THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. LVII. Copyright, 1897, by the AMERICAN ARCHITECT AND BUILDING NEWS COMPANY, Boston, Mass. No. 1125

Entered at the Post-Office at Boston as second-class matter.

JULY 17, 1897.

CONTENTS

BY order of the Secretary of the Treasury, the design of public buildings is thrown open to competition among architects, in accordance with the provisions of the Tarsney Act of 1893. Under the new regulations, information as to cost and general requirements of buildings placed in competition will be furnished by the Supervising Architect of the Treasury Department, at Washington, who will also depute a competent superintendent of construction, or clerk-of-works, for each building; but the designing of the structure, and the general superintendence, will be entrusted to such of the competing architects as may be selected, and he will be paid for this service a fee of five per cent on the amount expended on the building up to five hundred thousand dollars, three and one-half per cent on the next five hundred thousand dollars, or any part thereof; and two and one-half per cent on any excess beyond one million dollars. The competing designs will be examined by a commission, consisting of the Supervising Architect and two other architects or experts in construction, who will report their conclusions to the Secretary of the Treasury; but the right is reserved to reject any or all plans. The first buildings to be designed under the new regulations are those at Norfolk, Va., and Camden, N. J. At present, competition will be restricted to architects invited by the Secretary of the Treasury, who is, in each case, to call upon at least five members of the profession in good standing to submit designs.

AMONG the buildings which may possibly be opened later to competition is the new Philadelphia Mint. Although designs have been prepared for the building in the office of the Supervising Architect, they have not been satisfactory to Philadelphia people, and their execution has been suspended for the present, until it shall be determined whether to modify them, or begin over again. Professional men will say, without hesitation, that if anything more is desired than changes in detail, it will be much more economical and satisfactory to begin from the beginning. No one but an architect knows how closely plans, elevations and details are related, one to the other, in the conception of a building in the mind of a competent designer; and, while a modification of a plan may be tolerably serviceable, it can never have the unity, or give the artistic satisfaction, of a design regularly developed.

THE question of a site for the New York Soldiers' and Sailors' Monument has been again unsettled by a petition, which has been sent to the Committee having the matter in charge, requesting that the monument may be placed on the Riverside Drive, overlooking the Hudson River, where it can be seen by sailors. It will be remembered that this site, or one near it, was advocated by the Fine-Arts Federation of New York, and by one member of the Committee, but that the majority of the Committee decided to place the monument at the Fifth Avenue entrance to the Central Park. Now, however, the representations of one hundred and fifty naval officers, including five rear-admirals and a large number of men high in the service, will certainly demand attention, and, independent of the artistic advantages of either site, there is no doubt of the propriety of putting a monument which commemorates the valor of sailors, as well as of soldiers, in a place where it can be seen from the water as well as the land. Meanwhile, the Committee have determined to go on with the preparation of the designs, and have invited Messrs. Richard H. Hunt, Gilbert & Ward, W. H. Hume & Son, Stephen W. Dodge, Stoughton & Stoughton and James E. Ware, to submit plans before September 1, with the understanding that the author of the best design is to be appointed architect of the work.

AS a good deal of interest has been excited here and abroad by the competition for designs for the Legislative Palace for Mexico, which closes November 30, we publish elsewhere a translation in full, of the programme of the competition, with the plan of the site, omitting only the schedule of current prices for labor and materials in Mexico, which we will gladly publish later, if our readers wish, although it seems to us unlikely that architects would use it to make serious estimates. It is hardly necessary to say that we offer no advice as to the advantages, or the reverse, of engaging in the competition. That is a matter which architects can best consider for themselves, but it may not be amiss to suggest that, as Mexican dollars pass only at their bullion value, fifteen thousand of them are worth, even in Mexico, only about seventy-five hundred American dollars, and, as the person whose design is placed first only receives one-half of this sum at the close of the competition, and is obliged to wait for the rest until he has delivered all plans, details and diagrams for carrying his design into execution, the prospect is not so alluring as it appeared at the first announcement; for, although fifteen thousand dollars, even in Mexican silver, is a considerable sum, it is by no means an extravagant compensation for the preparation of complete working-drawings and details of such a building.

COMPARING generally the Mexican prices with those current here, we find that materials are, as a rule, far more expensive, while labor is much cheaper than with us. For example, the cost of "English cement," in the ordinary barrels of four hundred pounds, is given at eleven dollars a barrel. This is about four times the cost here; but, while a concrete or mortar-mixer here earns easily two dollars a day, the same man in Mexico is paid, as a maximum, fifty cents. This, being in Mexican currency, is equivalent to twenty-five cents of our money, and, as we are told in another table, an "aprendiz" earns from twelve to twenty-five cents, Mexican, per day, or from six to twelve and one-half cents in United States coin. In other words, while an American laborer earns enough in a day and a half to pay for a barrel of English cement, with something to spare, a Mexican laborer belonging to a rather superior class, the "peones de zoquiteria," who are employed particularly for concrete-work, would have to work twenty-two days to earn the price of a barrel of cement, supposing him to receive the maximum wages of his class, or twenty-six days at the minimum wages; while the unfortunate "aprendices" would have to labor from forty-four to eighty-eight days to accomplish the same result. In the same way, iron, in the form of beams, angles and tees, costs from fourteen to eighteen cents a kilogram, or something over six to eight cents a pound, while the ordinary journeyman, or "oficial," for ironwork is paid fifty cents, Mexican, per day.

AN extraordinary case has been decided by the Supreme Court of New Jersey. It seems that a new City-hall was lately built in Jersey City, and among its decorations were intended to be some "allegorical groups." These were included in the contract, but the specification required that they should be executed "in an artistic manner." When these groups, which were of sheet-metal, were put in place, they failed to satisfy the committee of the City Government, who found a statue of Flora, which appeared in one of the groups, "out of all proportion to the human figure," and, in general, considered the "sculptures" to be "a disgrace, rather than an ornament," to the building. They, accordingly, refused to accept them as "artistic," within the meaning of the contract, and notified the contractor to furnish others. This he did, protesting, however, that the original groups had been made "by a reputable firm in Ohio," and were in accordance with the specifications; and, when the Committee were at last satisfied, he sent in a bill for extra work, including these and some other things, to the amount of twenty-six thousand dollars. As the largest item was that relating to the "sculptures," the important question was whether those originally furnished were "artistic," within the meaning of the contract. As the person who drew this up was so incautious as not to specify who should be the judge of their artistic quality, the decision came upon the jury, which, naturally enough, concluded that the contractor had done his duty in this regard by ordering them of a "reputable firm," and brought in a verdict in his favor.

THE moral of this story is that, if an owner or architect wishes to get anything "artistic" under a building contract, he should specify in the contract who shall be the judge of the artistic quality of the object. If he does not do this, the contractor's opinion is, legally, just as good as his in regard to its merits, and if they cannot agree, a jury must decide between them. It would have been quite admissible for the Committee to have specified themselves as the persons to be satisfied with the artistic quality of the sculptures, and, if the contractor had agreed to this, he would have been obliged to satisfy them at his own expense; but the law does not look with favor on a person who constitutes himself judge in his own case, and it would have been better to require the sculpture to be satisfactory to a committee of the National Sculpture Society, or to some individual critic of reputation.

THE Bourne cotton-mills at Fall River have for the past eight years been carried on under a system of profit-sharing, which has recently come into notice through a statement in the newspapers that the system might be discontinued. Originally, so far as can be gathered from the meagre newspaper accounts, the plan was adopted purely for business reasons, the managers of the mills hoping that, by giving their operatives an interest in the success of the business, their work would be more intelligent and efficient, so that the owners would benefit at the same time with their employés. Although the operatives in cotton-mills are nearly all foreigners, of a very low degree of intelligence, and those of Fall River, in particular, are the prey of swarms of agitators and demagogues, the experiment seems to have been a successful one. Most of the Fall River mills produce cheap print-cloths, with which the market is easily overstocked, and their business is, in consequence, liable to great fluctuations, yet the Bourne mills have, during the last eight years, which have been years of general depression, paid dividends regularly, while labor troubles, which are chronic in Fall River, have affected them so little that their operatives, since the profit-sharing plan was adopted, have lost only three per cent of the maximum working time from all causes, including the necessary stoppage of the mills for repairs. Besides this, the machinery has been better taken care of than in other mills, the operatives have been more punctual at their work, and they have been unusually ready to help one another, and to use their intelligence in promoting the profitable conduct of the business. It must be acknowledged that these results are of value, and, even if business conditions should make it hard for a year or two to save money enough to pay the operatives their dividend, a system which has had eight years of success ought not to be given up without serious deliberation. Poor people are easily discouraged, and the abandonment of a plan which, in better times, would probably be very advantageous to all parties concerned, would take away hope and encouragement from the best part of the working population of Fall River; while the demagogues and socialists, who hate the thought of coöperation and good feeling between employers and employed as Satan hates holy-water, would seize with exultation upon this new evidence, as they would call it, of the "greed" of "capitalists," and their determination to shut out "the creators of wealth" from all share in the proceeds of their labor.

SOME time ago, the Royal Institute of British Architects appointed a joint Committee with the College of Organists, to determine the best position for the organ in churches. This Committee, after long study of the subject, reported in favor of placing the organ, as a rule, at the west end of the church, and placing the choir, in two divisions, so as to favor antiphonal singing, at the sides of the nave. The editor of the *Builder*, who is a musician of note, approves of this arrangement, particularly where the choir is intended to lead the singing of the congregation, which, in theory, it is generally expected to do; and observes that clerical opinion in England is now evidently influenced by this report, among other things, the Bishop of Chester having lately written a letter, in which he favors such a disposition, but says that "the conservatism of architects" stands in the way of improvements of the sort. It seems that the Bishop agrees with the expert Committee in condemning the "organ chamber," once so fashionable in church-building, for the reason that it is impossible to get proper musical effect from an instrument enclosed in a stone box; and it seems quite probable that the western organ-gallery, which has for many years been common here in church buildings of all denominations, will become the general rule. There are, as every architect knows, some objections to the western organ-loft, one being that the organist, being behind the congregation, can hardly lead them with the enthusiasm of a conductor placed in their midst, but this trouble could be met, in these days of electrical transmission of force, by placing the keyboard in the nave, or among the choir.

THE Health Department of the City of New York has lately instituted a system of medical inspection of the children in schools, with a view to the exclusion of those affected with contagious diseases, and the results already show how great has been the necessity for such examination. In three months, 14,346 visits were made to the schools by the medical inspectors, and 4,183 children excluded, on account of the contagious diseases from which they suffered. As the total number examined was 63,812, the number excluded was nearly seven per cent of the whole. In 2,735 cases, or nearly two-thirds of the whole, the reason for exclusion was parasitic disease of the head or body; in 876 cases, there was contagious disease of the eyes or skin; and the others were due to measles, diphtheria, mumps, whooping-cough, scarlet-fever or croup. The prevalence of parasitic diseases among the children gives a rather unattractive idea of the school population of New York, but it must be remembered that the city is peopled, to a great extent, by the filthiest of foreign rabble, and that our system of free education necessarily brings the younger members of these degraded families into companionship with clean and healthy children; and it may be hoped that the new system of inspection will prove an efficient means for improving the condition of the unfortunate little ones, who are not themselves to blame for the neglect to which their afflictions are due.

THE study of the report brings out some interesting facts. While the average ratio of the children excluded to the total number examined was about eight per cent in the primary schools, and six per cent in the grammar schools, the pupils of the parochial schools were found in far better physical condition, the total number excluded from these schools being only 340, out of 9,774 examined. This is only about three-and-one-half per cent, and the sisters who, presumably, conduct most of these schools deserve much credit for the faithfulness with which they seem to have looked after the physical condition of their little flocks. In some of the establishments of the charitable societies, contagious diseases were very prevalent. The Children's Aid Society furnished 2,725 subjects for examination, of which 428, or nearly sixteen per cent, were excluded; but 2,131 pupils of the American Female Guardian Society were examined, of which only 145, or a little less than the average, of seven per cent, were excluded.

STATICS OF STRUCTURES. — THEORETICAL AND APPLIED.[1]—VII.

THEORY OF THE TRUSS. — II.

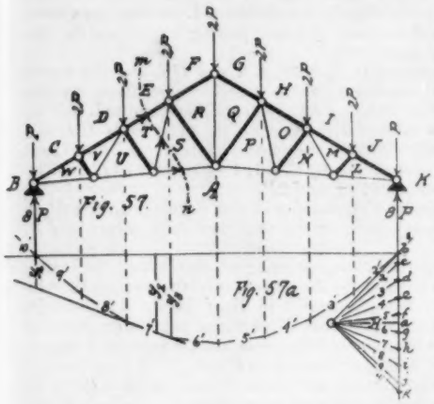


Fig. 57.

Fig. 57a.

132. If a section is taken through a truss in such a manner that three members not meeting at the same panel-point are cut, the stress in any one of them can be found by a method based upon the law, according to which, if a number of forces are in equilibrium about a point, the sum of their moments for that point is equal to zero. For, by regarding only that part of the truss on one side of the section; further, by taking the point of intersection of two of the three cut members as a centre of rotation, and placing the sum of the moments of all the external forces and the stresses of the cut members about it equal to zero, we get an equation containing but one unknown quantity; namely, the stress in the third member. For the moments of the stresses of the two members passing through the centre of rotation are equal to zero.

This is known as "Ritter's method."

133. To apply it, let us take the section $m-n$ through the truss in Figure 57, cutting the members $E\,T$, $T\,S$ and $S\,A$. To simplify the calculation, the following rules are to be observed:

a. All right-turning moments are considered positive, and the sign + prefixed to them; all left-turning, negative, and the sign — placed before them (§4, 5).

b. In writing out the equations, the cut members are all invariably assumed as being in tension; *i. e.*, their stresses are always taken as acting *away* from their joints, *toward* the line of section. (See arrows on cut members in Fig. 57.)

c. In the final result, a + sign indicates tension, and a — sign compression. Thus, when the result obtained for any member is a negative quantity, it shows that that member is really in compression, and, consequently, its arrow must be reversed.

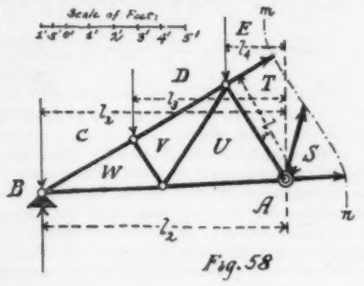


Fig. 58.

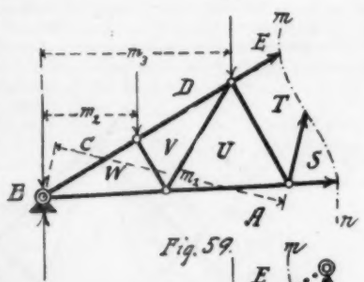


Fig. 59.

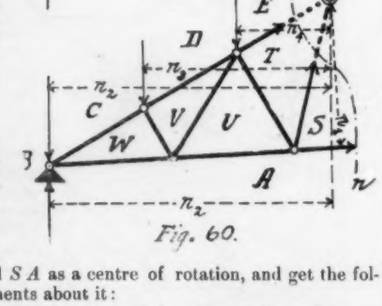


Fig. 60.

134. After having placed arrows on the cut members according to (*b*), let us begin by finding the stress in member $E\,T$ (Fig. 58). We assume the intersection of $T\,S$ and $S\,A$ as a centre of rotation, and get the following equation of moments about it:

$$E\,T\times l_1+A\,B\times l_2-B\,C\times l_3-C\,D\times l_3-D\,E\times l_4=0.$$

Transposing, and inserting for $A\,B$, $B\,C$, $C\,D$, etc., their respective values $8P$, P, $2P$, etc.; and for l_1, l_2, etc., their lengths found by measuring them with the scale, we get:

$$E\,T\times 4.4=-(8\,P\times 10.3)+(P\times 10.3)+(2\,P\times 6.3)+(2\,P\times 2.4);$$ from which

$$E\,T=-\frac{54.7\,P}{4.4}=-12.4\,P.$$

The — sign shows that $E\,T$ is in compression.

To find the stress in $T\,S$, the intersection of $E\,T$ and $S\,A$ is taken as the centre of rotation (Fig. 59), which results in the following equation:

$$T\,S\times m_1+C\,D\times m_2+D\,E\times m_3=0 \qquad (21)$$

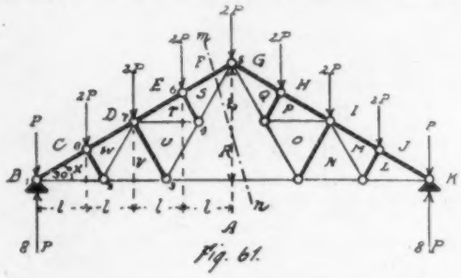


Fig. 61.

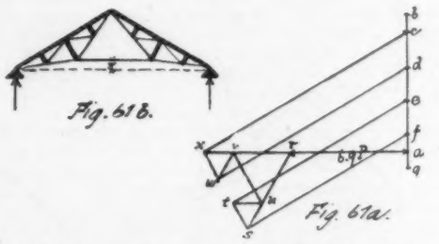


Fig. 61a.

Inserting values, transposing and solving for $T\,S$, we get:

$$T\,S=2.37\,P.$$

To find $S\,A$, the centre of rotation is taken at the intersection of $E\,T$ and $T\,S$ (Fig. 60), for which point the equation of moments is

$$-S\,A\times n_1+A\,B\times n_2-B\,C\times n_3-C\,D\times n_4-D\,E\times n_5=0 \qquad (22)$$

From which we find, after inserting the values of $S\,A$, $A\,B$, etc., and n_1, n_2, etc., that

$$S\,A=9.98\,P.$$

135. A quicker method of finding the combined moment of the external forces for any centre of rotation than that of determining the moment of each load separately, consists in drawing a cord-polygon for the external forces directly under the truss-diagram (Fig. 57*a*).

Thus, in finding $E\,T$, with the centre of rotation at the intersection of $T\,S$ and $S\,A$, the sum of the moments of the external forces to the left of the section $m-n$ would be equal to the ordinate y_1 times the pole-distance H (§63, 65).

Equation 20 could therefore be written

$$E\,T\times l_1+H\,y_1=0,$$

from which

$$E\,T=-\frac{H\,y_1}{l_1}=-\frac{8\,P\times 6.8}{4.4}=12.4\,P.$$

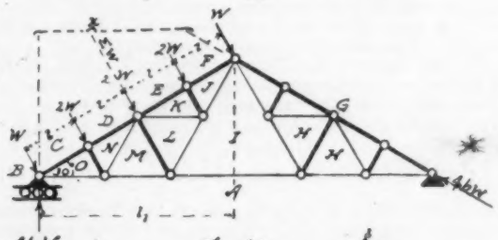


Fig. 62.

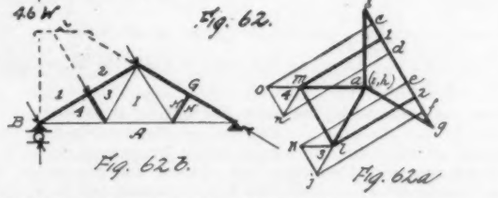


Fig. 62a.

For the same reason Equation 21 could be written

$$-T\,S\times m_1+H\,y_2\ (\text{Fig. } 57a)=0, \text{ or}$$

$$T\,S=\frac{H\,y_2}{m_1}.$$

The ordinate y_2 is determined by prolonging the side 7′, because that forms one of the two outside sides of the cord-polygon for the system of forces under consideration (§63).

Finally, Equation 22 becomes

$$-S\,A\times n_1+H\,y_2=0, \text{ or}$$

$$S\,A=\frac{H\,y_2}{n_1}.$$

136. Although Ritter's method results in greater accuracy than

[1] Continued from No. 1120, page 85.

the graphical method, its application involves more labor, and it is therefore hardly ever used to determine *all* the stresses in a truss. It can, however, be employed to great advantage when it becomes desirable to find the stresses in one or two members independently of the rest. An illustration of this is afforded by the next example,

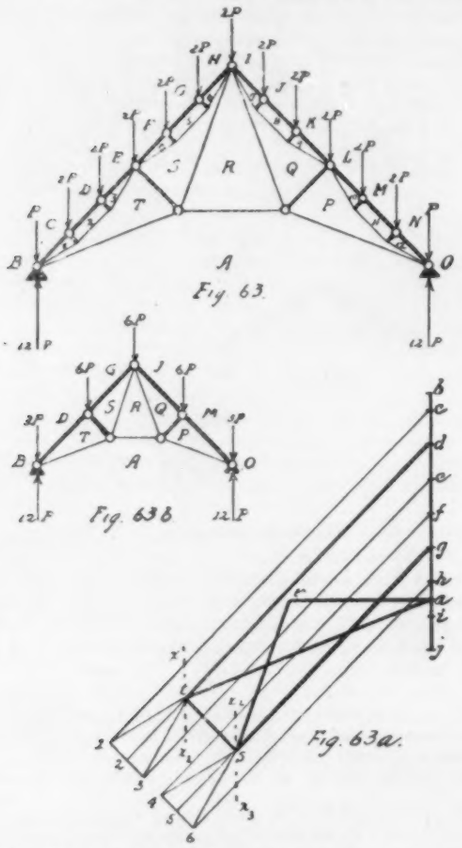


Figure 61. This is variously called a *Poloncean* or *Fink* truss. A simpler example of this type was given in Figure 48.[1] In drawing its stress-diagram no difficulty is experienced until we get to panel-points Nos. 3 or 7, at each of which we find three unknown forces, which render the polygons for these points indeterminable.

137. This difficulty can be readily overcome by ascertaining the stress in $A\,R$ according to Ritter's method. Thus a section $m - n$ is taken through the truss in such a manner as to cut the three members $F\,S$, $S\,R$ and $R\,A$, and the intersection of $F\,S$ and $S\,R$ (panel point No. 5) is assumed as the centre of rotation.

Calling the distance of AR from joint No. 5, r, and taking the panel width l as a unit in measuring the lever-arms of the reaction and loads, we get the following equation of moments:

$$-(A\,R)\,r+(8\,P\times 4\,l)-(P\times 4\,l)-(2\,P\times 3\,l)-(2\,P\times 2\,l)-(2\,P\times l)=0.$$

From which

$$-(A\,R)\,r=-16\,P\,l,\text{ or }A\,R=\frac{16\,P\,l}{r}\qquad(23)$$

Instead of scaling r, its value in terms of l can be more accurately determined trigonometrically. For, one-half of the truss being a right-angle triangle, $\frac{r}{4\,l}=tan\ 30°$, from which, since $tan\ 30°=0.57735$, $r=2.3\,l$. Inserting this value in Equation 23, we get

$$A\,R=6.9P.$$

If we now make $a\,r$ in the stress-diagram equal to $6.9P$, we can proceed to find the other forces about panel-point No. 3 as follows (provided the diagram has been completed for joints 1, 2 and 8): — $a\,v$, to the left; $v\,u$, downward; $u\,r$, upward, and $r\,a$, to the right. After finding the stresses for joint 3, the diagram can be completed in the usual way. In Figure 61*a* the diagram for only one side of the truss was given, as that for the other side is practically the same.

138. It will be noticed that the upper chord, and the members vertical to it (indicated by heavy lines in Figure 61) are in compression, the remaining members (indicated by light lines) being in tension. The form of this truss can be slightly modified by raising the middle tie-rod above the line of supports (Fig. 61*b*). This increases the stress in the tie-rod; the increase being proportional to the rise r. With the exception of the lower chord stresses, the diagram remains very much as before, so that the reader will find no difficulty in drawing it himself.

[1] See No. 1120, page 83.

139. Figures 62 and 62*a* show the left wind-diagram for the truss with the continuous horizontal lower chord. The total load, or $\Sigma\,W$ equals $8\,W$, from which are found the reactions $A\,B=4.6\,W$ and $G\,A=4.6\,W$, according to the method described in §126. Instead of again determining the stress in the tie-rod $I\,A$, as was done above, the following method was used to avoid getting more than two unknown forces at any panel-point:

The left-hand members $O\,N$, $N\,M$, $L\,K$ and $K\,J$, and the corresponding right-hand members, which together constitute, as one might say, the *auxiliary* framing of the truss, were omitted, leaving the *main* framing as indicated in Figure 62*b*. The loads $C\,D$ and $E\,F$ were then equally divided between the joints 1 and 7, and 7 and 5, respectively; so that the loads $B-1$, $1-2$ and $2-G$ in Figure 62*b* became equal to $2P$, $4P$ and $2P$.

The stress diagram for Figure 62*b* was then drawn as indicated in Figure 62*a* by the heavy lines. Note that there is no stress in $I\,A$, $I\,H$ and $H\,A$.

After redividing the load-line according to the loading in Figure 62, the diagram was finished for the entire truss, the stresses thereby added to Figure 62*a* being indicated by light lines. The stresses $1-4$ and $2-3$ of the main-truss diagram do not enter into the final diagram otherwise than to determine the location and magnitude of stress $m-l$, which is the same as $4-3$. The lengths $1-4$ and $2-3$ are, however, really embodied in $c\,o$, $d\,n$, $e\,k$ and $f\,g$, as the reader will see after studying the next example. It is to be noticed that there are no stresses in any members of the right-hand side except the upper chord.

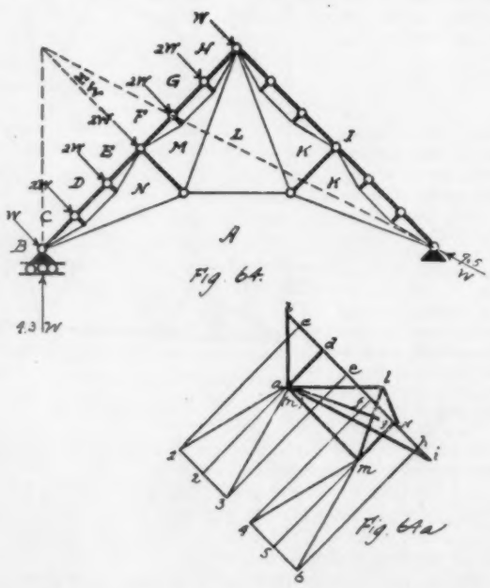
140. That the results thus obtained are correct can easily be verified by finding the stress in $I\,A$ by the method of sections. According to Figure 62*a* this stress is equal to zero; if the same value is obtained by the equation of moments, the diagram must be correct. The centre of rotation will be panel-point No. 5; the unit of length the distance l between loads taken parallel to the upper chord; r will then equal $2\,l$, since $\frac{r}{4\,l}=sin\ 30°=0.5$; l_1 will equal $3.46\,l$, because $\frac{l_1}{4\,l}=cos\ 30°=0.866$; and $A\,B$ will equal $4.62\,P$, because (see stress diagram) $\frac{4\,P}{A\,B}=cos\ 30°=0.866$.

The equation of moments for point No. 5 will, therefore, be

$$-(A\,I\times 2\,l)+(4.62\,P\times 3.46\,l)-4\,P\,l-6\,P\,l-4\,P\,l-2\,P\,l=0;\text{ from which}$$

$$-(A\,I\times 2\,l)+16\,P\,l-16\,P\,l=0,\text{ or }A\,I=0.$$

141. Sometimes the loads on a truss cannot all be concentrated at the panel-points, but act at intervals along the span of certain members; or, members may be of such length that the uniform load upon them becomes a serious consideration. In such cases these members may either be composed of single pieces strong enough to resist the bending-moment of the forces upon them, after the manner of beams, or they may be made of lighter material and *trussed*. This latter method would result in a number of *auxiliary* or *sub-trusses* within the *main* truss, as illustrated in Figure 63, in which each member of the upper chord is in itself a small truss.



142. Suppose the whole truss to carry a load of $24P$, of which each end joint gets P, and each intermediate joint $2P$.

It is quite impossible to draw the stress-diagram in the ordinary way, for at the very beginning we encounter three unknown forces. There are two ways of solving the problem:

(*a*) A stress-diagram can be drawn for each auxiliary truss independently of the whole; after which the reactions from the auxiliary trusses can be applied as loads to the main truss and a diagram drawn for the latter. Finally, to determine the total stresses in the upper chord members, the partial stresses given by the auxiliary diagrams must be *added* to those found by the main diagram.

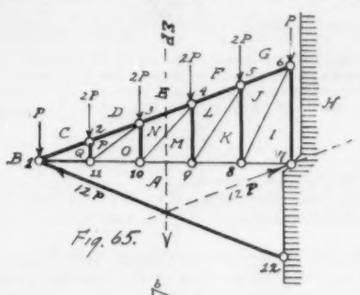


Fig. 65.

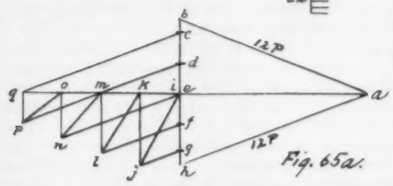


Fig. 65a.

(*b*) Disregarding, in the beginning, the auxiliary trusses, and concentrating the loads at the panel-points of the main truss, a diagram can be drawn for the latter, giving the partial stresses in the upper chord and the whole stresses in the other main-truss members. Then, using the same diagram, but redividing the load-line, the diagram for the whole truss can be completed in the customary manner without meeting more than two unknown forces at any point. This method is virtually the same as that employed in the last example.

If the auxiliary trusses are not very elaborate, it is the simpler of the two, and was therefore followed in Figures 63 — 63*a*. All the loads were concentrated at the panel-points of the main truss, giving $3P$ over each support and $6P$ on the intermediate points (Fig. 63*b*). The diagram was then drawn as indicated by the heavy lines in Figure 63*a*. The load-line for this diagram consisted of $b\,d = 3P$; $d\,g = 6P$; and $g\,j = 6P$, while $a\,b = 12P$. Then, returning to Figure 63, the diagram for the complete truss was drawn, after redividing the load-line into parts of P and $2P$, according to the loading in Figure 63. The reader will have no difficulty in tracing the successive steps. Thus, we get for the first joint: $a\,b$, upward; $b\,c$, downward; c 1, downward; 1 t, upward; $t\,a$, as previously found, to the right. For the next joint on the upper chord: 1c, upward; $c\,d$, downward; d 2, downward; 2 — 1, upward. And so on.

143. The total stress d 2 in member D 2 is made up of the partial stress $d\,t$, due to the action in the main truss, and the partial stress t 2, due to the auxiliary truss. The same is true of stress g 5, which is equal to $g\,s + s$ 5.

And if we were to draw the diagrams for the auxiliary trusses according to the method above described under (*a*), we should find the partial stresses in C 1, E 3, F 4 and H 6, due to the auxiliary truss action, to be equal in length to x 1, x_1 3, x_2 4, and x_3 6. Adding $d\,t$ to x 1 and x_1 3 would give c 1 and e 3; and adding it to x_2 4 and x_3 6 would give f 4 and h 6; which shows that the stress in a trussed member is equal to the sum of the stresses called forth in it by the main and auxiliary trusses.

144. Figure 64*a* gives the left wind-diagram. It was drawn in a manner similar to that of the static-load diagram. The diagram for the main truss members was shown by heavy lines. With the exception of $L\,K$, there are no stresses in any of the members between the upper and lower chords in the right-hand part. Note further that $L\,A$, $L\,K$ and $K\,A$ are in compression.

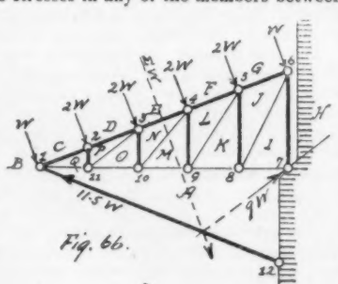


Fig. 66.

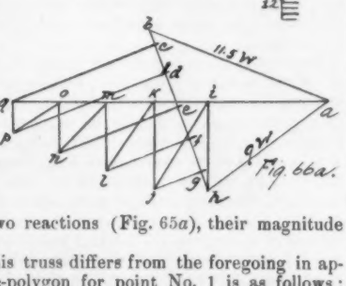


Fig. 66a.

145. Figure 65 is a *canopy* or *marquise* truss. It is rigidly supported against the wall at the point 7, while its outer end, at point 1, is carried by the strut $A\,B$, which has a hinged support at the point 12. The reaction $A\,B$ therefore coincides with the axis of the strut; and the direction of the reaction $A\,H$ is determined by the point of intersection of $A\,B$ with the resultant of all the loads, or $\Sigma\,P$. By drawing a force-triangle $a\,b\,h$ for $\Sigma\,P$ (represented by the load-line) and the two reactions (Fig. 65*a*), their magnitude is found to be $12P$ each.

The stress-diagram for this truss differs from the foregoing in appearance only. The force-polygon for point No. 1 is as follows: $a\,b$, upward, to the left; $b\,c$, downward; $c\,q$, to the left; $q\,a$, to the right. The remainder of the analysis is similar. If the diagram is correctly drawn, the point i must come at the intersection of the load-line with $q\,a$. It will be found that the upper chord and the verticals are in compression, while the lower chord and the diagonals are in tension, as indicated by the heavy and light lines.

Figure 66*a* is the diagram for a left wind-load. It is so like the static-diagram that it requires no explanation. It must close at the point i, on the line $q\,a$, vertically over h.

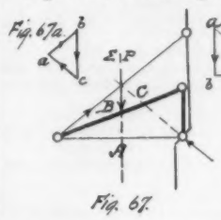


Fig. 67.

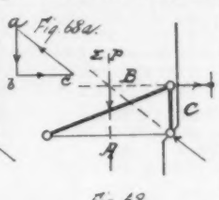


Fig. 68.

145. Another form of this truss is shown in Figure 67. Here the strut is replaced by a suspension rod $A\,B$, with a consequent change in the reactions. Otherwise the diagram remains the same.

A third manner of supporting the truss is shown in Figure 68. Here the upper right-hand joint is bolted or anchored to the wall, the rod of the anchor being in tension, as indicated.

146. With this we shall leave the theory of the truss, taking up its practical application in the next chapter.

As it was quite beyond the scope of these articles to give a more or less complete series of diagrams of the various forms of trusses in vogue, it seemed best to select a number of typical examples and present them in such a manner that each would involve the application of a different method or principle.

With a thorough knowledge of these methods of analysis, the reader will experience no difficulty in making further diagrams himself — both for the ordinary forms of trusses which it was impossible to treat of here, and such other special forms as he may be called upon to design to meet the requirements of particular cases.

O. F. SEMSCH.

(To be continued.)

THE MEXICAN FEDERAL PALACE COMPETITION.

(TRANSLATION.)

{ UNITED STATES OF MEXICO.
{ MINISTRY OF COMMUNICATIONS AND PUBLIC WORKS.

THE President of the Republic has directed that the Ministry of Communications and Public Works shall proceed to the preparation and publication of the following order, having for its object the opening of an international competition for the design of the edifice destined to serve as the Palace of the Federal Legislative Power of the Mexican Republic.

I. GENERAL DESCRIPTION.

The Federal Congress is composed of two Chambers, one of Deputies, and the other of Senators, which hold their sittings in different rooms, and each of which should be furnished, on its own side, with the accommodations mentioned below. It is indispensable that the two Chambers should be able to assemble and hold their sessions simultaneously, without interfering with one another.

The general construction of the edifice should be suitable to the dignity and importance of the Palace of the Legislative body.

The principal conditions demanded in the construction of the Palace are solidity and the rational employment of materials, and these conditions must not be lost sight of in the decorative work. The edifice will be constructed in the middle of a proposed elliptical area, as shown in the accompanying plan, [See Illustrations] and this area will be surrounded by structures to which it is proposed to give the same architectural composition.

II. LOCALITY.

The place chosen for the site of the Palace destined for the Congress is situated at the intersection of Avenue No. Four, West, and the Eighteenth Street, South, known respectively under the names of "Calzada del Egido," and the streets "of the Exposicion," and "of Tamaulipas."

The ground covered by the edifice may have such perimeter as the candidates choose, within the limits of the square A, B, Y, Z, but the length of neither axis must exceed one hundred metres, as indicated on the accompanying plan.

The principal façade will be turned easterly, toward the Calzada del Egido, and this must be the most important from the point-of-view of architectural composition. The opposite, or westerly front, will be designed in harmony with the ascent by which it is approached, and the portico destined for carriages.

III. NECESSARY ACCOMMODATION.

The edifice will contain as many stories as may be necessary for accommodating the following services:

1. A fireproof store-room for preserving the ancient archives of each Chamber.
2. A printing establishment.
3. A store-room for printed documents.
4. Rooms for firemen and for police officers.
5. A room for fire-engines and their accessories.
6. A room for the ventilating apparatus.

7. A room for dynamos and motors.
8. Storage space for fuel.
9. A room for lamps.
10. Store-rooms for the furniture of the two Chambers.
11. Lodging-rooms for the janitor.
12. Rooms for four serving-men.
13. Lodging-rooms for the Superintendent of the building.
14. State staircase, general public staircases, private staircases, elevator and interior courts where necessary.
15. Space for reservoirs and pumps for lifting water.
16. The greater part of the ground-floor should be destined, so far as possible, for the archives of the Supreme Court (Contaduria Mayor de Hacienda).
17. A large room destined for the service of post-office and telephones.
18. Grand entrance vestibule, on the principal front. This vestibule should be richly decorated.
19. Vestibule communicating directly with the staircases leading to the public galleries.
20. Vestibule adjacent to the portico destined for carriages.
21. Grand hall for the sessions of the Chamber of Deputies, capable of containing 330 representatives, including the Senators, who also assemble there on the days of opening and closing the Chambers. The seat of the President will be placed on a platform, so that he may see and hear all the Deputies who address him from their places. The platform must be large enough to accommodate the chair of the President of the Republic, on the days on which he is present at the opening of the Chambers, as well as the desks and arm-chairs of the Secretaries of the Chamber, which must be placed at the right and left of the table of the President. In front of the said platform will be placed the tribune, at a proper height, so that the orators shall be visible to all the Deputies, without shutting off the view of the hall from the President. On each side of the tribune, and on a line with the floor of the hall, must be a clear space for three stenographers.

The Secretaries of State will occupy seven arm-chairs, suitably placed. The seats of the Deputies must be large enough to allow of sitting and writing conveniently in them. Not more than four seats are to be joined together in the same line, without a break, and circulation must be secured by numerous passages.

The hall should be furnished with many and wide doors, protected against draughts of air. Galleries are to be arranged around the hall, destined for the following bodies:

Diplomatic Body.
Judicial Body.
Representatives of the Press.
Deputies of State Legislatures and Governors.
High Officials of the Federation.

There will be, in addition, a gallery reserved for ladies.

All these galleries must be preceded by a cloak-room, which should have convenient entrances, and be provided with lavatories and water-closets.

The press-gallery should have direct communication with the journalists' work-room.

Above these galleries, there should be a well-lighted gallery, with wide corridors, destined for the public.

The great Hall of Sessions should be lighted mainly from the top. Light at night will be furnished by electric arc-lights and incandescent lamps.

The ventilation should be energetic, but without causing draughts. Care must be taken to secure good acoustic conditions for the hall, so that the voice of speakers may be heard in the most remote seats.

The lobby, or Reception-hall, which is to serve for both Chambers, must communicate directly with each. It is expressly desired that this room should be the most richly decorated room of the whole Palace.

22. Private study of the President of the Chamber, with a reception parlor and a lavatory. This apartment should, if possible, be in direct communication with the Hall of Sessions.
23. Parlor for the Secretaries of State, with three or four consultation rooms, in direct communication with the Reception-hall.
24. Work-room for eight stenographers, with easy access, independent of the hall of sessions.
25. Cloak-room for the Deputies.
26. Room where Deputies can write.
27. Lavatories and water-closets.
28. Office for the Sergeant-at-Arms of the Chamber.
29. Waiting-room for the public, connected with the Reception-hall above specified.
30. Room for pages, near that of the Sergeant-at-Arms.
31. Hall of sessions of the Chamber of Senators,—for fifty members. Attention should be paid to the directions which have already been given in relation to the Chamber of Deputies concerning the required rooms, their arrangement, lighting and ventilation, modifying the proportions according to the difference in capacity of the two Chambers.
32. Private study of the President of the Senate, with reception-room and toilet.
33. Work-room for four stenographers, with ready access to the hall of sessions.
34. Cloak-room for the Senators.
35. Room where the Senators can write.
36. Wash-room and water-closets.
37. Office for the Sergeant-at-Arms of the Senate.
38. Waiting-room for the public, connecting with the general Reception-hall, previously specified.
39. Room for pages, near that of the Sergeant-at-Arms.
40. Offices of the Supreme Court (Contaduria Mayor de Hacienda), comprising private office for the Chief Clerk, room for sixty employés, office for the sheriff, or marshal, room for utensils, toilet-room and water-closets.
41. Office of the Director of the Journal of the Debates.
42. Office of the Treasurer of the Congress.
43. Office of the Chief Secretary of the Chamber of Deputies. This room must be in direct communication with the room for employés, and must be preceded by an ante-room.
44. Work-room for thirty employés of the Secretary's office.
45. Fireproof storage-room for the archives of the Chamber, communicating with the room just mentioned.
46. Four rooms for the Commission of the Chamber of Deputies (five persons); two larger rooms for Joint Commissions (twelve persons); and a room for the Grand Jury (thirty persons).
47. Library and reading-room for the Deputies and Senators.
48. Office of the Librarian.
49. Room for office utensils for the Chamber of Deputies.
50. Room for the sorting and distribution of documents.
51. Work-room for journalists in direct communication with their gallery.
52. Office of the Chief Secretary of the Chamber of Senators, to have ante-room, and to be in direct communication with the room for employés.
53. Work-room for twenty employés of the Secretary's office.
54. Three rooms for Commissions of the Senate; one for Joint Commissions; a room for the Grand Jury.
55. Fireproof room for the archives of the Chamber, communicating with the Secretary's offices.
56. Room for utensils and materials for the Senate.
57. Room for sorting and distributing documents.
58. Toilet-rooms and water-closets at such places as may be deemed necessary.
59. Restaurant for the two Chambers, with smoking-room and reading-room for periodicals.

Besides the rooms specified above, candidates may add such as their study of the subject suggests as useful or necessary to the purposes of the edifice. The communications between the rooms pertaining to the two Chambers must be convenient, and corridors and stairs must be spacious and well-lighted.

DRAWINGS AND SPECIFICATIONS.

The following drawings must be presented:

Plans of the foundations, with indication of the various loads.

Plans of each story, with indication of the purpose of rooms comprised in it.

Elevation of each front, with a profile, to show the projections.

Sections, suitably chosen to give an idea of the interior proportions of the building in its principal parts.

All these drawings must be prepared at the scale of 1:200.

Detailed drawings of the two halls of session, showing the arrangement of the seats, must also be presented, as well as detailed drawings of the grand vestibule and the main Reception-hall. These drawings must be at a scale of 1:50.

A perspective view may also be sent, and detailed drawings of the ornamentation. The detailed drawings may be simply sketched, but in such a way as to show clearly the ideas of the author. A list of the drawings sent must accompany them.

The drawings must be accompanied by an explanatory specification, written in Spanish, French or English, and comprising a general description, as well as an account of the arrangement of the building, a specification of the materials to be employed in each of its parts, and an estimate of the cost, as closely approximate as possible, using as far as may be the list of prices annexed to this programme. The total cost must not exceed $1,500,000, without counting the cost of the foundations to the level of the street.

In order that the designs may be fairly judged, it is absolutely necessary that the candidates should conform to the conditions above specified.

The drawings and specification must bear a mark, which is to be repeated on the outside of a sealed envelope, in which is to be found a paper containing the name of the author of the design, his address, and other information sufficient to establish his identity. Meanwhile, candidates should give an address which will permit of making known to them the decisions which may be taken in regard to the competition.

The designs must be sent by the candidates to the Ministry of Communications and Public Works, either directly, or through the diplomatic or consular representatives of Mexico in foreign countries, on or before November 30, 1897. After that date, no design will be admitted to the competition.

JURY.

The designs will be submitted to the examination of a jury, which will make the awards. This jury will be composed of seven architects or civil engineers, appointed, one by the Chamber of Deputies, one by the Senate, one by the Ministry of Communications and Public Works, and four by the candidates, by means of a written ballot, from among ten experts proposed by the Ministry of Public Works. They must not be participants in the competition, and will be chosen by the absolute majority of ballots.

For this purpose the candidates must send with their drawings and specification a list containing the four names of the persons whom they choose as members of the jury. Before the making of the award, the *Official Journal* of the Government of the Mexican Republic will publish the result of the ballot held for the formation of the jury, over which the Minister of Public Works, or his representative, will preside.

PRIZES.

The author of the design placed first will be entitled to a prize of $15,000 in Mexican silver, of which he will receive one-half at once, and must complete his design, furnishing all the detailed plans for execution, in such a manner that his ideas may be faithfully interpreted.

As soon as he delivers these plans, he will receive the other half of the prize above specified. The designs classed second and third will receive together a prize of six thousand Mexican dollars, divided in a proportion which will be determined by the Jury of Award. Finally, the designs classed fourth and fifth will receive respectively a gold and a silver medal, with a diploma of which the form and the inscriptions will be determined by the jury, and, in addition, five hundred Mexican dollars each, as a contribution to the cost of making them. The designs classed first, second and third will become the property of the Mexican Government.

The designs submitted in competition will be exhibited for ten days after the award is made, at such place as may be designated by the Ministry of Communications and Public Works.

The decision of the Jury of Award will be published in the *Official Journal* of the Federal Government.

Four months after the publication of the result of the competition, the designs not awarded prizes must be withdrawn, and if they are not so withdrawn, they shall become the property of the Mexican Government.

No candidate shall make known his name in advance, under penalty of exclusion from the competition.

The sealed envelopes relating to designs not accepted will not be opened, and will be returned to their authors, with the drawings and specifications to which they belong, on presentation of the receipt given for them. MENA.

MEXICO, April 23, 1897.

AMERICAN LOVE OF HOME.

APROPOS of the peripatetic habits of the well-to-do American, "an Idler" tells the following stories in the New York *Evening Post*:—

"I was taken through a very large and handsome residence lately, with the thoroughness that only the owner of a new house has the cruelty to inflict on his defenceless victims. One is not allowed to pass a closet or an electric-bell without having its particular use and convenience explained, is forced to look up coal-slides and down air-shafts, and every secret place, from the cellar to the fire-escape, is revealed to him. I noticed that a certain arrangement of the rooms seemed to repeat itself on each floor, and even several times on a floor. I remarked this to my host. 'You notice it,' he said, with a blush of pride, 'it is my wife's idea. The truth is, my daughters are of a marrying age, and my sons are starting out for themselves, and as this house is a great deal too big for us two old people to live in alone, we have planned it so that at any time it can be changed into an apartment-house, at a nominal expense. It is even wired, and plumbed with that in view.'

"This answer positively took my breath away. I looked at my host in amazement. It was hard to believe that a man past middle age, who after years of the hardest toil could afford to put half a million into a house for himself and his children, and store it with costly and beautiful things, could have the courage to look so far into the future as to see all his work undone, his home turned into another use, and himself and his wife afloat in the world without a roof over their wealthy old heads. Surely this was the 'Spirit of the Age' in its purest expression, the more strikingly so that he seemed to feel rather pride than anything else in his ingenious combination. He liked the city well enough now, but nothing proved to him that he would like it in ten years. He and his wife had lived in twenty cities since they began their brave fight with fortune, far away in a little Eastern town. They had since changed their skin with each ascending rung of the ladder of success, and beyond a faded daguerreotype of two of 'the children' and a few modest pieces of jewelry stored away with the wedding-ring, it is doubtful if they owned a single object belonging to their early life.

"Another case occurs to me. Near the village where I pass my summers there lived an elderly, childless couple on a splendid estate, combining everything a fastidious taste could demand. One fine morning this place was sold, the important library divided between the village and their native city, the furniture sold or given away, even the bric-à-brac; everything went, and at the end the things no one wanted were made into a bonfire and burned. A neighbor, asking why all this was being done, was told by the lady, 'We are tired of it all, and have decided to be "Bohemians" for the rest of our lives.' This couple are now wandering about Europe, and half-a-dozen trunks contain their belongings."

BOOKS AND PAPERS.

PROFESSOR JOHNSON, whose admirable treatise on surveying is known to many architects, has published a book on materials which differs a little from any other. While Thurston's works on the subject cover a wide field, including, for example, fuels and lubricants, and are adapted, perhaps, primarily for students, the present work assumes that its readers are familiar with the ordinary text-books on applied mechanics, and leads them through an exceedingly interesting succession of investigations into the less-known properties of our ordinary materials. To reassure architects who have forgotten their calculus, it may be well to mention that these properties are not, as a rule, connected with mathematics, but relate to such eminently practical points as the reason why iron castings are weakened by re-entering angles; why, and in what way, shrinkage tends to bend pieces of wood; the function and precise value of iron ties in concrete work, and so on. While the information given is derived from the best and latest sources, much of it is from the author's own tests, and from those of Professor Bauschinger, of Munich.

One of the most interesting sections in the book is that on dry-rot in timber. We imagine that few architects or builders know that the "blue sap," so common in yard-seasoned spruce and pine timber, which is generally considered a favorable indication, as giving evidence of long exposure to the air, is really produced by a dry-rot fungus, which has acted on the wood only so far as to absorb the starch in its pores, but has not sent its mycelium threads through the cell-walls in search of further nutriment; and it is interesting to find the true explanation of the superior durability of autumn-cut timber, which owes its quality simply to the advantage derived from the low temperature, which checks the activity of fungi while the wood is drying, and to its comparative freedom from season-cracks, due to the action of the sun on newly-felled timber, which give entrance and shelter to the germs of noxious vegetation.

Another interesting chapter is that on cement-testing, and, in general, the book presents, under each heading, many observations which are likely to be new to the most diligent reader of technical literature.

PROFESSIONAL men sometimes feel a little humiliated at what they suppose to be their bad taste in the choice of their professional reading. While they acknowledge that the truly wise person prefers exhaustive treatises, which present all the details of their subject in studied order, they are apt to find more interest in an informal recital of facts and observations, such as would be brought up in discussions among the members of a professional society; and they attribute this preference to the loose habits of thinking which they regret to find growing upon them. Although humility is always praiseworthy, the reproaches which architects may address to themselves on this account are quite uncalled-for, and, whatever may be the advantage to the student of taking up a subject in regular order, the practitioner, who has long ago learned the principles of his art, finds little that is new in the pages of a formal treatise, and derives much more benefit from studying miscellaneous examples of professional practice, as they are described in the current issues of the technical journals. The Germans, who understand this thoroughly, make great use of technical books consisting mainly of collections of actual examples, arranged in convenient order, but there are comparatively few such books in English. The *Engineering Record*, which has already published several very useful works of the sort, on roads and pavements, and steam and hot-water heating, compiled mainly from its own files, has added another, on American Plumbing Practice, which is, perhaps, the most useful to architects of all. Assuming that the readers of the book know the principles of house-drainage up to the point to which an architect's attainments usually extend, it presents a great number of plans and details of actual plumbing installations, very clearly drawn, and accompanied by explanations of unfamiliar dispositions or apparatus. There is nothing puzzling, or formidable, or theoretical in the book. On the contrary, every architect has to deal constantly with just such problems of arrangement as are illustrated here, and the drawings are so clear that it is a pleasure to glance over them and note the various methods of planning employed by different architects and engineers; the devices for providing clean-outs in difficult places; for securing circulation in hot-water systems; for draining basement rooms below the level of the sewer; and for meeting the thousand other requirements, exactly similar to those which every architect has daily to consider.

Even in a hasty reading, the professional man will find in it solutions of many problems which have cost him a good deal of anxious thought, and many an architect will find a convenient place for it among the books which he uses most for reference.

THE ILLUSTRATIONS.

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

THE FISHER BUILDING, CHICAGO, ILL. MESSRS. D. H. BURNHAM & CO., ARCHITECTS, CHICAGO, ILL.

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

THE REGISTRY OF DEEDS AND PROBATE COURT FOR MIDDLESEX COUNTY, EAST CAMBRIDGE, MASS. MR. OLIN W. CUTTER, ARCHITECT, BOSTON, MASS.

COMPETITIVE DIAGRAM FOR THE MEXICAN FEDERAL PALACE.

SEE programme elsewhere in this issue.

CAR-HOUSE AND RESTAURANT FOR THE COMMONWEALTH AVE. STREET RAILWAY, AUBURNDALE, MASS. MR. S. J. BROWN, ARCHITECT, BOSTON, MASS.

THIS building is the terminal station at Norumbega Park.

[1] "*The Materials of Construction*": A Treatise for Engineers on the Strength of Engineering Materials: by J. B. Johnson, C. E., Professor of Civil Engineering in Washington University, St. Louis. New York: John Wiley & Sons, 1897. Price $6.

[2] "*American Plumbing Practice*": From the *Engineering Record*; A Selected Reprint of Articles Describing Notable Plumbing Installations in the United States, and Questions and Answers on Problems arising in Plumbing and House Drainage. With Five Hundred and Thirty-six Illustrations. New York: The *Engineering Record*, 1896.

DOORS AND DOORWAYS, NO. 9: CHURCH OF STA. MARIA DELLA LACRIME, NEAR TREVI, ITALY.

DOORS AND DOORWAYS, NO. 10: PALAZZO DEI CONTI DELLA PORTA, GUBBIO, ITALY.

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

DOORS AND DOORWAYS, NO. 8: CHAPEL OF SAN BERNARDINO, ASSISI, ITALY.

A GROUP OF VASES AND FOUNTAINS.

[Additional Illustrations in the International Edition.]

OLD TOWN-HALL, LEIPSIC, SAXONY. HIERONYMUS LOTTER, ARCHITECT.

[Gelatine Print.]

THE Leipsic Town-hall, of which our plate shows the central portion of the long main façade, fronting upon the Market Square, dates as far back as the Middle Ages. About the year 1556 the old Gothic building was subjected to a pretty thorough process of renovation, when it received the outward form in the popular Renaissance style then in vogue, in which it has come down to the present day. The work was carried on under the supervision of Hieronymus Lotter, then burgomaster of the town, and himself an architect of no mean repute. It is of some interest to know that the stone-carving in connection with the town-hall was given out to several guild-masters with the understanding, that each was to be responsible for the design of the details, a procedure which easily explains the difference in the treatment of the various parts. The best portions, among which is the doorway in the main front, shown in our plate, are the work of one Paul Wiedemann. The material consists mostly of red Saxony porphyry, from Rochlitz. The building underwent no important alterations in the course of time, except that, in 1744, a new hood was placed on the stately tower. As the city is about to erect a new city-hall upon another site, it will be possible, after the removal of the municipal offices from the old Town-hall, to make some much-needed repairs to the interesting old pile, which it is intended to preserve unaltered, as a monument of local history.

WEST CORRIDOR, MEZZANINE FLOOR: LIBRARY OF CONGRESS, WASHINGTON, D. C. ARCHITECTS, MESSRS. SMITHMEYER & PELZ; P. J. PELZ; E. P. CASEY.

[Gelatine Print.]

THIS view shows one of the corridors of the main staircase hall.

WEST FRONT: ST. PAUL'S CATHEDRAL, LONDON, ENG. SIR CHRISTOPHER WREN, ARCHITECT.

CHOIR OF ST. PAUL'S CATHEDRAL, LOOKING EAST.

COMMUNICATIONS

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

A QUESTION OF COMMISSION.

July, 1897.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — 1. Architect A agrees to undertake to make the plans and supervise building for B at the customary rate of 5 per cent on the cost, and writes a letter to that effect. When building nears completion, B instructs A to design and have carried out bank-fittings and vaults of an elaborate and burglar-proof character, which is done without any reference being made to the rate of commission to be paid.

B claims now that 5 per cent is sufficient compensation, and brings in A's letter as evidence.

Please state at what rate such services are usually paid for.

2. C purchases an old house, builds an extension, remodels the entire interior and has a new front built to it. Are such services usually paid for at 5 per cent or 7½ per cent of the cost?

Yours, etc., A. D.

[1. THE cost of bank-vaults is so large in comparison with the architect's work upon them, unless the latter is a specialist in such matters, that 5 per cent is generally considered a fair compensation, where the vaults form a part of the building carried out under the direction of the architect. With fittings, so far as these mean woodwork, which must be designed with much care, and the drawings carried into minute detail, the case is different, and ten per cent on the cost of such work would not be an unreasonable charge.

2. In case of alterations, such as those made by C, the architect is usually paid ten per cent on the cost of the work. — EDS. AMERICAN ARCHITECT.]

GRAPHITE PAINT.

JERSEY CITY, N. J., July 13, 1897.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — We have just noticed in your issue of June 19, an article entitled "The Painting of Metallic Surfaces." In it occurs these words:

"Carbon, usually as graphite, is used to some extent as a pigment for anti-rust paints. It, however, cannot be ground fine economically, and therefore it cannot efficiently fill up the pores or interstices left in the film of oil, as it dries by oxidation, which is one of the chief uses of the pigment."

As manufacturers of Dixon's Silica-Graphite Paint, permit us to say, that the grinding of the graphite to an impalpable powder can be done economically by manufacturers of graphite who have the proper facilities.

Every publisher using electrotypes, and every electrotyper is thoroughly familiar with Dixon's Electrotyping Graphite and knows it to be much more finely ground than that required for any paint pigment. This, in itself, shows that the graphite can be ground to an impalpable fineness, and the economy of reducing it to that degree of fineness rests, of course, with the manufacturer alone, and the public need have no concern in regard to that, providing it buys the paint at a sufficiently low price.

Graphite has no known solvent. It has a greater affinity for metallic surfaces, especially those of iron and steel, than any other pigment. Hence, its great value as a pigment for protective paints. It is absolutely inert, is not affected by acids, alkalis or any known chemical, and about all that can be said against it is, that many who have attempted to manufacture it for paint purposes have failed, because of lack of experience or imperfect machinery.

It may also be well for us to add that the amorphous forms of graphite and the several Ceylon graphites lack hardness and durability, and therefore, while more easily worked, are unsuitable for graphite paint pigment, where durability and strength are required.

Yours truly, JOS. DIXON CRUCIBLE CO.

NOTES AND CLIPPINGS

DEATH-RATE IN MODEL TENEMENTS. — The London *Chronicle* calls attention to the remarkably low death-rate in many of the model dwellings in that city. In particular there is found in the houses of the Metropolitan Association for Improving Dwellings of the Working Classes, which is now in its fifty-third year, a death-rate of only 9.64 to 1,000. The inmates of these houses number 6,430, and are housed in fourteen blocks in different parts of the city. This rate is only half the rate for the whole of London.

STATUES FOR THE WASHINGTON ZOOLOGICAL GARDEN. — Indians and animals typical of America are to be perpetuated in bronze for the National Zoölogical Garden at Washington, if the plans of certain men of public affairs at the National capital are carried out. And Edward Kemeys, the Chicago sculptor, is the artist who is to execute the statues of the fast disappearing red man and the fauna of America. Congress will be asked for an appropriation for the purpose, and it is expected that that body will respond as generously for the purpose as it has heretofore in the beautifying of the great National park. Captain Kemeys has returned to his Bryn Mawr residence after a six weeks' visit to Washington and is at work on the project. — *Chicago Chronicle.*

SAFE-BREAKING BY AID OF THE ELECTRIC CURRENT. — A scare of no mean proportion was worked up recently among the banking interests out West by the statement that the use of current from any ordinary circuit would enable a burglar to melt his way very swiftly through the walls of the stoutest safe. Certain experts, who were introducing a new protective system, gave an exhibition in Chicago of the ease with which, as though sliding a knife through cheese, they connected a branch circuit to a safe and bored big holes in it with a stick of carbon pressed against the wall of metal. That a thing can be done, however, is no proof of its practicability, and in this case various factors impose conditions that appear insurmountable. An enormous quantity of current is needed; noxious fumes are generated; the connections need to be made very carefully in places that are not private or secluded; the apparatus to give the required quality of current is extremely heavy, weighing tons; instruments on the circuits elsewhere would tell of the unusual drain of current; and the conditions of operation would vary at every instant. In short, the thing is not possible in large cities. In smaller ones, it has been suggested, the burglar could accumulate his current in storage batteries, or hitch his wire to adjacent lighting or trolley wires in the street. Electricians say that to attempt the performance of such a task in secret is not even worth discussion. — *N. Y. Evening Post.*

S. J. PARKHILL & Co., Printers, Boston, U. S. A.

NEGATIVE BY M. H. SIDMAN, NEW YORK.

WEST CORRIDOR, MEZZANINE FLOOR: LIBRARY OF CONGRESS, WASHINGTON, D. C.

Architects: SMITHMEYER & PELZ. — P. J. PELZ. — E. P. CASEY.

THE HELIOTYPE PRINTING CO., BOSTON.

THE HELIOTYPE PRINTING CO. BOSTON

THE FISHER BUILDING, CHICAGO, ILL.

D. H. BURNHAM & CO., Architects.

Blätter für Architektur. Neumann & Co., Berlin.

THE RATHHAUS, LEIPSIC, SAXONY.

HIERONYMUS LOTTER, ARCHITECT.

FROM A PHOTOGRAPH BY F. W. EDWARDS, PECKHAM.

INK-PHOTO. SPRAGUE & CO 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

CATHEDRAL SERIES, NO. 43.—ST. PAUL'S: WEST FRONT.

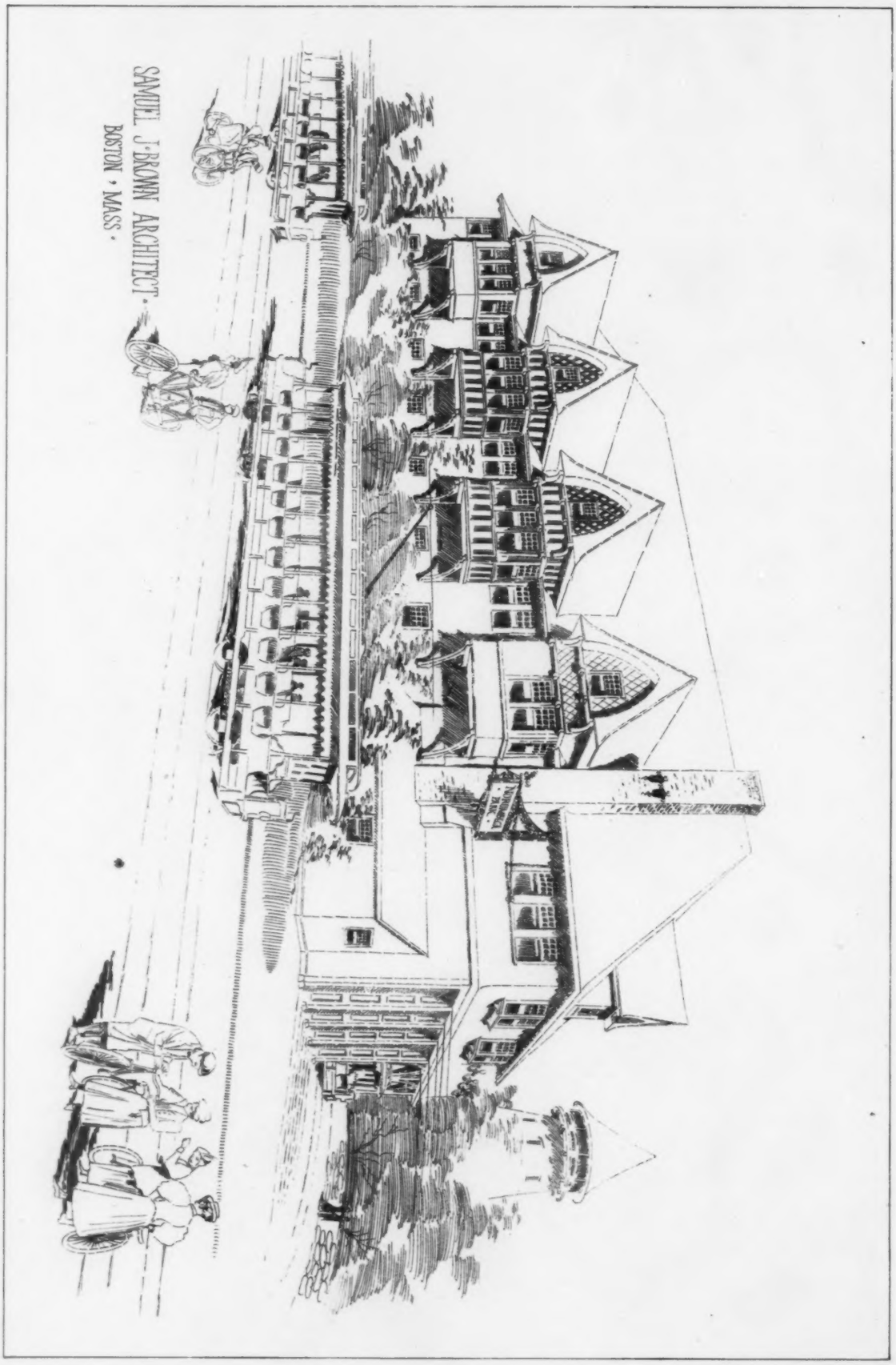
MIDDLESEX REGISTRY OF DEEDS AND PROBATE COURT, CAMBRIDGE. MASS.

Levi S. Gould
Saml. O. Upham
Francis Bigelow } Commissioners.
Olin W. Cutler. Architect

HELIOTYPE PRINTING CO. BOSTON

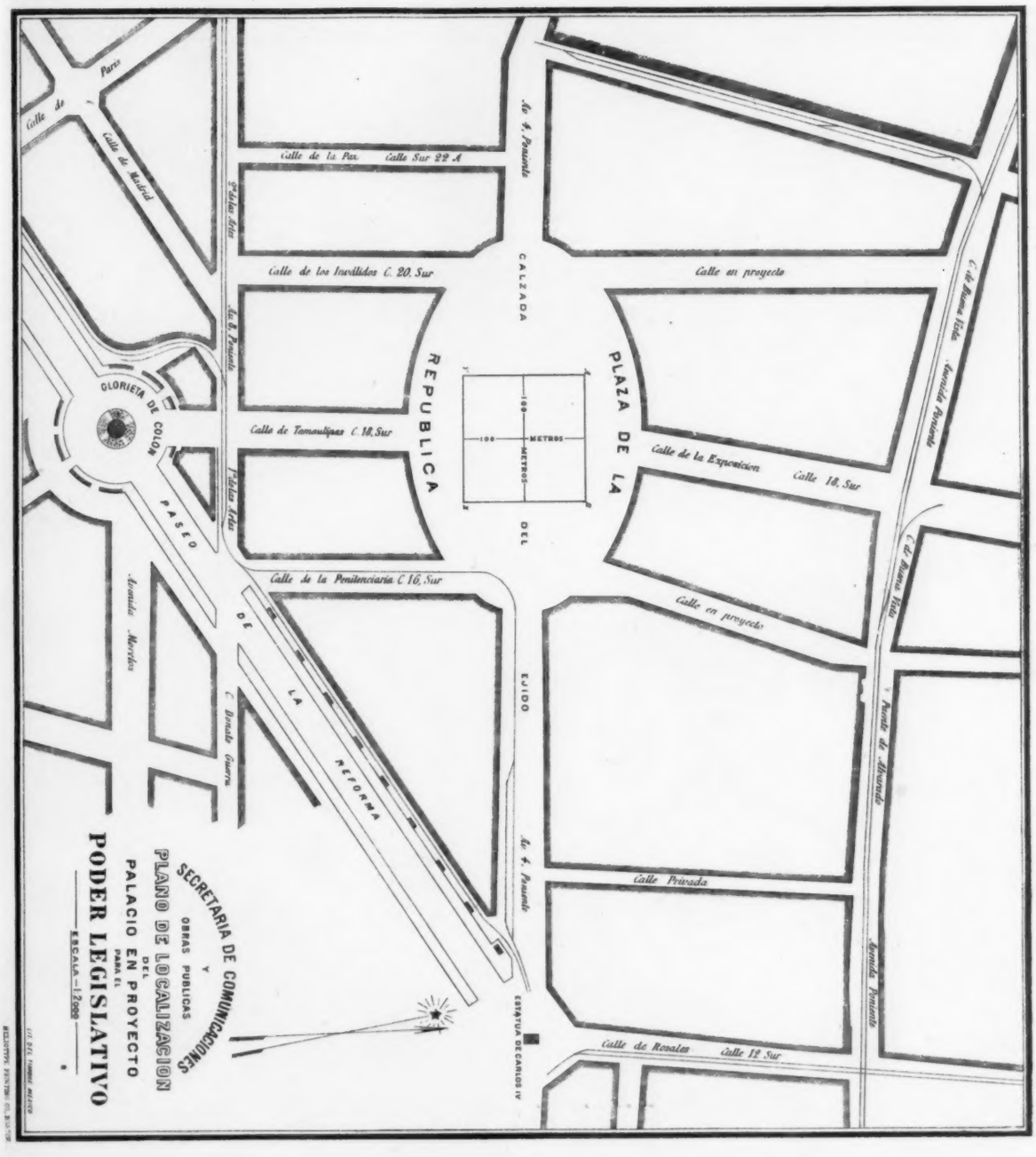
Doors and Doorways No. 9:—Church of Sta. Maria delle Lacrime, near Trevi, Italy.

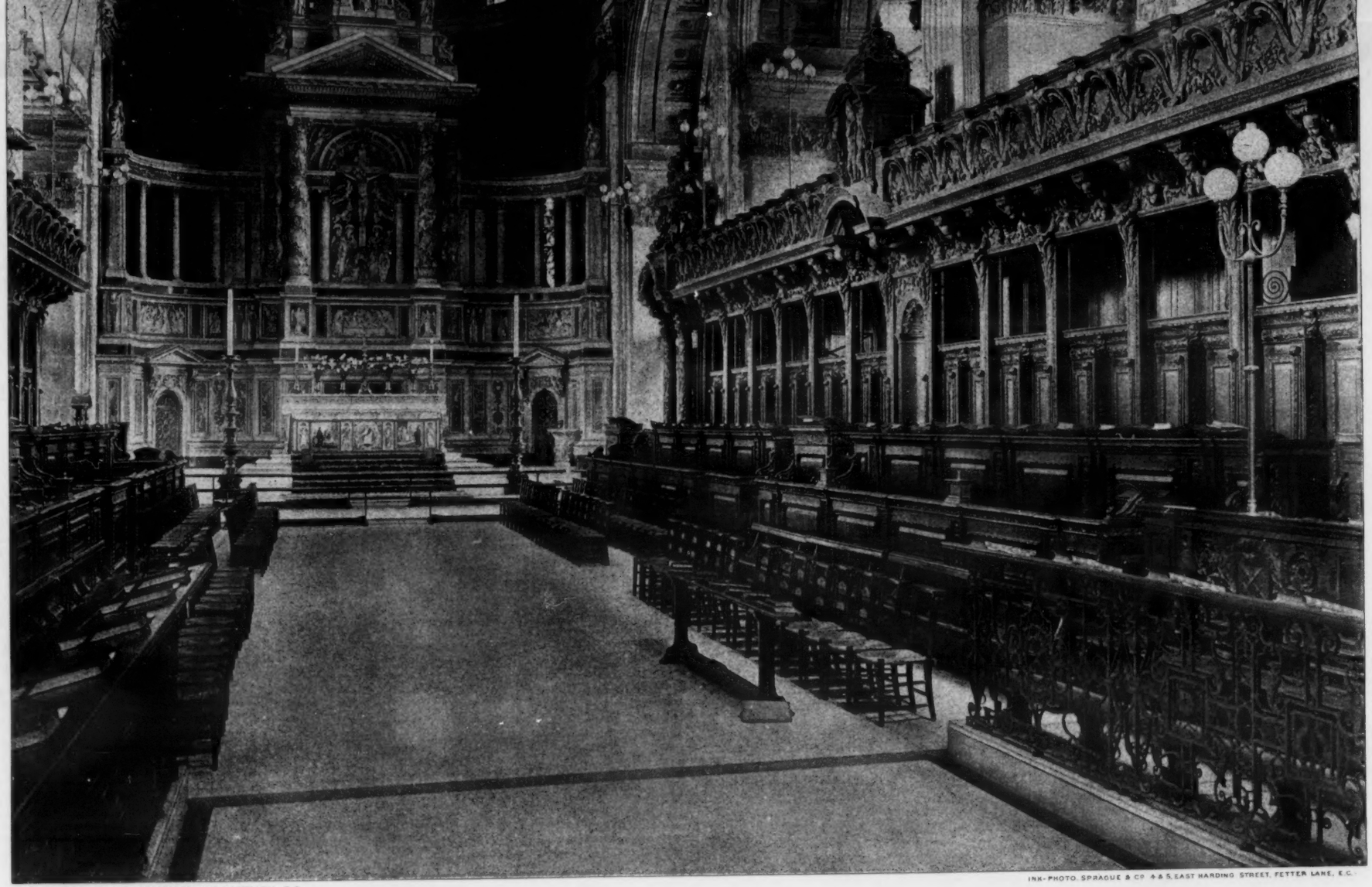
Doors and Doorways No. 10: — Palazzo dei Conti della Porta, Gubbio, Italy.



CAR-HOUSE AND RESTAURANT FOR THE COMMONWEALTH AVENUE STREET RAILWAY, AUBURNDALE, MASS.

SAMUEL J. BROWN, Architect





PHOTOGRAPHED BY S. B. BOLAS & Co 11, LUDGATE HILL, E.C.

INK-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

CATHEDRAL SERIES, NO. 44.—ST. PAUL'S: CHOIR, LOOKING EAST.