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SUMMARY:—

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TOO late in the season to allow us to perfect our plans and make announcement earlier, we determined to make a change in the manner and method of publishing our International edition, and we now give notice that the change impends and will have effect in the second quarter of the year. The change consists simply in gathering the extra illustrations which constitute the International edition into four quarterly issues in place of their being, as now, scattered through thirteen weekly issues. The result will be that the subscriber to the International edition will receive each week a copy of the Regular edition and with each quarter a quarterly volume in which will be collected the gelatine and other International plates. That is, a subscriber will receive exactly what he now receives, but it will reach him in what, we believe, will be a more acceptable and agreeable form. Amongst other advantages incident to this condensation of matter is the fact that it will enable us to publish in the same issue all the plates in illustration of a given building, instead of being forced to let them dribble out, a few at a time, in four or five different weekly issues, as in the past.

MR. P. M. STEWART, the new Building Commissioner for the Borough of Manhattan, has had an excellent idea, although it is not, as yet, very evident how he is to carry it out. Realizing the superiority of foreign cities to New York in imposing and beautiful general effects, he has formally invited "the American Society of Architects," which, we suppose, means the New York Chapter of the Institute, to cooperate with his Department "in securing, so far as is practicable, more artistic effects in the city's architecture." The "American Society of Architects" will, we are sure, be very happy to lend all the aid in its power to this excellent scheme, and the public will bless both it and Mr. Stewart for whatever they may be able to accomplish in the desired direction, but it is not so clear how they are likely to be able to accomplish anything. Under the present New York building-laws, any man can, practically, construct anything he likes on his land, provided it is reasonably incombustible; and regulations like those in force in Europe, where Governments exercise their police power in regulating the heights of cornices and string-courses, while admirable in their effect on the artistic beauty of cities, would hardly be suited to our notions of individual liberty.

IT should, however, be remembered that the best effects of city architecture in Europe are not the result of police regulation, but of voluntary agreement. The Rue de Rivoli, in Paris, for example, which excites the admiration of all foreigners by the continuous arcading of the sidewalk, and its long, level lines of cornices, string-courses and balconies, was formed by the municipality, which, desirous of widening the narrow, dirty passageway, bordering the grounds of the Tuileries and

the Louvre, acquired the lots facing on these passageways; and, after laying out a broad street, resold what was left of the lots, facing on the street, subject to the condition, that all structures erected on these lots should have the first story uniformly arcaded, and should have the string-courses and main cornices at fixed levels. Although this transaction took place nearly a hundred years ago, the street, thanks to the foresight of those who planned it, is as attractive as ever. Around the Rond-Point de l'Étoile, which dates from the same period, and was laid out in the same way, the regulations are even more strict, and the uniformity extends even to the decorations of the fronts. In many cases in this country it would be possible to apply similar restrictions, and the city of Boston, for example, has lost a great opportunity to control the constructions on the lots fronting on its beautiful park, where, in consideration of the privilege of access from the park avenues, it has imposed only a few meagre regulations where it might have insisted on its own terms, to the great advantage of the lot-owners, as well as of the public.

THE world has lost a brilliant artist in the sculptor, Onslow Ford, who died in London a few days ago, at the age of forty-nine. Ford was in some respects the most remarkable sculptor of his time. Without the obtrusive eccentricity of some of the more original French artists, he was independent and imaginative to a degree which is rare among sculptors anywhere, and particularly so in England. Most of his artistic training was obtained abroad, and it is not impossible that his peculiar freedom of thought may have been, in part, the result of his varied experience and study. He belonged to a poor family, and, when only a boy of seventeen, he was taken from London to Dunkirk. Here he pursued the artistic studies for which he had already shown an aptitude under the direction of an old Frenchman. Later, he entered the School of Fine Arts in Antwerp, and studied drawing and painting there for nearly two years. From Antwerp circumstances took him to Munich, where he was led to turn his attention from painting to sculpture. His studies were interrupted by the necessity of returning to London for a time, but he afterwards went back to Munich to complete them. Returning again to England, he found employment in portraiture, and it was some time before an opportunity was afforded him for a work of real imagination. The first, perhaps, of these was a statue of General Gordon, which he was commissioned to execute for the city of Birmingham. Instead of presenting the eccentric hero on horseback, with the conventional cloak over his shoulder, he mounted him on a camel, contrasting his simple uniform with the embroidered and fringed trappings of the animal. This work brought him fame, and he soon had plenty of commissions. One of his last works was a figure of Shelley, for the University of Oxford, which shows the poet as he lay dead on the beach of the Gulf of Spezia, after his body was dragged from the water by his friends.

THE total of fire-losses for 1901 will amount, it is said, to more than one hundred and sixty million dollars in the United States and Canada, and we are treated to the usual rumors that "property-owners are to be forced to lessen the fire-hazard," and so on, which mark the close of the insurance year. There is no doubt that the fire-loss, to which must be added, probably, a hundred millions more for cost of maintaining insurance companies and fire protection, is too large. As we have before suggested, the money spent by the people of the United States every year in making bonfires of their goods, and trying, in vain, to put them out, would just about keep the entire population supplied with boots and shoes. Now, the idea of free boots and shoes perpetually for everybody is quite sufficient to make the fathers and mothers of families prick up their ears, and there is no danger that a real remedy for the evils of fire would not attract public attention. The trouble is that the underwriters, who could easily carry out any measures that they might agree upon, content themselves mainly with grumbling and threatening. Not long ago, according to the New York Evening Post, the manager of a property insured for several hundred thousand dollars, after reading, apparently, some of the eloquent speeches at an underwriters' banquet, was touched in his conscience, and inquired into the cost of proper

protection against fire for the property which he had at risk. He found that the expense would be more than the amount of his present premiums for several years, and, like a conscientious man, he abandoned the project, feeling that he could not honestly sacrifice the interests of the owners of the property to a private fancy. We have ourselves had the same experience more than once, and until it is made for the interest of owners to use methods of protection against fire, it is very certain that few of them will do so.

THE English newspapers are being supplied, apparently by industrious "champions of labor," with a good deal of literature on the subject of the abolition of contractors, and the substitution of the system of the "direct employment of labor" by owners. Architects who have seen something of the "direct employment of labor" by people rich enough, and inexperienced enough, to be easy victims, will not be surprised that the suggestion should be received with cries of joy by the radical "friends of the toilers," but the other side has begun to take part in the discussion, and interesting facts, for the time, replace theories and predictions. One contractor, Mr. Wallis, writes an admirable letter to the *Builder*, asking why the experience of the contractor should not be of as much value in the business of construction as in any other; and refers to the costly experiment made by the London County Council, which was deluded into the notion that it could save twenty-five per cent of the cost of municipal work by being its own contractor, and, instead of that, after a series of disgraceful scandals, considered itself fortunate in being able to get work poorly and inefficiently done for a sum not very much greater than the cost of having it rapidly and efficiently executed by contract.

MR. WALLIS mentions some instances from his own experience of the result of encouraging rich and unsuspecting owners to employ labor "directly," either in building or engineering operations, which will not surprise architects. In one case, he saw five men and an overseer engaged, at good wages, in fishing an empty oil-barrel out of the water into which it had fallen; and in a fitting-shop he saw twenty-five men, also at good wages, employed in standing still, watching the two remaining men who alone made any pretence of doing any work. As to the influence of trades-unions on the efficiency of labor, about which there is so much dispute, he observes that men in places where there are no unions do, on an average, twice as much work in a day as in cities, where the unions rule the workmen.

WE imagine that American architects could add something to the illustrations of the difference in results between the "direct employment of labor" and the entrusting of the work to be done to a good contractor. We do not dare to say how many old packs of playing-cards we have found concealed near where some "labor" had been "directly employed" for several weeks by a wealthy proprietor, or how many empty whiskey-bottles were discovered under similar circumstances in another case. Of course, much work can only be done, or can be done most cheaply, by the day, and with an honest contractor to look after the men, at a reasonable compensation, there is no disadvantage in the system; but the time when all workmen can be trusted to labor faithfully and intelligently for an employer who has plenty of money, and does not have leisure to look after them, has not yet come, and will not come until politicians and college professors cease to hold up employers as "greedy monopolists," who have "seized upon the means of existence," by "exploiting the toilers," and whom it is desirable, in the interest of abstract justice, for the "toilers" to plunder in their turn whenever they get a chance.

THE Emperor of Germany has been unfortunate in incurring the hostility of certain artists who were not treated by him with the consideration which they thought they deserved, but he seems, notwithstanding their criticisms, to have very clear and excellent ideas in regard to art; and, in a recent speech, delivered at a dinner given in the palace to the artists of the Sieges-Allée, he gave good reasons for the favoritism with which he has been so much reproached. Concerning the present tendency of art to advertise itself by newspaper clamor, by the imitation of fashionable masters, and by a search for startling effects, he said, with justice, that the best way to counteract this degrading movement was for those in a position

to command to seek out artists of great talent, and attach them to their courts, giving them liberty and opportunity to work out, under the protection of their patron, the inspiration of their hearts. The Emperor, in support of this theory, said that it was in this way that the great schools of art of the Middle Ages and the Italian Renaissance were formed, and, although the complete accuracy of this statement is, as a matter of history, doubtful, there is, at least, enough truth in it to confirm his view that in all ages, and now more than ever, an atmosphere of security and sympathy is essential to artistic development. Thus encouraged, the Emperor believes, with William Morris, that art has a great work to perform, particularly among those to whom fortune has denied wealth and leisure. As he well says, the Germans have risen to their present supremacy through their constancy to the great ideals which they have set before them, and it is the mission of art to elevate and comfort the poorer people by placing before them ideals of beauty, purity and love. It was William Morris's theory, founded on long experience, that a poor man whose æsthetic faculty had been awakened soon found a pleasure in the sunshine on the whitewashed walls of his little cottage, and the varying figures of his children, at play in the dark interior, that he would not exchange for the delights of a palace; and the most important, as well as the most neglected, principle of social science is, perhaps, that the key to the abolition of class distinctions, of the envy of the poor toward the rich, and the arrogance of the rich toward the poor, is to be found in art, which no class can monopolize, and which draws all, rich and poor, together by the purest and strongest sympathy. To be effective as a social force, however, the art must be good, that is, inspired with true feeling, and expressed simply and without affectation. If it is insincere or theatrical, it will fail to excite sympathy; and if its inspiration is bad, it will be an instrument of evil, instead of good. The Emperor said that "art which represents misery more hideous than it is sins against the people," and the point that the value of art lies in its power to keep before the world the ideals which it is the mission of civilization to cultivate should, particularly in these days of impressionism, of Sargent, Raffaelli and the other purveyors of soulless horrors, never be lost sight of.

FORESTRY Associations will do well to note a recent study, by Sir William Thomson, of the sources of oxygen in the earth's atmosphere. According to this, as reported in the newspapers, the original atmosphere of the earth consisted only of carbonic acid and nitrogen, and it was not until plants began to grow that oxygen, formed by the decomposition of carbonic acid in the leaves of the plant, by the influence of light, began to be mixed with the air. As time went on, and vegetation increased, the proportion of oxygen in the atmosphere increased also, until the mixture became fitted to support animal life, first in the lower grades, and, later, in a higher development. When man arrived, or was developed, the proportion of oxygen had reached its maximum, and he has, since then, expended a large portion of his energy, not only in consuming the oxygen that he found ready for him, but in cutting himself off from future supplies by destroying the vegetation which produces it. Since the discovery of coal, his resources for this sort of slow suicide have greatly increased, for every ton of coal, in burning, destroys about three tons of oxygen; and Professor Thomson observes that, ages before the exhaustion of the coal-supply, against which economists warn us, the oxygen supply will be so reduced that the air will be irrespirable. The obvious method of postponing this evil day is to add to the oxygen supply by increasing vegetation, and every one who makes a tree grow where one never grew before is not only helping to preserve the fertility and salubrity of the surrounding country, but is doing something to prolong the existence of the race on earth.

IT will interest contractors to learn from the New York *Evening Post* that "ruinous competition" has cut down the price of window-glass to such a point as to force "many dealers to conduct their business temporarily at a loss." To meet this sad condition of affairs, a "rise in price" is under consideration, to take effect early in 1902. We know of a good many contractors who would like to have the names and addresses of the dealers who sell window-glass "at a loss," and whose impression has been for a long time that the enormous prices asked for such glass were established by a monopoly which, under the shadow of a tariff-tax practically prohibitory, was making immense profits at their expense.

NOTES ON IRON AND STEEL CONSTRUCTION.—I.

ARCHITECTURE, in the completest and fullest sense of the day, embodies probably a more varied knowledge of the industrial arts and sciences than any other single profession. The man who follows architecture thoroughly and with distinction must necessarily not only be an economist, but must be, as well, an artist and a constructor. This last qualification, far from being the least, is of the utmost importance, an importance which, unfortunately, was not recognized a few years back, but which, from the very nature of things, must find its place to-day in the modern buildings of the large cities or towns.

How vastly more the term "constructor" means now than it did three or four decades ago; for to-day it is not sufficient to know somewhat of the rule-of-thumb methods of figuring the thickness of walls, the size of a joist or the construction of a king or queen post truss, having enough material in its construction to build a highway bridge and not enough strength in its connections to realize one-twentieth of the strength of its members. The constructor of modern buildings must be well versed in the strength of materials; he must know the mechanics of the beam or girder, and be well versed in the analysis of stresses in framed structures, as well as the shop-practice employed in their manufacture; he must, too, know all about the stability of arches and retaining-walls, together with the processes employed in deep excavation through plastic and unstable soils, and the construction of heavy foundations upon such soils, when required to support a great superimposed load.

It is the purpose of these articles, however, to deal entirely with that modern innovation, "steel-construction," and with the end in view of giving reliable and working data upon the subject succinctly and successively treated, the following is presented:—

The size of the beams and the sections of the columns, together with the dimensions of the members making up any structure framed and assembled, composing the framework of a modern building, are based upon data which must be assumed. The designer, in working from such uncertain data, can at best produce a building only approximately economical in its construction. The two uncertain factors making up the original assumption, and which fix the dimensions of the structural members in any building, are the dead and the live loads. The dead load is considered to include the weight of everything entering into the construction of the building, while the live load may safely be said to include all loads and forces external and independent of the building, and when classified in this manner embraces the wind load, either in its horizontal action against the side of a building, or in its normal action upon a roof, and it may also include under its heading the snow-load. When the live load is especially referred to in the design of the floor-construction, it is considered as representing the weight of people, merchandise, furniture, fixtures and machinery.

In calculating the dead load in a structure the design of the construction must first be decided upon, and since accuracy in this respect is impossible on account of the fact that the sizes of the elements are as yet undetermined, the dead load should always be checked carefully after the plans and sections of the building are well under way, and if the beams, columns, or trusses are found to be light, the rolled sections composing them should be increased in thickness until adequate cross-sections have been obtained. Correct assumptions and accuracy in the determination of the dead load are of the utmost importance, for the design and successful proportioning of the foundation footings depend mainly upon the data obtained from these calculations.

While the materials entering into the construction of the modern building are many, the architectural-engineer need only bear in mind the most important, more especially those which enter into wall, floor or roof construction. The weight of these materials should be ascertained carefully and not too much dependence placed upon data more or less general in its character. The following weights of the principal materials used in building-construction given in pounds per unit of surface or volume, depending upon which is the most useful in the calculations, have been compiled from reliable sources and are generally accepted as correct by practising engineers:—

WEIGHT OF COMMERCIAL STRUCTURAL TIMBER IN POUNDS PER BOARD FOOT.

Pine (southern yellow long-leaf).....	3½
Pine (white).....	2

Pine (Oregon).....	2½
Spruce.....	2½
Hemlock.....	2
Maple.....	4
Chestnut.....	3½
Oak (live).....	4½
Oak (white).....	4

WEIGHT OF METALS USED IN BUILDING-CONSTRUCTION.

	Pounds per cubic inch.	Pounds per cubic foot.
Structural steel.....	.283	490
Cast-iron.....	.260	450
Wrought-iron.....	.277	480
Copper (cast).....	.319	552
Lead (commercial cast).....	.412	712
Zinc.....	.253	438
Brass.....	.302	523
Bronze.....	.319	552

WEIGHTS OF MASONRY MATERIALS IN POUNDS PER CUBIC FOOT.

Asphalt, pavement composition.....	130
Bluestone.....	160
Brick, best pressed.....	135 to 150
Brick, common hard.....	110 " 125
Brickwork, pressed-brick.....	112 " 140
Brickwork, ordinary.....	110 " 112
Cement, Louisville.....	50
Cement, Portland.....	80 to 100
Cement, Rosendale.....	50 " 60
Clay, dry, loose.....	63
Concrete.....	120 to 140
Earth, dry, loose.....	72 " 80
Earth, dry, moderately rammed.....	90 " 100
Feldspar.....	166
Gneiss, common.....	168
Gneiss, hornblende.....	175
Granite.....	170
Gravel.....	117 to 125
Hornblende, black.....	20½ " 220
Lime, quick.....	95
Lime, quick, loose.....	53 to 59
Limestone.....	170
Loam, soft.....	110
Marble.....	164
Masonry, granite or limestone.....	165
Masonry, granite or limestone, rubble.....	154
Masonry, granite or limestone, dry rubble.....	138
Masonry, granite or limestone, rough mortar rubble.....	150
Masonry, granite or limestone, rough dry rubble.....	125
Masonry, sandstone.....	145
Pitch.....	75
Plaster-of-Paris.....	142
Quartz, common.....	165
Sand, pure quartz, dry, loose.....	90 to 160
Sand, perfectly wet.....	118 " 129
Sandstone, building dry.....	144 " 151
Shale, red or black.....	162
Slate.....	160 to 180
Soapstone, or steolite.....	170
Terra-cotta.....	110
Terra-cotta, masonry work.....	112
Tile.....	110 to 120
Traprock, quarried and piled.....	107
Traprock, compact.....	187

WEIGHT OF ROOF AND CEILING COVERINGS IN POUNDS PER SQUARE FOOT.

Corrugated-iron, No. 26 to No. 18, no sheathing.....	1 to 3
Corrugated-iron, No. 26 to No. 18, with 1" hemlock-sheathing.....	3 " 5
Felt and asphalt, without sheathing.....	2
Felt and asphalt, with 1" hemlock-sheathing.....	4
Felt and gravel, without sheathing.....	8 to 10
Felt and gravel, with 1" hemlock-sheathing.....	10 " 12
Slate on laths, ¾" to 1".....	7½ " 11
Slate on sheathing ¾" to 1".....	9 " 11
Copper, without sheathing.....	1 " 1½
Tinplate.....	1 " 1½
Shingles with laths.....	2½
Skylight, glass ⅝" to ¾", including frame.....	4 to 10
Lath and plaster ceiling.....	8 " 10
Tile, flat.....	12 " 15
Tile, corrugated.....	8 " 10
Tile on 3" fireproof blocks.....	30 " 35

In making the necessary calculation for the dead load to be combined with the live, and to be used in determining the sizes of beams and columns, the general design of the floor-construction must be thoroughly studied and decided definitely. It is then a simple matter to make scale-drawings of the several sections of floor-construction between beams and from these calculate the weight of the construction per lineal foot of beam or per square foot of floor-area. It is always well in determining the unit dead load on a floor to disregard the usual tables

giving the weight of the different systems of flooring, and to make one's own calculations for each particular case in hand. By using actual weight and accurate calculations in each specific case, data regarding the requirements of the beams and girders entering into the floor-construction may often be determined that will lead to the adoption of considerably lighter beams and girders, and hence a material saving in cost will be instituted. In the preliminary consideration of a building the time cannot always be spared in order to take up the thorough study of these details, and therefore it is necessary to have at our command data which will give approximately the weight of such floor-constructions as are in everyday use. The following tables are as nearly correct as such generalizing under the several items will admit:—

WEIGHT OF USUAL FLOOR-CONSTRUCTIONS IN POUNDS PER SQUARE FOOT.

Ordinary joist, wood floor, plaster ceiling.....	20
Heavy wooden girders, 3" rough floor, 1" finished floor.....	18
Brick arch, 4" thick, concrete filling, 1" finished floor:—	
8" I-beam.....	75
9" I-beam.....	80
10" I-beam.....	90
12" I-beam.....	100
15" I-beam.....	120
Hollow brick flat arch, ordinary type:—	
8" I-beam.....	70
9" I-beam.....	75
10" I-beam.....	80
12" I-beam.....	90

The uncertain factor in figuring the dead load is the weight of the floor-beams, the sizes of which have as yet not been determined. Any rule which will give this information, even though it is only approximate, and far from accurate, is of value. There has been such a rule evolved, based on the condition that beams are designed upon the same limitations that are usually employed, and which will be given later. This rule applies to steel beams only and is as follows:—

$$W = \frac{L \times S^2}{1,000 \times d}$$

In which W equals the weight of the floor-beams in pounds per square foot of floor-area; L equals the combined live and dead loads in pounds per square foot of floor-area; S equals the span of the beam in feet, plus the length of the beam-bearing; 1,000 a constant, and d the depth of the beam in inches.

In order that the above may be clear, the following example may be interesting:—

Example.—The span of a beam supporting a floor-load of 150 pounds is 20 feet; what will be the weight of the beams per square foot of floor-area, provided 15-inch beams are used?

Solution.—From the problem, the values of the symbols in the formula are as follows: L 150; $S^2 = (20 + 1.5)^2$ or 462.25, 9 inches at either end being taken for the bearing of the beam at either end; d = 15 inches. Then substituting in the formula we have

$$W = \frac{150 \times 462.25}{1,000 \times 15} = 4.62$$

While the dead load is at first only based on a series of assumptions, it is eventually accurately determined; not so, however, with the live load, which is probably never within 25 per cent of the load assumed. This load is so variable in amount that only an assumed load, which must be the maximum, can be taken. Since this maximum load is nearly always considerably in excess of the actual load, it is necessary to include in the structural members of a building considerably more material than is ordinarily required. It is, therefore, economy to keep the maximum live-load as low as possible after a careful analysis of the conditions obtaining in the particular building has been made. All original investigation along this line is therefore extremely valuable, and authentic data regarding the live-loads that obtain in existing buildings should be carefully scrutinized.

Many buildings at present erected are designed for excessive live loads, but as it is usually necessary to conform to certain building-laws, which are extremely general in their application and consequently inadequate, the designer cannot figure on the light loads which he knows will amply meet the requirements. The modern office-building, for instance, is hardly likely to fill any other function in the business world than it does, and statistics show that no office contains a greater load than 40 pounds per unit of floor-space, and that the average load is not one-half this amount; nevertheless, the limitations imposed by

the several city ordinances are far in excess of this amount. It is well, undoubtedly, to be on the side of safety, but where heavy live loads are impossible, owing to the nature of the structure and means of intercommunication, it would seem that greater latitude should be given.

In buildings for public assembly there is hardly a necessity for a load of more than 80 pounds per square foot, which is the average weight of a densely-packed crowd of people, though in the case of a panic an unusual condition of loading may result, and a load of 120 pounds or more be attained. It would seem reasonable, however, to adopt the light load in figuring, especially in buildings where there are fixed seats, pews or benches, for on such a floor-area even the load of 80 pounds will not obtain except in the aisles. The necessity for a larger live-load than 40 pounds per square foot of floor-surface does not exist in dwelling-houses, except for the fact that on occasion they are subject to the same condition as an assembly hall or room; and then, too, there is no class of building situated in the midst of a city that more quickly outlives its original use than a dwelling-house; for these reasons a live load of 70 pounds should usually be considered. Such a live load is, however, not necessary in designing a country house, at least in all rooms and halls not used for assemblies, and 40 pounds will be adequate except for those wherein 70 pounds would be a better assumption and one sufficiently safe.

All other buildings, such as factories, warehouses, machine-shops and printing-plants, are designed for specific purposes; and they should be carefully designed to fulfil the conditions of loading which are reasonably likely to occur under actual working conditions. In fact, for this class of buildings it is entirely impossible to fix any general rules as to the amount of the live load to assume. One single floor of a plant may be subjected to twice the live load that would obtain on the other floors, and consequently should be proportioned for the additional burden. Then again, the vibration of moving machinery is an important factor which is often overlooked in the design of floor-construction; it is, nevertheless, a factor that should never be neglected in the consideration. The floors of printing-plants are especially liable to a vibratory movement, owing to the nature of the machinery, and in designing the floors of buildings erected for this purpose too much care cannot be exercised in order to secure stiff girders and beams, and broad bearings and rigid connections.

The live loads usually assumed for buildings built for many purposes and requirements are as follows:—

LIVE LOAD IN POUNDS PER SQUARE FOOT USUALLY ASSUMED IN BUILDINGS OF DIFFERENT CLASSES.

Country and suburban houses:—	
Sleeping-rooms, studies, etc.....	40
Halls, ball-rooms, dining-rooms, etc.....	70 to 80
City houses.....	70 " 80
Churches, theatres.....	80 " 120
Drill-halls, dancing-halls, etc.....	120 " 150
Manufacturing-plants.....	120 " 400
Machine-shops.....	150 " 450
Warehouses.....	150 " 500

When a careful analysis of the dead and live loads is not made in the preliminary study or the hasty design of a building, recourse is had to data which cover both, and the following table can be considered as conservative and accurate as such a general recapitulation can be:—

ENTIRE LOAD IN POUNDS PER SQUARE FOOT USUALLY ASSUMED IN THE DESIGN OF FLOORS FOR DIFFERENT PURPOSES.

Plank covering, lightest construction.....	100
Brick arches.....	150
Light-warehouse floors.....	200
Places of public assembly.....	200
Heavy warehouses.....	300 to 600
Shop-floors for light machinery.....	250
Shop-floors for heavy machinery.....	300 to 500

In the design of a modern steel structure all of the members must be proportioned for the full live load that they will be required to sustain; it is, however, not considered necessary practice or economical construction to proportion all the members in the structure for the maximum live load that the utmost possibilities of loading may necessitate. The floor-beams must always be proportioned for the full live load, for some of them are more than likely at one time or another to be fully loaded. That all of the floor-beams in a system of flooring depending

for its support upon a principal girder are likely to be loaded with the full live load at any particular time is highly improbable, and, consequently, good practice would seem to dictate that only 90, or possibly as low as 80, per cent of the maximum live load may be figured as coming upon the principal girders. The high office-buildings of modern construction contain many floors, supported by tiers upon tiers of columns, and as the sectional supporting-area required in any one floor must be carried to the foundation-footing through all of the intervening columns, it can readily be seen how important it is, for economical reasons, that the loads upon these principal supports should be reduced to the lowest possible amounts consistent with safety.

That all the floors of an office-building should be called upon to sustain the maximum live load all at the same time is not likely, even if with the present means of intercommunication and usual transaction of business it were possible, and so a certain reasonable reduction in the percentage of all the live load above that a tier of columns may be called upon to carry can certainly be made. This percentage of reduction is entirely a matter that lies within the individual designer's province in the construction of the particular building in hand, and no data or rules general in application will be of much practical value. In this connection the above data giving the amount of the live load and the percentage of increase of the same load from the floor above, of a thirteen-story building of the skeleton-construction type erected in Chicago, may be interesting as a sample of how much economy may be effected by the adoption of such assumptions:—

	Live load per square foot of floor-area.	Live load on columns from floors above.	Total live load on columns.
Roof.....	40		
Thirteenth floor...	50	40	40
Twelfth floor.....	50	45	85
Eleventh floor....	50	41	126
Tenth floor.....	50	35	161
Ninth floor.....	50	31	192
Eighth floor.....	50	25	217
Seventh floor.....	50	21	238
Sixth floor.....	50	15	253
Fifth floor.....	50	11	264
Fourth floor.....	50	5	269
Third floor.....	50	1	270
Second floor.....	50		270
First floor.....	125		270
Basement.....		50	320

M. M. SLOAN.

[To be continued.]

THE CATHEDRALS ONE WILL NEVER SEE.

TWENTY years ago, after having chatted awhile about grotesque and symbolic sculpture, in that immense workshop in the Rue Condorcet, Viollet-le-Duc showed me some of his admirable drawings: bird's-eye views drawn with the hand of an expert and delicately tinted, studies and details of the most astounding precision; then, halting a few seconds before a superb drawing of the Cathedral of Paris, he cried, "Just think, there is not a single cathedral, not one, understand you, which has been finished as it was intended to be!"

This exclamation has very often occurred to my mind, and I ask myself if it would not be interesting to give in a few sketches, intentionally neglecting the details in order to simplify and aggrandize the appearance of the *ensemble*, I ask myself if it would not be amusing, perhaps even interesting, if not instructive, to give a sketchy presentation of the cathedrals which will never be seen!

And first, it must be said, cathedrals built as one operation are rare, and ought to be. It would, in fact, be necessary for this that the work should be carried on with incredible rapidity and with boundless resources, at those epochs where each style of architecture frankly had the better of earlier styles, where each century built according to that formula of art which was familiar to it.

I can better make understood by the detail of some church—the façade of the Cathedral at Rouen, for instance—this principle of the superposition of styles which prevailed up to the end of the eighteenth century. And in this connection, I must remark that in all the drawings [see Illustrations] the tinted surfaces show the edifice as it exists, while the additions, the portions projected or not executed, are merely indicated in line.

Now, regarding the tower of Saint Romain, a single glance will show through what phases it has, or might have, passed. In the first place, the primitive construction is of the twelfth or thirteenth century, showing a charming little staircase tourelle which most happily breaks in on the symmetry of one of the faces of the tower. Then, the upper platform, destroyed by a fire, was levelled, and they busied themselves with completing the tower. According to the plans of the early architect, the tower should have been crowned with a grand pyramid, flanked by four smaller pyramids, in the

style of that which finishes off the staircase turret. This cannot be doubted. But years passed, resources were lacking, and so we come to the fifteenth century. Then, the architect, Guillaume Pontifz, no longer hesitates; he crowns the ancient stories with a new one, beflowered, ornamented with balustrades, pinnacles, arcades and statues the richness of whose details frankly breaks with the masculine simplicity of the portions already built. And even then it is not done. It must be finished, it must be covered, in a word. Suggestions are asked for from different artists; for a time there is an idea of finishing the tower as a campanile. Finally, after long discussion, they adopt the form of a pavilion roofed in iron which is decorated with carvings and appliqué-work in metal. But, I suppose this roof to be destroyed at the commencement of the seventeenth or even eighteenth century. Never, never, would the architects of those times have reestablished it, and we might have seen the tower of Saint Romain finished, as the last sketch shows, by an openwork campanile, in several stories retreating one above the other.

I give this as an example of the superposition of styles—especially in the matter of spires and towers—which so completely modifies the aspect of the *ensemble* of cathedrals, of which fact, moreover, there are numerous proofs, as at Chartres, Strasbourg, and so on.

Two cathedrals, particularly, which have escaped this superposition of styles must, nevertheless, be mentioned. For the completion of one—Cologne—architects of methodical mind, wise and conscientious, set themselves a task full of self-abnegation, since it continued purely and simply to completion an unfinished edifice. They worked according to the painstaking principles of the stone-mason who measures the ancient profiles, and cuts them with most scrupulous care from new blocks of white stone which can be substituted for the blocks of stone blackened by time, and which are then slipped into place as into a cell, without leaving a millimetre's play.

The choir of Cologne Cathedral, begun in 1248, was finished in 1322. The work was interrupted in the sixteenth century. Then, in the last century, from 1817 to 1880, work was carried on steadily, and to-day the Cathedral of Cologne, finished only a few years ago, Gothic from base to summit, rears towards the sky its two immense towers of openwork stone 156 metres high. But this veritable *tour de force* of unity of style, so energetically carried out, was possible only in our epoch, after the development of the science of archaeology—a development which is one of the characteristics of the nineteenth century.

Earlier than this, such an achievement was impossible, and another cathedral—the Cathedral of Orleans—gives us an indisputable proof of this. In 1562, the inhabitants of Orleans saw their cathedral devastated; they wished to rebuild it. Up to this point, well enough. But, by an oddity not wholly free from obstinacy, instead of asking of the architects of the seventeenth and eighteenth centuries plans for a new structure, they demanded of these architects that, abandoning the formulas which were familiar to them, they should reconstruct the cathedral exactly, that is to say, should rear a Gothic structure. Now, at this time, not only the taste for Gothic building was not the fashion, but no one even knew how to draw a Gothic edifice with exactitude. This may appear extraordinary, but it is a fact. Let any one consult a number of the finest plates engraved in the last century, and he will see that the characteristic line of Gothic structure is wholly unknown to the most skilful draughtsmen, who always had a tendency to apply the formula of the pilaster and entablature of their own epoch to the structures of earlier centuries which they believed they were portraying.

So it is that the Cathedral of Orleans is the most ridiculous interpretation of Gothic which it is possible to dream of. The robust buttresses have been transformed into pilasters with columns at the angle; the pointed arches—and what arches!—rest on entablatures. The disproportioned arcades, the openwork cresting, like jig-sawed woodwork, and the tympana with their childish rose-windows make everybody laugh.

Would it not have been better, a hundred times better, as Victor Hugo has so well said, that "the great structures, like great mountains, should be the work of ages; that each wave of time should superpose its own alluvion, that each race should add its layer upon the monument, that each individual should add his own stone?"

Thus much said, a comparison of certain façades will show us what might be the change of aspect of some cathedrals if only we could see them finished. The Cathedral of Laon is one of the most beautiful buildings of the thirteenth century, and ought to have as many spires and towers as Rouen; the drawing of the façade indicates with clearness that the towers, with their openwork buttresses and silhouettes of animals detaching themselves against the sky in so decorative a manner, are not yet finished. A poverty-stricken balustrade now finishes the platform, while two pyramids with spirelets crowning the angle-buttresses—now decorated with oxen of huge dimensions—should have crowned with absolute symmetry this façade of so masculine a simplicity.

The Cathedral of Amiens, also, does not appear as it should. The richness of its façade is admirable. Less sumptuous than that at Rheims, but with a beauty of line perhaps at the same time more robust and more elegant, the façade should have for complement two towers, which, as we now perceive, must be dissimilar. To-day, the platforms above the balustrades are protected by little roofs, and conical or pyramidal roofs decorated with lead crown the staircase turrets. But if we suppose these two towers finished—either in the

fourteenth or fifteenth centuries—grafting upon the existing bases the confectionery-work carving of new stories, rendered still more delicate by contrast with the robust buttresses that flank the towers, these would have given to the Cathedral of Amiens an aspect of incomparable richness.

And no more is the Cathedral at Strasbourg finished, and the tower which is lacking was, nevertheless, very necessary. Doubtless, we have become habituated to the present silhouette. The "Münster," with its spiral staircase, 142 metres high, losing itself in the morning mist, gives to the façade a very characteristic silhouette; it is, nevertheless, true that there lacks a pendant to this fourteenth-century tower. This pendant, most likely to be built in the fifteenth and sixteenth centuries, would, in all probability, have been more elevated than the "Münster," for it is an almost constant law that each century always seeks to excel its predecessor, and, probably, this new spire would far have surpassed the spires of Cologne. But, unfortunately, it never did exist and never will exist!

If now we look at cathedrals in profile, those especially which ought to have several spires or towers, we shall be impressed with the change in silhouette of these great edifices. First I will speak of the superb drawings of Viollet-le-Duc. This eminent architect, in fact, made a drawing of the façade of the Cathedral of Paris and a bird's-eye view of the Cathedral at Rheims which give a marvellously exact idea of what the aspect of these two cathedrals should have been, but which we shall never see.

"If the façade of Notre Dame of Paris is very beautiful as it exists to-day," he often said, "we must, nevertheless, remember that everything had been so well prepared for the stone spires that we cannot but regret their absence. In the construction of the towers there is a force and strength which is not justifiable, since they carry nothing. Now, if these piers, so skilfully planted, if these grand bays terminated with masculine archivolt, if this structure, somewhat heavy for its crowning, could only be finished with spires, how elegant all would appear!"

All this is perfectly true, but it does not prevent, if on one fine day we should see scaffoldings set up and work begun on the building of the stone spires, that there should break out such a riot among certain alleged amateurs and archaeologists that the audacious architect who should undertake such a work would be obliged to seek safety in quick flight. The public doesn't like to be disturbed in its habits. We saw this a few years ago when Falguère set up on the Arc de Triomphe his full-sized model, which set the grand silhouette of a quadriga against the light of a setting sun. The composition was pretty enough; some of the figures at the angles should have been altered—as was agreed by the sculptor himself. The model was left there to rot away slowly and make itself unpleasant, and, finally, to fall to pieces: so the Arc de Triomphe remains as it was, without crown, because the public was not accustomed to see it otherwise and, not liking to change its habits, disdainfully turned its back upon the artist's project.

For the real finishing of the Cathedral of Paris, it would be the same, and yet, according to Viollet-le-Duc's idea, the Cathedral of Paris—thirteenth-century work—ought to have had its façade dominated by pyramids equally of the thirteenth century. And yet it might very well have had its façade finished with towers of the fifteenth or sixteenth century, or even by campaniles with domes and colonnettes of the seventeenth or eighteenth century, and would not have been any more ugly for that. Picturesque cathedrals are not distasteful to artists.

From this point-of-view, it has been said a hundred times with perfect truth that the Cathedral of Rouen is one of the most picturesque cathedrals which one can dream of. The exterior of the choir is of the twelfth century, the nave and choir of the thirteenth, the gables of the transepts of the fourteenth; the sixteenth-century façade, set above the thirteenth-century façade, is flanked by two towers, one of the twelfth, the other of the fifteenth, and yet the cathedral is not finished. Far from it. The real Cathedral of Rouen, the one which will never be seen, ought to have seven towers. Seven towers? Some will ask, that is wholly unlikely! No, we shall see shortly that Rouen should have had eight towers and Chartres nine. Nothing is easier than, not only to justify these towers, but to see how they would have looked when finished as they should have been. At the side of the façade, the tower Saint-Romain, which I have already used as an explanatory type, ought to have appeared with a campanile of the sixteenth or seventeenth century, replacing the slate-covered roof we have spoken of. As to the "Butter Tower," it lacks a stone pyramid of openwork with crockets on the arrises. The portals of the two transepts show the lower stories of four pyramids which should flank the lateral doorways. As to the central tower, the stone base of 1353, burned and repaired in 1514, was, in 1544, surmounted by a *flèche* designed by Robert Becquet, in wood covered with lead. This was burned by lightning in 1822. Later, this Renaissance *flèche* was replaced by one in cast-iron. In the drawing, I suppose that the work of Robert Becquet still appears intact, and I believe that when we think of the effect produced over the countryside by the towers of Tournai, which still exist, we can only regret the incompleteness of our cathedrals, whose picturesque silhouettes would have been so attractive and grandiose.

The Cathedral of Rheims would also have been very imposing with its eight spires, and it is quite impossible to pretend that it is much better to-day than if it had been so finished. The western towers, 80 metres in height, would have measured 120 if the spires had been built. The finish of its angle-turrets is more than sug-

gested, only the pyramidion and the gables are wanting. The Cathedral of Rheims, seen in profile, appears still more unfinished than the Cathedral of Paris. If now we add the four transept spires, the central spire and that little *flèche* which exists above the choir, the angle-tower 18 metres in height whose base is formed by caryatides in an attitude of torture, one would be compelled to agree that, amongst the celebrated cathedrals, Rheims is one of those which would have gained most if seen completed.

Apropos, nevertheless, of restored spires or towers, and particularly of central spires, it must be said that in illustrations of this kind it is allowable to hesitate, not as to the proportions—for they are imposed by the relations of the *ensemble*—but as to the mode of construction. The original architects, lacking means, have, as is said, sometimes hesitated before the danger of too greatly overloading the isolated piers of the transepts, and they had terrible experience of this at Beauvais. Often the central spires were not built, but were replaced by a *flèche* of woodwork covered with lead, which, in spite of its really considerable weight, was far less of a load upon the lower portions of the structure than stonework would have been. But it should be added that if these same architects had had the time and the necessary resources to finish their buildings—where the original plan showed transept towers—these spire-terminated masses, buttressing the flying-buttresses of isolated piers, would have rendered central stone spires far less dangerous. The Gothic building being *par excellence* a methodical construction, in perfect equilibrium, it was necessary to proceed in orderly manner and erect one after the other, according to the requirements of statics, those masses which were at once necessary and decorative.

As to the Cathedral of Chartres, which to-day we see with only two towers—and it is true that these towers are very marvels, and certainly give the countryside a superb silhouette,—what would it have been if nine towers had been built? The height of the old tower (106 metres) is exceeded by the new tower (115 metres); the four transept towers, and especially the two towers rising from the beginning of the choir, would have had less noble proportions, but the central spire would certainly have exceeded the "Münster" at Strasbourg, even if not the spires of Cologne.

But the marvel of marvels, from the picturesque point-of-view—and that is one which perhaps is least negligible—is the Cathedral of Beauvais. Not that it would ever have had against the sky a forest of spires, or towers, but because of its mere dimension, its fantastic proportions, this cathedral, if finished, would have been simply the queen of all cathedrals. Every one knows that the choir still exists, and this choir is higher than that of Cologne. This choir, of the thirteenth century, measures 68 metres in height, and the two transepts were built between 1500 and 1537.

I have placed side by side, at the same scale, the Beauvais choir and the present façade of the Cathedral of Paris. At a glance, we can perceive the difference in size. The two towers of Notre Dame de Paris could be sheltered under the roof of Beauvais, as if they were two simple soldiers sheltering under sentry-boxes. What prodigious effect would have had such a cathedral finished according to these dimensions, one hardly dares to dream! The central spire, 153 metres high, higher than the towers of Cologne, did exist—this appears hardly believable—but not for a long time, it is true. This spire, due to Jean Vast, the lantern of which was visible from the interior of the cathedral, crumbled away in 1573.

Surely the Cathedral of Beauvais would have been finished in the style of the purest Renaissance, since the transepts date from 1537; surely the western towers would have belonged to the seventeenth century, if not the eighteenth, one at the least. The Cathedral of Beauvais would have been a work of centuries; it would have been "like a mountain, in the true sense of the word, upon which each had reared according to his taste the construction which pleased him."—Jules Adeline in *Le Monde Moderne*.

BOOKS AND PAPERS

WE will begin our criticism of Mr. Gotch's book¹ with the only unfavorable observation which we shall have to make in regard to it. This is, that the appearance of the work could have been brought more into agreement with its merits by a little greater care in the management of the illustrations. From Mr. Gotch we expected, in his new book, something like his magnificent work on the Architecture of the Renaissance in England, only, of course, on a smaller scale; and, while the material is as excellent and abundant as any one could desire, it is a disappointment to see it illustrated by photographic full-page plates printed apparently at random, in all shades of color from dead black to warm sepia, mingled with half-tone cuts, scale-drawings and sketches, the last of which, in some cases, leave a great deal to be desired. It is, undoubtedly, necessary to use both drawings and photographic illustrations to explain the subject, and, in the earlier work, this was done with good judgment and excellent effect; but in the present book we find repeatedly collotype plates in brown and half-tones in black.

¹ "Early Renaissance Architecture in England." A Historical and Descriptive Account of the Tudor, Elizabethan and Jacobean Periods, 1590-1625. For the Use of Students and Others. By J. Alfred Gotch, F.S.A. With 317 Illustrations. New York: Imported by Charles Scribner's Sons. Price \$9.

acing each other on opposite pages, and half-tones and pen-and-ink sketches on the same page; while, of the latter, one or two, as, for instance, that representing the staircase at Lyveden, on page 186, might almost be called discreditable. We are often told that sketching is in disrepute among English architects just now, and that we must not expect much from people who have so many other things on their hands; but there are still draughtsmen in England who can make very pretty architectural sketches, and the era of Nesfield and Norman Shaw is not so remote that one need despair of finding talent enough yet surviving to make tolerable sketches for a book which must inevitably be compared with the work of Nash and Richardson and Shaw.

Apart from this criticism we have nothing but praise for the book. Although the illustrations are necessarily small, there are a great many of them, and they show clearly the development of the Early Renaissance in England, in plan and detail; while they are accompanied with an extremely interesting and valuable text, tracing the history of the style from its timid beginnings, under Henry the Eighth, to its full assertion in the works of John Thorpe and Inigo Jones, and giving, as only an architect's writing could, exact ideas of the origin and growth of the peculiar forms of ceiling decoration, panelling, metalwork, mantels and staircases which, even more than exterior pilasters and curved gables, form the essential characteristics of the style. The lover of architectural history will read the book with very great pleasure, while the practising architect will find in it invaluable suggestions for reviving, under such modifications as the conditions of modern life may require, the spirit of a style which has always had a singular charm for the profession and the public.

It might be supposed that everything that could be said about perspective had been already said; but, to the real lover of the art of perspective drawing and sketching, there is perennial interest in learning what each new author has to bring forward on the subject; and, if Mr. Longfellow's book¹ has nothing new in the text, it would still be interesting from the skilful use made of photographs to illustrate the principles which it gives. It may be observed that the perspective of photographs is generally very false. Not only does the photographic lens give us rather the picture of a small model of the subject, seen from a distance of a few inches, than a representation of it from a point so far distant as to reduce it to the given size, but the correction for spherical aberration often magnifies the objects at the sides of the picture very materially in proportion to those at the centre, thus introducing new distortions. Mr. Longfellow, however, uses his photographs with excellent judgment, employing sometimes pictures taken with a short-focus lens, and sometimes those taken with a lens of long focus, in which the distortion is far less, to illustrate the points under discussion. With the help of these, and of a multitude of outline sketches, the beauty and cleverness of which can be fully appreciated only by the expert architectural draughtsman, he discusses in a most interesting manner, and at greater length than any other writer on the subject, so far as we know, what may be called the technique of perspective drawing: that is, the great mass of empirical rules, the result of observation, guided by good taste, with which the thoroughly accomplished draughtsman must supplement his knowledge of the mathematical science of perspective. At the very outset, for example, the learner is made to find the vanishing-point of diagonals, and is shown, by various examples the uses to which skilled draughtsmen, and, as a rule, only skilled draughtsmen, apply this invaluable key to rapid perspective drawing. Next, the student is introduced to perspective scales, so that he may, from the first, avoid the ridiculous blunders which so often disfigure the work even of people who call themselves accomplished draughtsmen.

Having explained these simple points, — which, if understood by every one who attempts perspective drawing, would do away with those pictures of the interior of churches a mile and a half long, or thereabouts; of giants stalking through streets of Lilliputian houses, and of figures poised in air above the roof of the houses that they are supposed to inhabit, which adorn the walls of nearly every exhibition-hall, — the book takes up a systematic method, which it bases on the use of the perspective plan. This, it may be observed, is a very old-fashioned method; but it is so incomparably superior to the more modern ones in the facilities which it affords for unravelling difficulties, and giving rapid approximations, as well as in its superior neatness of handling, that it has been revived of late years, and is now in general use by the best draughtsmen. Taking this as a starting-point, the book gives us some valuable observations on the choice of the conjugate vanishing-points, and the proper use of parallel perspective, with that of vanishing-points of inclined lines, adding a variety of suggestions, which the professional draughtsman will find of great value, for making inaccessible vanishing-points available; and, later, we find several chapters, as new as they are interesting, devoted to labor-saving methods of drawing circles, arches and vaults, of almost every imaginable kind, intersecting and otherwise, in correct perspective.

A draughtsman who thoroughly understands the method of the perspective plan, with its applications and consequences, hardly needs to trouble himself about other systems; and Mr. Longfellow is, to our mind, judicious in dismissing with brief notice the much-vaunted theory of curvilinear perspective. The authors of books on

perspective sometimes forget that draughtsmen and artists, who have to earn a living by making correct and pleasing drawings, have no time to spend in following mathematical reasoning from doubtful postulates. They need, what very few of them possess, a thorough knowledge of one good system, which should, however, be aided by the observations which Mr. Longfellow gives in greater profusion than any other writer that we know of, and with admirable judgment, on the most advantageous choice of horizon-lines and vanishing-points; the grouping of figures; the arrangement of the composition, and many other matters which affect the success of the picture to a degree which only experienced draughtsmen can appreciate.



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

NEW THEATRE, CORNER OF TREMONT ST. AND VAN RENSSLAER PL., BOSTON, MASS. MR. J. M. WOOD AND MR. J. G. HOWARD, ASSOCIATE ARCHITECTS, NEW YORK, N. Y.

SECTION OF SAME BUILDING.

CATHEDRALS THAT ONE WILL NEVER SEE: LAON; STRASBOURG; RHEIMS; AMIENS; CHARTRES; PARIS; BEAUVAIS.

FOR discussion of these subjects, which are copied from *Le Monde Moderne*, see article elsewhere in this issue.

[The following named illustration may be found by reference to our advertising pages.]

CANCELLO DELLA VILLA MASSIMI, IN VIA MERULANA, ROME, ITALY.

[Additional illustrations in the International Edition.]

THE ATLANTIC BUILDING, WALL AND WILLIAM STS., NEW YORK, N. Y. MESSRS. CLINTON & RUSSELL, ARCHITECTS, NEW YORK, N. Y.

DETAIL OF THE SAME.

DETAIL OF CENTRAL FOUNTAIN: VILLA LANTE, BAGNAIA, ITALY.

DRUMMOND CASTLE, FROM THE SOUTH.

DECIDUOUS CYPRESS: VILLA DORIA-PAMPHILI, ROME, ITALY.

GATEWAY: HAMPTON COURT PALACE; GATEWAY: SYON HOUSE, MIDDLESEX, ENG.



WASHINGTON ALLSTON. — It is remarkable that the name of the only eminent American painter who was born in South Carolina should have been omitted from the list of great American artists inscribed on the walls of the Fine-Arts building at the Charleston Exposition. The claims of Washington Allston to a place in the list are thus set forth in a letter written by Edward Octavius Flagg to the *Mail and Express* of New York. "If he were not mentioned as handling the brush equal to these, his compeers, there are other reasons why he should be enrolled on the immortal list. As a painter alone, while in Florence, he was styled the Titian of America. He was in this regard most highly appreciated in Europe, where his best pictures are to be found. He produced a portrait of Coleridge which his friend Wordsworth, echoing a common sentiment, pronounced a masterpiece. All of his choicer productions have long been deemed full of suggestiveness, classical merit and idealism which belong to a pure and exalted imagination. Aside from the painter, other considerations would seem to have weight in determining an honorable award on the part of his judges and room where it is denied. His humanity was displayed when, at a great sacrifice, he freed his slaves. His society was widely sought by those who would enjoy an entertaining and improving converse. He stood among the first as a scholar, poet and prose writer. Mrs. Jamison said that he was one of the three great men of America in her day. He was born in South Carolina, and had not ceased to shed lustre upon his native State from the time when he delivered the poem at his graduation from Harvard until the day of his death. Boston has honored him by placing at the entrance of her Art Museum his splendid conception of "Belshazzar's Feast," also by calling after him a gallery in the same, likewise a street and an adjacent town. [Not a town, but a railway-station neighborhood in the city. — Ed.] In the new art-gallery at Washington his name is inscribed in mosaic. The following is the list of painters referred to: Benjamin West, Gilbert Stuart, John S. Copley, Thomas Sully, George Inness, A. H. Wyant, Homer Martin, George

¹ "Applied Perspective": for Architects and Painters. By William P. P. Longfellow. Boston and New York: Houghton, Mifflin & Co. 1901. Price, \$3.

Fuller Allston was certainly superior in rank to some of these. Another name that should have appeared is that of Frederic E. Church, who was altogether the greatest man in landscape whom America has yet produced.

THE VILLA BORGHESE.—The Villa Borghese and its famous gardens at Rome have been purchased by the Italian Government. The gardens will be united with the Pincio, and the Borghese villa will become another public museum. Payment will be distributed over ten years. In all probability the Government will sell the gardens to the municipality of Rome, but if this be impossible the land can be sold to private parties. The King is to erect a monument to his father, Humbert, in the Borghese Gardens, and the Government will establish on a portion of the land an agricultural college. The collection in the villa includes the Titian which a modern expert has identified as a scene between Aphrodite and Medea, the enchantress, famous under the title of "Sacred and Profane Love." There are also the "St. John the Baptist in the Desert," by Paolo Veronese, the famous "Danaë and the Rain of Gold," by Correggio, and the Raphael, painted in 1507 at Perugia, the celebrated "Deposition from the Cross." — *Boston Herald*.

LONDON'S DEADLY WATER-SUPPLY.—The life of a Londoner is worth ten to fifteen years' less purchase than that of the average provincial. This fact is due to many causes, but the chief among them is the quality of the water. London water is "hard." That is to say, it contains a large quantity of the carbonate and the phosphate of calcium. The tea-kettle proves this. When a Londoner examines his tea-kettle he must be horrified to think what the condition of his stomach must be. But the tea-kettle reveals only a fraction of the state of affairs. When water is boiled the carbonic acid which held part of the calcium in a state of solution (and therefore invisible) is driven off and the solid calcium falls to the bottom. But boiling has no effect on the phosphates. They still remain in solution, and are swallowed in our tea and coffee. Now, barring fatal disease, the chief cause of decay and death is calcification of the blood vessels. This prevents proper circulation of the blood and produces apoplexy. In London water we swallow enough stony matter to shorten our lives ten or a dozen years. Drinkers of soft water escape this life-destroyer, and hence most provincial people live longer than Londoners. The moral is that every Londoner ought to welcome the day when fresh sources of supply will be available. The Welsh water, which the London County Council hope some day to obtain, has very little calcium salts, and it should prolong the life of its consumers by many years. — *London Mail*.

TRANSMURAL VENTILATION.—In the year 1878 Dr. Flugge proved that air will go through the walls of a closed room, at a rate depending mainly on difference of temperature between the inside and the outside—the latter being the lower. With walls of ordinary thickness he found that about one-fourteenth of the air in the room would be changed per degree Centigrade per hour. In other words, if the outer were 14 degrees Centigrade colder than the inner, the air of the room would be completely changed in an hour by transpiration through the walls. M. H. Wolpert has re-examined this subject, and he finds that in a chamber of 60 cubic yards capacity, having walls of masonry covered with paper, the air will be changed at the rate of one-fortieth of its volume per degree Centigrade per hour. When the paper on the walls contained oil-varnish decidedly less air permeated, while without paper at all much more went through. It is desirable, therefore, that the exterior of houses should be clean, and a heavy rain is a blessing in this respect. Also it follows that the greater the difference between inside and outside warmth the more copious this spontaneous ventilation. Pettenkofer found that when materials like slag and glass were used, through which air could not pass, the cements employed were, as a rule, highly permeable. — *London Telegraph*.

BOGUS ANTIQUE TAPESTRIES.—The two curiosity dealers who were arrested for doctoring new tapestry and selling it for old, have just been condemned to six months' imprisonment and 1,000 francs fine each. The principal culprit was, it appears, Charlanes, who had failed as an upholsterer, and who, being hard up, had the brilliant idea of buying new Aubusson tapestry, doctoring it, and selling it as old. He had two accomplices, Deschamps, who has made himself scarce, and Sauvageot, who shared his condemnation, and the trio used to sew on to the modern tapestries antique linings, stain parts of them with walnut-juice, rub them with wet earth, powdered pumice-stone, soft-soap, and other products, scent them with camphor or "naphthaline," and all this with "intent to deceive." Charlanes took the treasures, once doctored, into the provinces and sold them to unsuspecting persons as the possessions of aristocratic families who had been obliged to dispose of them. One unfortunate lady who had bought a set of panels for 13,000 francs showed them afterwards to an expert, and then the murder was out. To people interested in tapestry and having a knowledge of it the whole affair is surprising, for hand-made and machine-made tapestry are so utterly different. — *London Globe*.

Bologna's LEANING-TOWER IN DANGER.—Bologna has been having a sensation in the rumor that its great leaning-tower, the pride of the city, is weakening, and may fall. This has caused so large an influx of visitors that it is said the hotel-keepers may not be wholly guiltless in regard to the rumor. The city has two of these square towers, the Asinelli, which is 315 feet high, and was erected in 1109, and its rival, the Garisenda, which was built one year later, and was originally much higher, and is rendered peculiar by its decided inclination to one side. It is now only 153 feet high, the width of one side is 23 feet, the walls at the base are 6 feet 6 inches thick, while higher up they are 4 feet 9 inches. Its origin is somewhat obscure, but it was certainly intended to outdo the Asinelli, and both were for retreat in troublous times. Some say the original intention was to make it lean, but others contend

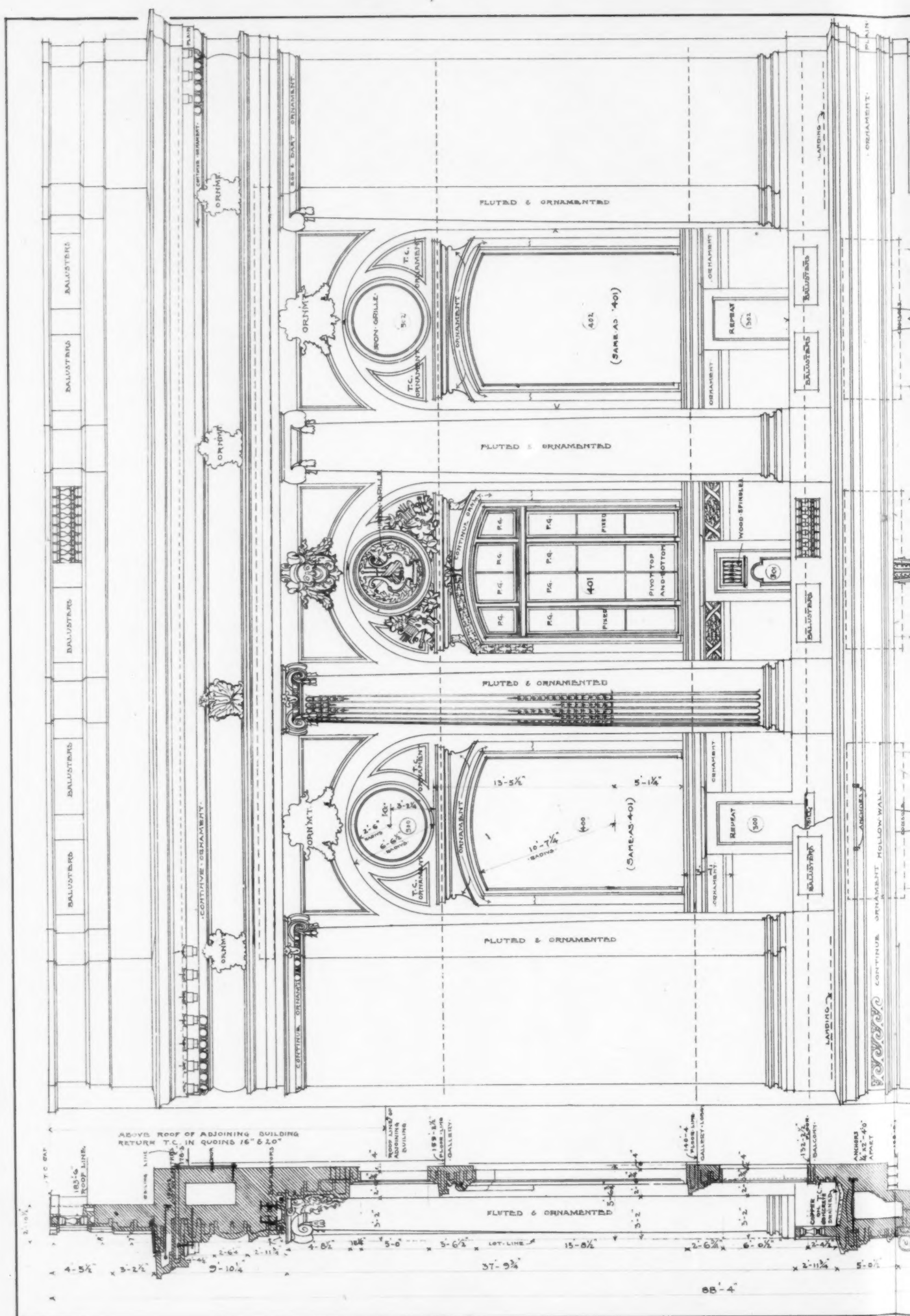
that either the ground has settled or there was a defect in the engineering. This unique relic was so little thought of by one of its later possessors that it was sold in 1266 for 220 lire, something less than \$44. — *N. Y. Tribune*.

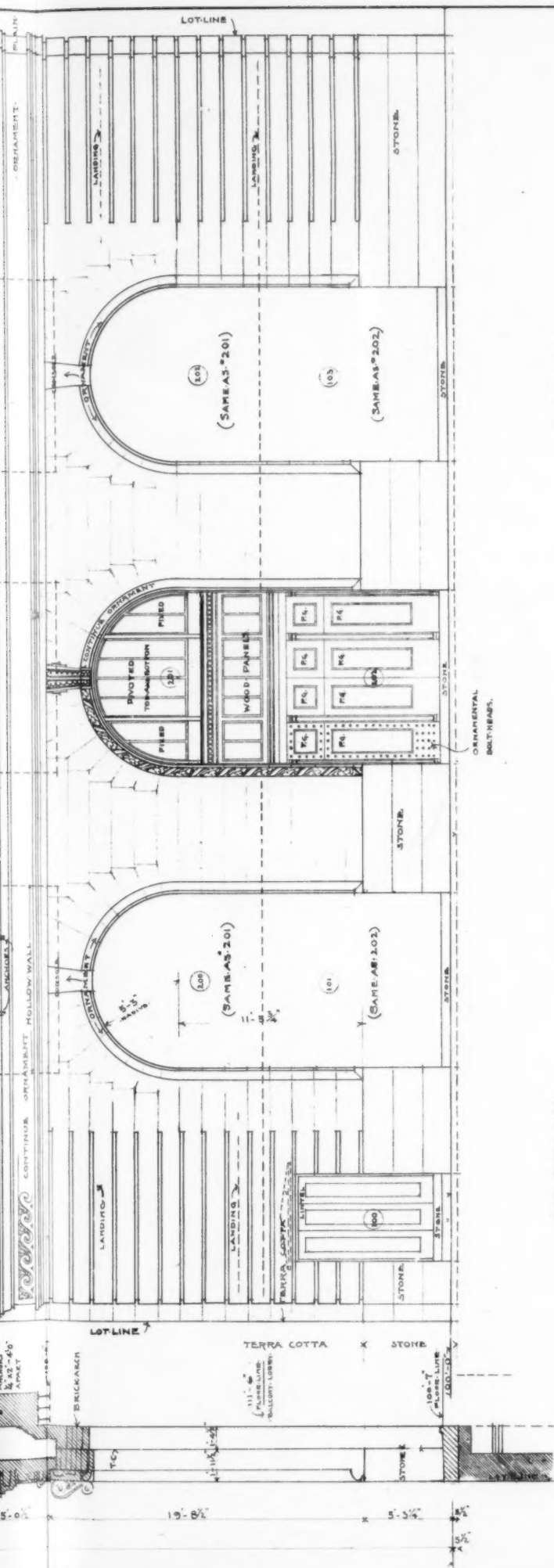
NEW YORK'S FIVE TUNNELS IN POSSE.—These are some of the more important features in the Pennsylvania Long Island railroad plan for running direct to New York City by tunnels: There are to be five tubes, three under the East River and two under the North River, all joining at a central station in a space at Seventh and Tenth Avenues, Thirty-first and Thirty-third Streets. The station is to be one of the largest ever constructed, measuring 1,500 feet in length by 520 feet in width. Leading to it will be 15 miles of tunnels. The tunnels will have an inside diameter of 18 feet 6 inches. There will be a single track in each. There will be a total of 25 tracks in use at the central station, which is to be three-decked. Electric-motors will be employed in hauling trains through the tunnels. It will put Long Island relatively as close to the centre of New York City as the Bronx is now. By means of a second tunnel under the Hudson River, distinct from the gigantic plan of the Pennsylvania railroad, this city is to be connected with Philadelphia by trolley. E. F. C. Young, President of the North Jersey Street Railway Company, has purchased the old Hudson River tunnel for this. — *Boston Herald*.

THE ALBERT MEMORIAL, LONDON.—It seems incredible that so important a public memorial as that erected in honor of the late Prince Consort in Hyde Park should be neglected. The London atmosphere is no respecter of persons or works of art, and the Albert Memorial appears to be destined to the common deterioration. Only thirty years have elapsed since it was completed, and yet Mr. R. M. Beachcroft has reported that during a visit on Sunday last a shower of mosaic from one of the gables fell at his feet. He was also informed that such a fall is of frequent occurrence. Some of the statuettes have been already disfigured owing to the softness of the marble, and the railing and gates are in a neglected condition. So elaborate a structure was unfitted to be placed in the open air of London. The delicate detail and the variety of materials employed appear to offer facilities for the inevitable process of disintegration, and only good work could have stood so long. On the other hand, it should be remembered that restoration is particularly difficult. Scaffolding would be regarded as an eyesore, and it would not be easy to employ a movable platform, from which repARATION would be practicable as soon as needed, and which could be taken away when the work was executed. The Memorial, however, deserves careful attention. When decay once begins, it is apt to advance with unsatisfactory speed, and, in order to preserve a work in which so many artists co-operated, it may be necessary to enclose the Memorial in a shrine of glass, which would not be inappropriate in Hyde Park. — *The Architect*.

GALVANIC COLORING OF METAL.—In an abstract by *Lightning* of an article in *L'Electrochimie* on the coloration and protection of metals, a large number of receipts are given. Gilding on steel is imitated by galvanically coating with copper from a cyanide bath, then with a thin film of zinc. After drying and polishing, the article is heated in linseed-oil to 160 degrees Centigrade, when it is stated that the surface becomes of a red-brass color, as if there had been a real alloying of the copper and the zinc. Iron can be protected from rust by a layer of molybdenum, deposited from a bath containing one gramme of ammonium molybdate and fifteen to twenty grammes of ammonium nitrate per litre, with a current of two to five amperes per square decimetre. All varieties of iron can be covered with an adherent and unalterable deposit of peroxide of manganese by making them anodes in a bath containing about .05 per cent of manganous chloride or sulphate, with 5 to 25 per cent of ammonium nitrate, the bath being cold, the cathodes of carbon, using a weak current of one to two amperes. Selenite of copper is recommended for coloring iron and steel brilliant black or blue-black, according to the strength; the layer, after firing, is very permanent. The bath is made with selenious acid six to ten, copper sulphate ten, nitric acid four to six, to the litre of water. It can be also used for copper and brass with feeble currents. Mathey colors watch-hands and other small metal articles with gold or platinum, but not with silver, by placing them on an anode plate under about three cm. of solution, and dipping the cathode into the liquid over them until the required tint is produced. — *N. Y. Evening Post*.

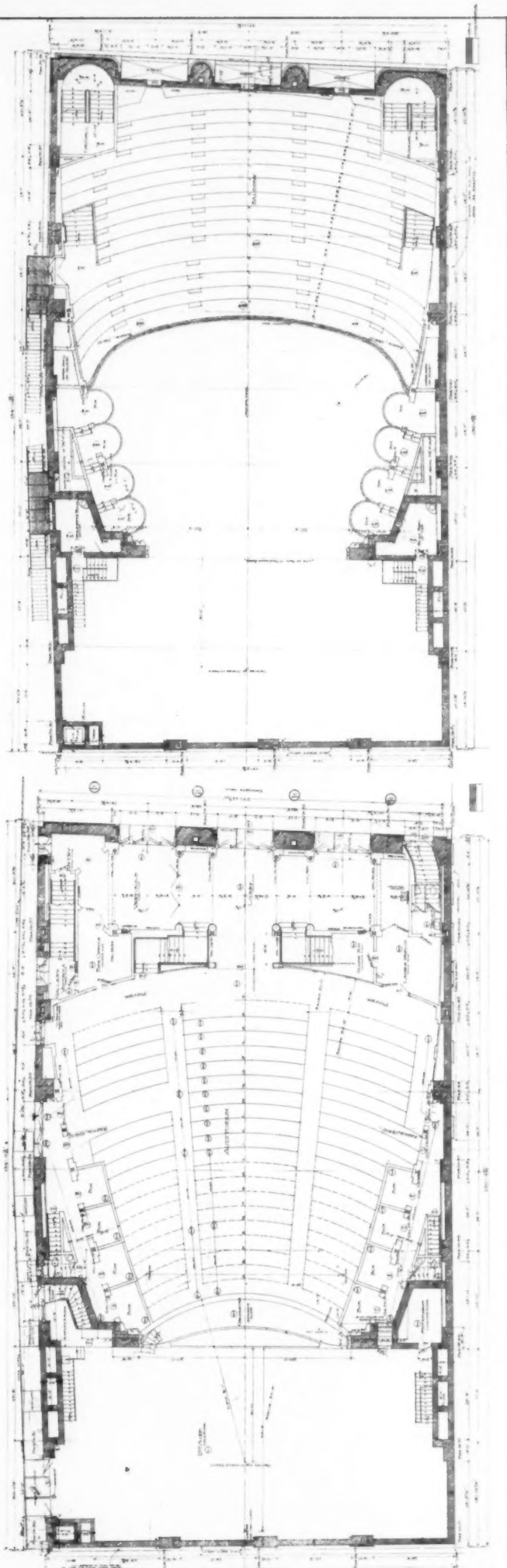
INSURANCE GRAVEYARD.—Franklin Webster, editor of the *Insurance Press*, has made a very interesting compilation of underwriting corporations that have retired from business in the United States during the last two or three decades. The summary is rather appalling, and shows how narrow is the margin of profit obtainable from the business to-day. Mr. Webster speaks thus of the exhibit: "The *Insurance Press* knows no better way to emphasize the magnitude of the problems confronting fire-underwriters, to demonstrate the unwisdom of legislative attacks on the insurance business, and to explode the fallacies concerning insurance 'profits,' than to ask the American people to gaze upon the list of joint-stock fire-insurance corporations that have given up the struggle, and to reflect upon the causes of the failures. The object-lesson is impressive. The *Insurance Press* has invited and received the cooperation of insurance-departments in making up the record that follows, and has made use of other data, especially reports by the National Board of Fire-underwriters. During the past twenty-five years the fire-loss in the United States has exceeded \$2,800,000,000. This year the value of the property destroyed by fire will exceed \$170,000,000. Nearly 1,200 fire-insurance companies with paid-in cash capitals, mutual companies not included, have gone to the wall in the United States. Nearly all of these companies have been either burned to death or crushed out of existence by oppressive laws.





FIRST FLOOR PLAN.

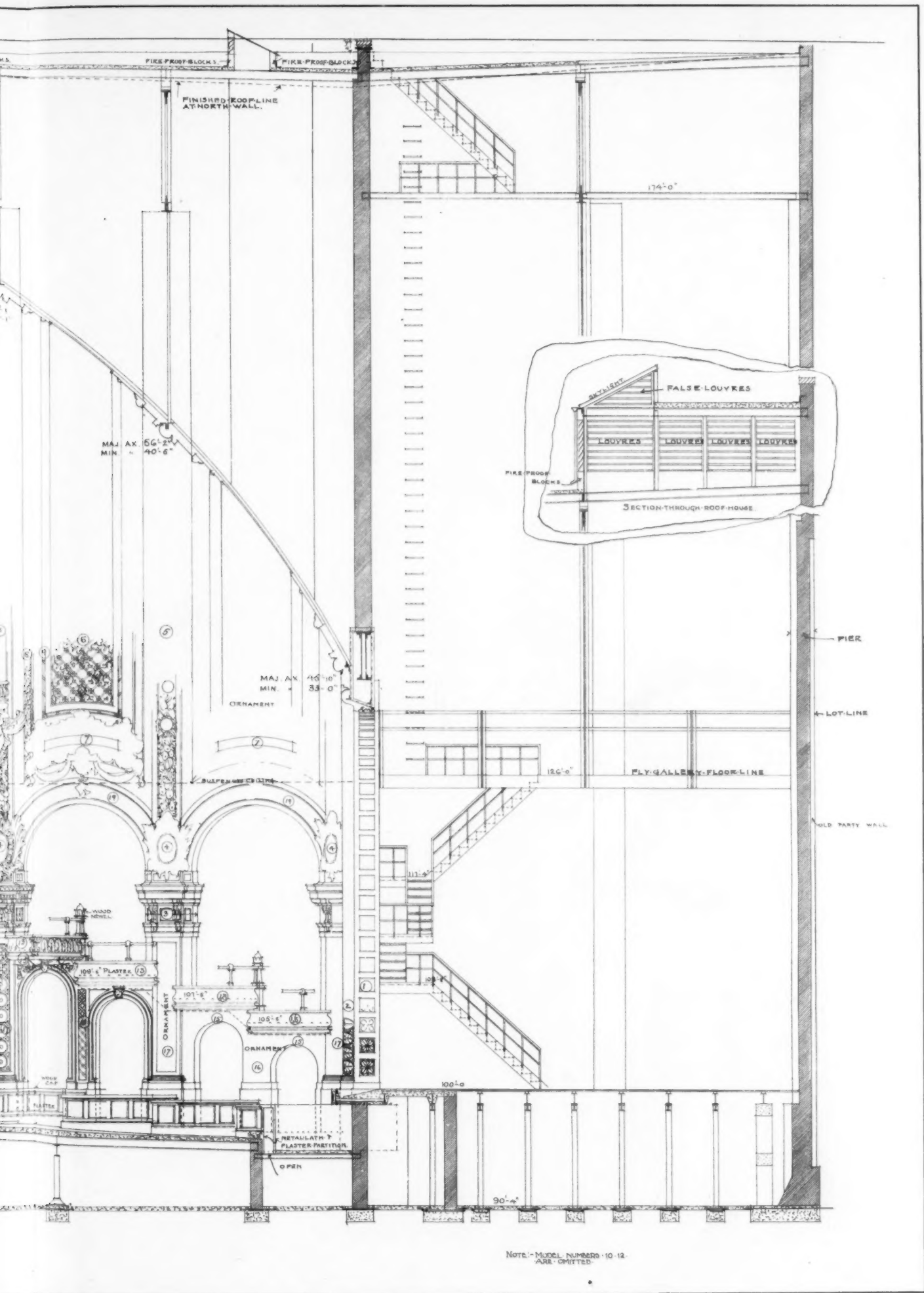
BALCONY PLAN

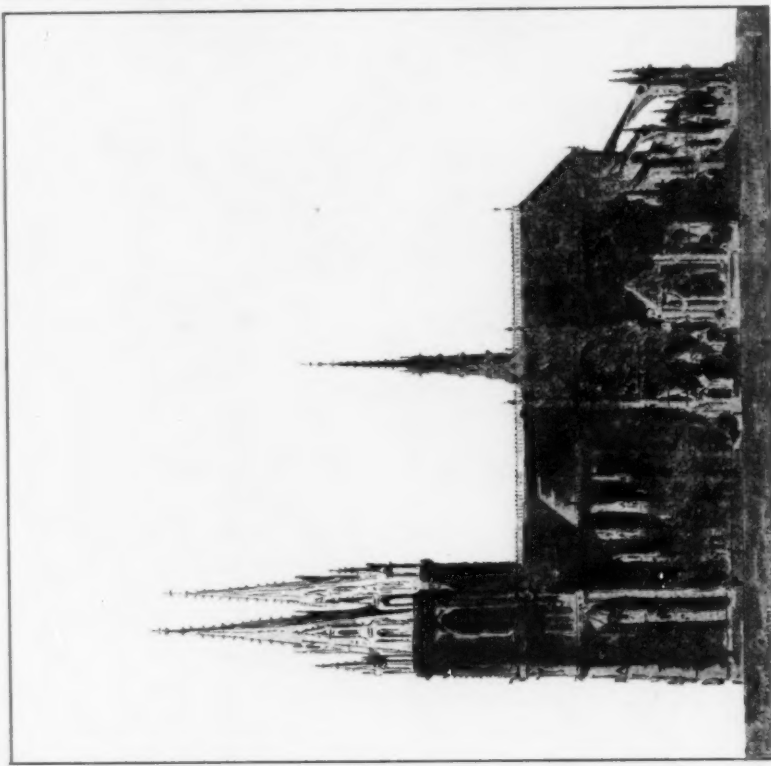


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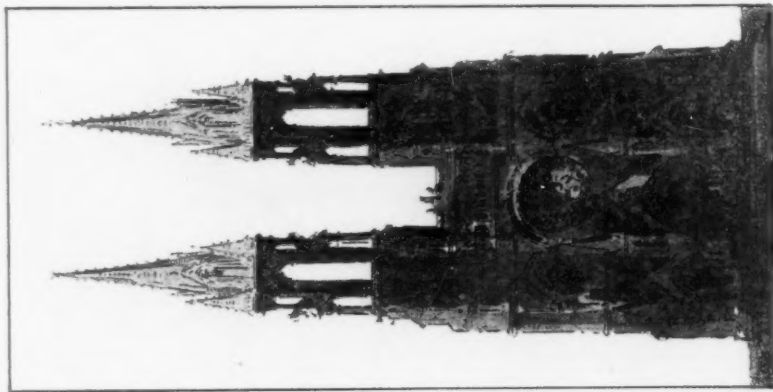
NEW THEATRE, TREMONT STREET AND VAN RENSSLAER PLACE, BOSTON, MASS.
JAMES M. WOOD, AND JOHN G. HOWARD, ASSOCIATE ARCHITECTS.

The American Architect
Jan. 4, 1902.
No. 1258

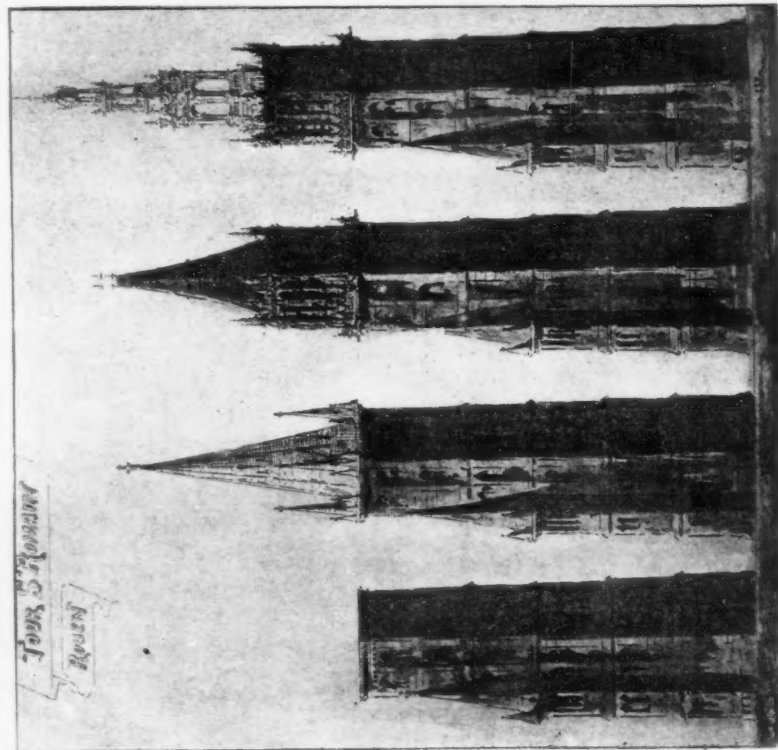




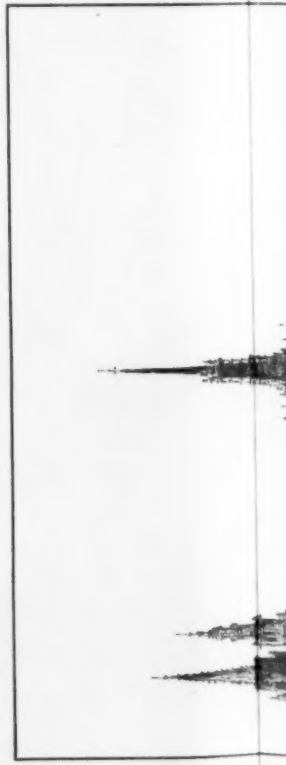
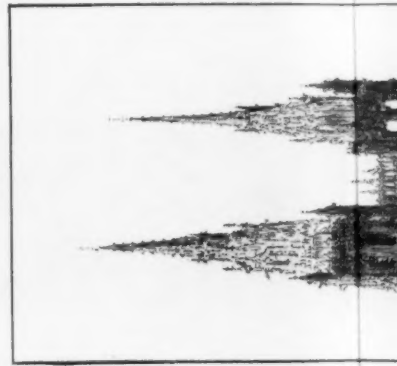
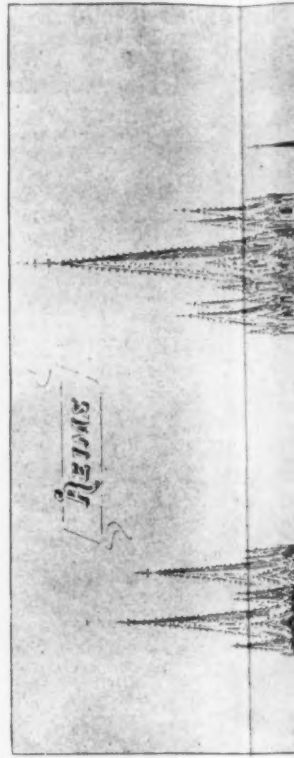
LA CATHÉDRALE DE PARIS.

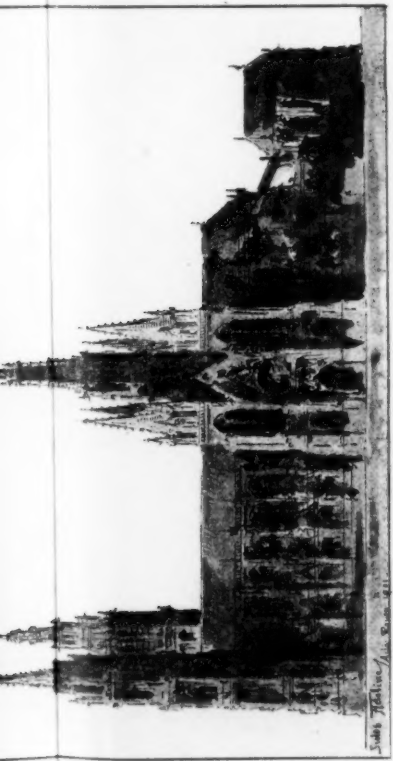


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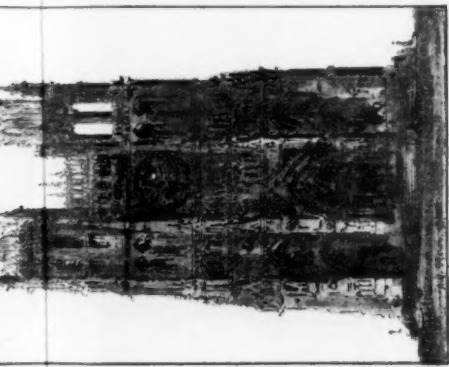


ASPECTS SUCCESSIFS D'UNE TOUR DE LA FAÇADE DE LA CATHÉDRALE DE ROUEN

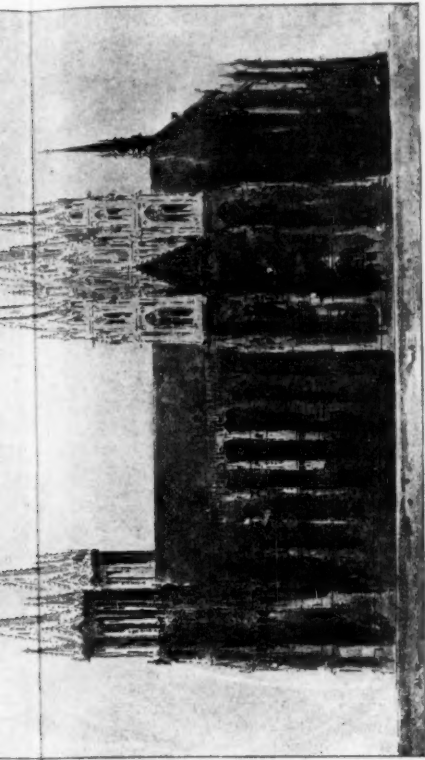




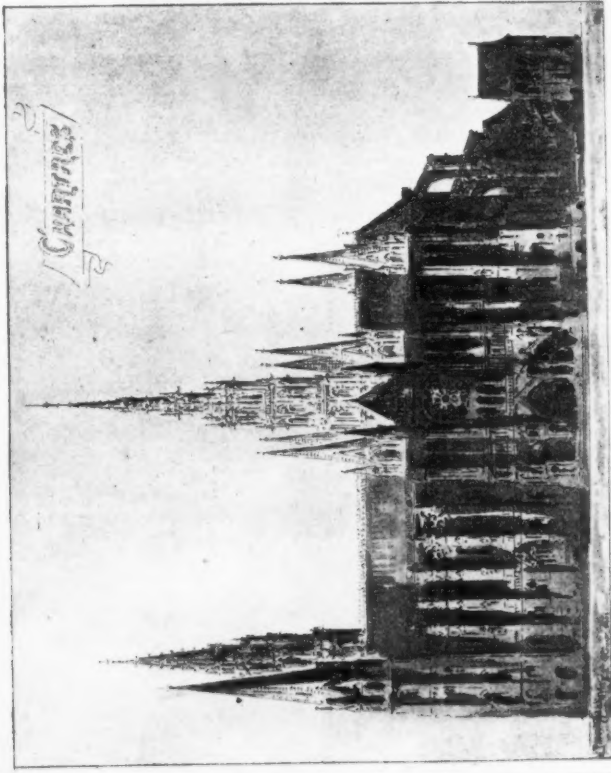
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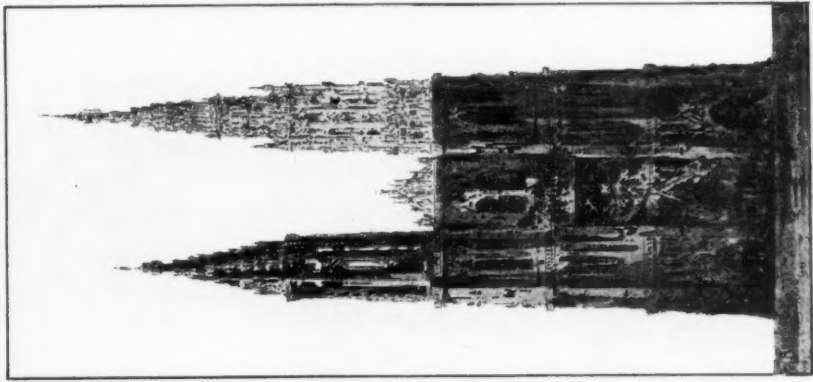
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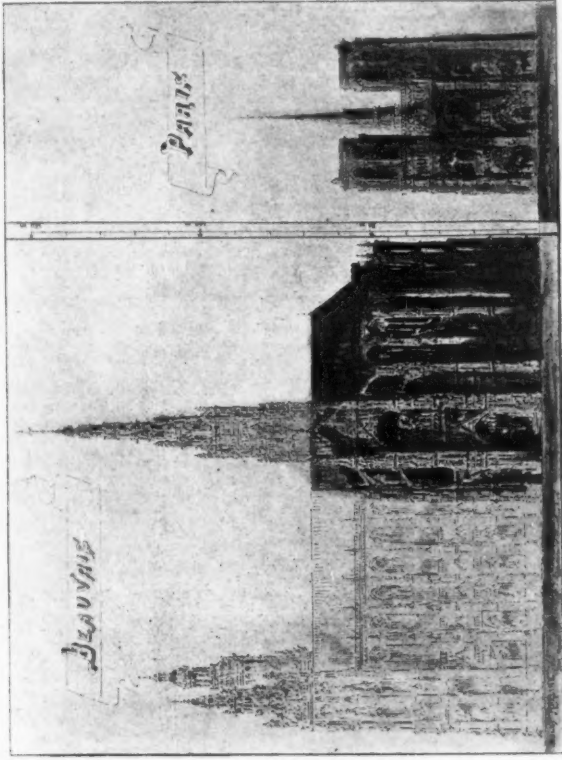
LA CATHÉDRALE DE REIMS



LA CATHÉDRALE DE CHARTRES



FACADE DE LA CATHÉDRALE
DE STRASBOURG.



LA CATHÉDRALE DE BEAUVAIS

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CARVED GRILLES.

WHILE it cannot be said the grille is a necessity, yet it is useful because it adds much to the beauty of any interior where it is properly placed. In large houses it is one of



the chief attractions, and is capable of such a wide range in styles and sizes as to meet every requirement. The grille may be made square, oblong, round, half-round, half-square, triangular, and, in fact, in such a variety of shapes and sizes as to meet every case. Placed over the passage-way, or sliding-doors between the drawing-room and the library, or in large hallways, it is appreciated. It also adds much to the attractiveness of stores—especially drug-stores, jewellery-stores, candy-stores, millinery-stores, and others where partitions are needed between different departments. Grilles may be made in almost any kind of wood, to match any interior finish. In interiors painted white, the grille may be made of pine, and painted white to match the other woodwork. It may also be made of white-maple, ash, oak, walnut or mahogany, very plain or very elaborate, and with most satisfactory results.

The Waddell Manufacturing Company, of Grand Rapids, Mich., manufacture a great variety of carved grilles in all native and foreign woods, and in an almost endless variety of styles.

Until the Waddell Manufacturing Company took up the manufacture of carved grilles, they were so expensive that comparatively few

cared to use them, contenting themselves with the old-fashioned spindle grille because of its cheapness. The carved grilles manufactured by this company are superior to much of the hand-carved work, and at prices that come within the reach of all. They are so constructed as to be very strong and durable, being made out of 3-ply lumber, outside stock crossing at right angles to inside filling, well glued together, making a piece of work almost impossible to break and ensuring a straight, strong, beautifully carved grille.

Architects and builders will find it advantageous to correspond with them. The illustration accompanying this brief mention affords but a faint idea of what they are prepared to furnish their customers.

THE American Bridge Company, of New York, has taken an order for a bridge across the Ohio River at Marietta, Ohio, made up of two 220-foot

spans, one 1,380-foot cantilever span and a viaduct approach of 645 feet. This structure is for highway and electric-railway purposes.

HEATING AS IT WILL BE—VAPOR.

TAKING it for granted that all well-posted heating-engineers as well as users of steam or hot-water heating-apparatus will acknowledge that existing systems are defective not only as pointed out in the previous chapters, but in many other respects, any system that will be entirely free from these defects and objections is certainly something to be desired. The heating-system of the future will be so constructed that it will have the following points of superiority and excellency:—

The boiler, the most important part of any heating-apparatus, will be constructed in such a manner that it will be absolutely safe from explosion or breakage; it will be easily managed and taken care of; will be arranged in such manner that all heating-surfaces can be readily cleaned. The boiler will be economical in the use of fuel and so constructed that it will burn the kind of fuel most readily obtained in that locality in which the boiler is to be used. The operation of the boiler, so far as its water-supply and regulation of

draught is concerned, will be as near automatic as possible. The boiler will have a low-water line and the height of boiler over all will be such that it can be readily placed in low cellars.

The other parts of the heating-system must have equal merit with the boiler and be constructed in such manner that leaks in boiler, pipe-joints or radiators are impossible. The entire heating-system must be constructed so every radiator can be used independently from all others. It must be possible to regulate the temperature of any radiator to suit the requirements of the weather. The entire system must be simple and free from complicated fixtures of any kind. Broomell's Vapor System of Heating, a heating-system having all these desirable qualities and free from every defect due to present systems, has been invented, carefully tested, and perfected in all details.

The new system is known as "Broomell's Vapor System," so called because of the fact that all heating is by the vapor arising from boiling water not under pressure, the temperature of vapor never exceeding that of boiling water—212 degrees.

The Vapor System has all the advantages of hot-water heating with none of its defects. All the desirable features of steam-heating heretofore used will be found in the new system, but every one of the objections against all the other systems of heating are eliminated in new plan. This system is applicable to buildings of every class, from the smallest residence to the largest business-house, hotel, school-building, church or factory. The Vapor System will work in the most satisfactory manner when steam is taken from street-mains. A special receiver and regulator is furnished for this class of work. The Vapor System will also operate to great advantage from high-pressure boilers or exhaust-steam. Any good steam-heating boiler can be used with "Broomell's Vapor System," the only requirements being that the boiler has an ample capacity to fill all radiators with vapor in the coldest weather, that it has a nicely-fitting, easily-moving damper in smoke-pipe, and that the water-line of the boiler be at least 4 feet below the joist overhead. Leaving the selection of a suitable boiler to the heating-engineer or owner and starting from the boiler, the following description of the "Vapor" System will enable any one to understand its great advantages and its adaptability to the heating of all classes of buildings. To make the description a little more clear the system may be divided into the following parts:—

First. — A combined receiver, relief-apparatus, pressure-gauge and draught-regulator.

Second. — A quintuple radiator-valve.

Third. — A special union elbow.

Fourth. — A condensing-radiator and connections.

The combination receiver is attached to the boiler with a return-pipe from the bottom of the receiver connecting into the boiler below the water-line. There is attached to each radiator near the top the quintuple valve. Above the boiler in the cellar and connected to the receiver with a steam-pipe is a condensing-coil. From the top of the condensing-coil on the opposite end from the pipe connecting the condensing-coil to the receiver, a pipe is taken down and its end is run into the smoke-pipe or smoke-chimney. This creates a suction and a partial vacuum through the entire system equal to the draught of the chimney, the tendency being to exhaust the air from the radiators and to pull the vapor into them as soon as the radiator-valve is opened. Particular attention is called to the fact that the combined receiver is open to the atmosphere through the condensing-coil, making any pressure whatever in the receiver impossible. It will further be noticed that the radiators are open to the atmosphere through their return-pipes, which connect into the top of the receiver, thus making it impossible for the radiator to receive pressure. When in use the operation of the system is as follows: —

Having filled the boiler to the proper level as indicated by the water-gauge, it will be noticed that the same water-level is shown in the glass gauge attached to the combined receiver and its pipe leading into the boiler. After fire is made in the boiler and before any actual steam is generated, and before any pressure is produced in the boiler, the quintuple valves on radiators being open, the hot vapor arising from the water will flow through the main supply-pipe in the cellar and thence to the radiators through the small connecting-pipes and the quintuple valves. The air with which all radiators are filled when cold is drawn out through the return-pipes by the suction of the chimney, and will pass out through the condensing-coil and its connecting-pipe. The water of condensation formed in the radiators as they become heated will flow through the small return-pipes and will be discharged into the top of the receiver, from which it will return to the boiler by gravity through the connecting return-pipe.

The quintuple valve is made in such a manner that any desired quantity of vapor can be admitted to the radiator; the maximum quantity admitted, however, being just sufficient to nicely heat the radiator from end to end in the coldest weather.

When the radiator is hot all over and is doing its maximum work the return water will be of such temperature that some vapor will pass down the return-pipes and into the receiver. It is at this point that the condensing coil comes in. All vapor arising from the water of condensation which is being discharged into the receiver will pass from the receiver through the connecting-pipe into the condensing-coil, where it is condensed and will return to the receiver in the form of water.

The fact that all radiators are open to the atmosphere makes it possible to circulate vapor through them without any pressure on the boiler.

In the event, however, of all or part of the radiators being shut off the boiler may make more steam than is condensed, in which case

a slight pressure will be produced in the boiler, and there will be a tendency to depress the surface of water in the boiler, and to elevate the surface of water in the receiver. A glass gauge is attached to the side of the receiver, back of which is a graduated scale which will measure the elevation of the water and indicate the pressure on the boiler by ounces, thus forming an absolutely accurate pressure-gauge. The distance between the water-line in the boiler and the extreme high water-line in the receiver will in no case exceed 2 feet. The maximum pressure, therefore, that can ever be in the boiler will equal a column of water 2 feet high, or, say, one pound per square inch. Supposing pressure to gradually accumulate in the boiler, the water-line in the glass-gauge on receiver will change and as the water of condensation comes into the receiver from the different radiators it will accumulate in the receiver until it reaches sufficient height to overcome the pressure in the boiler, when it will flow into the boiler by gravity.

Should the pressure continue to increase the water in the receiver will gradually accumulate until it reaches the draught regulating float which has been set to the desired point, when this float will be raised by the action of the water and the damper of the boiler will be closed; damper is connected to float by a brass chain, making the most satisfactory and most accurately working automatic draught-regulator ever devised, opening or closing the damper entirely on change of two ounces in pressure and at any point between 2 to 16 ounces pressure on boiler. Should the closing of the damper fail to check the increase in steam-pressure, the water in the receiver will continue to accumulate until the float in the receiver reaches the lever attached to the relief-valve, when the action of the water will lift the safety-valve, which will immediately reduce the pressure in the boiler, the water in the receiver will drop and the relief-valve will close.

In all other systems it will be remembered that radiator-valves must be wide open (otherwise the radiators will fill with water), heating the radiators from end to end, no matter whether the weather be mild or severe. With "Broomell's Vapor System," and by the use of the quintuple valve, it is not only possible but very easy to regulate the amount of vapor delivered to any radiator; admitting sufficient to keep the radiator barely warm, to heat it up to a moderate degree, or to fill it entirely, thus heating the radiator from end to end so it will work to its maximum efficiency. In this particular we have all the advantages of hot-water heating; the radiators being heated to only a moderate temperature will give off the same delightfully mild heat so much appreciated by users of hot-water heating-systems. The quintuple valve, is so made that one-fourth, one-half, three-fourths or full opening on can be secured. It frequently happens that unoccupied rooms should have sufficient heat to keep the temperature above freezing or to take off the chill. In the ordinary systems of steam-heating this is impossible, the consequence being that the radiators must be run to their full capacity and a great deal of heat oftentimes wasted. With the "Broomell Vapor System" the valve can be opened one-fourth or one-half, just sufficient to temper the room and at the same time a very trifling amount of steam will be used from the boiler. With this system it is also possible when it is desired to heat the room quickly to open the valve on the radiator to

its full capacity until the radiator has been thoroughly heated from end to end, when it can be gradually reduced until the valve is open only one-half or one-quarter of its full capacity. By this means the temperature of the room can be held at any desired point continually.

With "Broomell's Vapor System" and by use of the patented quintuple valve it is an absolute impossibility for radiators to fill with water. You can turn a radiator on or off as often as you please and it will never make the least noise. The nuisance of leaks around radiator valve-stems, air-valves and joints so frequent in ordinary steam-heating apparatus is unknown in the "Vapor System."

While the quintuple valves can be handled with a thumb and finger without stooping, and can be set accurately to deliver any required amount of heat to the radiator, they can also be locked fast in any desired position only to be changed by the person holding the proper key. This is a very desirable feature in residences, preventing children from moving the valves, or in schools, hospitals, churches, etc., where the regulation of heat should be attended to by one person only.

"Broomell's Vapor System" has the great advantage of capacity to heat the building in which it is placed in the most severe weather without over-heating in moderate weather. Radiators for the "Vapor System" are made about 10 per cent larger than when used with old plans of steam-heating, and they have ample surface to meet the requirements when blizzards strike and the thermometer registers way below zero. At such times heat, and plenty of it, is wanted, and wanted at once.

The Vapor System can be put in at a less cost than hot water and is much better when done. The larger the building, the greater will be the saving. Smaller pipes are used, requiring only such tools as every steam-fitter has. Pipes and fittings, as well as pipe-covering, will cost much less than for water and the work is a great deal less.

VAPOR HEATING CO.,
YORK, PA.

SANITARY FIXTURES.

As experience is an educator, and custom soon becomes law, it has been universally acknowledged that the only way to properly introduce an article of value in the building line is through the architect.

Realizing this truth, the Ideal Manufacturing Company has issued the most complete sanitary catalogue ever published, illustrating modern sanitary fixtures, together with all the necessary roughing-in measurements, and information for the architect and plumber.

We are the largest individual concern in the world manufacturing plumbers' specialties, and have no special agents.

Our goods can be purchased in every city in the United States, at interesting prices, quality considered.

IDEAL "SILEO" NOISELESS DOUBLE-FLUSH SYPHON-JET CLOSET, OUR LEADER.

There is a demand in refined homes for a sanitary fixture that is silent in operation.

The "Sileo" Combination is the result of long experiment to satisfy this demand.

We believe it to be one of the most remarkable productions of this century in the field of closet-manufacture.

In this original combination we have overcome the most serious objections in closet-construction without sacrificing sanitary utility.

In other words, we have produced a Syphon-jet Bowl in which syphonic action takes place

Atlas PORTLAND CEMENT

The
Standard
American Brand.

Used Exclusively in the Following New York Buildings:

HAVEMEYER STORES	SINGER BLDG.
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without the usual noise of the water passing through the bowl.

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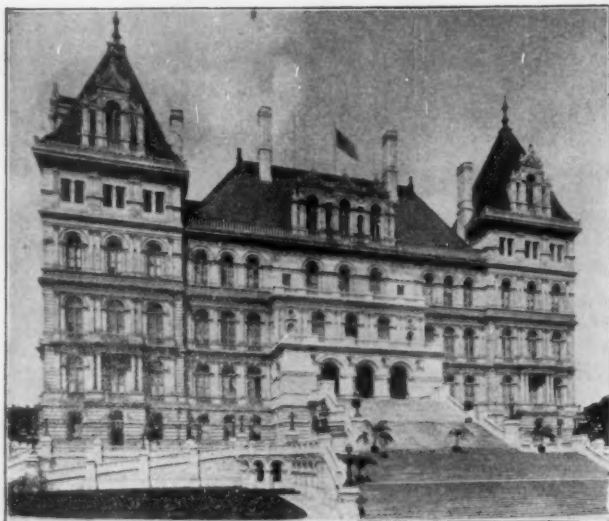
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"We solicit an opportunity of presenting plans and estimates for any library work desired."

With these words the Art Metal Construction Company, of Jamestown, N. Y., preface

a very interesting description of their specialties which are fully explained and illustrated in a very handsome catalogue, to which we propose to refer later.

NOTES.

AMONG the recent contracts for bridge-work taken by the American Bridge Company, of New York, are two structures for the Wabash Railroad's entrance into Pittsburgh. These bridges are both cantilevers 1,504 feet total length with a centre span of 812 feet; they carry two tracks and the eye-bars will be the largest ever manufactured in this country, necessitating the building of special machinery. One bridge is located over the Allegheny River at Pittsburgh and the other is at Mingo Island.

It would be a real disappointment to us if each New Year's season did not bring to our

desk from the Joseph Dixon Crucible Co. a box of lead-pencils for our personal use. We value the gift not only for its intrinsic worth and real usefulness—since we always find enough "blue pencils" in it to carry us through the year—but because there is real interest in discovering what new variety of pencil has been devised during the last year. This time, in addition to the dozen or so different forms of pencil already familiar to us, we find as the season's novelty a flat pencil—a high grade of carpenter's pencil, perhaps, enclosed in a flat nickel-plated tube and of just the right size for the vest-pocket.

THE American Bridge Company has purchased the properties heretofore owned by the Detroit Bridge & Iron Company, of Detroit, Michigan, and the same will hereafter be known as the Detroit Plant of the American Bridge Company. Mr. Max J. L. Fowler has been appointed Manager. The plant thus becomes a part of the Western Division of the American Bridge Company, under the jurisdiction of Mr. August Ziesing, Western Manager, in Chicago.

It is quite impossible to feel that the Lord & Burnham Company, of Irvington-on-Hudson, N. Y., is interested in any other line of manufacturing than one in which the generation of heat is in some way involved, so warm and glowing in color is the great calendar which the firm this year distributes to its friends and customers.

The background of the central feature is the verdure and plant forms of a hot-house, while the central feature is a perspective sectional view of the excellent sectional heater which the firm so successfully introduces into the many conservatories and greenhouses erected by it every year.

THE American Bridge Company, of New York, has contracted to furnish and erect the train-shed in the railway-station at Richmond, Ill., for the P. C. C. & St. L. Railway.



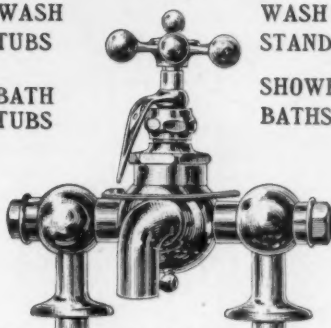
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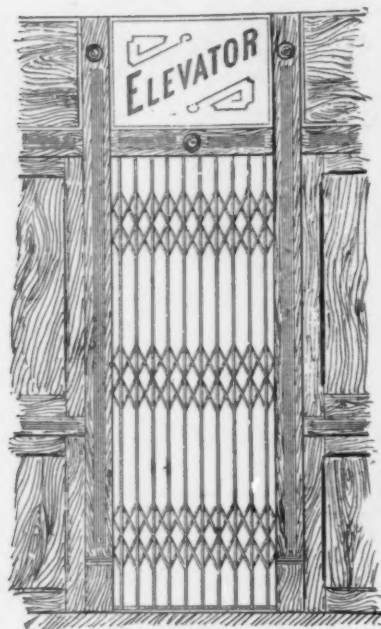
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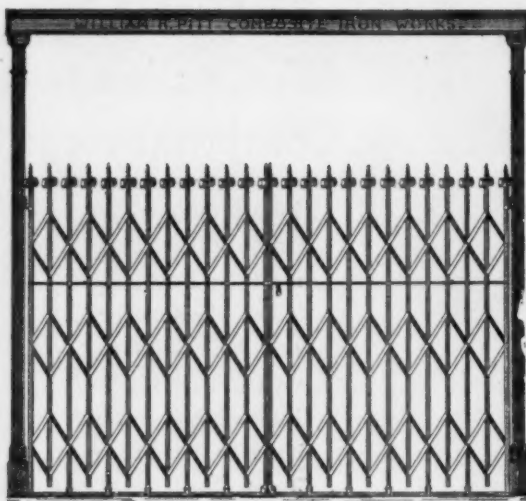
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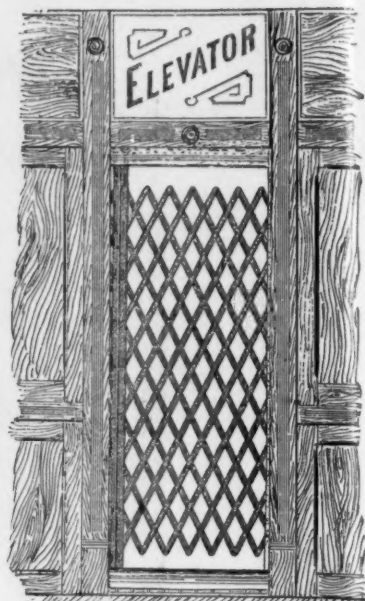
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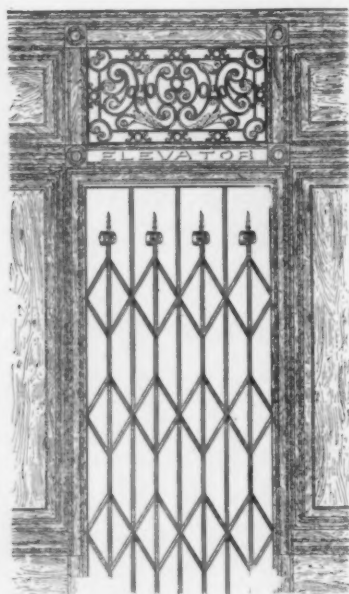
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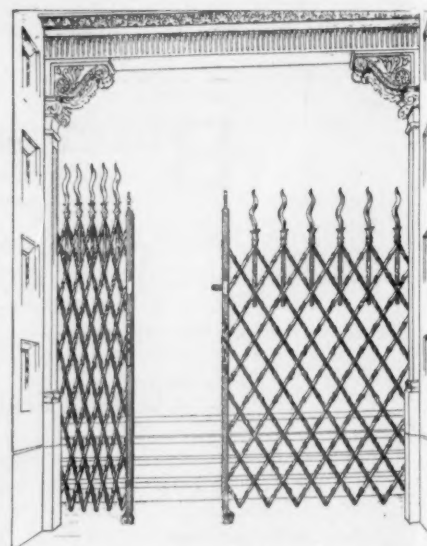
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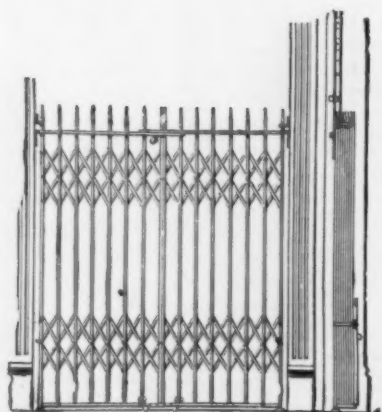
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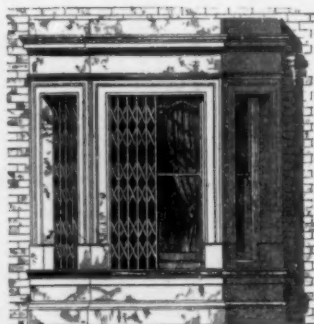
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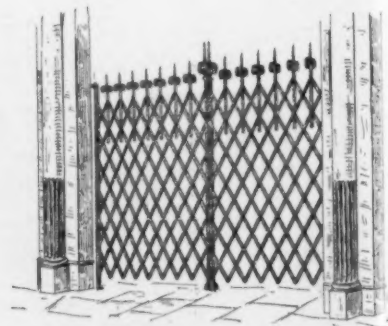
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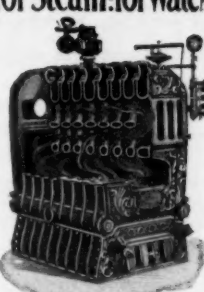
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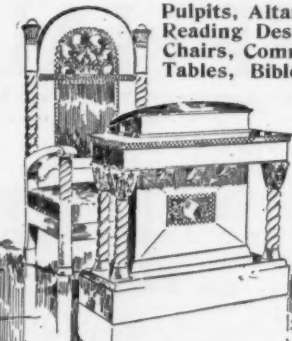
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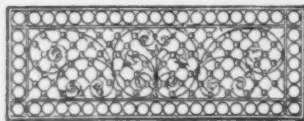
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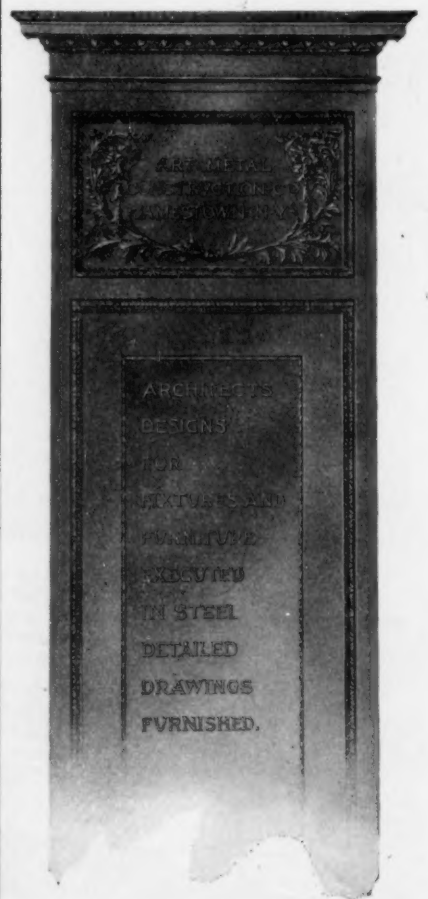
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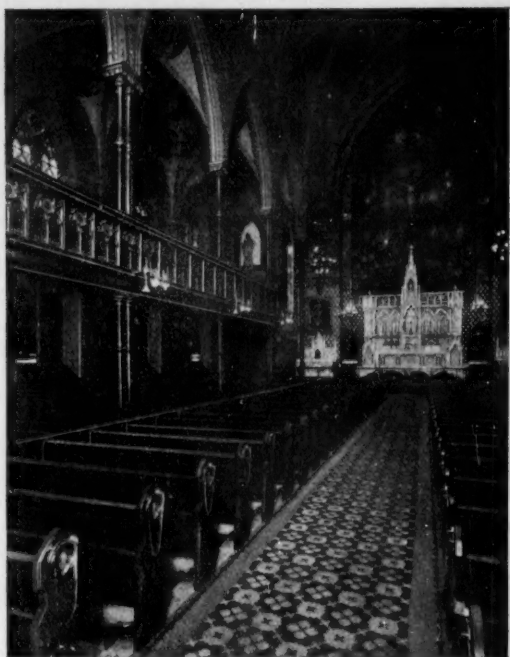
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13. Renaissance Cornices.—I.
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BUILDING INTELLIGENCE.

(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.

Akron, O.—Andrew Carnegie has offered this city \$70,000 for a free public library, the city to guarantee \$7,000 annually to maintain it. The offer will probably be accepted.

Augusta, Me.—At a recent meeting of the Maine State Sanitarium Association, a committee was appointed to select a site for a new State sanitarium.

Bay City, Mich.—Plans have been prepared for a \$30,000 addition to the Michigan State Home for Feeble Minded.

Beverly, Mass.—Architect E. M. A. Machado, of Salem, has completed plans for extensive alterations and additions to Dr. Chas. F. Parker's summer residence and stable at Beverly Cove. The work will cost at least \$70,000.

Boston, Mass.—It is reported that the property on the corner of Exmouth and Harvard Sts., Dorchester, has been purchased by Rev. Peter Roman, pastor of St. Peter's Church, for a site for a handsome new Catholic Church to be erected soon. A hall will be erected at once on the estate and services will be held there during the construction of the church. Fr. Roman will have charge of construction.

Bradford, Mass.—The Haverhill Box Board Co., it is said, are to erect a large plant on the site of the old paper mill at this place. Five buildings will be erected, and the equipment will be first-class in every respect. They will be built after plans used by the company on one of their other plants. No contracts are let as yet. The cost will be about \$500,000.

Brooklyn, N. Y.—George L. Morse, Eagle Building, has completed plans for an addition to the nine-



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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

story brick and stone office-building on Washington St., near Johnson Ave.; cost will be about \$350,000. Brooklyn Daily Eagle, owner.

A. B. Jennings, 45 Wall St., N. Y. City, has drawn plans for a granite church, 55' x 65', to be erected on 15th St. (Borough Park); cost, \$25,000; Edgewood Reformed Church, Rev. W. Ten Eyck Adams, of present church on site, owner.

Bryn Mawr, Pa.—Cope & Stewardson, 320 Walnut St., Philadelphia, have been chosen to prepare the plans for the \$150,000 dormitory.

Cambridge, Mass.—A four-story recitation hall, to cost \$100,000, will be erected at Harvard College. Guy Lowell, Tremont Building, Boston, has drawn the plans.

Van Brunt & Horne, Boston, have prepared plans for a \$30,000 stone and steel addition for the Cambridge Public Library.

Chicago, Ill.—John D. Rockefeller has made an additional gift to the University of Chicago, amounting to \$1,250,000. President Harper intimates that a large part of this sum will be used in constructing a new building for a law school and a school of technology.

Cleveland, O.—A press report states that this city contemplates building a City-hall and a public library, while Cuyahoga County, of which Cleveland is the major part, is to build a court-house. It is proposed to open a court of honor 300 feet wide for a distance of 2,000 feet, from the present public square to the lake front, and to group the three buildings in a position overlooking Lake Erie. There are many difficulties in the way of a successful solution of the problem, and a large amount of money will be necessary to carry out the plan. The City Council has approved the proposition to issue \$700,000 in bonds for the purchase of a site and the erection of a City-hall, and the cost to the city alone of the rest of the plan is estimated to be at least \$2,000,000 additional.

Clinton, Mass.—Architects Winslow & Bigelow, 3 Hamilton Pl., Boston, have been selected to prepare plans for the new \$40,000 library building which is to be built on the corner of Church and Walnut Sts. The architects will at once prepare plans, but work will not be commenced on building before spring.

Deadwood, S. D.—The Business Men's Club is taking stock subscriptions for the erection of a hotel to cost \$100,000. The movement has progressed well and it is thought that nothing will prevent its being carried out.

Detroit, Mich.—Donaldson & Meier are preparing plans for the new Y. W. C. A. Building to be located southwest corner Washington Ave. and Clifford St.; cost, about \$70,000.

Malcomson & Higginbotham are the architects for the new Pingree School to be built on McClellan Ave.; cost, \$46,000.

John Scott & Co. are preparing plans for a \$25,000 apartment-house for Mr. Penny.

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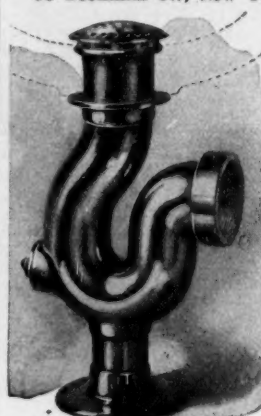
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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

N. Wardrop is preparing plans for an addition to F. G. Clayton's genteel furnishing store, corner Shilby St. and Michigan Ave.; cost, \$10,000; also preparing plans for a three-story addition, 56' x 38', to the plant of Hamilton Carhartt; estimated cost, \$16,000.

S. J. Murphy will build an office-building on the Penny & Walker lots, W. Fort St.

East Manchester, N. H.—Arrangements have just been made by which the erection here of the big shoe shop is assured, and work will begin at once. The project has been under consideration for some months, but up to within the last two weeks some doubt existed as to its successful execution.

Everett, Wash.—S. S. Gardner states that his clients, Mitchell Bros., London, will erect a \$75,000 brick hotel here the coming season.

Fall River, Mass.—Louis G. Destremps has prepared plans for a \$75,000 brick R. C. Church, to be built for the St. Dominique parish. Contracts for construction will soon be let.

Grand Rapids, Mich.—B. R. Thompson is interested in the erection of a \$250,000 theatre.

Grand Rapids, Wis.—A \$50,000 high school building is to be erected next summer.

Greenville, O.—Reports state that a city-hall will be built after plans by Kramer & Harpster, Findlay. The building will cost \$25,000.

Guttenberg, Ia.—It is proposed to replace the Catholic Church with a new structure costing \$35,000.

Kansas City, Mo.—It is stated that the Avery Mfg. Co., of Peoria, Ill., will erect a seven-story warehouse on 10th and Santa Fe Sts., at a cost of \$60,000.

Leicester, Mass.—\$100,000 has been subscribed for the proposed new sanitarium and hotel to be erected here. It will contain 200 rooms and will be fitted with all modern conveniences. There will also be erected a number of cottages for those patients who prefer to live outside the main building. The plans have been drawn by a Worcester architect.

Leominster, Mass.—The plans for the proposed new country club-house have been received and show a very attractive building two stories in height. If the plans are accepted the building work will be commenced at once.

Long Beach, Cal.—Plans have been prepared by Ed. Neisser, of Los Angeles, for the \$75,000 bath-house to be built by the Seaside Water Co.

Los Angeles, Cal.—Plans will be made by Wilson & Marshall, 218 La Salle St., Chicago, for a theatre, apartment-house and office-building, to be built on Broadway, near 1st St., for John A. Mason. The structure will cost \$450,000.

Howard, Train & Williams have prepared plans for a six-story business and office-building to be erected on 3d and Hill Sts., for the F. H. Ruidge & Conservative Life Insurance Co.; cost, \$120,000.

Manchester, Vt.—Report states that a new \$300,000 summer hotel will be built on Mrs. Arthur Taylor's land, the capital to be furnished by New York and Saratoga parties. The hotel will contain 300 rooms and will be modelled after the new Aspinwall at Lenox, Mass. The Rutland Railroad is to build a

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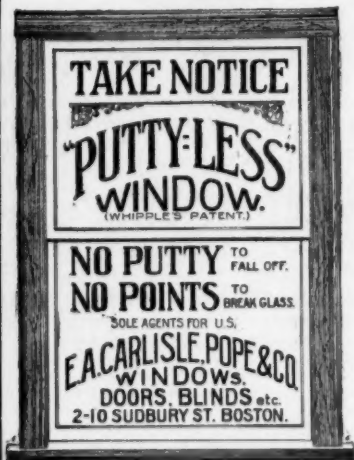
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Professor of Architecture,
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I have looked over the plates of "Topical Architecture" and think the idea excellent.

ALEX. B. TROWBRIDGE,
Professor in Charge.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

new station near the hotel. The grounds will be laid out by a well-known landscape gardener of Boston, and the manager will be J. P. Burns, formerly of the Rockingham, Narragansett Pier.

Marshalltown, Ia.—The Masonic Temple Association has been incorporated with a capital of \$50,000. A site has been secured on S. 1st Ave. on which it is proposed to erect a temple five stories high, 60' x 180'. N. A. Carmean, president.

It is stated that the Chicago Great Western R. R. Co. has decided to erect a depot here to cost \$40,000. Sam'l C. Stickney, gen'l mgr., St. Paul, Minn.

Congressman Cousins has introduced a bill appropriating \$150,000 for a federal building.

McKeesport, Pa.—Plans have been prepared by W. F. Wilson for a \$50,000 school to be built at Atlantic Ave. and Reed St.

Minneapolis, Minn.—L. A. Lamoreaux, architect, has made plans for a warehouse to be erected at 119-121 Second St. N., to be occupied by the Sherwin-Williams Paint Co. It will be 42' x 100', five stories and basement, of pressed and ornamental brick; cost complete, \$22,000.

Montclair, N. J.—The plans for the \$30,000 Carnegie Library, to be erected on Church St., will be drawn by John C. Howard.

Mt. Vernon, N. Y.—The long disagreement in the Board of Education, which threatened to lose for this city the \$35,000 library offered by Andrew Carnegie, has finally been settled. The Board voted to purchase the Jones and Van Arsdale properties, fronting on S. 1st and S. 2d Aves., between 1st and 2d Sts. The price paid was \$16,000. It is expected that work on the library will begin early next spring, and that Mr. Carnegie will be asked to lay the corner-stone.

Muscatine, Ia.—A \$175,000 union depot is to be erected on Iowa Ave. and Cedar St. The Chicago, Rock Island & Pacific R. R. (A. J. Hitt, gen'l mgr., Chicago, Ill.), is one of the companies interested.

New York, N. Y.—The Board of Education has had plans prepared for a \$160,000 building at 165th St.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

and Union Ave., by C. B. J. Snyder, Park Ave. and 59th St.

Alex. C. Patterson, 642 Columbus Ave., has the contract for general alterations to the brick and stone hotel, on the corner of 62d St. and Central Park West; cost, \$25,000; J. P. Morgan, 120 Broadway, owner. John Woolley, 111 Fifth Ave., architect.

A press report states that the Dennison Manufacturing Co., whose building at 198 Broadway, was gutted by fire recently, will erect a ten-story fireproof building at 15 John St. Wilson Eyre, Jr., of Philadelphia, Pa., who erected the building at 198 Broadway, will draw the plans.

L. & J. Brandt, 1270 Amsterdam Ave., have made sketches for a six-story brick and stone apartment-house, 44' x 90', to be erected on the north side of 137th St., between 7th and 8th Aves.

Contractor James Milligan, of 1267 Broadway, is excavating a plot, 44' x 100', at 360 and 362 Washington St. for Wm. J. Peppiat and Thomas Scott, who will erect a six-story warehouse.

It is reported that an important improvement will shortly be begun by the Robert Goelet estate. An addition will be made to the Imperial Hotel, at the corner of Broadway and 31st St. The Winchester and San Carlos apartment-houses stand on the plot, which will be improved.

The congregation Kelaith Jeshurin will erect a new synagogue on 85th St., near Park Ave., from plans prepared by George F. Pelham, 503 Fifth Ave. The structure will have a front of limestone, size 71' x 92', two stories high; cost, about \$60,000.

Plans have been prepared by architect William A. Cable, 1183 Broadway, for a five-story brick, stone and iron college building to be erected on Verona Pl., Brooklyn, for the Brooklyn College Co. The building will be of fireproof construction, equipped with all modern appointments and cost about \$300,000.

It is stated that the Schwarzschild & Sulzberger Co., 1st Ave. and 45th St., will erect an eight-story brick, stone and iron packing plant on 1st Ave. and 45th St., to cost \$800,000.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Plans have been drawn by W. E. Mowbray, 1300 Broadway, for a three-story brick and stone theatre, which is to be erected at the corner of Willoughby and Pearl Sts., Brooklyn, for Mrs. H. Levy, 61 De Bevoise St., at an estimated cost of \$50,000.

The property on the north side of 94th St., near West End Ave., has been purchased by Jacob Axelrodt, 126 W. 91st St., who will improve it by the erection of a six-story brick and stone apartment-house, to cost \$70,000. Plans are being prepared by Architect George F. Pelham, 503 Fifth Ave.

Report states that a new business block, to cost about \$750,000, is to be erected on the block front in Battery Pl., between West and Washington Sts., facing Battery Park and the bay. It is to be put up by the Battery Place Realty Co., understood to be made up of William G. Park and the George A. Fuller Co., which has bought the property from the Century Realty Co. for about \$500,000. The land, which is incumbered with a number of old brick houses, was bought by the Century Realty Co. from the Hemmenway estate, of Boston. Plans for the building, which it is said will be sixteen stories high, have not been prepared yet.

The Empire City & Realty Co., care of Morris Hayman, 149 Broadway, will erect 2 six-story brick tenements, 50' x 100', on the corner of 1st Ave. and 100th St.; cost, \$40,000 each.

It is said that the Singer Manufacturing Co. will build an addition to their present building. The new building will be at 155 to 161 Broadway, and will have a frontage of 62.3 feet. The present entrance on Broadway will be closed up and a new one nearer the centre of the improved building opened. It is also rumored that it will be more than eleven stories high, and that a number of stories will be added to the present building. Ernest Flagg, 35 Broad St., who was the architect for the first building, will undoubtedly draw the plans.

It is reported that plans are under consideration for the erection of an office-building in lower Broad St. which will cover more ground and be taller than the Broad Exchange Building, 35 Broad St., which is twenty stories high. A large amount of property,

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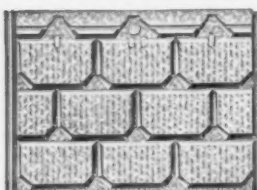
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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

It is said, is being bought at the southeast corner of Beaver and Broad Sts. for this new building.

Nyack, N. Y.—Andrew Carnegie, through his private secretary, James Bertram, has offered to give this city \$15,000 for a public library building provided its residents will guarantee \$1,500 a year to maintain the institution and furnish a site for the building. The offer will doubtless be accepted.

Omaha, Neb.—The Y. W. C. A. will raise funds for the erection of a building. It is suggested to jointly erect a building with the Y. M. C. A.

Philadelphia, Pa.—The Council's Finance Committee have approved an appropriation of \$1,250,000 for the purchase of a site and the erection of buildings, to be used as an almshouse, a hospital for the insane poor and a municipal hospital for contagious diseases. The committee also approved of an appropriation of \$80,000 for the erection of pavilions for consumptives.

Portland, Me.—James Cunningham is to build on Park St., at the corner of Congress, a large hotel, which he has already leased to Mr. Peter O'Connor. The hotel will be four stories high, with 100 rooms, and the structure will be so arranged that an addition can be built on at a later date.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Providence, R. I.—Carrère & Hastings, 28 E. 41st St., New York City, have drawn plans for a residence and stable to be erected for I. Gifford Ladd. The house will cost about \$100,000.

Powerful congressional support has been promised to secure the appropriation for a new \$1,500,000 post-office building for this city.

It is proposed to erect a new building for high school purposes at the corner of Summer and Pond Sts.

The old Central Congregational Church, on Benefit St., has been purchased and will be altered into an armory.

Rock Island, Ill.—Fred Borgolte has prepared plans for a \$30,000 addition to the St. Anthony's Hospital.

Sault Ste. Marie, Ont.—A site has been secured for a new post-office building. A structure will be erected at a cost of \$65,000.

Schenectady, N. Y.—It is stated that the Y. M. C. A. will erect a \$35,000 gymnasium.

Shoals, Ind.—It is stated that John R. Walsh, president of the Southern Indiana Railroad Co., has purchased the Trinity Medical Springs, two miles



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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

north of this place, and will erect a hotel to cost \$500,000.

Sibley, Ia.—Plans by Kinney & Detweiler, architects, of Austin, Minn., have been adopted for the new court-house; cost, \$50,000.

COMPETITIONS.

HOSPITAL.

[At Washington, D. C.]

Competitive plans will be received by the District Commissioners until February 8 for the municipal hospital to be erected on 13th St. and Arkansas Ave. The contemplated structures will cost several millions.

1360

SCHOOL.

[At Corsicana, Tex.]

Plans and specifications will be received by Chas. H. Allyn, chmn. com. for a high school.

1358

BUILDING.

[At San Jose, Cal.]

Competitive plans will be received by the building committee of the trustees of the Odd Fellows' Home for an Odd Fellows Home building, to be erected near Alum Rock Park. The structure to cost \$80,000.

1358

LIBRARY.

[At Boulder, Col.]

The Board of regents of the University of Colorado invite competitive plans for a library building, to be erected at the State University. Further information may be obtained from E. J. Morab, secretary of the Board of regents, Boulder, Col. The cost of the completed building is to be \$75,000.

1358

SCHOOL.

[At Milwaukee, Wis.]

Competitive plans and outline specifications will be received by the Board of Public Works until January 31 for a school to be erected at Galena and 14th Sts. CHAS. J. POETSCH, commr. of pub. wks.

1358

PROPOSALS.

OFFICERS' QUARTERS.

[At Ft. Washington, Md.]

Office of Quartermaster, 409 North Washington St., Alexandria, Va. Proposals will be received here until January 13, 1902, for construction and completion of two single sets of frame non-commissioned officers' quarters at Ft. Washington, Md. Information regarding plans and specifications may be obtained at the office of the depot quartermaster, Baltimore,



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TRADE MARK.

The leading architects of
the country are specifying
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KENNEY SYSTEM—
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Most Effective, and Cleanest
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Hotel Union Apartments, Boston; Hotel Ansonia; Hotel Manhattan, New
York; U. S. Hotel, and Grand Union, Saratoga, N. Y.; Prudential Life Build-
ing, Newark, N. J.; Broad Exchange, and Broadway Chambers, New York,
and others.

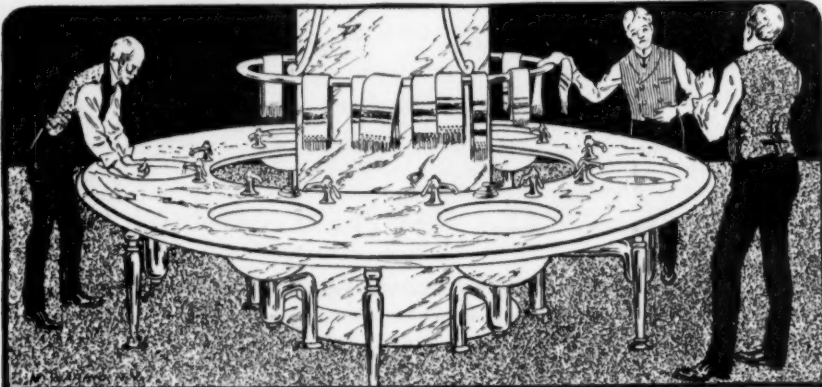
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PATENT SEWER-GAS AND BACK-WATER TRAP,**
For Wash-Bowls, Sinks, Bath and Wash-Tub.
West Cleveland, O.

PROPOSALS.

OFFICERS' QUARTERS. [At West Point, N. Y.]
Sealed proposals will be received here until Janu-
ary 14, 1902, for the construction of officers' mess
and quarters. Plans can be seen and forms and
specifications obtained at this office or at the office of
McKim, Mead & White, 160 Fifth Ave., New York,
N. Y. Address Q. M., U. S. M. A. 1358

JAIL. [At McRae, Ga.]
The Board of roads and revenues will receive sealed
proposals until January 13 for the erection of a
two-story brick jail and jailors' residence. GEORGE
M. WILCOX, commissioner. 1358

WATER AND SEWER SYSTEM. [At Sullivan's Island, S. C.]
Sealed proposals will be received here until Janu-
ary 15th, 1902, for constructing a water and sewer
system at this Post. DAVID PRICE, Q. M. 1358

CHURCH. [At Lindsay, Tex.]
Sealed bids are being received by the Rev. Father
John, Lindsay, Tex., for the erection of a brick
church, 48' x 98'. Plans and specifications can be
seen at the above place. 1358

COURT-HOUSE. [At Reidsville, Ga.]
Sealed bids will be received until January 15 for
the erection of a court-house. B. F. ALEXANDER,
county ordinary. 1358

BUILDING. [At League Island, Pa.]
Sealed proposals will be received at the bureau of
yards and docks, Navy Department, Washington,
until January 18, 1902, for constructing a brick
and steel building at the navy yard, League Island,
Pa. Plans and specifications can be seen at the
bureau or at the navy yard named. Appropriation
\$30,000. MORDECAI T. ENDICOTT, chief of bureau. 1358

CHURCH. [At Pensacola, Fla.]
Bids will be received by the vestry of Christ Epis-
copal Church, until January 15, for erecting a
church. Address, H. G. DE SILVA, Sec'y Bldg.
Com., Pensacola. 1358

CHURCH. [At Crafton, Pa.]
Rev. W. C. Kelly will receive bids until January
28 for a \$50,000 edifice for St. Philip's Church, after
plans by W. P. Ginther of Akron, O. 1359

COURT-HOUSE. [At Olivia, Minn.]
Sealed bids will be received until January 14th,
1902, for the erection of a court-house for Renville
County, Minnesota, to be built at Olivia. Plans and
specifications are on file in the office of the County
Auditor at Olivia, and at the office of Fremont D.
Orff, architect, Lumber Exchange Building, Minne-
apolis, Minn. J. T. BROOKS, county auditor. 1359

PROPOSALS.

Philadelphia, and on application to this office. ABE
S. BICKHAM, captain and quartermaster, U. S.
Army. 1358

JAIL. [At Hart, Mich.]
Bids are wanted January 15 for furnishing mat-
erial and erecting a county jail, to cost about \$15,000.
Plans and specifications to be furnished with bids.
JOHN R. BUTLER, chmn. bldg. com. 1359

HEATING PLANT. [At Ft. Logan H. Roots, Ark.]
Bids are wanted January 20 for furnishing and
installing a hot-water heating plant in a hospital at
Ft. Logan H. Roots. Address JNO. W. PULLMAN,
Ch. Q. M., Omaha, Neb. 1359

GUARD-HOUSE. [At Ft. Warren, Mass.]
Bids are wanted January 20 for constructing a
brick guard-house. Address LIEUT. EDW. HILL,
Q. M. 1359

CHURCH. [At Alexandria, Minn.]
M. N. Koll, secretary, has plans and will receive

PROPOSALS.

bids until January 29 for the erection of a church
for St. Mary's Catholic Society, on plans by Omeyer
& Thorl, architects, of St. Paul. 1360

LIBRARY. [At Decatur, Ill.]
Sealed bids will be received until January 30,
1902, for erecting a public library. WILLIAM J.
QUINLAN, president, library Board. 1360

SCHOOL, ETC. [At Iowa City, Ia.]
The School Board will receive sealed proposals
until January 25 for furnishing material and erect-
ing a two-story brick and stone high school for the
independentschool district. Bids will also be received
for erecting a one-story heating station together with
coal and ash vaults and brick smokestack; a brick
steam tunnel connecting new and old high and gram-
mar schools; a hot-blast steam-heating apparatus
required to heat and ventilate the proposed new high
school including the installation of three new steam
boilers and all steam pipework and connection re-
quired to connect with the old apparatus in present
high and grammar schools; also for sewer and plumb-
ing work. A. J. HERTZ, secretary school Board. 1360

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SHADES

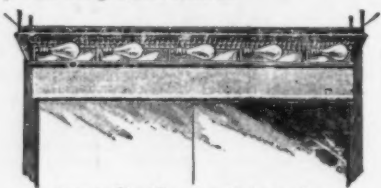


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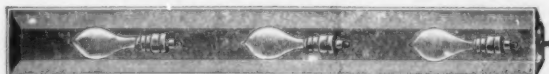
Covers the entire window space with a brilliant, evenly diffused light, without glare in the eyes of the onlooker, thus displaying the goods to best possible advantage. Adopted by the finest stores in the country with the greatest success.



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Handsome nickel finish. Made small and compact, for use in angles of counter cases, tops of show cases, etc. Used by many leading stores, and rapidly being adopted by the more prominent stores.



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Brass Band, Plain or Embossed.

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which save one-third the lighting expense necessary with ordinary porcelain reflectors. They are made to last and reflect all the light there is. The most practical fixture made for store lighting. A large variety of styles and sizes for public and institutional buildings generally.

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