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THE New York Municipal Art Society has prepared, with the aid of suggestions from the Merchants' Association, the Board of Trade, the Manufacturers' Association, the American Society of Civil Engineers, and the various artistic bodies, a report upon a comprehensive plan for the improvement of New York, which can be carried out slowly, if necessary, but which will surely lead to the development, in time to come, of a beautiful and convenient city, worthy of its situation and surroundings. In the matter of convenience, the report looks forward to the time when every important street will have its subway, to contain main pipes and wires; when arcades, parallel with the most crowded streets, will relieve the traffic; and when the water front, which is every day more congested, will be connected with the underground system. One of the most important recommendations, artistically, is that sites for public buildings should be selected long before they are needed, so that they may be sure of a worthy position. As compared with Boston, New York is already tolerably successful in the positions of its public buildings; but it is still far behind any great Continental city, and it is none too soon to be looking out for the future. There is in France a curious law by which any municipality can acquire improved property, paying for it the value of the land alone, but allowing the occupant to remain in peaceful enjoyment of the property, under the stipulation that he shall make no repairs on the building. In the ordinary course of things, a city building which cannot be altered or extensively repaired is practically obsolete and useless in twenty or thirty years, so that the owner is glad to give it up, making the site available for public purposes. Some such arrangement as this might be useful for acquiring for public purposes the most prominent sites in the newer parts of cities; or, perhaps, municipalities might be authorized to acquire such sites before the territory was developed, and lease them, on ground-leases of twenty-five or thirty years, or longer, so as to be receiving a little income on the investment until the growth of population should make it desirable to utilize the ground. If something of the kind could have been done when the upper part of New York was first laid out, and the streets had been carefully planned so as to give vistas terminating in a monument, or building, or object of interest of some kind, as the streets of Paris lead up to the Arc de Triomphe, or the Madeleine, or the Tuileries, or the Trocadéro, or St. Augustin, or the Opéra, or the Chamber of Deputies, or the Monuments of the Place de la République, or the Place de la Bastille, the fatiguing monotony of the present avenues would have been avoided. It is not too late, even now, to remedy this oversight. Broadway, by cutting diagonally across the avenues, gives many sites which could be beautifully utilized; and even such an intolerably tiresome street as Sixth Avenue, nearly spoiled as it is by the elevated railway, could be to a great extent reclaimed by interrupting it with a public square, around the perimeter of which the elevated road could be carried, leaving the middle clear for a great monument in the axis of the street, which would be visible throughout the whole extent.

MR. WILLIAM COLFORD SCHERMERHORN, who died a few days ago in New York, was one of the most conspicuous members of the group, now rapidly diminishing, of representatives of the old Knickerbocker families, who, with their like in Philadelphia, Boston and Baltimore, and a few in places farther South, form an aristocracy of which this country may well be proud. Unassuming, useful and charitable, he managed a great property wisely and intelligently for the benefit of other people. The profession of architecture is particularly indebted to him, in that, although the gift was so quietly made that it does not appear in the newspaper notices of his life, he founded and maintained, as long as it needed such assistance, the Architectural Department of Columbia University, now one of the principal architectural schools in the United States. He was not less generous in other ways to his Alma Mater, having presented it at one time with three hundred thousand dollars, to be used in erecting a building for such purposes as the Government of the University might prefer. Mr. Schermerhorn, in addition to being a devoted friend of Columbia University, was for many years an officer of the Metropolitan Museum, and gave freely of his time, money and counsel to whatever was best in art in New York.

WE have a letter from an architect of distinction, who is troubled at the treatment which he has received from a committee. The committee had occasion to make some alterations in a building, noted as one of the most important works of the architect in question, and invited a builder to make an estimate of the cost of the alteration proposed. The builder employed an architect of his acquaintance to draw plans of the work, as a basis for his estimate. When the plans and estimate were submitted to the committee, it appeared that they contemplated the making of several new windows, which, naturally, affected the appearance of the building. The committee, realizing this, decided that, although, in their opinion, the new plans "conformed to the general architectural features of the building," it would be more satisfactory to submit them to the original architect, and ask him for such suggestions in regard to the shape and proportion of the windows as he might see fit to make, provided he would be willing to make such examination and suggestions for a sum not exceeding fifty dollars.

IT is not surprising that the distinguished architect in question should be a little indignant at such treatment; and yet, in spite of the ludicrously Philistine air of the transaction, it cannot be denied that the committee, according to its lights, acted with what it intended to be perfect courtesy and consideration. Our friend thinks, as every other architect would, that he ought to have been consulted in the first place in making plans for an alteration in his building; but it does not appear that the committee knew that any architect was employed by the builder, and it seems that, after they found that one had been so employed, they, of their own accord, voted fifty dollars of the money for whose expenditure they knew they would be held to rigid account, in courteous recognition of the right of the original designer of the building to be consulted in regard to alterations in it. Although we are certainly not disposed to favor any neglect or violation of artistic rights, we think there is something to be said on behalf of the people who are not artists, and have no conception of artistic rights, or of artistic sensibilities, except when they happen unintentionally to ruffle some of these latter. We might, indeed, observe that the fact that an architect was found to make plans for altering a work of a distinguished professional brother might well have led the committee to suppose that artistic rights need not give them much concern which were not recognized by the artists themselves; and they are entitled to the greater credit for having been so scrupulous.

BOSTON and Cambridge are gradually accumulating artistic treasures of great value, and, in many cases, of a special interest. Among these latter, those which are ready, or are promised, for the new Germanic Museum deserve, perhaps, the first place. Although, in general, only casts, they show, as nothing else has ever shown Americans, the great and noble art of Germany. Even Germans know, as a rule, very little

of the artistic treasures of which their own land is so full, and it is fortunate that the favor of an imperial amateur has been enlisted in behalf of a project which may, we hope, place before the eyes of the public of Cambridge and Boston some reasonably adequate abstract of German art, from the charming Bavarian ironwork, and the stained-glass of Cologne, to the mediæval stone-carving of Nuremberg, and the beautiful domestic sculpture of the present day, in which the Berlin School stands perhaps unrivalled. Besides German casts, however, the University Museum of Fine-Arts has gained lately a water-color drawing by Turner; a large panel in tempera, by Fra Filippo Lippi; a panel signed by Giovanni Bellini; two Greek marbles; three Greek vases, and a multitude of Greek and Egyptian bronzes and terra-cottas, all in the form of "indefinite loans" from recent graduates of the University. Comparatively small as these acquisitions are in importance beside those of the great public museums, it should never be forgotten that a small working collection, like that of the Fogg Art Museum, stands in relation to the students of art in the University something as the treasures which a great artist hangs around the walls of his studio do to his eager and appreciative pupils, and the excellence or mediocrity of the works so shown has a great influence upon those whom it is most important to influence.

WITHOUT wishing to disparage great public museums, which undoubtedly do much to train the public taste, it may be observed that it is more than doubtful whether they do much to develop artists. In England, where enormous sums have been spent to collect the most valuable works, and to show them, as travelling loan collections, all over the country, the development of the National Gallery and the South Kensington Museum coincides closely in date with the collapse of the once lovely school of British art, and the substitution of the horrors of Beardsleyism, and the self-conscious affectations of the moderns for the touching sweetness of Gainsborough and Reynolds and Hogarth. However this phenomenon may be explained, there is, fortunately, no question of the influence upon the public of great art, and the Boston Museum has done wisely in purchasing, out of a fund bequeathed for the purpose, several pictures out of the splendid collection left by Mrs. S. D. Warren. Mrs. Warren, it may be observed, was the daughter of a country minister, learned and able in his profession, but no more devoted to the fine-arts than most New Englanders of liberal education. The daughter married a manufacturer, also well-educated according to the New England standard, and the two, or more particularly, perhaps, Mrs. Warren, after she was left with a large property, and leisure and opportunity to use it as she wished, brought together one of the most characteristically American collections in the country. In calling it an American collection, we do not mean that there were in it many pictures by American artists, although some of the best were included in it, but that she selected, with independent American taste, pictures because she liked them, not because they bore great names. It is well known that Americans did much to make the reputation of the Barbizon painters, whose freshness and naturalism charmed the unprejudiced Trans-Atlantic buyers, and Mrs. Warren's collection, naturally enough, contained many splendid examples of this school, besides a beautiful Millet, which has been bought for the Boston Museum of Fine-Arts, and will be added to the rich store of this great artist's works now owned in Boston. Besides the Millet, the Boston Museum purchased a Pieter de Hoogh, a Gérôme, and two portraits by Sir Thomas Lawrence, which will add very materially to its attractions.

MR. JOHN DE WITT WARNER, the President of the New York Municipal Art Commission, expresses some very sensible views in regard to the tariff on works of art. It is needless to say that he considers all duties on such works, whether fifty days or fifty years old, as injurious to the interests of this country; and he denounces, in vigorous language, as "piggery," the attempts of a very few American artists to oppose the repeal of the duty, or to retain a specific duty on low-priced pictures, in order, as he presumes, to keep the home market for their own productions, the value of which they thus estimate. At the same time Mr. Warner regards the movement to secure repeal from Congress as hopeless, partly from the absolute and well-known indifference of the great majority of voters to the question, and partly from the great reluctance which Congress has shown to consider any modification whatever of the present tariff system.

PERHAPS we can impart a ray of hope to the distinguished and unselfish artists and amateurs who are endeavoring to bring about at least the partial abolition of this barbarous tax, by suggesting that they should try to enlist Mr. Oxnard on their side. We are informed by the newspapers that "Mr. Oxnard has decided to allow the Cuban Reciprocity treaty to pass," and a person who, by simply "deciding" to do so, can accomplish an undertaking which two Presidents have attempted in vain is certainly the one to whom an appeal should be made when legislation is wanted. When we speak of him as a "person," it must be understood that we intend no disrespect to a Being who holds Congressmen in the hollow of his hand, and that we simply suffer from the embarrassment of not knowing what title is appropriate to so powerful a potentate. Under the Constitution of the United States, we are debarred from speaking of him as "His Majesty"; and to call him an Imperial Highness would be, we fear, to cast undeserved discredit on him. Perhaps it might be permitted to use a new title of honor, which would be appropriate to the occasion, as well as expressive of esteem, by addressing him as "His Sweetness." At least, the committee in charge of the petition might try the effect of this salutation.

THE iniquitous contract by which the window-glass trust allotted five thousand shares of stock to the Glass Workers' Union, on condition of the assistance of the latter in driving independent manufacturers out of business by preventing them from getting men, has been cancelled, and the stock withdrawn, through what might be called a falling-out of that familiar kind through which honest men get their own. As the Glass Workers' Union, just as much as the trust, was simply in pursuit of its own interest in the transaction, it was, perhaps, inevitable that a time should come when the interests would separate. The worst grievance, however, seems to have been that the union allowed its members to work in the independent factories which it had been bribed to help in suppressing, at the same time that, while the trust was bound, by its compact with the union, to employ only union men, nearly half its plants were idle, for want of men to work them. Meanwhile, the union and the trust have both become so obnoxious to all lovers of decent methods in business that a petition from the principal labor organization in the country has been prepared for presentation to Congress, urging the abolition of the duties on imported window-glass, with the avowed object of breaking down the tariff-protected monopoly which has held possession of this great industry for so many years.

A CURIOUS illustration of the way in which tariff legislation affects the life of the people is to be found in the appeal made by Professor Fernow, of the New York State College of Forestry, for the repeal of the duties on lumber. Professor Fernow is probably the best authority living on the subject, and certainly would not speak unadvisedly, but he thinks it his duty to point out that, at the present rate of consumption, the timber resources of the United States will hold out only about thirty years. The feeble efforts at planting which have been made within the past few years are better than nothing, but they are insignificant in comparison with the devastation which sweeps away our forests at the rate of hundreds of acres daily. Evidently, the only way for our children to have timber to build their houses with is for us to plant it for them, and, meanwhile, to check, if possible, the furious cutting which is going on everywhere in the United States, so that while the newly-planted trees are growing, there may still be timber to use. For this latter purpose Professor Fernow sees no better means than to remove the tariff duty of two dollars a thousand on lumber. As Canadian building-timber can be delivered here as cheaply as the native product, the duty is simply a bounty, paid out of the pockets of the consumers, to encourage the denudation of the forest lands of the United States; and, as it is notorious that the duty, by shutting out Canadian lumber from this country, has led to the establishment of multitudes of wood-working factories in Canada, and drawn population from the frontier States at an alarming rate, the proprietors and lessees of the American forests feel that their present prosperity is rather precarious, and strain every nerve to increase the harvest while the profits last. If the duty were removed, this inducement for the destruction of the forests would be lessened and, as Professor Fernow points out, every stick of Canadian lumber used in this country would save an American stick for future use, at a time when it will be sorely wanted, and when foreign producers will have us at their mercy.

NOTES ON IRON AND STEEL CONSTRUCTION.¹—XIII.

EVERYTHING in connection with steel-building construction has been treated upon in these articles with the exception of the determination of stresses in framed structures, and the design of such framed structures as roof-trusses. It is not the purpose of the

article to start in with the analysis of stresses for elementary trusses and treat upon the many different types, but rather to give such principles as will allow of the analysis of any framed structure, and to give, in connection with these principles, four or five practical examples covering the more complicated types of trusses.

Before commencing the subject, there are certain definitions and terms which, if thoroughly understood, will greatly facilitate explanations and descriptions, i. e.:—

A "force" acting upon a framed structure is either a "load," a "stress," or a "reaction." The "loads" upon any framed structures are usually due to the weight of the materials, and, in a roof-truss, the roof-covering and snow-load, beside which there exists the wind-load.

The "stresses" are created in the members of the truss or frame by the loads and wind-pressures. They may be either tensile or compressive.

The reactions are the forces at the ends of the structures, or points of support of a framed structure. These reactions may act in any direction, but are necessary to counteract the loads.

The external forces upon a frame consist of the loads, the force due to wind-pressure, and the reactions.

The internal forces are the stresses in the several members. Any system of forces may be either concurrent or non-concurrent.

Concurrent forces are those which meet at a single point of action. Non-concurrent forces imply that the forces do not meet at a single point of application.

Any structure to be in equilibrium, that is, in a state of rest, must be secure against motion, either lateral or rotary.

When a structure is secure against lateral motion, it is said to be in equilibrium of translation.

Equilibrium of rotation implies that a structure is secure against a circulation or revolving motion about any particular point.

In statics the element that most interests the engineer is equilibrium, for the frame is designed in order that equilibrium may exist. A structure in order to be in complete equilibrium must possess both equilibrium of rotation and equilibrium of translation, that is, it must neither tend to move laterally, nor shall there be any rotation about a fixed point. Where a system of forces meet at a single point there can be no tendency for rotation, but there can be a tendency to move in a certain direction unless the system is balanced or in equilibrium. An example of a system of concurrent forces, or forces that act at a single point, exists in the connections of a truss or framed structure. For instance, in Figure 91 is shown a rafter member, its load, two tension-members and a compression-member, meeting at a single point. There are, consequently, six forces in the system, which are designated by the arrows as shown. This joint, in order to be secure against failure, must be in equilibrium of translation. In Figure 92 is designated an iron bracket supported upon a corbel and sustained in position by a tie-rod, secured through the wall. The force W acts at the end as shown, and would tend to turn the bracket about the point c but for the tension in the bolt at b . The four forces acting upon the bracket are non-concurrent, and consist of the load W , the tension in the bolt b , the pressure upon the corbel at a and the horizontal thrust at the corbel marked c . In order that W shall not rotate the bracket about the point c , the moment of W about the point must be equal to the moment of the force created in the bolt b about the same point. When this condition exists there is no tendency for the bracket to revolve about the point C and equilibrium of rotation is created.

To analyze the condition of equilibrium that exists at any point in a structure, assume the following example, which consist of the analysis of the stresses meeting at a single point, as shown in Figure 93 at A . These stresses consist of A , B , C , D , E and F , the amount and direction of the stresses are as shown in the diagram, and in order to determine whether the joint is in equilibrium it is necessary to draw what is known as the polygon of forces shown at B in Figure 93; the forces are similarly marked, as shown in the figure at

A , and are made equal by some scale to their amounts and as well extend in the same respective direction. For instance, A , = 5,333 pounds, is drawn downward obliquely; B , = 16,000 pounds, is likewise drawn downward, vertically; C extends upward obliquely with an amount of 26,500 pounds; D is practically horizontal, and amounts to 8,000 pounds, while E is drawn upwards and is measured to equal by scale 9,000 pounds, and F downward is made to equal 7,500

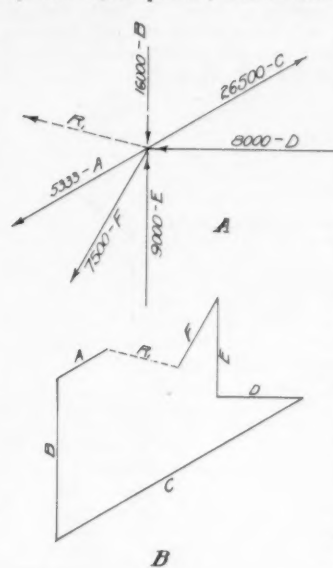


Fig. 93.

order that the joint can be in equilibrium. In drawing the polygon of forces they may be taken in any order, but each force must be laid off accurately to scale to represent its particular member, and its direction must be carefully designated. When the polygon closes, as was accomplished by the introduction of the resultant R , the system of forces about the joint is in equilibrium, and when a polygon of forces closes and each force follows around the polygon in direction from the beginning to the end, then equilibrium is ensured.

There is another means by which the equilibrium at a joint in a structure may be proved, and that is by the employment of the principle known as the resolution of forces. The resolution of forces exists in the fact that any force, as at A , Figure 94, may be resolved into two components, as B and C ; these two forces, which are equal in effect to the oblique force A , are vertical and horizontal, and are known as the vertical and horizontal components of the force A .

Consider the connection or joint in Figure 95. Each one of these forces is resolved into its vertical and horizontal components; the result is diagrammatically shown by the dotted lines. The negative components are marked with the sign of subtraction, while the positive components are marked with the plus sign, that is, all of the vertical and horizontal forces acting in one direction are called negative, and all of the vertical and horizontal forces acting in the opposite direction are called positive. The algebraic sum of these components gives the lines marked H and V , and when the diagonal R is drawn it will be found that this line is equal to the resultant obtained in the previous discussion of Figure 93, but it was determined that it was necessary, in order to create equilibrium at the joint to introduce the resultant R , as a force in the system of forces shown at A in Figure 93; when, therefore, the resultant R in Figure 95 is considered as a force it is quite evident that the algebraic sum of the vertical components equals zero, while the algebraic sum of the horizontal components likewise equals zero. This, then, is always a condition of translation equilibrium for a system of concurrent forces, and the condition may be expressed algebraically as

$$\begin{aligned}\Sigma H \text{ comp.} &= 0 \\ \Sigma V \text{ comp.} &= 0\end{aligned}$$

The one important principle to be borne in mind by the designer of framed structures, in the determination of the stresses by the graphical methods, is that the external forces upon the frame must be determined accurately in amount and direction. The external forces on any frame consist of the loads and the corresponding reactions. The loads are readily determined when the weight of the material, the superimposed loads and the wind-pressures upon the several areas supported by the frame have been determined. The problem then resolves itself into the determination of the reactions.

Where the truss is symmetrically loaded and the reactions are parallel with the direction of the loads, the sum of the reaction equals the sum of the loads, and in consequence each reaction is equal to one-half of the loads upon the frame. No difficulty is therefore encountered in determining the amount of the several external forces acting upon a roof-truss that is symmetrically loaded,

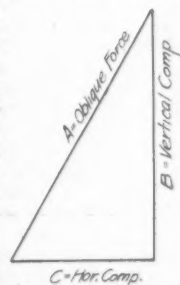


Fig. 94.

¹Continued from No. 1403, page 53.

but when a roof-truss is not loaded in this manner the several reactions must be determined by employing the principle of moments or by some graphical method.

To demonstrate the several methods by which the unknown reactions are determined from the principle of moments the problems illustrated in Figures 96, 97, 98 and 99 are to be solved.

In Figure 96 is shown a roof-truss of the Fink type, supporting vertical loads of unsymmetrical amounts. Since the loads are vertical, the reactions R_1 and R_2 will likewise be vertical, and the amount of R_2 may be calculated by taking the moments about the left-hand abutment, or the point c . If the loads are represented

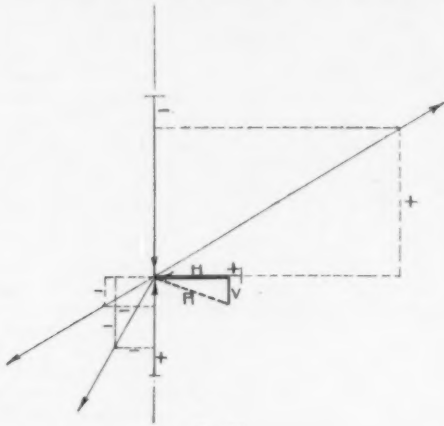


Fig. 95.

as creating positive moments, and the reactions are in all cases considered as creating negative moments, the algebraic sum of the moments about the point c will be as designated in the following calculation:—

500 × 0 =	0 foot-pounds.
1,000 × 10 =	10,000 foot-pounds.
1,000 × 20 =	20,000 foot-pounds.
1,200 × 30 =	36,000 foot-pounds.
1,800 × 40 =	72,000 foot-pounds.
1,200 × 50 =	60,000 foot-pounds.
900 × 60 =	54,000 foot-pounds.

Sum of positive moments = 252,000 foot-pounds.

The reaction R_2 acts with a lever-arm equal to the span of the truss, or 60 feet, so that the negative moment about the point c equals $60 R_2$, which in turn must equal the sum of the positive moments, or 252,000, and $R_2 = \frac{252,000}{60} = 4,200$ pounds. The sum of the loads is

equal to 7,600 pounds, so that $R_1 = 7,600 - 4,200 = 3,400$ pounds. All of the external forces for the roof-truss in question have now been determined, and the polygon of external forces is represented by a single line in which a, b, c, d , etc., are laid off to equal respectively by scale the amount of the forces in the frame-diagram similarly marked. When the point h is reached the next external force is R_2 ; this acts upwards and is represented by scale in the stress-diagram as extending from h to the point z ; z, a likewise represents the reaction R_1 , so that in working around the truss the polygon of external forces extends from a to b, b to c, c to d, d to e, e to f, f to g, g to h and from h to the point z , then upwards from z to the point of commencement, a ; thus a closed figure is formed, and since it is closed the external forces acting upon the truss are in equilibrium.

In Figure 97 is designated a frame-diagram of a similar truss to the one previously described, with a wind-pressure upon the left-hand rafter-member. In this problem it is assumed that the truss is fixed at the ends, and in consequence the reactions R_1 and R_2 coincide in direction with the line of action of the loads. The problem is, to determine the amount of the reaction R_2 , and it may be solved by taking the algebraic sum of the moments about the point c .

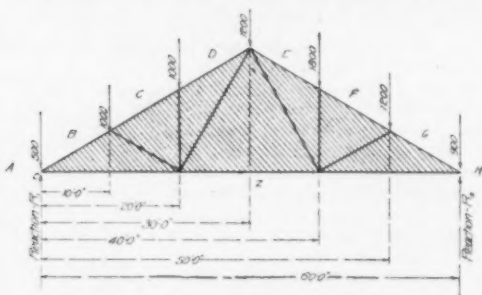


Fig. 96.

It must be borne in mind, however, that in taking the moments of any force there, the leverage of the force is the perpendicular distance between the line of action of the force and the point around which it tends to turn the structure. In consequence, the lever-arms of each of the forces acting upon the left-hand rafter-member lies

parallel with the slope, and the lever-arm of R_1 is no longer the span of the truss, but is the perpendicular distance from the line of action of R_2 to the point c , or 52.5 feet. According to the diagram the algebraic sum of the the moments will then equal

1,000 × 0 =	0 foot-pounds.
2,000 × 11.33 =	22,660 foot-pounds.
2,000 × 22.66 =	45,320 foot-pounds.
1,000 × 34 =	34,000 foot-pounds.

Sum of positive moments = 101,980 foot-pounds,

and $R_2 = \frac{101,980}{52.5} = 1,942$ pounds. Since both the reactions coincide in direction with the loads, and since the sum of the loads is

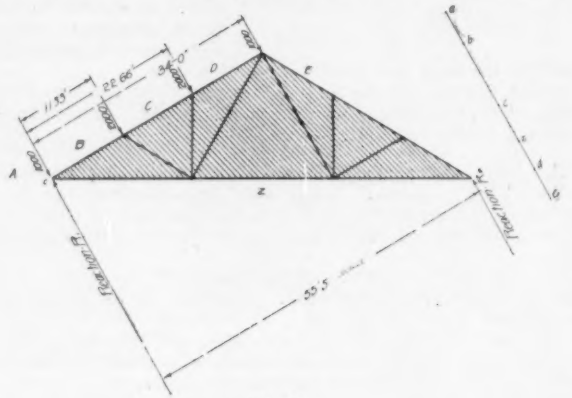


Fig. 97.

equal to 6,000 pounds, the amount of $R_1 = 6,000 - 1,942 = 4,058$ pounds. As in this instance the direction of the reactions and the several wind-pressures at the panel-points coincide, the polygon of external forces will, as in the previous case, be represented by a straight line which will extend from a to b , from b to c , from c to d , from d to e , from e back to z , this distance being measured by scale to equal R_2 , when it will be found that the distance from z to a is equal to the reaction R_1 .

In Figure 98 is shown the same truss, with the same wind-loads. This truss, is, however, considered to have a roller-bearing at the right-hand end, and to be fixed at the left-hand end. At the end supported upon the roller-bearing there is, theoretically, no friction, so that the direction of R_2 is vertical, there being no horizontal component at this joint. When this condition prevails the positive moments of the several loads about the point c are, as figured in the previous case, equal to 101,980 pounds.

The perpendicular distance from R_2 does not, in this case, lie parallel with the slope of the rafter member, but is equal to the span of the truss, which is 60 feet, so that the amount of $R_2 = \frac{101,980}{60} =$

1,698 pounds. Since the left-hand end of the roof-truss is fixed, the direction of the reaction R_1 will not be vertical at this abutment, and its direction must be found by drawing the polygon of external forces for the frame. In order to do this proceed with the stress-diagram by laying off the load-line to scale; this line extends from a to b , from b to c , from c to d , from d to e in a direction coinciding with the direction of the forces at the several panel-points; from e the reaction R_2 , equal to 1,698 pounds, can be laid off and the point z thus determined. By connecting z and a both the amount and direction of the reaction R_1 is determined, for, in order that the frame may be in complete equilibrium, the polygon must close, and in this instance extends from a to b , from b to c , from c to d , from d to e , from e to z , and from z back to a , the starting-point.

Another case of loading is shown in Figure 99. In this instance

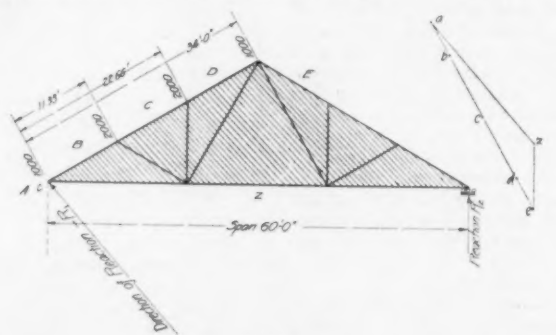


Fig. 98.

the same roof-truss supports a wind-load upon one side of the truss and a snow-load upon the other, the wind-load being represented by the oblique forces, the snow-load being designated by the vertical forces. This assumption is practical from the fact that the greatest wind-load is likely to exist at times when the maximum snow-load

occurs, but no snow will lodge upon the slope of the roof when the maximum wind-pressure is realized, though it may rest on the sheltered side of the roof. It is assumed that this truss rests upon a roller-bearing at the right-hand end, and that in consequence the reaction R_2 is vertical. The positive moments due to the wind are

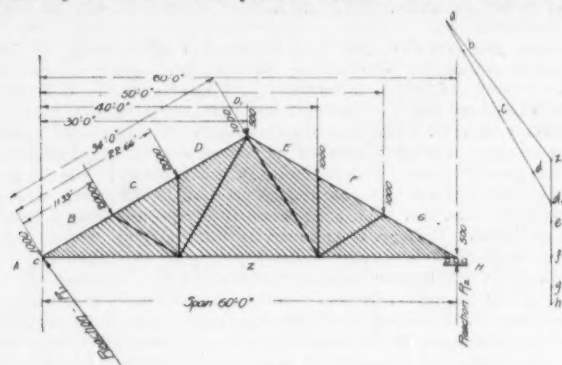


Fig. 99.

equal to, by the calculation previously made, 101,980 foot-pounds. The moments due to the snow-load about the point c are equal to

$$\begin{aligned} 500 \times 30 &= 15,000 \text{ foot-pounds.} \\ 1,000 \times 40 &= 40,000 \text{ foot-pounds.} \\ 1,000 \times 50 &= 50,000 \text{ foot-pounds.} \\ 500 \times 60 &= 30,000 \text{ foot-pounds.} \\ \text{Sum of moments} &= 135,000 \text{ foot-pounds.} \\ \text{to which add} &= 101,980 \text{ foot-pounds.} \\ \text{Total moment in one direction about } c &= 236,980 \text{ foot-pounds.} \end{aligned}$$

The reaction R_2 exerts its force about the point c through a lever-arm equal to the span of the truss, or 60 feet, so that the amount of R_2 is equal to $\frac{236,980}{60} = 3,949$. When the reaction has been found in this manner, the polygon of external forces will extend from a to b , from b to c , from c to d , from d to e , then vertically from e to f , from f to g and from g to h , returning upward with an amount equal to R_2 determining the point z . Thus, a line connecting z and a will represent accurately in amount and direction the reaction R_1 .

In Figure 100 is shown a type of truss often used for the support of the roof on an office-building, especially where a Gothic feeling is desired. In this figure the wind-forces are bc , cd and de ; they tend to turn the truss about the right-hand abutment, or R_2 . In order to determine the amount of R_2 , the reaction R_1 can first be figured by taking the moments about the point c . The positive moments about the point c are created by the loads cd and de , while the negative moment is due to bc , and the sum of the positive moments is equal to

$$\begin{aligned} cd &= 2,000 \times 1.75 = 3,500 \text{ foot-pounds.} \\ de &= 1,000 \times 20 = 20,000 \text{ foot-pounds.} \\ \text{Total} &= 23,500 \text{ foot-pounds.} \end{aligned}$$

If from this moment the moment of the negative forces bc is deducted, the moment of the reaction R_1 must be the difference, and since the moment of bc equals $1,500 \times 11.5$, or, 17,200, and the difference between this moment and the sum of the positive moments equals 6,250 foot-pounds, the reaction R_1 equals this amount divided by 20, or 312½ pounds. The amount of R_2 is equal to the sum of the loads plus R_1 , or 4,822½ pounds, from the fact R_1 is negative and R_2 is positive and the algebraic sum of the loads must equal zero. It will be noticed that the direction of R_1 is downward, instead of upward, so that instead of a compressive-stress at the foot of the left-

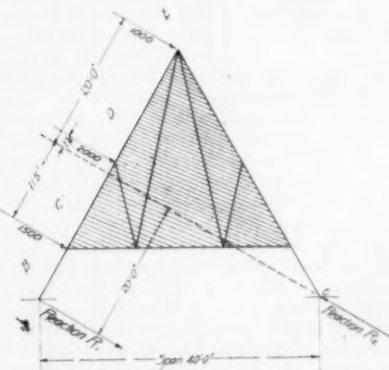


Fig. 100.

hand leg of the truss, there will be a tensile-stress, and anchor-bolts would need to be provided at this point unless the weight of the truss and roof-covering, acting through a lever-arm equal to the distance from the centre line of the truss to the point c , would more than counterbalance this overturning tendency of the wind.

The application of the method of moments to the reactions is practically covered in these several cases. In the next article will be treated the graphical method for determining the reactions on framed structures.

M. M. SLOAN.

[To be continued.]

BOSTON'S NEW OPPORTUNITIES.¹

AT the last meeting of the Society I was much interested in the remarks that were made about the haphazard way in which our streets and squares are laid out. During the last few years I have been present at a number of gatherings at which efforts were made to acquaint the unthinking public with the actual backwardness of the conditions existing in the Athens of America. Our average citizen regards a street as an arrangement for facilitating his progress from his dwelling to his store, a place to be hurried through if on the surface, or preferably to be traversed at a greater speed in an underground tram. The idea of a street which is really an attractive place, with broad sidewalks upon which people actually find pleasure in taking refreshments at little tables, or with long perspectives broken by statues or fountains, is to him a laughable conception, good enough, as was said, for "dago" cities like Paris or Naples, but not to be seriously contemplated by plain Yankees. Undoubtedly some progress has been made in disseminating the germs of the idea of the City Beautiful, but progress on the lines so far exploited is slow. My recollections are that the principal troubles cited in these meetings have been the condition of Copley Square, the artistic merit of the Dartmouth-street bridge, and the affair of the Westminster Chambers.

As concrete results of this agitation we are, I am told, constructing a bridge upon which money is to be expended for purposes of ornament, and laws have been passed restricting the heights of buildings on Copley Square and the park-system. Such a measure of accomplishment indicates progress, at least of the formation of an idea in the public mind, but during the same period other events have transpired which practically offset the advantages that have been gained. Now, it seems to me that we are not getting at the root of the question. When Trinity Church was built Copley Square was at the frontier; when the Library was projected, the central part was still enclosed by a rail fence; but the frontier had moved to Massachusetts Avenue. Now, with the Art Museum about to move as far again, the increasing traffic will soon make it impracticable to do anything more than to throw the whole square into roadway, with islands of refuge, and possibly a fountain in the centre, and we shall be fortunate if there is not an elevated railroad. On the theory that Copley Square is a sort of secluded spot of scholastic and artistic retirement, precious time has been lost in wrangling over upper stories of buildings and imposing restrictions on height which, in their very nature, can be nothing but unjust and temporary, and whose removal is even now plotted.

While these discussions have been going on, another aggregation of monumental buildings has grown up in the same old haphazard way, and still more are projected. I refer primarily to the groups of buildings at and near the junction of Massachusetts and Huntington avenues. Something was said last month about buildings needing sites. But if advantageous sites do not exist, what is to be done? Symphony and Horticultural halls, both good buildings, are so badly placed as to excite pity, and through nobody's fault. Simply the fact existed that, owing to the lay-out of the streets and lots at the junction of two of the most important avenues in Boston, no scheme of a monumental nature could ever be carried out there.

Now, the point I want to make is this: For years after the idea of an improved Copley Square had been formed, and after suggestions of municipal decorations had been made and discussed, the land at this junction was empty or occupied by unimportant buildings. If any one could have looked ahead, a movement might have been started and a *rond-point* or something made there in anticipation of the future.

This opportunity has been thrown away just as the Copley Square opportunity was thrown away, and just as the chance to get Bunker Hill Monument on the axis of New Washington Street was — and just as about every opportunity for effect east of Massachusetts Avenue has been. But west of Massachusetts Avenue there is still a chance. On the level fen-lands, on outer Beacon Street, outer Commonwealth Avenue, outer Huntington Avenue, lies the site of our new city. Here is virgin territory. This Boston of the next ten years is ours to make or mar. Just get out the city atlas and look at the possibilities of improvement, that, except for land-damages, will hardly cost a cent. For one example, take the star formed at the junction of Beacon Street, Commonwealth Avenue, Brookline Avenue, and Deerfield Street. It is safe to say that nowhere else in the city limits was there ever such a site for improvement as that, and at present it is mostly vacant land, and the "flatirons" which would make such noble sites for monumental buildings are merely being covered with dwellings and apartment-houses. Within five years it will be surrounded and improvements will be impossible except at great expense. I even believe that crossings as far out as that of Beacon and Harvard streets, at Coolidge Corner, should be considered; that point is axially good — having the State-house dome directly in line. Some time we, too, may need a place to put a triumphal arch on a hill

¹ A paper by Mr. Walter H. Kilham, read before the Boston Society of Architects, Friday, December 5, 1902.

against the sunset at the top of a grand avenue. Could a better spot be found for one?

It is tempting to follow for a moment this idea for making our improvements in undeveloped territory so as not to do things over twice. Down-town projects are being anxiously weighed for new teaming thoroughfares which will provide direct routes for the city's congested traffic. If we were to begin all over again and rebuild Boston, would we not, for one thing, make a straight street from the North to the South Station, and another from the East Boston Ferry or tunnel to the Cambridge bridge? Just as the important parts of a building are accented in a well-designed elevation, so should the strategic lines of a city's traffic be accented by *rond-points*, statues and bridges.

For example: In the fens we have Ruggles Street and Audubon Road forming a cross-town line of considerable length. Could not the new Cottage Farm bridge, which is to be a child of the near future, be located in some way on an extension of Audubon Road and a street opened on the Cambridge side to connect with it? Again, apropos of the fact that last month the location of the Back Bay streets was criticised, does any one know anything about the new streets in the fens, whether the new Art Museum site is monumental or not, and if so to what degree?

Are we or are we not going to continue placing our churches and public buildings on the most immediately available lots, only delighted if we can secure a "corner" and getting as close to the building-line as a drug-store. There is hardly a theatre or public hall in Boston that has sidewalk-room to discharge its audience.

These are the complaints, but complaints without suggestion are not of great value. Occasional agitation by irresponsible persons, or criticism aimed at isolated spots, is ineffectual in helping the city as a whole, and, as we have seen two or three times, is just as likely to be misdirected as not. Any theme of improvement ought to be in charge of a commission of broad-minded men, educated, not in various theories of art or precedent, but able to look at projects from the side of the capitalist and investor as well as the architect or engineer, and capable of weighing the suggestions of would-be advisers and local boomers at their true value.

My general proposition is a movement towards the formation of some sort of a board of survey made up, shall we say, of an architect, an engineer and a lawyer, to whom shall be referred all schemes for new avenues or boulevards, all bridges, statues, fountains, or other works of art or utility which are proposed for location in the out-of-door public spaces of the city. This board to have absolute authority from the city to approve, condemn or criticise. I realize how impracticable such an idea sounds, but consider for a moment that without such assistance the untrained surveyor cannot be blamed for his ugly streets. We criticise him for his failures, but there is nobody to tell him how to do better. Is this Society willing to investigate the merit of such a proposition?

For one, I have little patience with the feeling which tends to throw blame on the general public for its obliviousness to our backward state. Somebody that knows has got to show the way to the City Beautiful. The architects are of the *cognoscenti*; if they cannot, no one can.

We are at the beginning of the winter season. I believe that if we really try to do anything of this kind we can secure the co-operation of the press and the public and make this season memorable in the artistic history of Boston.

THE ASSIOUT DAM.



MORE picturesque situation than that of Assiout, says the *Daily Telegraph*, cannot well be imagined. The thriving capital of Upper Egypt lies in a fertile plain at the foot of the Libyan Mountains. In front of its domes and minarets flows the Nile, wide and peaceful as a lake, and on the other bank is a noble belt of palms quite a couple of miles long. The weir is situated about half a mile below the town, just below the intake of the great Ibrahimyah Canal, which affords the main water-supply of Middle Egypt and the Fayoum. It consists of 111 arches of masonry, and is rather more than half a mile long. It was built by Messrs. Aird in a period of less than three years and a half, and has already been submitted to the severest of all tests, that of holding up the Nile in flood, with complete success. During the months of May and June, 1900, the average daily number of men at work upon it was 13,000. The special difficulty to be overcome in its construction was that of the foundation, for it is literally built upon the shifting sand. But the engineers of to day have profited by the experience of their fore-runners, and every problem has been adequately met. The barrage rests upon a platform of masonry 87 feet wide and 10 feet thick, which is protected on both sides, and here comes in the skill of recent days, by a continuous and impermeable facing of cast-iron sunk to a depth of 23 feet beneath the bed of the river. Whilst the work was in progress Sir Benjamin Baker tells us that the water had to be kept down by the uninterrupted use of seventeen 12-inch centrifugal-pumps, throwing enough water for the supply of a city of 2,000,000 inhabitants, while in a single season as many as 1,500,000 sand-bags were used in the construction of temporary dams. At the western end of the barrage is a lock which is large enough to accommodate the "*Rameses*," the most bulky steamer on the Nile. Whilst the work was in progress many new difficulties had to be coped with. Some-

times the working of the powerful pumps drew the sand from beneath the foundations, so that liquid-cement had to be poured in under pressure to fill up the gaps; at others springs, to the number of 1,000 in all, burst up through the sand, each requiring special treatment. But all this is over now, and there seems no reason why, under the supervision of the permanent staff, the Assiout barrage should not stand firm forever.

Assiout is about 250 miles from Cairo; 350 miles farther up, just beyond Assouan, the Nile rushes between black-granite rocks, to form the series of rapids known as the First Cataract. It is here, through the very heart of the cataract, that the third and grandest dam has been built. The idea of checking the current at this spot is by no means a new one; even an untrained eye can appreciate the advantages of the site. But the credit of proving that it was the best possible, and of devising a practical scheme for its utilization, belongs to one man alone, Mr. Willcocks, formerly Director-general of Reservoirs in Egypt. This great engineer, to whom Egypt owes so many reforms, worked out a plan by which a reservoir could be formed to store 3,700,000,000 cubic metres of water above a series of curved dams. Unfortunately this would have involved the submersion of the temples on the island of Philæ. In order to prevent this, Mr. Willcocks was asked to draw up fresh plans for a single dam, which should maintain a less quantity of water, under a third of that originally intended, at a somewhat lower level. This new design is the basis of the work of which the foundation-stone was laid by His Royal Highness the Duke of Connaught on February 12, 1889, and which was opened in state on Wednesday.

The completed barrage is a truly stupendous monument of industry and skill. Looking from the hills at either end one sees a solid arm of masonry a mile and a quarter long, thrust straight across from one side of the valley to the other. The greatest height of the wall is 130 feet, two-thirds that of the Monument; the width of its base is 100 feet, and its top, along which a light railway runs, is as wide as Fleet Street. It is pierced by 180 openings, through which, when the river is in flood, 15,000 tons of water may pass every second. The difference between the water-level on the two sides is 67 feet, and the total masonry weighs over a million tons. All this would be very wonderful if the structure had been erected upon terra-firma. It becomes almost awe-inspiring when we reflect that it was carried out in the midst of raging torrents, angrily seeking by night and day to sweep away the intruding obstruction. And it must be recorded, to the everlasting credit of all concerned, that the work was carried out well within the stipulated time, and for much less than the contract-price.

It was not, of course, possible to span the whole river at the same time; the various channels into which the "cataract" is broken by the intervening islands had to be attacked separately. The plan of action was uniform and comparatively simple in theory, though great and special practical difficulties cropped up in some places. The first thing to do was to get a section of the river-bed dry. This was effected by enclosing it between temporary rubble dams, or "sudds," and then removing the water by means of powerful pumps. Stones up to twelve tons in weight were tipped in to form these dams. In one channel even blocks of this size were washed away by the force of the current, and so railway-wagons loaded with stones and bound with iron wire, each weighing in all fifty tons, were dropped into the stream, and eventually proved effective. The rubble dams were made watertight by means of sandbags, and the exhaustion of the contained water by pumps proved an easier task than had been anticipated. Not so the next stage in the proceedings, the laying of the foundations. To do this the mud had to be dug away till soft rock was found; this was then blasted until the hard, living rock was reached. The amount of rotten rock was very variable, but on the whole much greater than had been anticipated, so that the foundations are in places some 40 feet deeper than had been expected. Once the foundations were laid, building proceeded apace. While the river was low all hands, up to 12,000, were crammed on to the work, which for a time proceeded by night as well as by day. Various portions were in different stages at the same time, and the visitor could see in one place the building of a sudd, in another the blasting of the rock, and in a third the laying of a coping-stone on the parapet, all on the same day. In one respect the conditions at Assouan differed widely from those at Assiout. The latter is a city of 50,000 inhabitants, within eight hours of Cairo; the former has a population under 15,000, is twenty-two hours from Cairo, and but 35 miles from the Tropics: A new town had, hence, to be built, supplied and doctored. The contractors, Messrs. Aird, spared no effort in the interest of their workmen's health and comfort, and were rewarded by their remaining notably free from serious illness. An excellent hospital was equipped, with separate wards for the various nationalities, and no expense was grudged in the provision of drugs and appliances. Well-qualified European doctors were in charge, and one of them, Dr. A. T. White, now of the Egyptian Sanitary Service, devised a plan by which the risk of death from heat-stroke, the temperature sometimes reaching 122 degrees in the shade, was minimized. At numerous points in the works-area he had tents raised, each surmounted by a Geneva cross, and containing a bath, an ice-box and a telephone. If a man fell down from the heat he was run in the bath, ice was added to the water, and the doctor rung up; when the latter arrived he found the patient already under treatment. This ingenious arrangement proved a great success; the loss from the heat was reduced to almost imperceptible proportions.

So much for the actual work. What is to be the result? It is hoped that not only will a largely increased area be brought under cultivation, but that much land which at present yields but one crop a year will be enabled to bear twice in the season. Something in this direction has already been attained. In 1900 the Cairo barrage saved the cotton-crop in the Delta from utter disaster, and only this summer the prompt action of Mr. Webb in closing the Assiout barrage while the Nile was in full flood rescued Middle Egypt from a very probable famine. This barrage will, it is hoped, by retaining more water for the Ibrahimyah Canal, bring 300,000 acres of additional land under the plough. When we remember that land in Egypt is usually rented at from £6 per annum per acre upwards, the value to the country can be guessed, if not fully estimated. Lord Cromer reckons that the recent improvements in the Cairo barrage have doubled the cotton-crop of Egypt, which means an annual gain of over £5,000,000. As for the Assouan dam, it is too early to speculate on its effects. Certain it is that a lake nearly 150 miles in length will be formed above it, a lake which it has been estimated would extend from London to Nottingham, and still have enough water left over to fill Windermere. The contents of this reservoir will be doled out to Egypt drop by drop, in exact proportion to the needs of the land. Thousands of acres of desert-sand will be converted into fertile fields, other thousands will be transformed from scanty pastures into rich plantations; but this is not the end. Further plans are already in the air, and a new dam is already talked of, up at Khartoum maybe, or perhaps on the Blue Nile, which shall assure the prosperity of the Soudan as well as of Egypt. Expeditions are at this moment on their way to investigate this problem, and much curiosity is felt in Egypt as to the results which will be arrived at. But all are confident that the future is safe in the hands of those who have brought the agriculture of Egypt to its present good fortune. Foremost among these are Lord Cromer and the Under-Secretary of State for Public Works, Sir William Garstin. It would not be fair to omit reference to the labors of Sir Benjamin Baker, as consulting-engineer, and of Mr. Blue, as manager, and to the fact that the financial side of the problem was settled at the outside by Sir Ernest Cassel.



REPORT OF THE LEGISLATIVE COMMITTEE OF THE BOSTON SOCIETY OF ARCHITECTS.¹

THE Committee appointed at the last annual meeting of the Society to keep watch over such measures of interest to architects as might be brought before the Legislature of 1902 presents the following Report:—

The number of changes in the building-laws has seldom been so small. Chapter 400 provides that second-class buildings outside the building-limits of Boston if used only for working in non-combustible material may have undivided areas greater than 8,000 square feet, which has been the limit hitherto. Chapter 543 limits the height of buildings on Beacon and Bowdoin streets, near the State-house, to 70 feet.

The Committee desires now to lay before the Society a project of legislation of the most far-reaching character, hoping for discussion, criticism, and the assistance of individuals, and the moral and financial support of the Society as a whole.

The Constitution of Massachusetts allows the taking of property by right of eminent domain for public uses. This is believed to mean for use by the public; hence it is that the Constitution forbids the taking of land for public improvements in excess of the amount actually required for such improvements. If public bodies could be authorized by special Acts of the Legislature to take land for public improvements in excess of the amount needed for the improvements themselves, and to sell or lease the surplus, there is reason to think that public improvements would be facilitated and their ultimate cost substantially lessened. For this purpose a constitutional amendment is needed to authorize the Legislature, subject to the remaining provisions of the Constitution, to permit the taking by right of eminent domain of a greater quantity of land for a given improvement than is actually needed for such improvement, and the sale or lease of the surplus under such conditions as the Legislature may impose. This is no new idea. It was ably advocated by the Rapid-transit Commission of Massachusetts in their Report to the Legislature, April 5, 1902. Judge Richardson draughted a form of constitutional amendment applicable solely to the "laying-out, widening, or relocating of streets and highways," and the Commission presented suggestive estimates of the cost of widening Tremont Street from Pemberton Square to Park Street, which was an incident of the proposed scheme of rapid-transit. "We conclude that the proposed widening . . . would involve a land damage of \$2,323,950. Assuming for the purpose of this inquiry that the city had power to take all the property which it might deem most expedient to seize, and after laying-out the street in the manner suggested should be allowed to sell the remainder in such form and manner as might be found most profitable, we should consider the net cost of the widening, exclusive, of

course, of the building of the street, to be \$1,093,620, a saving to the city of \$1,230,330 over the first proposition. In our opinion the greater part of this saving could not be made by the present owners of the estates to be taken; for to secure it, entire ownership with no conflicting interests is, in our opinion, absolutely necessary." Such is the statement of Messrs. Alexander S. Porter and J. Morris Meredith.

The Rapid-transit Commission point out in the Report already referred to that the English Parliament has authorized the taking of large tracts in London, Glasgow and Birmingham, and the sale or lease of a portion of these tracts after the several proposed public improvements had been carried out, and "if extensive appropriations of this kind have not seemed intolerable to a body so sensitive to the sacredness of private property as the Parliament of England is generally considered to be, we can hardly see much reason why we should shrink from treading in its footsteps. If cities and towns in this State could, upon petition to the General Court, and after full hearing of all parties in interest, be empowered in suitable cases to take not only the extent of land which the public actually needs to use, but also possibly other and more lands than it is necessary to use in construction of public works, we think that many very important and useful public undertakings would be made practicable which are now abandoned in despair because the draft on the common treasury must be excessive. Even the Commonwealth itself might well desire in some great emergency to avail itself of this new and valuable increased liberty of action."

The Report is signed by Messrs. Nathan Matthews, Jr.; J. Q. Adams, J. B. Richardson, Osborne Howes, Jr.; William Jackson, C. W. Kingsley, H. L. Higginson and John E. Fitzgerald.

A constitutional amendment must be obtained by a two-thirds vote of two successive Legislatures followed by a majority vote of the citizens of Massachusetts. Your Committee proposes to move for such an amendment in the name of the Boston Society of Architects in conjunction with various influential organized bodies of citizens, whose support must first be enlisted, and who will in all likelihood take a greater part in the agitation for this measure than the Society itself. To interest such organizations as the Boston Chamber of Commerce, the Board of Trade, the Real Estate Exchange, the Public Franchise League, and others whose assistance will be valuable, demands time, labor, and the most careful preparation and presentation of the case. It is essential that a brief should be written embodying a careful statement of the law as it stands, of the proposed amendment, and an accurate review of the results of similar legislation in other countries. If this Report will be accepted your Committee will move an appropriation from the funds of the Society, to be increased by at least an equal amount from other sources, and expended upon the study of the question by competent investigators. No far-reaching effort is justified until such a brief has been prepared, but there is one step to which the Society may commit itself even now in furtherance of the general object. It is of great consequence that an amendment such as is here proposed cannot be said to have any special application at this time. This ensures consideration of the measure upon its merits as a general proposition, which is the most suitable form for a new provision of the State Constitution.

It is, therefore, contemplated that your Legislative Committee shall, subject to the sanction of the Executive Committee of the Society, place the Boston Society of Architects on record with the Legislature of 1903, as a petitioner for a constitutional amendment of substantially the following tenor:—

"The Legislature may by special acts, subject to other provisions of the Constitution, authorize any city, town, or State commission to take in fee, purchase, or otherwise acquire for public purposes and in connection with any given public work, all or any portion of the land within certain defined limits, and after appropriating for such public work so much of the land so taken as is needed therefor to sell or lease the remainder."

Respectfully submitted,

JOHN A. FOX,
J. RANDOLPH COOLIDGE, JR.,
EDWIN J. LEWIS, JR.



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

THE HOLLIS BUILDING, HINGHAM, MASS. MR. JAMES T. KELLEY, ARCHITECT, BOSTON, MASS.

CROWELL MEMORIAL, MANCHESTER-BY-THE-SEA, MASS. MR. JAMES T. KELLEY, ARCHITECT, BOSTON, MASS.

ENTRANCE PORCH: CONGREGATIONAL CHURCH, WHITINSVILLE, MASS. MESSRS. SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS, BOSTON, MASS.

Additional Illustrations in the International Edition.

WATER-TOWER, LUTON, ENG. MR. H. T. HARE, ARCHITECT;—
THE ONSLOW FORD MEMORIAL, LONDON, ENG. MR. J. W. SIMPSON, ARCHITECT.

¹ Presented at the Annual Meeting, January 9, 1903. (Printed by vote of the Society.)

HOUSE AT KNEBWORTH. MR. E. L. LUTYENS, ARCHITECT; —
THE ROMAN CATHOLIC CATHEDRAL, WESTMINSTER, ENG. MR.
J. F. BENTLEY, ARCHITECT.

THESE and the foregoing subjects, copied from the Christmas number of the *British Architect*, show that Mr. Davison's hand has lost nothing of its cunning in spite of the marvellous number of drawings he has turned out in the last twenty years.

NEW ENTRANCE: BROCKLEBY PARK, ENG. MR. REGINALD BLOMFIELD, ARCHITECT.

THIS drawing, shown at the last Royal Academy, is copied from *Building News*.

SALLE DES PAS-PERDUS: NEW HÔTEL DE VILLE, TOURS, FRANCE.
M. V. LALOUX, ARCHITECT.

THIS plate is copied from *l'Architecture*.

THE MASSACHUSETTS STATE-HOUSE, BOSTON, MASS.



UNSUCCESSFUL ATTEMPT TO RESTRAIN NIGHT-WORK. — It must be admitted that it is not always agreeable to be living in a house adjoining others which are in progress. But it is an every-day experience that tenants are willing to brave the inconvenience and, in fact, occupy houses while still incomplete. The case differs when building-works are undertaken which must inevitably disturb the rest of established tenants; but the courts sometimes recognize the wisdom of living and letting live, and do not grant injunctions for the suspension of works when applied for. A few days ago there was a case before Mr. Justice Swinfen-Eady in which the occupier of a house at Haverstock Hill sought to restrain the Charing Cross, Euston & Hampstead Railway from night-work. It was said a crane was working day and night continuously, hauling out excavated material and letting down tube-sections and other material necessary for the construction of the station, lifts and railway, and that the noise was an intolerable nuisance, a steam-crane being worked within a few feet of plaintiff's bedroom. The defendants relied on the authority they possessed under their special Act, and their defence was supported by affidavits of their engineers, who testified that it was necessary with regard both to dispatch and safety that the operations should be carried on continuously, and that the work was being accomplished by means of the best modern appliances, and with as little noise as possible. Under the circumstances there was hardly any other course open to the judge than to refuse the injunction. But as further claims are being made by the plaintiff, it was ordered that the motion stand over till trial, and he directed the action to be expedited, and put the parties on terms to deliver pleadings in a limited time, so that, considering the state of the business of the court, the action would probably be tried very early next sittings. It is not for the public good that obstacles should be raised against the completion of railway-works, especially in the Metropolis. But as the annoyance is, in the majority of cases, very serious to the occupants of adjoining houses, there should be a more general recognition of compensation to occupiers. — *The Architect*.

THE CONSOLIDATED LAKE SUPERIOR COMPANY. — On the Canadian shore of the "Soo," by the original purchase of a small power-canal, Mr. Francis Clergue, of Maine, representing a Philadelphia syndicate, has developed in a few years, and by natural, conservative progress, the "Consolidated Lake Superior Company," a corporation including water-works as well as the original canal, light and power plants, pulp-mills, chemical and mechanical, railroads, telegraph and steamship lines, iron-mining, smelting and blooming, and electro-chemical works, with all their subsidiary industries. Mr. Clergue was, as he says himself, "fortunate enough to come to Sault Sainte Marie in 1894, and sensible enough to stay there." The story, as Mr. Clergue tells it, of how the need of sulphur for the process of chemical pulp-making led to scientific investigation by his experts, resulting in a performance of the "impossible" feat of roasting sulphur from the Sudbury nickel, near at hand, and how the resulting "matte" was discovered to be a superior quality of ferro-nickel, eagerly contracted for by the late Herr Krupp of Essen, is curious enough. An ignorant prospector, thinking he had found gold, brought his specimens to Mr. Clergue to be assayed. On learning that his treasure was only iron, he was so disgusted as to sell the claim for \$500. Later, when it was discovered how rich the mines are, Mr. Clergue made a life settlement of \$75 a month upon the lucky prospector, who thus found his gold-mine after all. The development of Michipicoten required the construction of railroads and the purchase of a fleet of steamers. One thing failed Mr. Clergue: coal is not available at Sault Sainte Marie unless brought from Pennsylvania; but in place of coke for the blast-furnaces, charcoal is made by a new process and can be used economically; charcoal cannot be afforded at rival plants except for the manufacture of the finest crucible-steel. The thousands of acres of forests comprising the company's timber-limits supply an abundance of hard wood for the charcoal, and the utilization of the by-products will necessitate new structures, extending the already large territory covered by the Company's picturesque buildings of red-stone. Every dollar of the vast expenditure for the construction and equipment of these works and transport-lines came from the pockets of the syndicate. There is not a mortgage nor bond of the concern in existence, and the funds at Mr. Clergue's command seem unlimited. — *R. H. Montgomery in the World's Work*.

M. OSIRIS AND THE RESTORATION OF MALMAISON. — M. Osiris by his munificence has made his name known to all Frenchmen. A rich man, he lives in the quietest way in Paris as if he were desirous to increase the fortune which he applies to the general good. Always opportune in his undertakings, it was felt he had selected the right time to restore the château of Malmaison, the site of the *mala mansio* of mediæval days, from whence issued the feudal chief Odon, who waged war on the boatmen of the Seine. In 1798 Josephine Beauharnais obtained possession of it, and there Napoleon is said to have spent his happiest years. There was a likelihood recently that the building would be sold to the highest bidder, and M. Osiris resolved to purchase and restore it as one of the historic monuments of France. The work has been executed, and all that remains is to pay the bills. It is not easy to reproduce the style of the Consulate, which was a very graceful adaptation of the Roman. M. Osiris imagined that all the masonry required would be executed for 200,000 francs, or £800. The contractor for the masonry, however, demands 431,563 francs, or more than double the amount anticipated. M. Humbert, the architect, has had the bill reduced to 300,388. The experts employed have declared that the correct amount should be 225,315 francs. The joiner's bill was 67,169 francs, which is now reduced to 60,000. The painter's account has been brought from 27,543 to 16,747, and over 4,000 francs have been taken off the bill of the locksmith. The case has come into the court, and nearly all the contractors uphold their demands. It is to be regretted that an amicable arrangement has not been possible, but although the French have a very elaborate system of builders' prices, it is not readily applied to restoration. — *The Architect*.

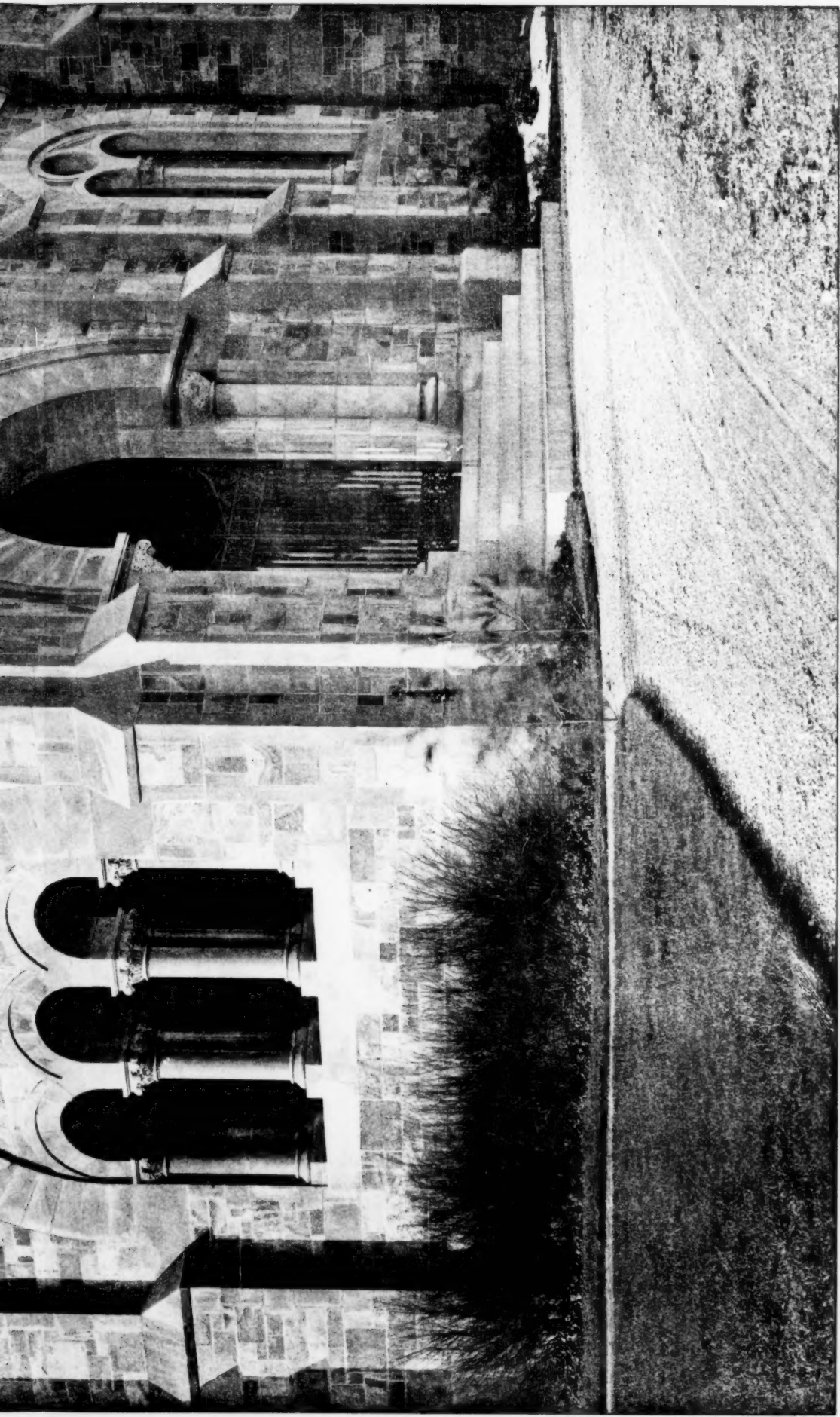
DAMAGE TO A \$16,000 ROSE-GARDEN. — The New York, New Haven & Hartford Railroad has recently paid \$20,000 for the destruction of two rose-gardens, says *Country Life in America*. In May, 1901, the railroad-company set fire to three worthless old buildings which it owned at Wood's Hole, Mass. The neighboring rose-gardens of Miss Fay and of Michael Walsh were ruined, apparently by poisonous gases thrown off from the tar and gravel roofing-material. An analysis of these gases showed the presence of carbolic-acid, pyracine and sulphur, all of which are harmful to plants. The matter was referred to an auditor, who awarded more than \$5,000 to Miss Fay and more than \$16,500 to Mr. Walsh. Before the cases were taken to court the railroad-company paid \$20,000 in settlement. Miss Fay had a collection of 2,000 plants, of which two-thirds were destroyed. The damage was estimated by six experts all the way from \$2,500 to \$7,000, the average being more than \$5,500. Mr. Walsh is a professional florist and a specialist in roses. He has originated many new varieties, including the Jubilee, and had received the first gold medal awarded to a rose in this country. His collection comprised 350 unnamed seedlings and consisted largely of new varieties raised by him. The most interesting phase of the matter is that Mr. Walsh sued for and practically received damages for prizes that he might have won at exhibitions with his new roses and for the loss of advertising which he would have had if he could have exhibited in 1901. One of the experts estimated the loss from the first source at \$300 to \$500 and from the second \$1,000. — *Exchange*.

THE WEARING-SURFACE OF BRIDGES. — The wearing-surfaces of highway-bridge floors were made the subject-matter of a recent report by a committee of the American Association of Railway Superintendents of Bridges and Buildings. In response to questions sent out by the committee, a number of replies were received. Mr. J. B. Sheldon, Superintendent of Bridges and Buildings of the New York, New Haven & Hartford Railroad, reports that with a traffic that will wear out 3-inch plank in two years Trinidad asphalt will last from six to seven years, and states it to be his experience that where a large volume of business is done, requiring a strong bridge with a wearing-surface of asphalt or granite blocks, the paving will last enough longer to more than pay for the extra cost of a bridge strong enough to carry the added weight and the expense of an under floor to support the paving. Mr. A. S. Markley, Superintendent of Bridges and Buildings of the Chicago & Eastern Illinois Railroad, reports that white-oak plank 4 inches thick, laid on 6-inch string-pieces 2 feet apart, will last from six to eight years, excepting where traffic is very heavy, and in such cases the life of the plank does not exceed three years. It will always wear out before it decays. — *Building News*.

HOW SMOKE EXPLODES. — The phenomenon of exploding smoke, which often puzzles firemen, has been explained by Inspector William McDevett, of the Philadelphia Fire Insurance Society. Inspector McDevett explains that in a fire free carbon arises and mixes with hydrogen. In addition to this, methyl alcohol, creosote and other gases are present. These become heated to the point of ignition and explosion is the result. Smoke explodes when heated to about 800 degrees, but is often ignited by sparks from burning material. When thick smoke is ignited it becomes incandescent and rolls through a room with such force as to shake the walls. Formerly firemen would keep the windows and doors closed in an endeavor to have the smoke smother the flames, but they now realize their mistake and endeavor to let out the smoke as soon as possible. One way to prevent explosions of smoke in large stores is to have an air-shaft of considerable size in the centre and this would prevent a lateral spread of the fire. — *Municipal Journal and Engineer*.

STATISTICS OF LIGHTNING-STROKES. — There were 5,527 strokes of lightning in this country in 1899, and they caused 563 deaths. The destruction of property amounted to \$3,006,820. — *Exchange*.





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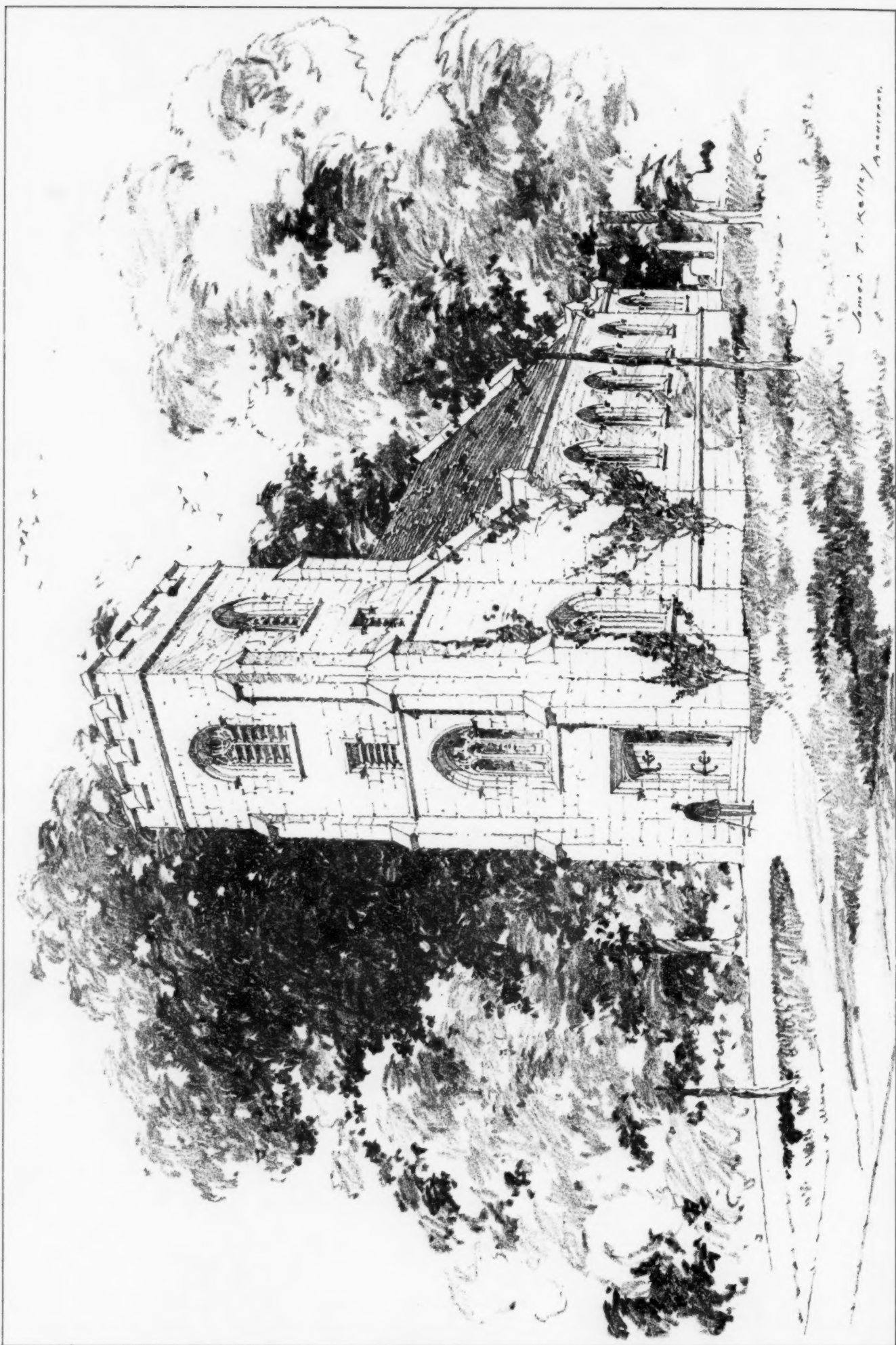
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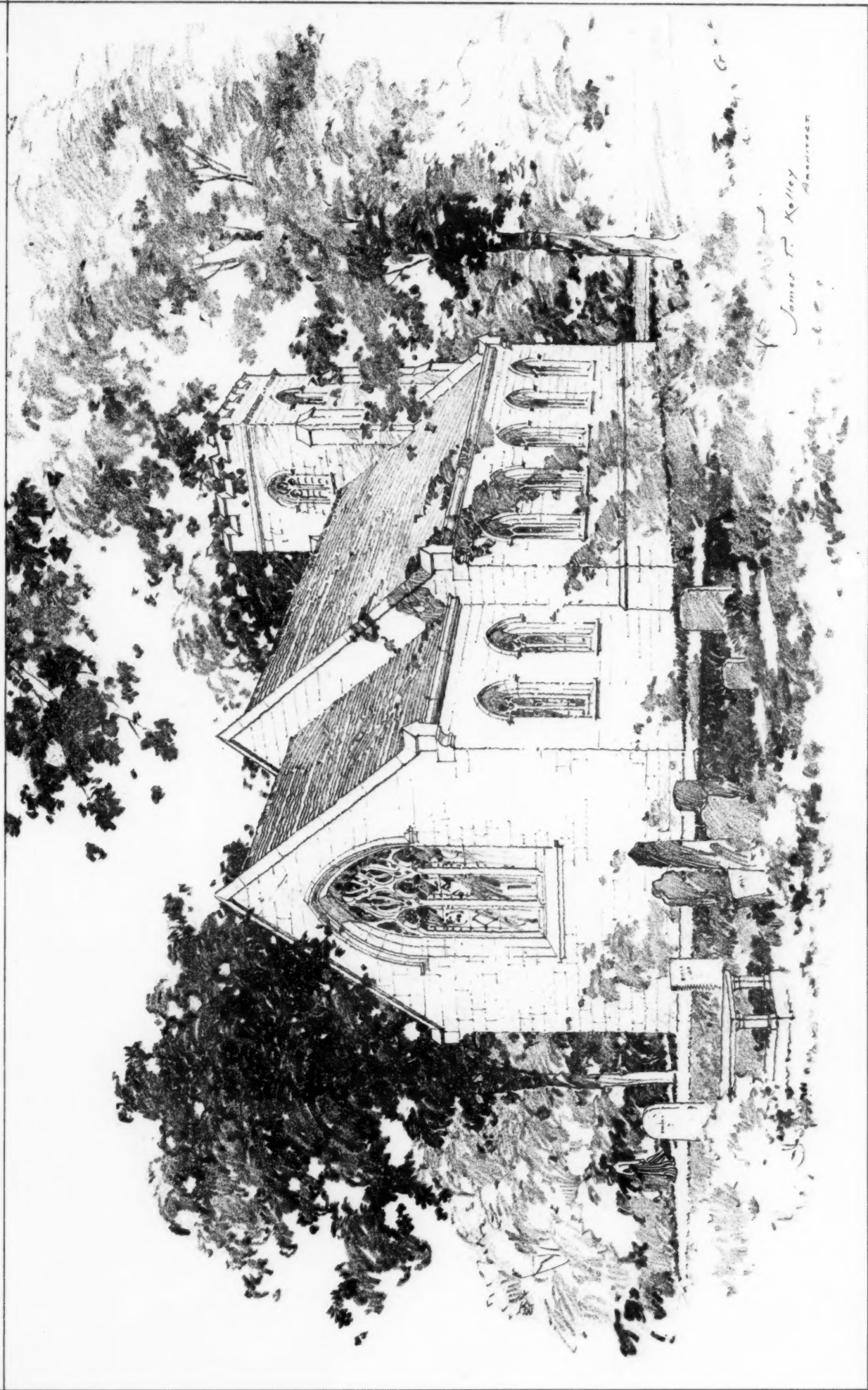
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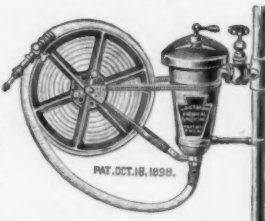
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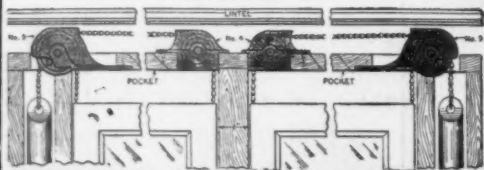
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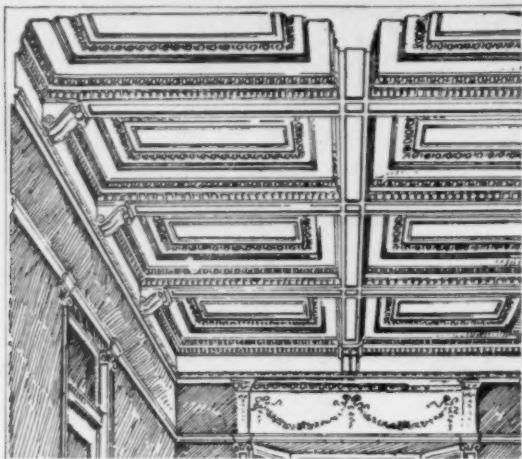
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Old State House, Boston, Mass.		" 1748
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Carpenters' Hall, Philadelphia, Pa.		" 1770
Independence Hall, Philadelphia, Pa.		" 1729
Faneuil Hall, Boston, Mass.		" 1741
and others.		

CHURCHES

King's Chapel, Boston, Mass.		Date 1749
Seventh-day Baptist Church, Newport, R. I.		" 1729
Christ Church, Alexandria, Va.		" 1767
Christ Church, Philadelphia, Pa.		" 1727
St. Paul's Chapel, New York, N. Y.		" 1764
Old South Church, Boston, Mass.		" 1729
First Church, Hingham, Mass.		" 1681
St. John's Chapel, New York, N. Y.		" 1803
First Congregational Church, Canandaigua, N. Y.		" 1812
St. Peter's P. E. Church, Philadelphia, Pa.		" 1758
Gloria Dei Church, Philadelphia, Pa.		" 1700
and others.		

IMPORTANT HOUSES

Fairbanks House, Dedham, Mass.		Date 1636
Royall Mansion, Dedham, Mass.		" 1737
Philipse Manor House, Yonkers, N. Y.		" 1745
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Mappa House, Trenton, N. Y.		" 1809
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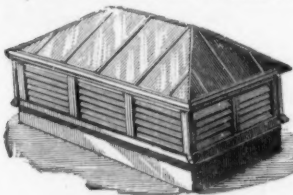
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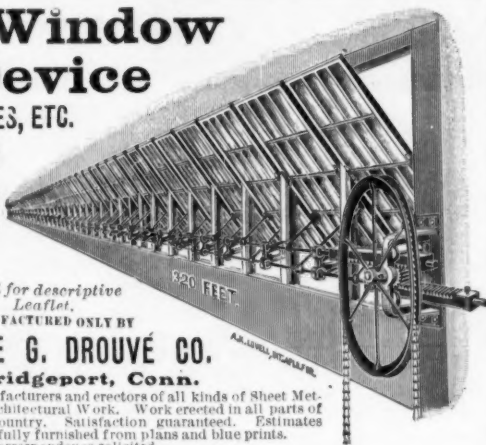


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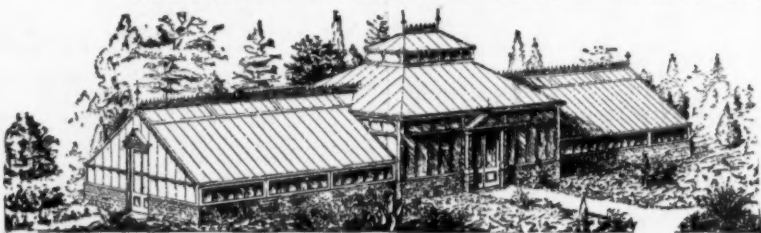
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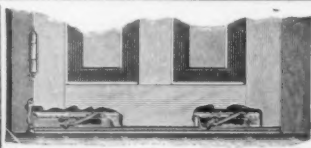
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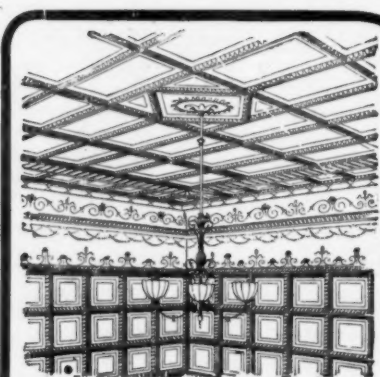
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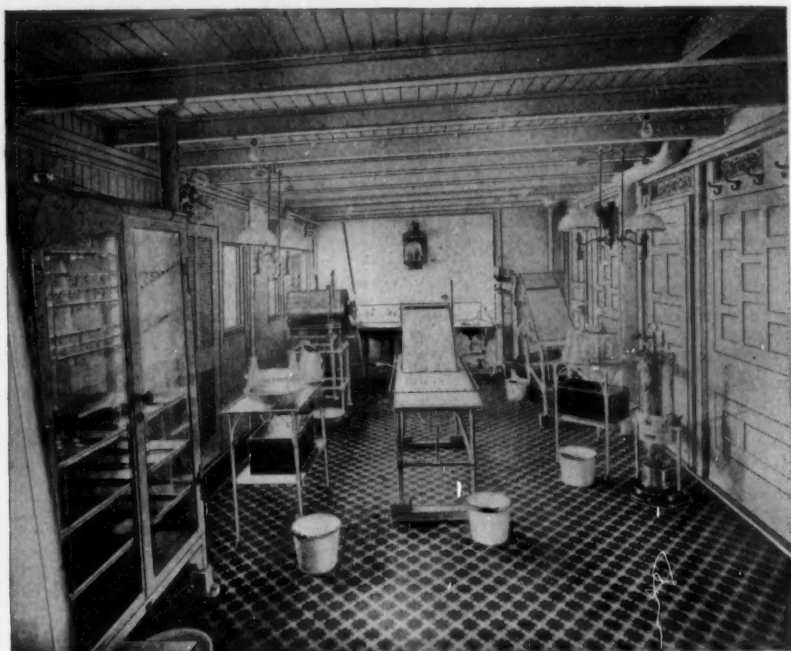
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[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

ADVANCE RUMORS.

Aberdeen, S. D.—The Milwaukee will erect a new passenger depot here, of brick and stone.

Albia, Ia.—Plans are out for the new passenger and freight stations to be erected here by the Central and Wabash Roads.

Ashland, Wis.—The Y. M. C. A. will erect a building next season to cost \$15,000 to \$20,000.

Billings, Mont.—The plans of C. E. Bell, of Helena, have been accepted for the court-house and jail building. Cost, \$75,000.

Boston, Mass.—It is reported that a new theatre building will be erected on the Back Bay. The site secured by the syndicate from the N. Y., N. H. and H. K. R. is the corner lot on Berkeley St., next to the Berkeley Hotel, within 100 feet of Boylston St. There will be several stores and an office-building in front. A novel feature of the new enterprise will be the roof garden, extending over the entire building, and completely enclosed in glass, with movable sides. The architect of the new theatre which will be called the Copley, and roof garden is L. H. Lempert. A prominent factor in the development of the syndicate is Quincy Kilby, for many years the treasurer and comptroller of the Boston Theatre.

Brockton, Mass.—Fire destroyed two factories on Linden St. recently and caused a loss of \$20,000. The buildings are owned by F. M. Shaw and Frank E. White. The firms occupying them which are

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(Advance Rumors Continued.)

the heaviest losers are George T. French, a dealer in leather remnants and suspender facings, and the Inkley Johnson Co., heel manufacturers. It is understood that all the property destroyed is covered by insurance. Rebuilding will doubtless be undertaken at once.

Camden, N. J.—Andrew Carnegie has offered to give this city \$100,000 for its library, provided the city will contribute \$10,000 a year for its maintenance.

Carlisle, S. C.—The Carlisle Knitting Mill has been incorporated with a capital of \$30,000. They will build plant to the extent of the capital named, but will not let any contracts for several months yet.

Carroll, Ia.—The Franciscan sisters contemplate erecting a large hospital and a home for aged.

Chicago, Ill.—It is stated that improvements will be made to the north branch of Chicago River from Belmont to Lawrence Ave. The present stream will be widened and straightened at a cost of \$700,000. The plan contemplates a channel 90 feet wide and 8 feet deep to cleanse the lower portion of the north branch, and supply additional water for the dilution of the city's sewage. The work will require the excavation of about 1,000,000 cubic yards of material and the construction of several miles of dock. It is said that in addition to this \$500,000 will be expended in constructing new bridges across the channel.

Concord, Mass.—The trustees of the Avon Home have sold the Warren Brown farm which was presented to the home by Mr. Huntington a few years ago. The estate contains about 120 acres and is located on Lowell Road, near the Middlesex School, and has been purchased for improvement by the buyer, who is to build this season an elegant residence.

Crookston, Minn.—Charles Westerberg contemplates rebuilding the Scandia Hotel in the spring, erecting a three-story brick and stone structure, 50' x 140'. Cost, \$20,000. Bert D. Keek, architect.

Dawson, Minn.—A. J. Peterson will erect a two-

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

story and basement residence to cost \$5,000. Louis Lockwood, architect, St. Paul.

East St. Louis, Ill.—The National Storage Warehouse Co. has been incorporated with a capital stock of \$50,000. A four-story building will be erected costing \$28,000.

Emmettsburg, Ia.—The late T. H. Tobin has left a bequest of \$50,000 for the erection of a Catholic church and school.

Escanaba, Mich.—P. M. Peterson has had plans prepared for the erection of a modern opera-house to replace the present structure. It will have a seating capacity of 1,200 and will cost about \$35,000.

Flatbush, L. I., N. Y.—A petition in circulation in this place for a new building for Erasmus Hall High School has received about 4,000 signatures. It will be presented to the Board of Estimate and Apportionment, as the local School Board has appealed in vain to the Board of Education. Members of the local board say that the city has violated an agreement which Brooklyn made with the trustees of the old Erasmus Hall Academy, in 1895. It is said that if the petition fails to bring about the relief sought, legal proceedings may be instituted by citizens of this place against the city to force the fulfillment of the contract.

Fort Dodge, Ia.—The Sacred Heart Society contemplates erecting a new parochial school to cost \$15,000 or a new church to cost \$30,000.

Germantown, Pa.—Lockwood, Greene & Co., engineers, 93 Federal St., Boston, are receiving estimates on a large brick furniture factory building for the Hale & Kilburn Mfg. Co., of Philadelphia. The new building will be located at this place.

Grant Neck, L. I., N. Y.—William K. Vanderblit, Jr., is said to have made an offer to the Long Island Railroad Co. to defray half the cost of building a new station at this place.

Greenwood, S. C.—The Greenwood Cotton Mills have instructed Lockwood, Greene & Co., 93 Federal St., Boston, to prepare plans for a No. 2 mill to

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

contain about 12,000 additional spindles, with provision for increase to 30,000. Construction will be commenced as soon as plans are finished.

Jackson, Miss.—C. A. Bonds, J. A. Jones, W. M. Anderson, J. C. Head and F. L. Ballenger have announced their intention to build a \$50,000 knitting plant. They are now making final arrangements to let contracts for buildings and equipment of machinery.

Jersey City, N. J.—The large yard the Pennsylvania Railroad Co. is constructing at Greenville, is not to be used exclusively for freight trains, but local passenger trains will be run there and a station will be erected at the lower end of Ocean Ave.

Lynn, Mass.—The Lynn Realty Co. has plans in preparation for a brick shoe factory in this city.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

five stories, 48' x 150'. N. W. Rogers, Item Building, architect.

Malden, Mass.—At the first regular meeting of the new Board of Aldermen, Alderman Schumaker of Ward 6 presented an order for an extra appropriation of \$5,500 to the \$17,000 already appropriated for the erection of a new fire station in the Maplewood District. The matter was referred to the Finance Committee. An order was adopted to make the committee in charge of the erection of the building a commission so that definite plans may be arranged at once to erect the building at a cost of \$17,000 if the additional appropriation is refused.

Mansfield, Mass.—Dean & Main, 53 State St., Boston, have drawn plans for a factory to be erected here for the Lowrey Chocolate Co. It will be of

(Continued on page xli.)

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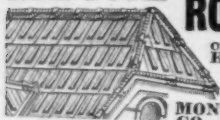


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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

brick, 338 by 85 feet, half six stories and half two stories.

Marquette, Wis.—Plans have been drawn by Ferry & Clas, of Milwaukee, for a three-story brick and stone department-store building, to be erected by Isaac Stephenson. Cost, \$70,000.

Carpenter, Cook Co., of Menominee, Mich., has prepared plans for a hotel to be erected on the site of the White Hotel on Dunlap sq. Cost, \$20,000.

J. I. Scott will remodel the Scott Theatre at a cost of \$10,000 to \$20,000. The theatre will be redecorated and improved.

Marlboro, Mass.—The City-hall is reported to have been destroyed by fire on December 25.

Middletown, O.—It is stated that the First Baptist Society will secure plans for an edifice, to cost \$60,000.

Minneapolis, Minn.—Trainor Bros., 428 Boston Block, secured the general contract to erect the Val. Blatz Brewing Co.'s building on 14th Ave. S. and 6th St. This will include a large cold-storage building and wagon-sheds. Cost, \$30,000.

Modena, Pa.—The Megargee Paper Co. will build here a large mill to cost \$60,000.

New Britain, Conn.—The members of the Swedish Lutheran Church are considering the erection of a \$50,000 edifice on Franklin St.

New York, N. Y.—Plans have been filed for the foundations of five buildings of the new College of the City of New York. An anchor-shaped building seven stories, is to face St. Nicholas Terrace, with two wings three stories high, the fronts of which conform to the curve of the driveway. The main building will stand on a plot facing Convent Ave. and 138th St. The two other buildings will face Amsterdam Ave. One will be the Mechanical Arts' Building, three stories and basement, and the other a four-story building for the chemical department. There will be a building for freshmen seven stories high and a gymnasium four stories high. The cost has not been made public. Work will begin at once.

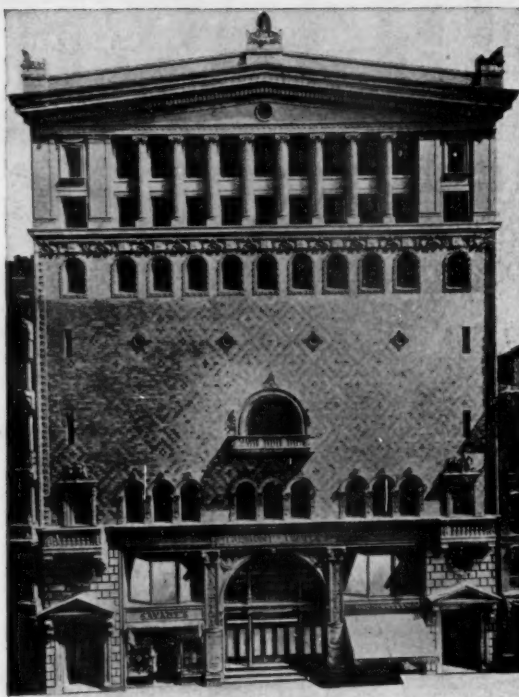
Sass & Smallheiser, 23 Park Row, have drawn plans for a seven-story loft building to be erected at 87 and 89 Ridge St. for Lazarus Levy & Son, 13 Catherine St.

It is reported that **Sonn Bros., 440 Washington St.,** will erect an eleven-story fireproof store and loft building at Nos. 276 to 282 Mercer St., corner of Washington Pl. Henri Fouchaux, Broadway and 162d St., is the architect. The old buildings now on the site are being demolished.

Buchman & Fox, 11 E. 59th St., are preparing plans for a twelve-story fireproof addition, 40' x 100', to the Hotel Albert, to be built on the northeast corner of University Pl. and 10th St. Plans will be completed by February 1st. The Rosenbaum estate, No. 16 Exchange Pl., are the owners of the property.

Gunn & Grant, who have purchased the plot 100' x 100' 11' on the north side of 111th St., 150 feet west of Amsterdam Ave., will erect thereon a seven-story elevator apartment-house.

The Metropolitan Life Insurance Co. has obtained ownership of the site on which stands the old Madison Square Presbyterian Church, of which Dr. Parkhurst is pastor. The Board of Trustees of the church accepted an offer of more than \$1,000,000



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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

for the property. By the terms of the sale the insurance company conveys to the church the Catherine Wolfe residence on the northeast corner of 24th St. and Madison Ave., which occupies a plot of the same dimensions as the church property, 75' x 150', in part payment for the church site, and the balance will be paid in cash. Dr. Parkhurst's congregation will remain in its present home until a new structure is completed across the street. By acquiring the church site the Metropolitan now owns the entire frontage on Madison Ave., between 23d and 24th Sts., and will be able to continue its plans for the extension of its building, which was begun two years ago, when the 23d St. block front was secured.

A four-story brick parochial school will be erected by the Church of Our Lady of Good Counsel, on the north side of 91st St., 200 feet west of 1st Ave. The front will be of granite, brick and terra-cotta. In the rear is to be a large auditorium with two balconies. F. A. de Meuron is the architect. The cost is placed at \$100,000.

A dwelling will be erected for Mrs. Alice G. Hubbard on the site of two dwelling-houses at Nos. 13 and 15 E. 64th St.

Plans have been filed at the Bureau of Buildings, Manhattan, for alterations to a one-story brick synagogue at Nos. 87 and 89 Attorney St. Sass & Smallheiser are the architects. The cost is placed at \$15,000.

Norfolk, Va.—A tunnel is to be constructed under Smith's Creek and the Elizabeth River for a connection with the Southern Railway, the Atlantic Coast Line, the docks and wharves of the New York, Philadelphia and Norfolk Railway and the Seaboard Air Line. It will bring all of these lines into Norfolk to a union station, which will be established probably in the neighborhood of Granby St. and Smith's Creek.

Oklahoma City, Okla.—The Shriners are reported interested in the erection of a \$75,000 temple.

Omaha, Neb.—Beebe & Runyan Furniture Co. will erect an eight-story factory and warehouse, 132' x 198' for the warehouse, and 66' x 132' for the factory. Cost complete, \$200,000.

The Young Women's Christian Association plans the erection of a modern building this season.

Osakis, Minn.—C. A. Caughren, of Sauk Center, has bought the Lake House Hotel corner and will erect a \$20,000 brick block thereon.

Paterson, N. J.—A police station will be erected to replace the one destroyed by fire. Wm. Vermeulen is preparing plans. Cost, \$30,000.

FACTORIES.

Brooklyn, N. Y.—Dean St., nr. Carlton Ave., three-story & cellar bk. factory, 50' x 100', gravel roof; \$25,000; o., Estey Wire Works, 59 Fulton St., N. Y.; a., F. H. Quinby, 99 Nassau St., N. Y.

HOUSES.

New York, N. Y.—One Hundred and Thirty-eighth St., nr. Broadway, four & five-story bk. & st. dwells., 16' & 18' x 50', tin & slate roof; \$72,000; o., Parsons & Laurie, Johnson Building; a., E. B. Chestersmith, 60 Broadway.

BUILDING INTELLIGENCE.

(Houses Continued.)

Monroe Ave., nr. 172d St., 2½-story fr. dwell., 20' x 46', shingle roof; \$4,000; o. & a., Mary J. Price, 1652 Monroe Ave.

Washington Ave., cor. 180th St., 3 three-story fr. dwells., 32' x 33' & 36' 9" x 32'; \$15,000; o., The Brogan Construction Co., 97th St. & Amsterdam Ave.; a., Neville & Bagge, 217 W. 125th St.

Ti-boul Ave., w s, nr. 180th St., 2 two-story fr. dwells., 22' x 46'; \$8,000; o., Charles and Edward Thornton; a., W. C. Dickerson.

Worcester, Mass.—Hollywood St., two-story fr. dwell., 33' x 58'; \$5,000; o., Misses J. V. and R. O. Smith; a., D. R. Rixford; c., C. A. Colburn.

Lincoln Ave., 2½-story fr. dwell., 25' x 52'; \$4,500; o. & c., H. B. Fender.

Wiley Ave., three-story fr. dwell., 27' x 55'; \$4,000; o. & c., A. N. Booth.

Massachusetts Ave., two-story private residence, 29' x 44'; \$8,000; o., R. B. Dodge; a., Geo. H. Clemence; c., W. F. Simonds.

Stoneland Road, two-story fr. dwell., 27' x 54'; \$5,000; o., J. B. Scrimgeour; a., J. P. Kingston; c., C. L. Peters.

Francis St., three-story fr. dwell., 26' x 47'; \$3,500; o. & c., Geo. W. Eames.

Uxbridge St., two-story fr. dwell., 28' x 32'; \$3,000; o. & b., Peter Lord.

Waller Ave., three-story fr. dwell., 27' x 57'; \$4,000; o., Henry Russell; c., James I. Elliott.

Richmond Ave., two-story fr. dwell., 26' x 42'; \$4,000; o., Frank T. Williams; a., J. P. Kingston; c., E. B. Rogers.

Pindmont St., three-story fr. dwell., 31' x 58'; \$6,500; o., John O'Connor; c., F. J. Goff; a., Wm. R. Hill.

Windsor St., 2½-story fr. dwell., 33' x 56'; \$6,000; o., Elizabeth J. Bannagan; a., Earle & Fisher; day work.

Thorn St., 1½-story fr. dwell., 2½' x 50'; \$3,000; o., L. Phanix; c., T. D. Foley.

LIBRARIES.

New York, N. Y.—Alexander Ave., cor. 140th St., three-story bk. & st. library, 30' x 80', tar & gravel roof; \$75,000; o., New York Public Library, 40 Lafayette Pl.; a., Babb, Cook & Willard, 3 W. 29th St.; b., W. L. Crow, 287 Fourth Ave.

STABLES.

New York, N. Y.—Southern Boulevard, nr. Willis Ave., two-story bk. stable, 25' x 25'; \$5,000; o., Wm. L. Byrne, 704 E. 134th St.; a., Bronx Architectural Co., 3307 Third Ave.

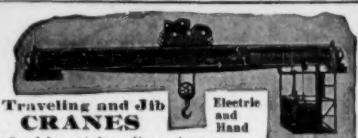
Worcester, Mass.—Beachmont St., 1½-story private stable, 37' x 44'; \$5,000; o., John M. Russell; c., Benjamin C. Jaques; a., Fuller & Delano Co.

Westminster St., 1½-story fr. private stable, 38' x 52'; \$2,000; o., A. H. Brunelle; c., Jos. J. Roberts.

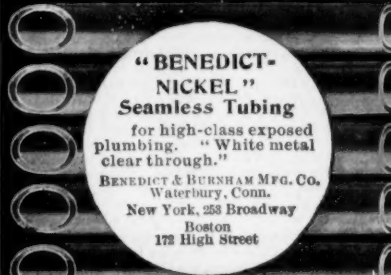
TENEMENT-HOUSES.

New York, N. Y.—Ludlow St., No. 117, six-story bk. tenement & store, 25' x 75' 4"; \$23,000; o. & b., Packman & Levin, 114 E. 102d St.; a., G. F. Pelham, 503 Fifth Ave.

One Hundred and Thirty-seventh St., nr. 5th Ave., 2 six-story bk. tenements, 36' 3" x 86' 11"; \$60,000; o., M. S. A. Wilson, 210 E. 79th St.; a., Sass & Smallheiser, 23 Park Row.

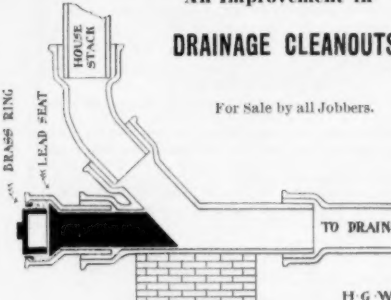


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(Tenement-Houses Continued)

Madison St., nr. Catharine St., six-st'y bk. tenement & stores, 50' 2" x 86' 11" & 87'; \$45,000; O., Polak & Oransky, 396 Grand St.; a., Horenburger & Straub, 122 Bowery.
E. Ninth St., Nos. 713-715, six-st'y bk. tenement, 43' x 79' 3"; \$30,000; O., Julius Weinstein, 192 Bowery; a., Bernstein & Bernstein, 111 Broadway.
Twenty-sixth St., nr. 8th Ave., six-st'y bk. tenement, 50' x 85' 6"; \$25,000; O., Louis J. Marx, 302 Broadway; a., Alfred E. Badt, 1 Union Sq., W.

COMPETITIONS.

LIBRARY. [At Madison, Wis.]
Competitive plans will be received for the erection of a \$30,000 Carnegie Library. 1412

SCHOOL. [At Glenville, O.]
Competitive plans will be received for the erection of a new high-school building in this city. 1413

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PROPOSALS.

COURT-HOUSE.

[At Centerville, Ia.]
Bids will be received January 28 by J. E. Parks, Co. Aud., for erecting a court-house. 1412

LIBRARY.

[At San Bernardino, Cal.]
Bids are wanted January 28 for erecting a library. F. W. GREGG, Pres. Library Trus. 1412

SCHOOL.

[At Marengo, Ia.]
The School Board will receive bids until January 23 for the erection of the \$20,000 high-school building after plans prepared by Architects Proudfoot & Bird, 712 Crocker Building, Des Moines. 1412

OFFICE-BUILDING.

[At Lancaster, Pa.]
Bids for the erection of a \$40,000 brick office-building, having slag roof, steam heat and elevator, are desired by Joseph P. Breneman, 135 North Duke St. 1413

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 12th, 1903. Sealed proposals will be received at this office until 2 o'clock P. M. on the 19th day of February, 1903, and then opened, for the construction of the extension to the U. S. Post-office at Burlington, Iowa, in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Custodian at Burlington, Iowa, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1413

CITY-HALL.

[At Houston, Tex.]
Bids for the erection of a two-story brick city-hall building and market-house will be received until February 2. Architects, George E. Dickey & Co. D. D. BRYAN, City Secretary. 1413

OFFICE-BUILDING.

[At Flint, Mich.]
Bids will be received until February 1 for the erection of a three-story office-building, 110' x 80', for the Knights of the Loyal Guard. Clark & Munger, Bay City, architects. F. H. RANKIN, Secretary. 1413

HOSPITAL.

[At Springfield, O.]
It is stated that bids are wanted February 1 for erecting a four-story brick and stone city hospital, including steam-heating apparatus, laundry machinery, and an elevator; cost, about \$60,000. R. C. Gotwald, architect, 56 and 57 Gotwald Building. 1413

HOTEL.

[At Beaumont, Tex.]
Bids are wanted February 2 for erecting a five-story hotel. MARK WIESS, Pres. Threadneedle Hotel Co. 1413

WAREHOUSE.

[At Aberdeen, S. D.]
Sealed proposals will be received at the architect's office until February 2d, 1903, for furnishing the necessary labor and material, including heating and plumbing, required to construct and complete a 100' x 150', four-story and basement brick wholesale grocery warehouse for Jewett Bros., at Aberdeen, S. D. Plans may be seen at the Builders' Exchanges in St. Paul and Minneapolis, Minn., Jewett Bros., Aberdeen. 1412

PROPOSALS.

deen, S. D., or at the office of Joseph Schwarz, architect, Sioux Falls, S. D. 1413

OFFICERS' QUARTERS, ETC.

[At Mare Island, Cal.]
Bids will be received at Washington, D. C., until February 30 for building officers' quarters, contagious disease hospital, and for changing main hospital building at Mare Island, Cal., navy yard. A. S. KENNY, paymaster general, U. S. N. 1414

FILTERS, CEMENT, ETC.

[At Washington, D. C.]
Office Washington Aqueduct, 2,728 Pennsylvania Ave., Washington, D. C. Sealed proposals for filters, pure water reservoir and appurtenances, and cement will be received here until 12 M. January 28, 1903. Information on application. A. M. MILLER, Lt. Col. Engrs. 1412

GRADING, DRAINING, ETC.

[At Cleveland, O.]
Bids are wanted January 29 for grading, draining, curbing and paving with brick on portions of numerous streets. CHAS. P. SALEN, Dir. of Pub. Wks. 1412

HEATING.

[At Creston, Ia.]
Bids are wanted January 27 for furnishing and installing the low-pressure steam heating apparatus, etc., for the U. S. Post-office at Creston. Jas. Knox Taylor, Superv. Archt., Treas. Dept., Washington, D. C. 1412

PLUMBING FIXTURES.

[At Fort Fremont, S. C.]
Bids are wanted January 24 for installing plumbing fixtures, etc., in public buildings at this post. Address CHAS. L. FISHER, Q. M. 1412

VENTILATING.

[At Chicago, Ill.]
Bids are wanted January 26 for the ventilating system of the Post-office, Court-house, etc.; bids will also be received at the same time for an elevator system in said building. Address Henry Ives Cobb, archt., Chicago Bldg. Treas. Dept., Washington, D. C. 1412

LIBRARY.

[At Geneseo, N. Y.]
Proposals for the construction, electric lighting, plumbing, gaspiping and heating of a library building at the State Normal School will be received by Charles K. Skinner, State superintendent of public instruction, Albany, until January 30. 1413

CHURCH.

[At Scotchbridge, O.]
Bids will be received January 31 by the Trustees of the U. P. Church for furnishing material and erecting a church. R. S. DAVIDSON, Sec'y. 1413

STEWARDS' QUARTERS.

[At Fort Wadsworth, N. Y.]
Sealed proposals for building one set of brick hospital steward's quarters here will be received until February 3, 1903. Information furnished on application. Work to commence on building April 1, 1903. LIEUT. GEO. L. HICKS, JR., Q. M. 1413

HOSPITAL.

[At Dayton, O.]
Bids will be received until February 1 for the construction of a \$30,000 two-story brick and stone hospital building for the Frank Jefferson Patterson Memorial. Plans by Architect Chas. Insko Williams, Callahan Building. 1412



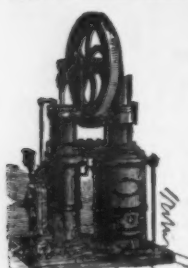
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[PUBLISHED SATURDAY, NOVEMBER 15]

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CODE OF PRACTICE FOR SUB-ESTIMATING AND SUB-CONTRACTING

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

ARTICLE I.

Obligation of Principal Contractor to Sub-Contractor.

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

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

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

ARTICLE II.

Award of Sub-Contracts.

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

ARTICLE III.

Penalty for not Awarding Contract to Lowest Sub-Bidder.

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

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

ARTICLE V.

Payments to Sub-Contractors.

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

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

ARTICLE VII.

Obligation of Sub-Contractor to Principal Contractor.

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

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

ARTICLE X.

Bids to Architects or Owners.

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

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

SUGGESTIONS.

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

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

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Professional Ethics.

The following . . .

. . . CODE OF ETHICS . . .

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Recommended to its Members by
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was

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

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

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

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

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

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

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

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

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

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

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

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

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

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

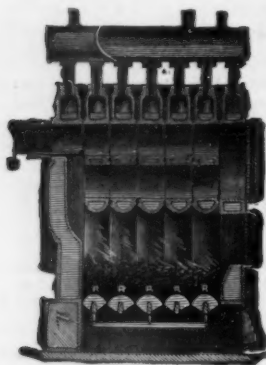
SECTION 14. It is unprofessional to enter into
competition with or to consult with an archi-
tect who has been dishonorably expelled from
the "Institute" or "Society."

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

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

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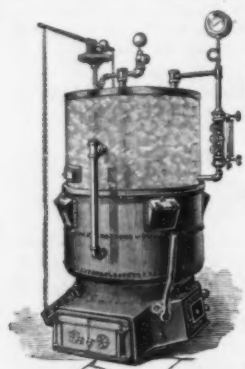
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