power is thus utilized, he states, in Germany and Austria, in Switzerland about 160,000 horse-power, in Sweden 200,000 horse-power. The total power available in Sweden is reckoned at about 2,000,000, whilst in France 10,000,000 horse-power may be utilized, whilst the resources of the maintainous districts of Germany, Austria, Switzerland and Italy may be placed at about the same figure. In the United States, Niagara alone could furnish 10,000,000 horse-power. The towns of Bozen and Meran, in the valley of the Adige, are now supplied with power at a cost of only twenty shillings per horse-power per annum, the maximum distance the current is transmitted being 20 miles. About 400,000 electro-motors are, he estimates, in use in the German Empire. As to other uses of the current, Mr. Gradenwitz states that the prospect of utilizing the current for heating purposes on a large scale is somewhat better than is commonly supposed. In fact, it would be cheaper to evaporate the brine at Hall by current transmitted from waterfalls about 12½ miles away than it is with coal at its present local price, and burnt in the ordinary type of furnace, in which the proportion of heat utilized is but 20 to 50 per cent of the total calorific value of the fuel. With electric-current evaporation, on the other hand, the efficiency would approach 100 per cent. — *Boston Transcript.*

SCULPTORS FOR ST. LOUIS FAIR. — Karl Bitter, Chief of Sculpture of the World's Fair, has announced the allotment of work for the Exposition to the following sculptors: S. H. Borglum, four great groups at the base of the Louisiana Purchase Monument; H. H. McNeill, main cascade sculpture; C. H. Niehaus, group at the northern end of the main axis, "The Apotheosis of St. Louis"; Lorado Taft, Chicago, two fountains in the transverse avenue; Karl Bitter, the Louisiana Purchase Monument; Isidor Konti, the sculpture of the two side cascades; J. Q. A. Ward, "Napoleon"; C. D. French, "Jefferson"; Louis St. Gaudens, Charles Grafley, of Philadelphia, and Philip Martini, permanent work on the art palace; Herbert Adams, portrait-statue; Enid Yandell, "Victory," to surmount the two restaurant pavilions; C. E. Potter and Phimister Proctor, figures in the main pictures. — *Exchange.*

UNFADING COLORED CEMENT. — Various colored cements can be produced by incorporating certain metallic oxides or metallic salts directly with the ground raw materials used in the manufacture of Portland-cement, and then burning the resulting mixture in the usual manner. A small quantity of chromic-oxide added to the raw-cement mixture will produce a green-colored cement, while oxide of cobalt will give a blue, varying in intensity according to the quantity of metallic-salt added. Oxide of copper will yield a peacock, or blue-green, cement, and a small quantity of oxide of iron, oxide of manganese and oxide of cobalt, in almost equal proportions, will produce a black cement. Tints produced in this manner will be found to be perfectly fast or unfading. — *Stone Trades Journal.*

PENNSYLVANIA ACADEMY OF FINE-ARTS. — In the suit of Mr. Henry R. Towne, against the Pennsylvania Academy of the Fine-Arts for selling pictures bequeathed by his father, John H. Towne, to the Academy, the answer is that no one of the Board of Directors who accepted the bequest was acting at the time the pictures were sold. The Board pleads ignorance of the terms of the bequest and denies that the picture specified was worth "not less than $2,500." On the contrary, the Board says that $90, the price for which it was sold, was its full market value at the time. — *N. Y. Times.*

EGYPTIAN ENGINEERING. — When the "laudator temporis acti" wants to silence the engineer, he says: "After all, Egypt can show the biggest engineering-works in the world, and they are all 4,000 years old. When you can surpass them, you will have something to boast of." It is undoubtedly true that Egypt contains the largest structures in the world, and probably will for all time. It is not likely that we shall again see a building with 7,000,000 tons of stone in it, as has the pyramid of Gizeh, and it will be long before we have an irrigation-reservoir of greater capacity than Lake Moeris, which, accepting the figures of Major Brown, R. E., held 11,800,000,000 cubic metres (tons) of water between high and low water-marks. What the Labyrinth was like we do not really know, but Herodotus classed it as a greater wonder than the Pyramids, although lesser than Lake Moeris. Further, there is a tradition that in the dim past the Nile flowed at the foot of the Libyan hills, and that it was diverted from that course into its present bed, and, if the account be true, the work was of enormous magnitude. The engineers of the past directed the forces of nature on a large scale, but, continues *Engineering*, to compare their work with ours to their advantage shows a complete ignorance of the science of engineering. The matter in which they excelled was the transportation and manipulation of heavy weights, a feat that appeals strongly to the lay imagination. Among the chief examples of such work are the columns of the Temple of Karnak. To cut a block of stone in a distant quarry, to work it to a cylinder 12 feet in diameter, float it down the Nile, land it, and place it on the top of a column of similar stones, making a total height of 60 feet, was no small enterprise. A still more difficult undertaking was the great obelisk now standing beside the Church of St. John Lateran, in Rome, with a height of 108 feet, and a weight of 450 tons. But the crowning example of Egyptian engineering was the colossal statue of Rameses II, at Thebes. Before it was broken it was a single block of red granite 60 feet in height, and it has been computed to weigh 887 tons. These were notable examples of engineering-work, and a modern engineer might be proud of executing them. But it must be remembered that they were done very leisurely, and that labor was abundant. With the simple appliances that we may assume the Egyptians possessed, such as wedges, levers, ropes, and pulleys, great weights may be handled if we suppose that time was no object. The city of Thebes was in course of building 2,000 years, and in such a place it would excite little comment if a year was spent in putting an obelisk into position. If a weight can be moved at all, no matter how little, it can be transported any distance, provided the same conditions persist for the whole route. — *London Engineering.*

PARK DRIVEWAY-TUNNEL UNDER CHICAGO RIVER. — A broad, well-lighted underground driveway, passing beneath the bed of the Chicago River and stretching from the Art Institute to Illinois and St. Clair streets, is formally announced to be the plan finally agreed upon by the park boards of the north and south sides to make the long-talked-of connection between the boulevard systems of these two portions of the city. A bill authorizing a $2,000,000 bond-issue containing a referendum clause will be prepared by committees to the two park boards and will be submitted to the Legislature. Plans for the tunnel have been drawn. — *Exchange.*

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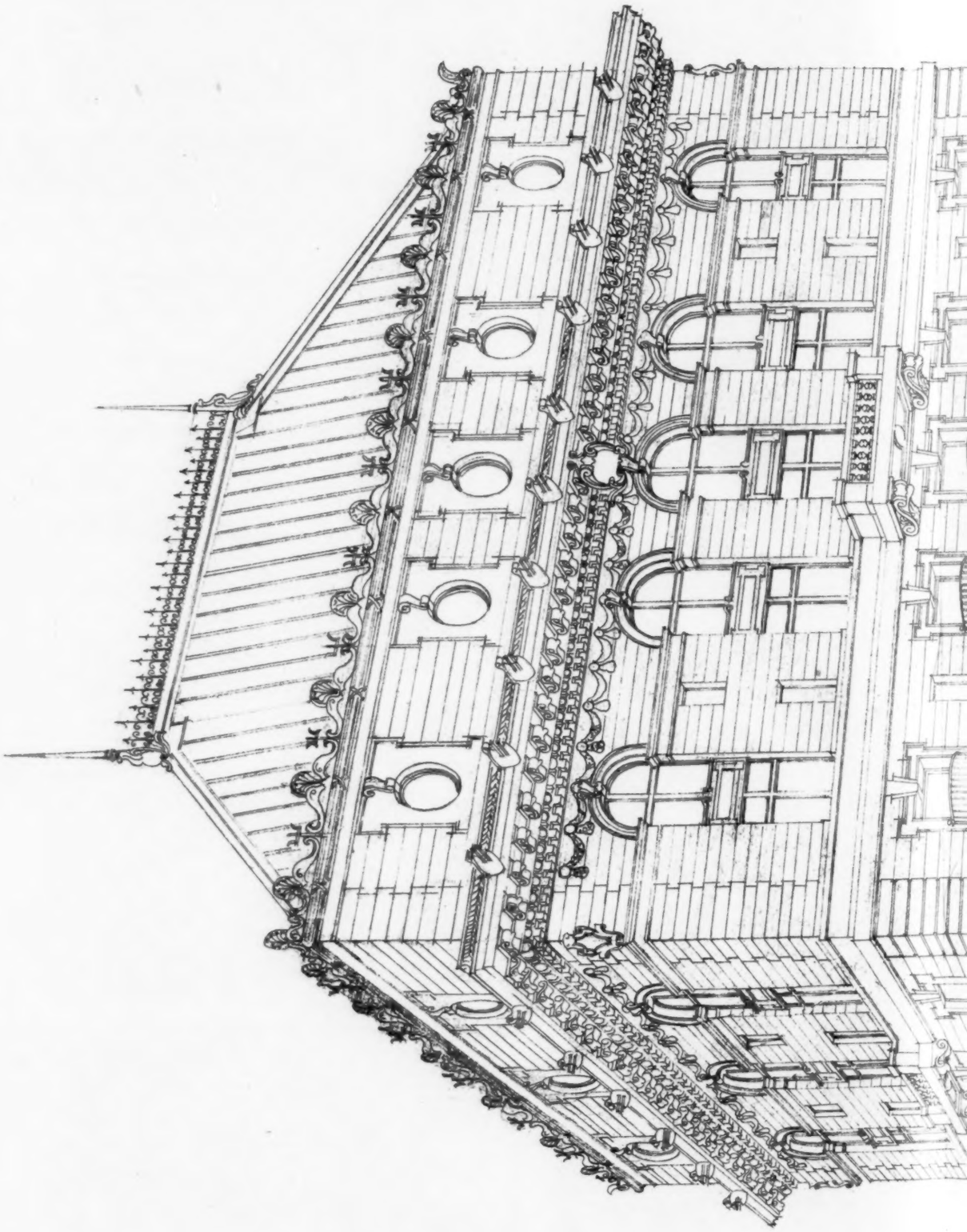

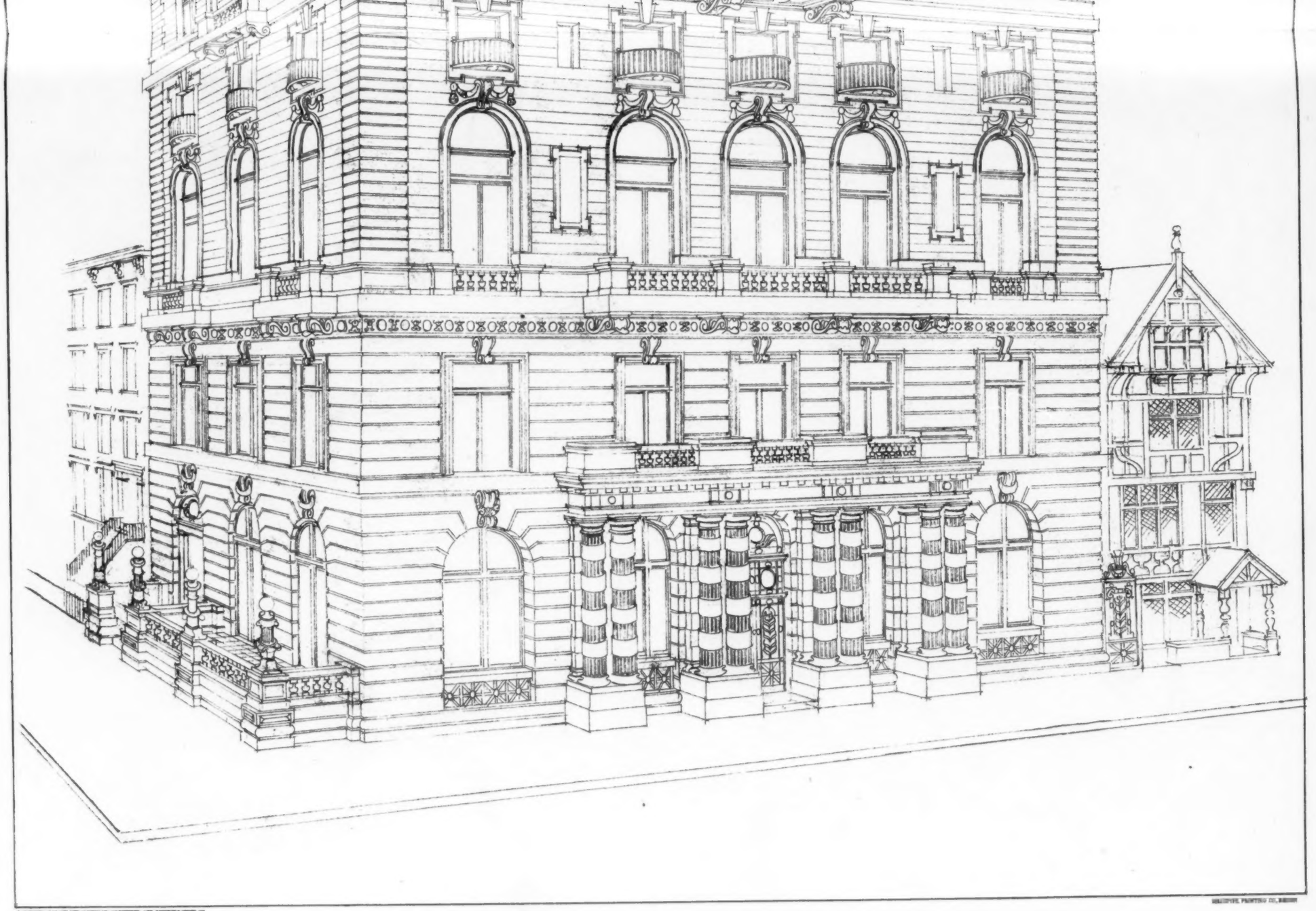

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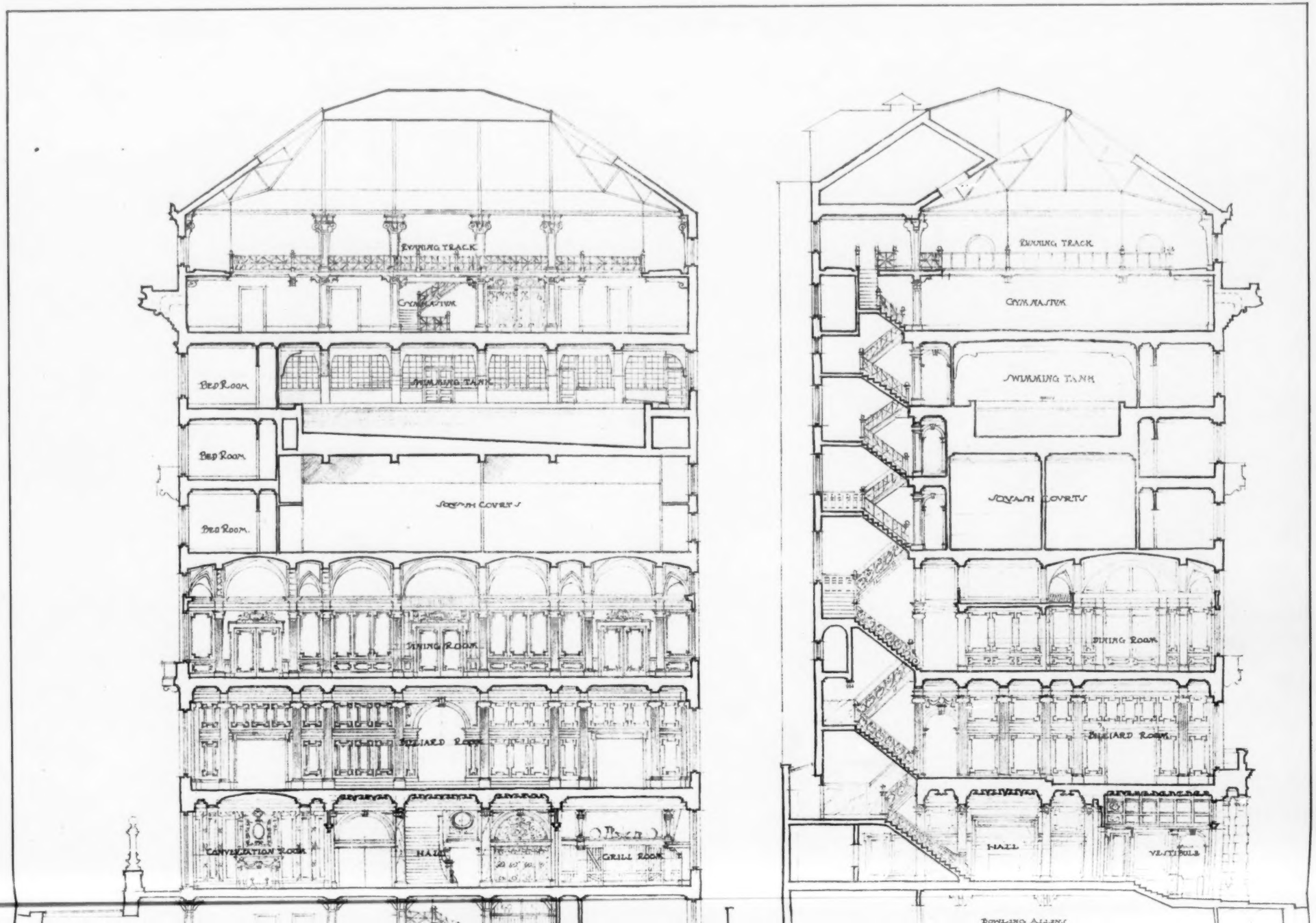
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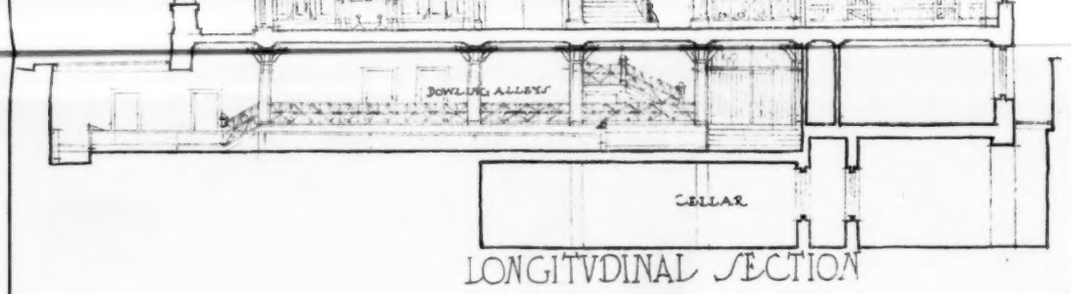

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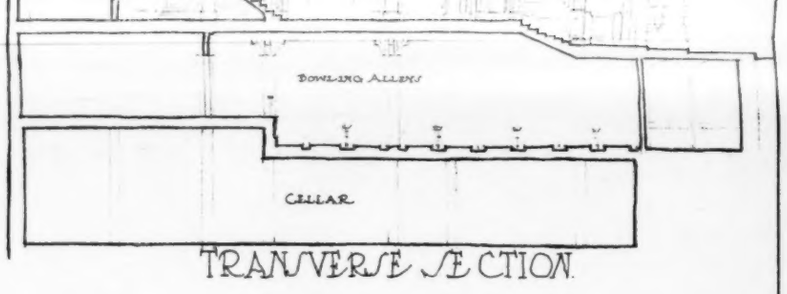

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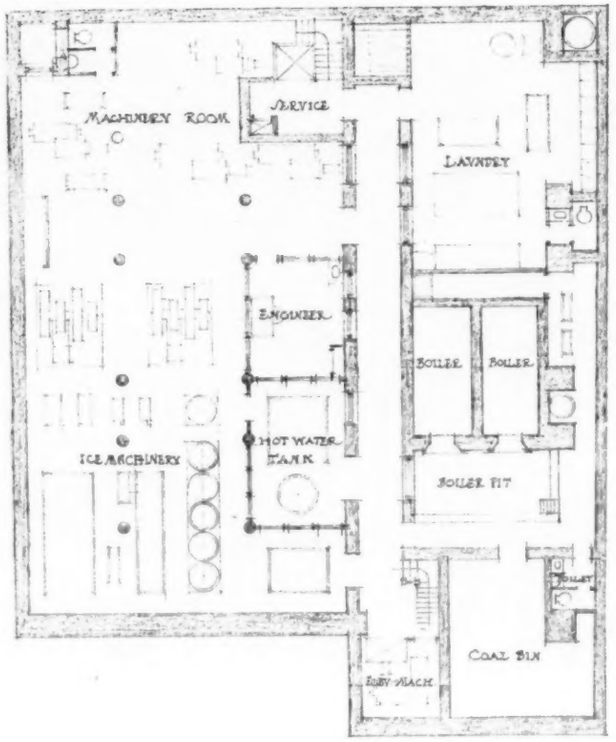

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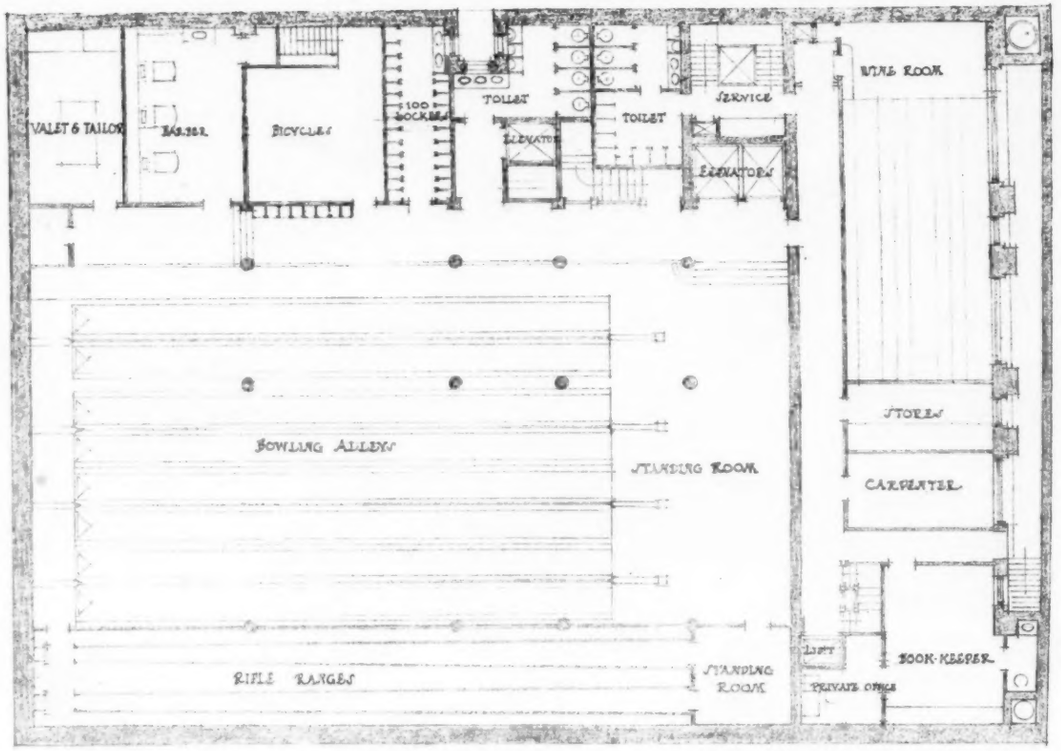

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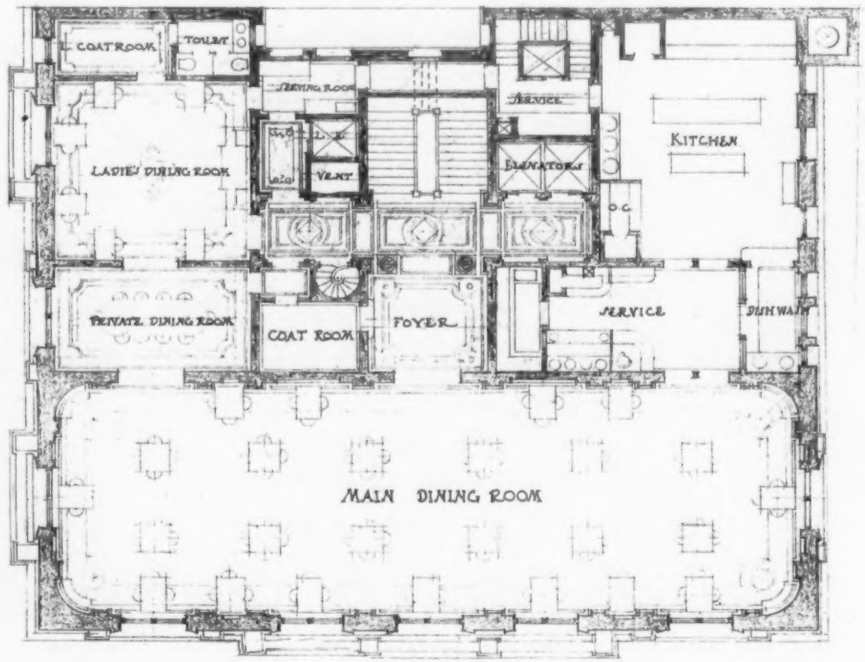

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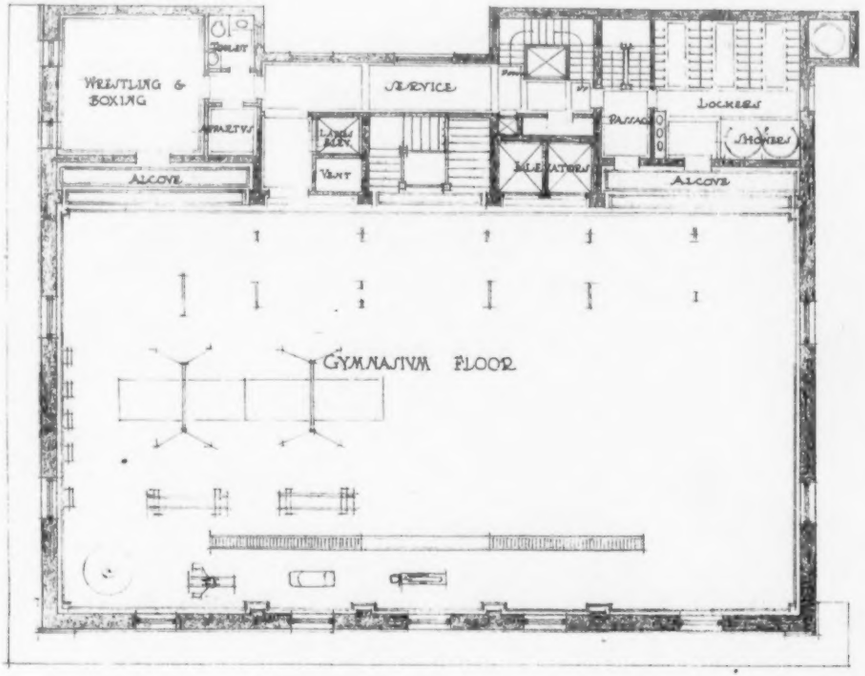

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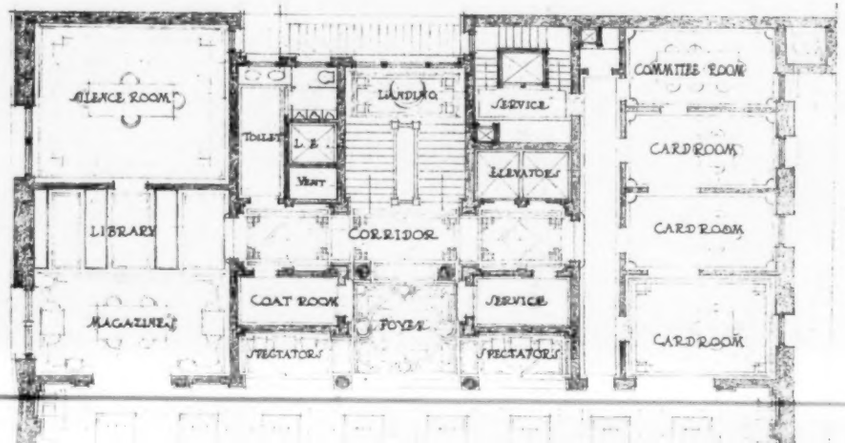

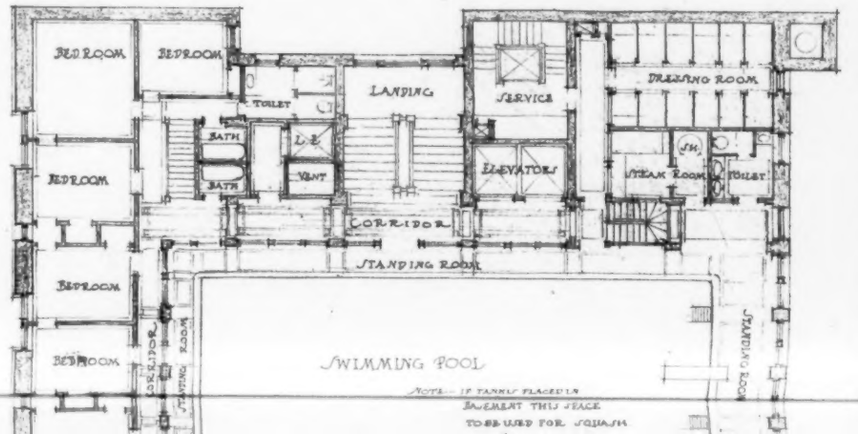

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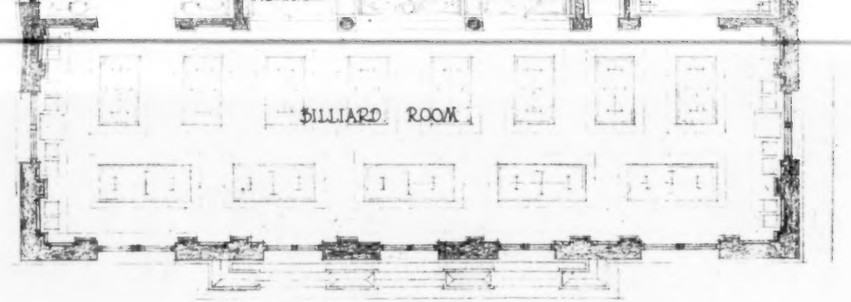

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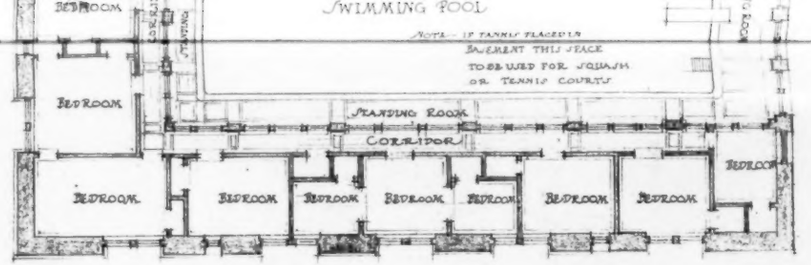

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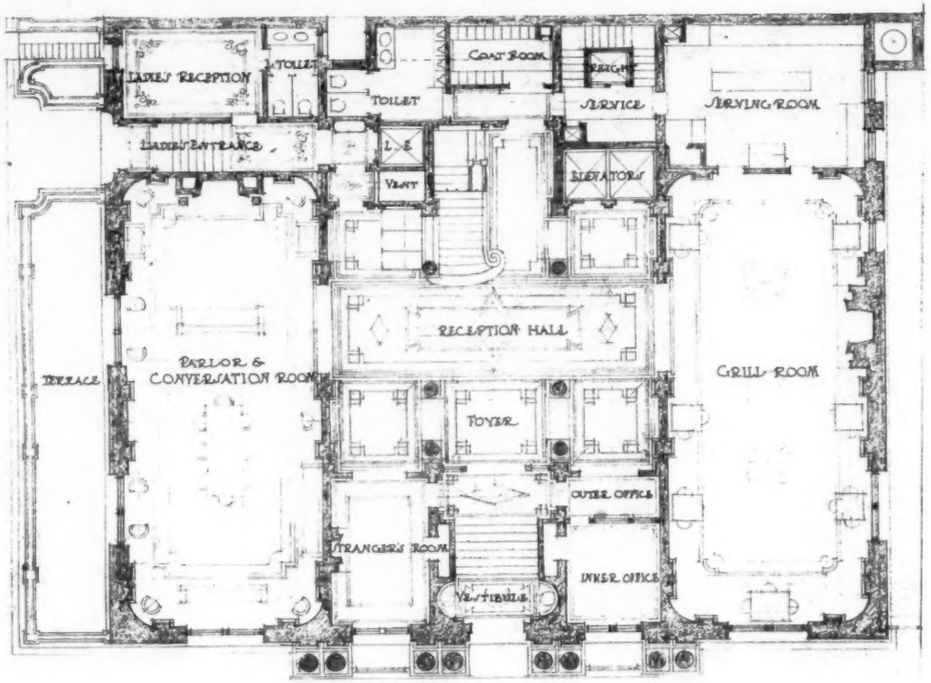

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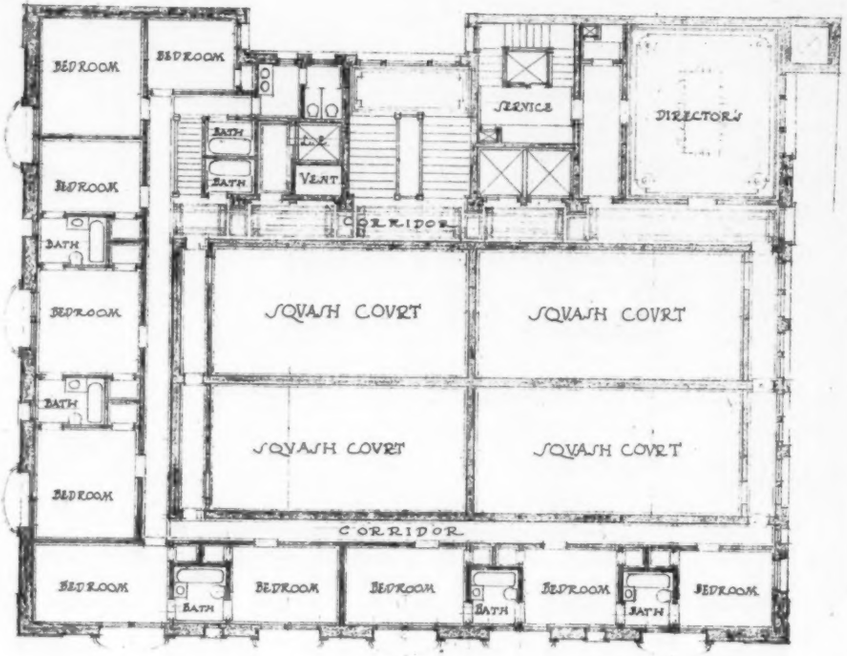

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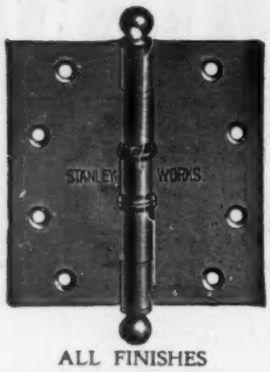

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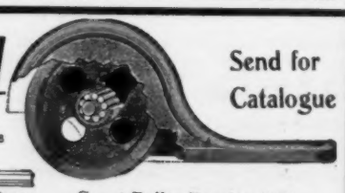

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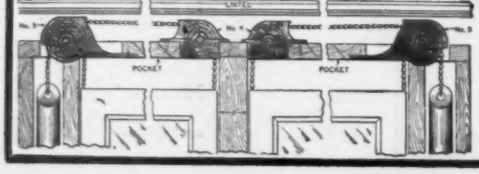

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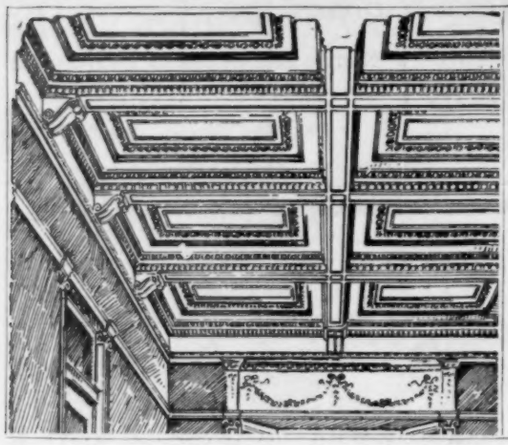

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"Building Superintendence." Thirty-one papers, illustrated, beginning with No. 262.

"Statics of Structures." Twelve papers, illustrated, beginning with No. 1093.

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Most of the issues of the American Architect containing the serials enumerated in the list above are still in print and can be supplied by us.

It is to be noted, too, that the further contents of the several issues named above are not without value to the purchaser.

AMERICAN ARCHITECT AND BUILDING NEWS CO.
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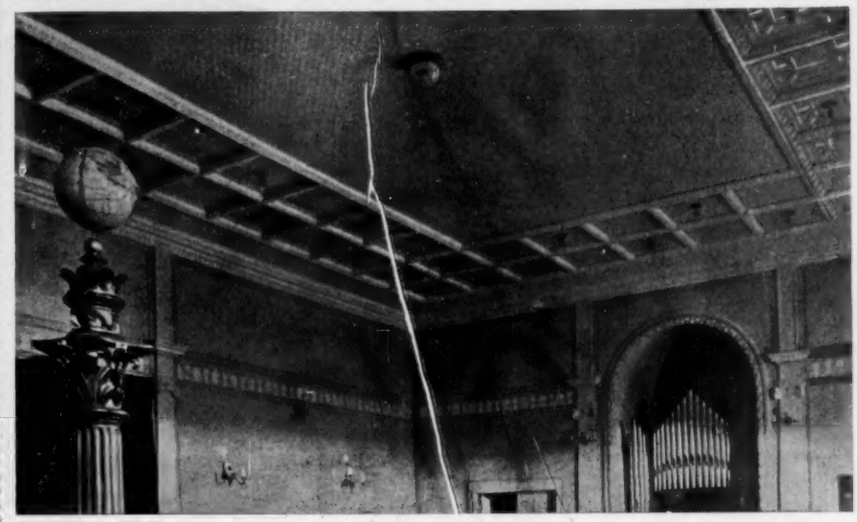

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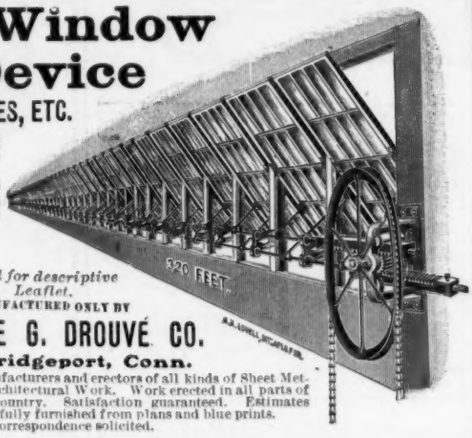

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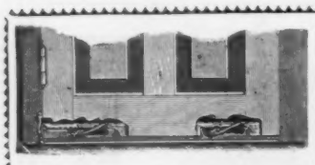

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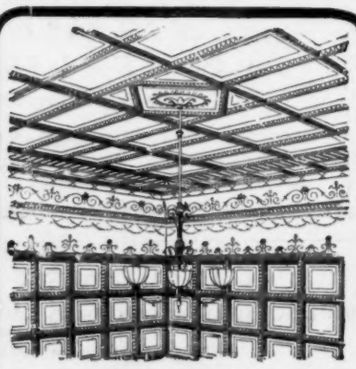

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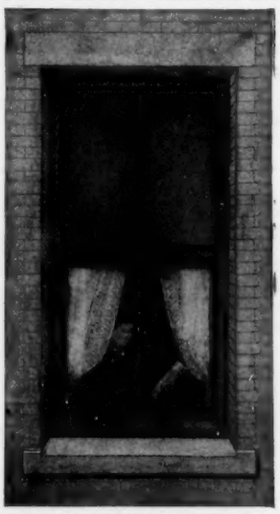

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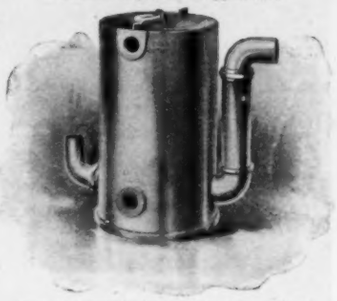

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(Reported for the American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

ADVANCE RUMORS.

Augusta, Ga. — Andrew Carnegie has given $50,000 to this city for a library building.

Baltimore, Md. — It is reported that the Roland Park Co. intends to extend its development in the northern suburbs of the city by acquiring more land that will give it about 700 acres. The land to be acquired is on Roland Ave., and between Roland Park and Lake Roland. It is a part of the plan to construct a boulevard to connect with the proposed driveway from the city to Wyman Park and to extend it through Roland Park to Lake Roland.

Messrs. Nixon & Zimmerman, the well-known theatrical managers who own the Academy of Music, will erect a new theatre here. The new theatre, it is said, will be on the plans of the Nixon, now in course of construction in Pittsburgh, and which, it is stated, will cost $1,000,000.

Beverly, Mass. — The U. S. Shoe Machinery Co. has taken the business of the Marlboro Awl & Needle Co. and will doubtless remove it to this city as soon as its new plant is completed. Work on the construction of the Beverly plant will begin about March 1, and $4,000,000 will be expended in carrying out the plans.

Boston, Mass. — Probably $100,000 will be spent in the erection of the new building on St. Botolph St., near Massachusetts Ave., for the Industrial School for Crippled and Deformed Children at 424 Newbury St. Plans have been prepared by Peabody & Stearns, and the structure will be three stories high, of brick and stone.

Four estates, numbered 137 and 139 Milk St., Nos. 141, 143 and 145 Milk St., also Nos. 4 to 10 Oliver St., known as the Vulcan Building, and two parcels in the rear; also Nos. 31 and 33 Batterymarch St., have been purchased by a new trust, known as the Oliver Building Trust. An eleven-story office-building will be erected sometime early in the summer. The total cost of land and building will be about $1,900,000.

The Monks Building Trust has been organized for the purpose of purchasing and improving the property Nos. 31-35 Congress St., now occupied by the Monks Building. Plans for an eleven-story office-building have been prepared by Peabody & Stearns. George A. Fuller Company has the contract for its erection.

The Oliver Ditson Co. have taken a twenty years' lease of an eight-story fireproof building to be erected by E. P. Whitney *et al.*, trustees, at 150 Tremont St. Plans by Winslow & Bigelow. It is expected the building will be ready for its occupants by the last of the year.

Extensive changes will be made in the five-story building at 313-17 Washington St., known as the Snow Building. The plans have been drawn by Winslow & Bigelow.

New York, N. Y. — Plans have been filed for the alteration of the New York Theatre. The entire interior will be torn out and reconstructed. Cost, $100,000.

Contracts have been signed for the remaining farm property in Flatlands, between Flatbush and Church Aves., Brooklyn. This farm fronts on the station of the Manhattan Beach Railroad and Kouwenhoven Pl., and comprises almost 100 acres, and was owned by the estate of P. G. Kouwenhoven, J. B. Kouwenhoven and T. G. B. Kouwenhoven. The purchasers are a syndicate from Philadelphia, represented by Aaron Osterman, who are going to develop the property for home sites. The price was about $1,500 an acre.

Dr. Parkhurst's Church, the Madison Ave. Presbyterian, has voted to acquire property on the opposite corner of 24th St. and Madison Ave. A handsome new church will be built.

It is reported that the New York Central Railroad Co. will erect a terminal structure twenty-five stories high, to stretch from Madison Ave. over

BUILDING INTELLIGENCE.

(*Advance Rumors Continued.*)

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(*Advance Rumors Continued.*)

Vanderbilt Ave. to Lexington Ave., taking in the span covered by the present Grand Central station and the vacant block between 43d and 44th Sts. and Madison and Vanderbilt Aves. Within this structure will be included a hotel, with a greater number of rooms than any now in this city, and a department store. All New York Central trains will enter the building. It is expected these changes will be effected within three years.

Ocean City, Md.—A large and convenient station will be built this spring on Philadelphia Ave., west of the Seaside Hotel. Grading and paving of the streets leading from the new station to Baltimore Ave. will be done. It is understood that the railroad company will have another and a platform station on the corner of 3d St. and Philadelphia Ave. for the accommodation of passengers for the up-town hotels and cottages. Already property is changing hands at advanced prices as the result of these improvements.

Phenix, R. I.—The French-speaking Catholics of this place and vicinity are to have a handsome new church, to cost about $20,000. The new edifice is to be a wooden structure, built in the Romanesque style, from plans by Murphy & Hindle, architects, of this city. The main structure will be 55′ x 75′, with bell-cote instead of a spire. It is expected that the edifice will be ready for dedication late next October.

Philadelphia, Pa.—James Arthur, Real Estate Trust Building, is soon to begin upon the erection at 58th and Race Sts., of 75 houses two and three stories high of brick and stone. They will have hot-air heat, tile and marble work, hardwood finish.

Providence, R. I.—Horton & Hemenway, builders, 86 Weybosset St., are excavating for a $20,000 factory building for George E. Borden of this city. It will be of brick, three stories, 40′ x 100′.

Salisbury, Md.—The Gunby Manufacturing Co., which has been incorporated here, has decided to begin as soon as practicable the construction of a large machine shop and foundry. The capital stock of the company is $150,000.

Somerville, Mass.—At a recent meeting of the School Board a recommendation was adopted urging the city government to provide for the erection of a new Latin school building near the present one, also the erection of a six-room building in the Bingham district at Winter Hill, with a separate room for a manual training department.

Spencer, Mass.—It is expected that the plans of the Spencer Woollen Mfg. Co. will be enlarged and improvements made. The mill has been the property of Allen L. Taft, and has just been incorporated under the new name with $100,000 capital.

St. John, N. B.—An English-Canadian corporation contemplates erecting a $100,000 cold-storage and refrigerating building here. A thousand carloads of chilled meat will be shipped to England every month if the city agrees to the plan.

St. Louis, Mo.—The building that the Texas World's Fair Commission will erect here will be symbolical of the Lone Star State, taking the shape of a huge five-pointed star.

A large building of modern French style is the proposed Woman's Magazine office, to be built by the Mail Order Publishing Co. on the eighty-five-acre tract on the north side of Delmar Ave., west of Delmar Garden, beyond the city limits, and owned by the University Heights Realty and Development Co. Herbert C. Chivers is the architect.

It is reported that the Liggett Realty Co. has made a contract with the Progressive Paper-box Co. to erect a five-story and basement building, 40′ x 127′, on the south side of Clark Ave., between 3d and 4th Sts. Plans have been drawn by C. K. Ramsey. The old buildings on the lot will be removed as soon as the tenants move out. The walls

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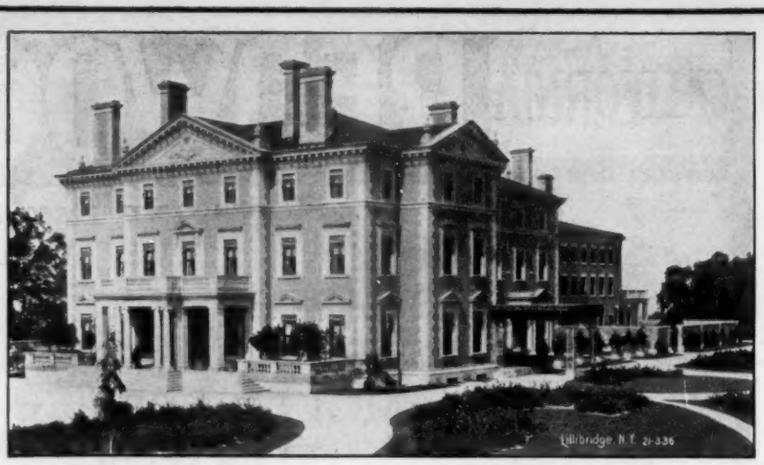

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BUILDING INTELLIGENCE.

(*Advance Rumors Continued.*)

of the new building will be of stone for the basement and brick for the five stories above. The foundations will be of concrete. Cost not yet determined, but expense will not be spared to make the building first-class of its kind.

Another site has been suggested for the proposed downtown hotel, which seems to meet with a great deal of favor. It is on the south side of Washington Ave., commencing at Robbins Lane and running 230 feet east.

Toledo, O.—With the completion of the new $5,000,000 belt around the city the Gould interests, controlling the Wabash, Ann Arbor and Wheeling and Lake Erie lines, have purchased property through the heart of the city, with which they will develop terminals at a cost of $10,000,000.

Waltham, Mass.—Plans have been drawn for a six-story brick building to be erected at the corner of Moody and Chestnut Sts. The new block will contain four stores on the first floor, offices on the second, while the four upper floors will contain housekeeping apartments.

Washington, D. C.—Plans have been drawn by N. T. Haller & Co. for 20 residences to be erected on Seaton St., between 17th and 18th Sts. by Chas. W. King.

It is said that a $600,000 apartment-house will be built on Vermont Ave. by the National Realty and Construction Co. Plans by P. Thornton Mayre. The building will be eight stories, 40′ x 100′, and fireproof throughout.

Ralph S. Townsend, 41 E. 19th St., New York, has drawn plans for a hotel to be erected on the corner of 14th and New York Aves.

A. O. Von Herbulis, Falls Church, Va., has made plans for the construction of a monastery. The cost of the building will be $350,000.

It is reported that the House has passed the bill providing for the erection of a building to cost $1,500,000 for the use and accommodation of the Department of Agriculture.

Watch Hill, R. I.—Messrs. Parker & Thomas, architects, are preparing plans for a summer cottage to be built here for Mr. W. T. Howard to cost about $12,000. It will be two and a half stories high and contain 12 rooms and a bath.

ALTERATIONS AND ADDITIONS

Chicago, Ill.—*W. Van Buren St., Nos.* 142-144, three-st'y bk. addition to stock-house, 41′ x 60′; $35,000; o., Fortune Bros. Brewing Co., 225 S. Desplaines St.; a., Louis Lehle, 312 Schiller Building.

New York, N. Y.—*E. Twenty-ninth St., Nos.* 30-32, four-st'y & base. extension, 25′ x 80′, to three-st'y & base. bk. & st. telephone exchange; $80,000; o., N. Y. Telephone Co., 15 Dey St.; a., C. L. W. Eidlitz, 1123 Broadway; m'n, D. C. Weeks & Son, 289 Fourth Ave.

St. Paul, Minn.—*Grand and Grotto Sts.*, 4-room bk. addition to school-house; $19,000; a., Hermann Kretz & Co.

CHURCHES.

New York, N. Y.—*One Hundred and Forty-third St.*, nr. Willis Ave., two-st'y bk. & st. church & Sunday-school, 69′ 1″ x 100′, tin & tile roof; $50,000; o., Congregational Church of North New York, 2717 Third Ave.; a., Dodge & Morrison, 32 Wall St.

EDUCATIONAL.

Brooklyn, N. Y.—*Avenue K*, four-st'y bk. school, slag roof, steam; $140,000; o., City; a., C. B. J. Snyder, Park Ave. & 59th St.

FACTORIES.

Brooklyn, N. Y.—*Butler St.*, nr. 5th Ave., five-st'y bk. factory, 50′ x 125′, gravel roof, steam; $65,000; o., Morsheimer & Oldenbush, 3d Ave. & 13th St.; a., F. H. Quimby, 99 Nassau St., N. Y.

Chicago, Ill.—*Pierce St., Nos.* 29-31, three-st'y bk. factory, 48′ x 118′; $25,000; o., S. H. Harris Co., 23 S. Clinton St.; a., G. W. E. Field, 175 Dearborn St.

New York, N. Y.—*Park Ave.*, cor. 156th St., five-st'y & base. bk. factory, 47′ 6″ x 119′; $70,000; o., Sigmund Feust, 718 E. 138th St.; a., Chas. Baxter & Son, 2580 Third Ave.

HOTELS.

New York, N. Y.—*Forty-ninth St., Nos.* 70-72, nine-st'y bk. & st. hotel, 41′ 3″ x 93′ 5′, plastic slate or asphalt roof; $175,000; o., Collins Building & Construction Co., 155 W. 140th St.; a., Small & Schumann, 265 Broadway.

HOUSES.

Brooklyn, N. Y.—*E. Seventeenth St.*, nr. Avenue R, three-st'y fr. store & dwell., 30′ x 40′; $5,500; o., W. Kuehr, 16 E. 110th St., N. Y.; a., I. B. Ells, 154 Montague St.

E. Thirteenth St., nr. Dorchester Road, two-st'y & attic fr. dwell., 26′ x 40′, shingle roof, steam; $5,000; o., G. Petterson, 472 Henry St.; a., A. D. Isham, 220 Broadway, N. Y.

Second St., nr. 9th Ave., 12 five-st'y bk. dwells., 20′ x 45′, steam; $110,000; o., First Construction Co. and W. A. Reynolds, 22 Court St.; a., B. Driesler, 13 Willoughby St.

Chicago, Ill.—*Lawrence Ave., No.* 1456, 2½-st'y bk. dwell., 30′ x 49′; $5,000; o., H. Kallenbach; a., Niels Buck, 125 La Salle St.

Harvard St., Nos. 6656-58, two-st'y fr. dwell., 30′ x 53′; $5,000; o., R. E. Keil; a., F. W. Perkins, 204 Dearborn St.

Glenwood, Ia.—Two bk. cottages, steam; $25,000; o., Inst. for Feeble Minded; a., Liebbe, Nourse & Rasmussen.

New York, N. Y.—*North Brothers Island*, four-st'y bk. nurses' house, 30′ x 74′; $40,000; o., City of N. Y.; a., W. Wheeler Smith, 7 Wall St.

W. Eighty-first St., No. 317, four-st'y bk. & st. dwell., 20′ x 62′ 6″, slag roof; $10,000; o., W. Bartin Chapin, 152 W. 83d St.; a., Israels & Harder, 31 W. 31st St.

MERCANTILE BUILDINGS.

Kansas City, Mo.—Bk. & terra-cotta business block, 62′ x 140′, gravel roof, steam; $100,000; o., Journal Printing Co., 9th and Grand Aves.; a., George Carmen, 508 Hall Building.

PUBLIC BUILDINGS.

Webster, S. D.—Two-st'y & base. bk. & st. court-house, 65′ x 90′, slate roof, steam; $65,000; a., Kinney & Detweiler.

STORES.

Hickory, N. C.—Two-st'y bk. store building, 58′ x 90′, tin roof, hot air; $8,000; o., J. D. Elliott; a., Bauman Bros., 612 Gay St., Knoxville, Tenn.

TENEMENT-HOUSES.

New York, N. Y.—*Twenty-fifth St., Nos.* 254-258, six-st'y bk. tenement, 45′ x 96′ 6″; $60,000; o., Friedman & Feinberg, 329 E. 116th St.; a., Bernstein & Bernstein, 111 Broadway.

Bank St., Nos. 52-54, six-st'y bk. tenement & stores, 35′ x 42′; $20,000; o., Chas. M. Straub, Lott Ave., Union Terrace, Borough Queens; a., Horenburger & Straub, 122 Bowery.

Eldridge St., Nos. 231-235, 2 six-st'y bk. tenements & stores, 37′ 1″ x 87′ 7″; $80,000; o. & b., Abraham Silverson, Germania Bank Building; a., Geo. F. Pelham, 503 Fifth Ave.

One Hundred and Twelfth St., nr. 8th Ave., six-st'y bk. tenement, 50′ x 87′ 11″; $65,000; o., Louis Cohen, 170 Greene St. or 14 W. 118th St.; a., Geo. F. Pelham, 503 Fifth Ave.

Audubon Ave., cor. 174th St., five-st'y bk. tenement, 63′ x 90′, slag roof; $75,000; o., Frank Kee, 261 W. 178th St.; a., Henri Fouchaux, 162d St. & Broadway.

THEATRES AND HALLS.

Pittsburgh, Pa.—*Sixth Ave. and Montour Way*, two-st'y granite & terra-cotta theatre building, 122′ x 172′; $600,000; o., Nixon & Zimmerman; a., Benj. H. Marshall, Cable Building, Chicago.

WAREHOUSES.

Chicago, Ill.—*W. Twenty-sixth St.*, nr. Rockwell St., five-st'y bk. warehouse, gravel roof, steam; $90,000; o., W. W. Kimball Co.; a., Wm. Strippiman, Room 927, 153 La Salle St.

Clark St., bet. 19th St. & Archer Ave., four-st'y bk. warehouse & stable, 50′ x 135′; $40,000; o., Payson Thompson; a., W. E. Walker, 355 Dearborn St.

St. Paul, Minn.—*Broadway and Fourth St.*, six-st'y bk. & st. warehouse, 104′ x 222′, gravel roof, steam; $175,000; o., Foley Bros. & Kelley; a., J. Walter Stevens.

MISCELLANEOUS.

New York, N. Y.—*Eleventh Ave.*, cor. 28th St., two-st'y bk. freight-house, 22′ x 36′ & 378′, slate roof; $30,000; o. & a., Erie Land & Impt. Co., 21 Cortland St.

PROPOSALS.

COURT-HOUSE. [At Hamburg, Ark.]
Bids are wanted **February 23** for erecting a court-house. W. F. McCOMBS, Co. Comr. 1416

SEWERS. [At Wabash, Ind.]
Proposals for furnishing materials and constructing sanitary sewers in Miami and Stilt Sts. will be received **until February 23.** JOHN HELTY, city engineer. 1416

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PROPOSALS.

SCHOOL. [At Quincy, Ill.]
Proposals for the erection of a school on the site of the present Webster School will be received by the Board of Education **until February 25.** 1416

LIVERY BUILDING. [At Birmingham, Ala.]
Architects Spink & Lovejoy have prepared plans and will receive bids **until February 25** for a $20,000 livery building for the Birmingham Livery Co. It will have composition roofing, electric lighting, terra-cotta, fireproofing, etc. 1416

HOSPITAL. [At Springfield, O.]
Proposals for the erection, including steam heating, laundry machinery and elevators, of a four-story brick and stone city hospital, will be received **until March 5** (extension of date). R. C. Gotwald, architect, Gotwald Building. 1417

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 7th, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 7th day of March, 1903, and then opened, for the alterations to the U. S. Custom-house at St. Paul, Minn., in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Custodian at St. Paul, Minn., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1417

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 9, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 16th day of March, 1903, and then opened, for the installation of a conduit and electric wiring system for the U. S. Post-office at Wilkesbarre, 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 Wilkesbarre, Pa., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1417

BUILDINGS. [At Athens, Ore.]
Proposals for the erection of a two-story business block to cost about $45,000 will be received by N. A. Miller **until March 20.** Buildings to be erected according to plans and specifications prepared by C. E. Troutman, architect, Pendleton. 1418

IOWA BUILDING. [At St. Louis, Mo.]
Bids are wanted **February 25** for erecting the Iowa building on the Louisiana Purchase Exposition Grounds, St. Louis, Mo. Proudfoot & Bird, architects, 712 Crocker Building, Des Moines. F. R. CONAWAY, sec'y, Iowa Comn. 1416

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 29th, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 4th day of March, 1903, and then opened, for the construction (including plumbing, heating apparatus, electric conduits and wiring) of the extension of the U. S. Custom-house and Post-office at Alexandria, Virginia, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Custodian at Alexandria, Va., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1416

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 26th, 1903. Sealed proposals will be received at this office until 2 o'clock P. M. on the 2d day of March, 1903, and then opened, for the low pressure steam heating and ventilating apparatus, complete in place, for the U. S. Public Building at Cheyenne, Wyoming, in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Superintendent at Cheyenne, Wyoming, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1416

PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 31, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 12th day of March, 1903, and then opened, for furnishing the low pressure steam heating apparatus, etc., complete in place for the U. S. Post-office at Janesville, Wisconsin, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Janesville, Wis., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1416

Treasury Department, Office Supervising Architect, Washington, D. C., January 24th, 1903. Sealed proposals will be received at this office until 2 o'clock P. M. on the 11th day of March, 1903, and then opened, for furnishing the low-pressure steam heating apparatus, etc., complete in place, for the U. S. Post-office at Wilkesbarre, Pennsylvania, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Wilkesbarre, Pa., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1416

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 3, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 10th day of March, 1903, and then opened, for the construction (except heating and elevator) of the extension to the U. S. Court-house, Post-office, etc., at Fort Smith, Ark., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Custodian at Fort Smith, Ark., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1416

BUILDING. [At Fort Terry, N. Y.]
Sealed proposals for constructing, plumbing, heating and electric wiring, frame barrack building and for constructing gun shed and machine shop building here will be received **until February 28, 1903.** S. Y. BRITT, Q. M. 1416

RIPRAP. [At Ashland, Wis.]
Bids are wanted **February 24** for furnishing and placing about 26,000 tons of riprap at Ashland. D. D. GAILLARD, Corps Engrs., U. S. A., Duluth, Minn. 1416

NOTICE TO CONTRACTORS.

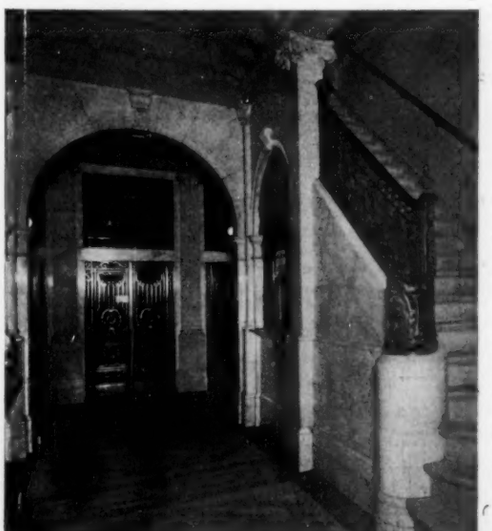
GATEWAY AND LODGE. [Near Dayton, O.]
Sealed proposals will be received at the Central Branch, National Home for D. V. S., near Dayton, O., **until 2 o'clock P. M. March 12th, 1903,** for supplying all labor and materials to erect and complete a stone "Gateway and Lodge," in accordance with plans and specifications on file in the office of Peters, Burns & Pretzinger, architects, Kuhn's Building, Dayton, O. Bids must be made in round sums, and to include all branches of labor and materials called for. Only such bids will be considered. All bids must be accompanied by a certified check equal to 5 per cent of amount of bid, drawn to order of John W. Byron, Commissary of Subsistence and Superintendent of Post Fund, which check will be forfeited in case the successful bidder refuses to or fails to enter into contract as required; otherwise to be returned to the bidder. Bidders must state the time required to complete the work. The Home reserves the right to reject any or all proposals, or to divide the contract between two or more bidders. A sufficient bond will be required from the successful bidders, and in addition, ten per cent of contract price will be retained from each payment until the contract shall have been completed. Blank forms and specifications for bidders will be furnished from the office of the C. of S. and Supt. Post Fund upon application. Envelopes containing proposals should be endorsed "Proposals for Gateway and Lodge," and addressed to the undersigned. JOHN W. BYRON, C. of S. and Supt. Post Fund. Approved: J. B. THOMAS, Governor. P. O. Address, National Military Home, O. Dated February 5, 1903. 1416

GATES. [At Nashville, Tenn.]
Bids will be received at the U. S. Engr. Office, **February 28** for 4 pairs of steel lock gates, filling valves, etc., for Locks A and No. 1, Cumberland River. 1417

ENGINE PLANT, ETC. [At Chicago, Ill.]
Bids are wanted **February 24** for the engine plant of the Post-office, Court-house, etc., in Chicago; also at the same time for the electrical generators of the said building. Plans and specifications may be obtained upon request, accompanied by a certified check of $100 (each branch), payable to the Treas. of the U. S., or order. Henry Ives Cobb, architect, Chicago Building, Washington, D. C. 1416

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 24, 1903. Sealed proposals will be received at this office until 2 o'clock P. M. on the 9th day of March, 1903, and then opened, for the installation of a conduit and electric wiring system for the U. S. Post-office at Jamestown, N. Y., 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. 1416

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 22, 1903. Sealed proposals will be received at this office until 2 o'clock P. M. on the 2d day of March, 1903, and then opened, for furnishing the low-pressure steam heating apparatus, etc., complete in place for the U. S. Post-office at Jamestown, N. Y., in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Superintendent at Jamestown, N. Y., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1416



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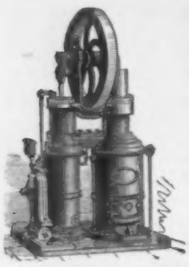

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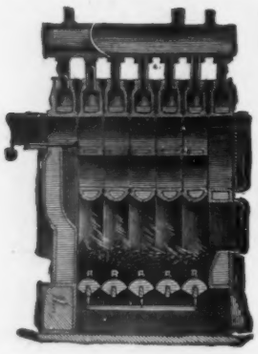

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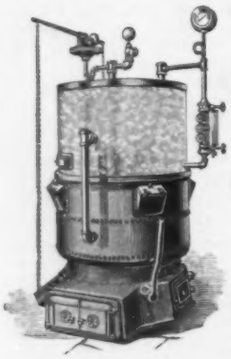

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Code Of Practice

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 ther 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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ADOPTED BY THE SOCIETY, FEBRUARY 1 . . 1895. . .

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.

SECTION 5. It is unprofessional to offer drawings or other services "on approval" and without adequate pecuniary compensation.

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.

SECTION 7. It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in event of the property having changed hands, without due notice to the said designer.

SECTION 8. It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

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.

SECTION 11. No Member should submit drawings except as an original contributor in any duly instituted competition, or attempt to secure any work for which such a competition remains undecided.

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.

SECTION 13. No Member shall compete in amount of commission, or offer to work for less than another, in order to secure the work.

SECTION 14. It is unprofessional to enter into competition with or to consult with an architect who has been dishonorably expelled from the "Institute" or "Society."

SECTION 15. The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration and supervision of all building operations which he may undertake.

SECTION 16. A Member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students

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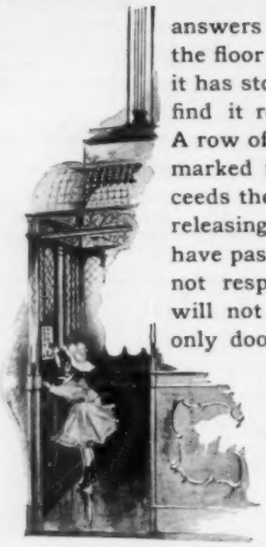

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