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CONTENTS.



WE regret sincerely to learn of the death, in New York, of Mr. Henry Robinson Searle, an architect well known there and in other parts of the country. Mr. Searle was born in Burlington, Vermont, in 1836, but spent his early years and began his professional life, in Rochester, New York. In 1865 he removed to Washington, where he designed the building of the Howard University, the Congregational Church, and the *Republican* newspaper office, besides other structures. In 1879 he was sought out by a wealthy gentleman who had seen and been pleased with some of his work in Rochester, and induced to leave Washington and take up his residence in New York, where he found constant employment until his health gave way before the distressing malady which at last proved fatal to him.

THE telegraph informs us, just as we go to press, of the election at Cincinnati of Professor William R. Ware, of New York, as Secretary of the American Institute of Architects, succeeding Mr. A. J. Bloor. Mr. Bloor, who, during his long and faithful service as Secretary, has done, perhaps, more than any other member of the Institute to maintain its dignity and usefulness, some years ago found the burden of his duties too great for his strength, and for a time the work was undertaken by others, but in 1880, when, on the resignation of Mr. Congdon, the Institute was in danger of being left without a Secretary, he generously consented to resume the labors of the office from which he now retires with the well-merited gratitude and esteem of the profession. Concerning the qualifications of his successor it is needless to speak, since every one knows of his distinction as an architect and writer on technical subjects, as well as of his success in creating the school of architecture in Boston, from which he has only lately been transferred to wider usefulness in New York. Whatever a thorough understanding of professional interests, and self-sacrificing devotion to them, can do to fit a Secretary of the Institute for his responsible position, is already done for Professor Ware, and the influence which he has long so wisely exerted to benefit the younger generation of architects, will now find a still larger field for its activity.

A VERY important decision has been rendered by the New York Court of Appeals, the highest court in the State, in the case of Story, an owner of real estate on Front Street, in New York City, against the New York Elevated Railroad Company, which, as the plaintiff alleges, deprives him of the rights and privileges in the street, to which, as an abutting owner, he is entitled, by maintaining a railroad over the middle of it. The two lower courts decided for the railroad company, but the Court of Appeals has reversed the decision, and gives judgment, by the votes of four out of the seven justices, in favor of the plaintiff. Front Street was reclaimed from the sea, and was once, with the tract adjoining, the property of the city, which conveyed lots on each side of it, describing it as a public street. This, in the opinion of the judges, gave the purchasers of the lots a right to the use of the whole street, with all the light and air which it is a part of the object of streets to supply, and the plaintiff, taking his title from the original grantees of the city, is justified in claiming that the street shall be kept open and continued as a public street for the benefit of his and other abutting estates. That such a privilege as this, belonging to his property and acquired in connection with it, shall not be taken away or abridged without compensation, is expressly provided in the Constitution of the State, and as the elevated railway track unquestionably interferes with the light and air as well as the freedom of passage afforded by the street, and will continue to do so as long as it stands there, the plaintiff is entitled to an injunction to prevent it from being maintained there. In view, however, of the injury which would be inflicted upon the railway company by a summary stoppage of its traffic, the Court withholds the injunction to give time for an amicable arrangement for compensation to be made between the parties.

THE Mutual Union Telegraph Company proposes to introduce certain novelties in the conduct of its business. In Switzerland an arrangement has long been in use by which any person can hire a telegraph wire, with the operators at each end, for a fifteen-minute conversation with some other person previously notified to be present in the office at the other extremity of the line. The Mutual Union Company improves on this system by undertaking to make appointments for two persons who wish to communicate with each other to meet in the offices nearest to their respective places of business, and furnishes them at the given time with the services of the two operators and a wire for as many minutes as may be agreed upon. This new plan, which extends the convenience of the telephone to the long distances of the telegraph, is likely, we should suppose, to prove very popular among business men.

THE first civil suit for damages against the proprietor of the Randolph Mills, in Philadelphia, which were burned a year or so ago with considerable loss of life, has been decided in favor of the plaintiff, who was awarded the substantial sum of forty-five hundred dollars. Unless the decision should be reversed by a higher court the suit will be followed by several similar ones, and the owner of the mill will have to pay dearly for the indifference to the welfare of those dependent upon him which brought so many of them to a cruel death. We imagine that most persons will view with equanimity the transfer of money from the pocket of the person who profited by the labor of the innocent victims of the fire to that of those who have been needlessly deprived of the comfort and support which that labor earned for them; and the fashion of claiming pecuniary indemnity from selfish and careless employers for the consequences of their neglect would, if it were to spread, do much more to reform the condition of small manufactories than the untenable indictments for manslaughter, or the ill-executed building laws, which are now thought sufficient for the purpose.

THE New York *Times*, in an editorial upon "Competitive Designs for Statues," laments the rapid increase of "bad, stupid and indifferent monuments," in this, as well as other countries, and attributes the evil in part to the competitions which are held for designs. In its opinion the bare announcement that competitive designs will be received from sculptors eliminates at once the men of character and reputation, who are unwilling to submit the question of the merit of their work to the decision of unskilled amateurs, such as usually compose the committee, even if the prizes offered were adequate to the time and labor involved, which is very rarely the case, and the competition usually turns out a total failure, or the prize is carried off by some manufacturer of monuments, rather than an artist. The remedy which the *Times* proposes for this state of things is, we think, a very doubtful one. "If committees on monuments cannot decide unanimously on one sculptor," it says, "the only way to do is to visit several sculptors in succession, talk the monument over, and engage each to deliver a design at a fixed price. The deliberation should then be kept secret, and should it turn out that portions of several designs are taken to form the monument, the authors of those designs should be approached, and their rightful claims satisfied by an amicable arrangement." Although the intention of all this is fair enough, we imagine that committees would find good sculptors quite as averse to entering into competition on these terms as they are under the present circumstances. The idea that his design will be judged by unskilled amateurs is

sufficiently discouraging to an artist, but a further prospect that "portions" of it "by an amicable arrangement," may be taken to combine with portions of some one else's design is worse still; and the number of sculptors who care so little for their reputation as to accede to any such proposition must be small indeed. If artistic competitions are to continue, as is in some respects desirable, and in any case probable, the way to induce men of ability to enter them is to make them fair and unquestionable tests of that ability. There is no one, ambitious to excel in his profession, who is not pleased with an opportunity to gain distinction, even at a considerable sacrifice of labor or money, but the distinction to be gained must be real, and while the history of art sufficiently shows the willingness of the ablest men of their time to try their skill in contests where lasting fame is the certain reward of the victor, a competition which is to be decided by laymen, or even by experts of obscure reputation, or worse still, by the local prejudice, or political influence, or personal favor, which are, rightly or wrongly, charged with determining the result in too many instances, is looked upon by any artist worthy of the name as a transaction more or less degrading and disgraceful, according to the intention of the parties, to all concerned in it; and a sculptor whom necessity or trust in undue influence leads to take part in such is despised accordingly.

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A correspondent asks us whether any means can be invented "to teach committees who have public buildings in charge that a gratuitous competition without expert judges will not bring them a single design worthy of execution." To this we can reply at once that there is a very effectual means for accomplishing the desired end, and that is, the refusal of reputable architects to enter such competitions. As soon as it is understood here, as it is in other civilized countries, that no architect will respond to any invitation to compete except on the terms recognized by the profession — that the award shall be publicly made by experts of reputation, and that the execution of the building or other structure, at the usual commission, shall be confided to the winner of the competition, — then, and not till then, shall we see the last of the ridiculous, unfair and disgraceful scrambles which are maintained by the folly, and at the expense, of those architects, particularly the younger ones, who imagine that they are to obtain some private advantage by degrading themselves and betraying the interests of the profession, for the benefit of persons who, to say the least, will not be rendered more scrupulous in treating them by witnessing their own disloyalty to their fellows. There is in this country plenty of work for all the architects in it to do, at a fair remuneration. No one else can do it, so that they are sure of the employment, and if they choose to do it for less than it is worth, they have only themselves to thank. A beginning has already been made in St. Louis, by an agreement of a large number of architects to have nothing to do with competitions where certain proper conditions — the appointment of expert judges among them — are not complied with. If a similar understanding could be arrived at between the architects of other places, we should soon see a great change in the conduct of competitions, which, instead of artifices for deluding, cheapening and degrading the profession, would become the recognized and honorable means for introducing the younger architects to lucrative practice, while the established and busy ones, in return for the loyalty of their juniors, would gladly lend their influence in sustaining these against the attempts of astute selfishness to take advantage of their youthful hopefulness and lack of caution.

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A new suggestion for the prevention of disastrous floods in the Mississippi River has been made by Mr. Lyman Bridges, a civil engineer of reputation, who points out that in times of overflow a considerable volume of water finds its way to the Gulf of Mexico by way of the Atchafalaya River, which is simply another name for a network of lakes and bayous extending from the mouth of the Red River to Atchafalaya Bay, and connecting with the Mississippi by three or four different channels. Mr. Bridges thinks that the depression of the Atchafalaya has long formed an outlet for a portion of the Mississippi water, and says that, owing probably to the greater violence of the freshets following the destruction of the forests in the river valley, the width of that stream has been increased since 1850, by natural causes alone, from seven hundred and thirty feet to twelve hundred feet, and its maximum depth from fifty-two to more than one hundred feet; and this in spite of all the efforts which have been made, at a cost of more than a hundred millions of dollars, to confine the water of the Mississippi within its present channel. Quite recently a steamboat was navigated by the Atchafalaya route from Chicago to the Gulf of Mexico, and as the distance from the mouth of the Red River to the Gulf by this course is only half as great as by way of New Orleans, the improvement and deepening of the stream would be a great service to the inland commerce of the country, while space would be provided for one-third of the flood-waters of the Mississippi, which now tax the levee system to the extreme limit of its strength.

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An interesting plan has been formed in Paris by an intelligent and enthusiastic manufacturer of furniture for the establishment of an atelier devoted exclusively to the production of articles of furniture to be supplied to other manufacturers as models for use in their business. Every expert has observed the uncertain taste which seems to prevail even among dealers of the highest reputation, who exhibit for sale articles of beautiful form side by side with the most clumsy and vulgar objects. The explanation of this is probably to be found in the character of the designers employed, one of whom may be a person of cultivated taste and skill, among a number of others remarkable chiefly for their stolid indifference to any of the graces of proportion or modelling; but ugly design is cheap, and so long as such furniture can be sold it will be made. The Paris plan, however, seeks to economize the cost of designing, — a large item in the expenses of a fashionable manufacturer, — at the same time improving its quality, by the formation of a school of young artists, under competent direction, who will study their specialty with intelligent interest, and be led by emulation to strive after the highest excellence. Their productions, costly in themselves by reason of the care with which the design of every detail is studied, can be reproduced by the hundred at a much lower price, and although work so multiplied would soon lose its novelty, it will not lose its beauty, and it is only foolish persons who cease to find pleasure in pretty things after they find that their neighbors have the same. The extraordinary popularity of late years of certain familiar patterns of minor metal-work, such as sconces and dragon candle-sticks, is a proof of the general appreciation, in the long run, of designs of real merit. Hundreds of novel suggestions for the same things have had their day and passed by, but the beautiful old patterns are as much favored as ever. The case would undoubtedly be the same with furniture, and sets of intrinsic beauty or grace would command a constant sale long after their design had become familiar to every purchaser.

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The explosion in a manufactory of fireworks at Chester, Pennsylvania, about a year ago, seems to have resulted in the discovery of a new detonating compound which may prove valuable in the arts. After the Chester catastrophe, in which it was suspected that a quantity of blue-fire composition played a considerable part, another explosion of blue-fire took place in New Zealand, where a chemist's assistant was burning some condemned composition, and threw water upon it to extinguish it; and Professor Jackson, following this clue, succeeded in reproducing the same result, and in determining at will the detonation of a substance hitherto regarded as incapable of decomposition in that way. In an experiment tried at Woodbury, N. J., a tube containing two pounds of blue-fire was placed in the ground, and a large stone laid upon it. The charge was then fired by means of a percussion cap ignited by an electric spark, after the mode employed with dynamite cartridges, but the explosion produced is said to have been even more violent than that of dynamite. The stone laid on top of the charge was shattered, a large hole was dug in the ground, and a cloud of dirt and dust was thrown a hundred feet in the air. An equal quantity of gunpowder fired under the same conditions produced no particular result, but when a second cartridge of blue-fire was placed in position, with a little powder on top, and the powder fired in the usual way, the concussion caused by the explosion of this caused the detonation of the blue-fire, with the same violence as in the first instance. When the blue-fire composition was lighted with a match it merely burned away. The material is composed of chlorate of potash, ammonio-sulphate of copper, and either shellac or sulphur, and is much more stable and safe to handle than the compounds of nitro-glycerine, while its explosion is produced with the same certainty, either by a percussion primer or one of gunpowder, and whether the composition is wet or dry.

## GIRDERS. — IV.

### III. — TO DETERMINE SECTION OF GIRDER.


We now have given or have obtained the following conditions:

1. The bending moment $M$ and the shearing strain, acting at any point of the girder and caused by the loading.

2. The stiffness or value of $I$ required at any point of girder.

3. The additional area which must be added to the section at that point for the purpose of safely resisting the shear.

4. The material of which the girder is to be composed.

The problem of designing the required section is then divisible into three parts:

*a.* A consideration of the different forms of section in use, with the different modes of connecting the parts of a compound girder, and of attaching the floor joists to the girder.

*b.* The general methods for determining the dimensions of the section required to have a given moment of inertia, or *vice versa*.

*c.* Applications of these methods to practical examples.

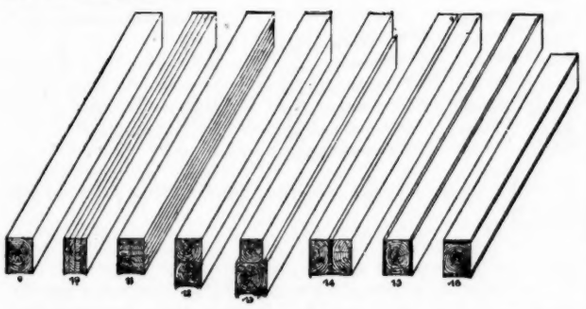
### A. — CLASSIFICATION OF GIRDERS.

I. — *Principally composed of wood.*

1. Single; merely a timber of rectangular section. Fig. 9.

2. Composed of several timbers set vertically beside each other and firmly fastened together. Fig. 10.

With proper fastenings this form is just as strong as the last, and is frequently preferable, especially for long continuous or horizontally curved girders.



3. Composed of several timbers laid one on the other. Fig. 11.

If the timbers are not fastened together the strength of such a girder will be little more than the sum of the strengths of the timbers taken separately, since if the girder were loaded the timbers would bend and slip on each other, appearing as shown in Figure 45; but if firmly fastened, so as to prevent all slipping, the girder would act as a single beam of equal depth, and would appear as in Figure 46.

Letting $n$ = number of timbers of which the girder is composed, the girder would then be very nearly $n$ times as strong as if the timbers were merely laid on each other and not fastened. This fact shows that this form of girder should only be employed when it cannot be avoided, and that great care must be taken to fasten the timbers very firmly, so as to prevent all slipping. This may be done as suggested in Figure 47.

*Modes of connecting joists and single girders.*

This must be so done as not to weaken the girder, or allowance must be made for this loss of strength.

*a.* Joists merely rest on top of girder. Fig. 36.

The ends should overlap several inches and be well spiked together; it is also well to bridge the joints over the girder, to prevent their tipping over sidewise.

*b.* Joists partially notched into the girder. Fig. 37.

*c.* Joists gained into the girder. Fig. 38.

*d.* Joists tusk-tenoned into girder. Fig. 39.

The last method weakens the girder least, excepting the first, as the wood is cut away at the mid-depth of the girder, where the fibres are least strained. Only the uncut area of fibres can be considered in estimating the strength of any girder.

*e.* Joists supported on a plank fastened to the side of girder, and in which the gains are cut. Fig. 40.

*f.* Joists gained into a plank supported by Z-shaped wrought-iron straps or hangers. Fig. 41.

*g.* Joists hung in wrought-iron stirrups. Fig. 42.

The last three methods do not reduce the strength of the girder, and are therefore preferable for heavy floors. The last is frequently required for the ends of trimmers, etc., by city building laws.

4. Girder composed of two timbers of equal breadth. Fig. 12.

5. Composed of two timbers, the lower being widest. Fig. 13.

The last is most common, and is usually preferable.

*Modes of supporting ends of joists on double girders.*

These are gained into the upper timber, the two most common methods being shown in Figure 43. The right hand mode is to be preferred, since each joist must then be separately framed and is more certain to be correctly cut.

*Modes of fastening together the two timbers.*

*a.* By bolts and keys. Fig. 44.

The keys should be made of hard and well-seasoned wood, the fibres running the same way as those of the girders, to avoid effects of shrinkage, and also set obliquely as shown in the figure, so as to better resist shearing and to get the benefit of the entire end area for resisting crushing, instead of one-half this area, as would be the case were the key horizontal. At the other end of the girder the key should slope in the other direction. A key at each end will usually be sufficient, since no slipping can occur if the ends are fixed. A sufficient number of bolts must be used to hold the timbers firmly together. There is little advantage in inclining the bolts as shown by the dotted lines, unless the timber is so thoroughly seasoned that no shrinkage can take place, or the ends of the bolts are accessible, which is rarely the case.

*b.* By narrow strips of wood nailed on the sides of the girder. (See *American Architect*, Vol. 10, p. 5). This method is an excellent one, but is only applicable to girders composed of two timbers of the same breadth. The girder is nearly as strong as if a single timber of the same dimensions. But the joists cannot be gained into the upper timber, so that the entire depth of the girder is visible beneath and it has a rather heavy appearance.

II. — *Girders composed of wood and wrought-iron.*

There is some danger of dry-rot in this case, unless care be taken to secure ventilation and to use only thoroughly seasoned timber. Only wrought-iron plates should be used, since cast-iron is not reliable, as it is likely to have flaws, etc.

6. The ordinary flitch-plate girder. Fig. 14.

Composed of two wooden timbers between which is placed an iron plate, the whole being firmly bolted together. This form of girder is much used in St. Louis, but rarely elsewhere in the Western States, as the form shown in Figure 13 is considerably less expensive.

7. Modified flitch girder. Fig. 15.

A single wooden timber is placed between two thinner vertical iron plates, which may be fastened to it by bolts, lag or coach screws, etc.

8. Modified flitch girder. Fig. 16.

Also composed of a single timber, to which iron horizontal top and bottom plates are fastened by screws, etc.

The last two forms are new, so far as known to the writer, but the last appears to offer considerable advantage over the usual form, as it is easily constructed, and the iron plates are so placed as to do the most good, all their fibres being nearly equally strained, so that their strength is nearly double what it would be if in a single vertical plate, in a flitch-plate girder of the same depth.

9. Modified flitch girder. Fig. 17.

Composed of two timbers, between which is placed a wrought-iron I-beam. This form is also new, and would be considerably stronger than a flitch-plate girder of the same depth and weight of iron; the I-beam can also be more readily obtained and at less expense than the plate, as only its length requires a special order.

The ends of the joists are supported in one of the modes already described for single girders.

In bolting together flitch-plate girders the bolts should not be arranged as in Figure 48, but placed near the mid-depth as in Figure 59, or as in Figures 60 and 61, where a wrought-iron strap passes around the lower part of the girder, to prevent cutting the lower fibres by bolt holes. Bolt holes in the upper part are not injurious, as these fibres are in compression.

III. — *Cast-iron girders.*

Cast-iron is not a good material, since it is very liable to hidden flaws and is apt to give way without warning when subjected to heavy loads, sudden shocks or changes of loading, and its strength is greatly diminished by heat and probably by severe cold. It should not be employed for girders, but it is and will doubtless continue to be used until wrought-iron becomes considerably cheaper than it now is, and the defects of cast-iron become better known. Cast-iron girders are simple, being very rarely composed of several parts bolted or riveted together.

Since cast-iron can resist about five times as much compression as tension, it is evident that the lower portion of the section should be of considerably greater area than the upper, and this is always the case in well-proportioned girders.

Cast-iron girders require to be stiffened by cross-plates, as shown in Figures 55 and 56, to prevent the girder from giving way by tipping over sideways, or by the separation of the flanges and web at their junction. These cross-plates may be from one to two feet apart, according to the dimensions of the girder. All junctions of parts at right angles should be carefully rounded, to prevent cracks from starting there on the cooling of the girder.

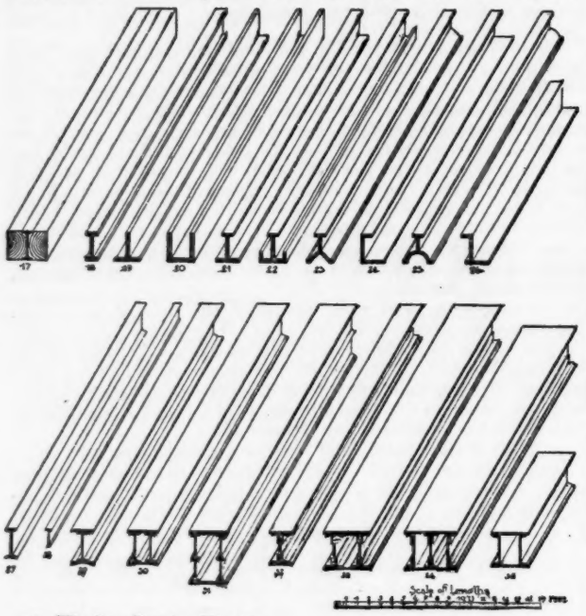
Since special patterns must be made for cast-iron girders, the section of the girder is usually diminished from the centre of girder towards its ends, usually in the height of the section only. It is usual to make the end heights from one-half to two-thirds that at the centre, then striking a circular arc through the three points, which forms the top of the girder. The bottom is usually straight and the girder of uniform width horizontally.

10. The I girder. Fig. 18.

This form is not now used, but was employed before Hodgkinson discovered that the lower flange should be larger than the upper.

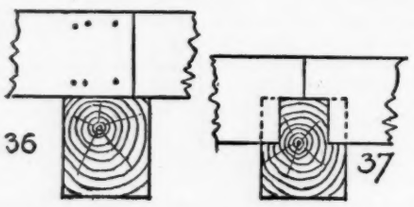
11. The inverted T girder. Fig. 19.

Sometimes used and preferable to the last, though weak sidewise.



12. The box lintel. Flg. 20.

The most common form of cast-iron girder, especially for supporting walls of masonry above the usual iron and plate-glass fronts. The girders extend from centre to centre of the columns, and have ends cast on, which are bolted together.

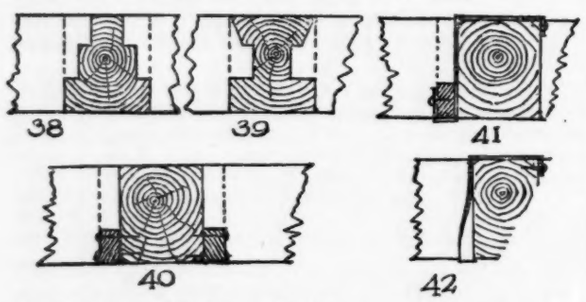



13. The Hodgkinson girder. Fig. 21.

Frequently employed, and the most economical form of cast-iron girder when it is suitable and is properly proportioned.

14. The modified Hodgkinson girder. Fig. 22.

Side webs are added, which aid in supporting the bottom plate, making the girder much stronger, especially when required to support a wall. Frequently used for supporting walls over large openings and much stronger than a box lintel of equal weight.




15. The inverted Y girder. Fig. 23.

The writer is not aware that this form is ever used in the United States, but saw it near the Docks in London. It is less economical than the Hodgkinson girder, but is better adapted for supporting the brick arches of fire-proof floors, as the skew-backs are ready formed.

16. Modified inverted Y girder. Fig. 25.

This might sometimes be preferable to the last, for the sake of appearance, and also might possess a little greater stiffness.

17. The L girder. Fig. 24.

Common; especially used for supporting the inner edges of the large stone slabs now used for city sidewalks.

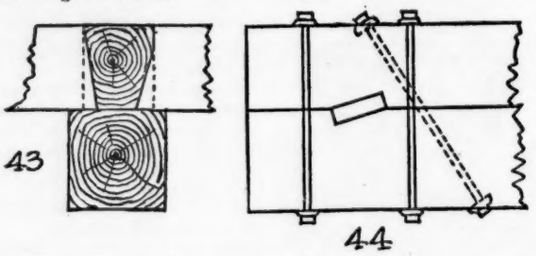
18. The Z girder.

Sometimes employed in Germany. Liable to give way by tipping sideways.

Joists or beams are attached to cast-iron girders in various ways.

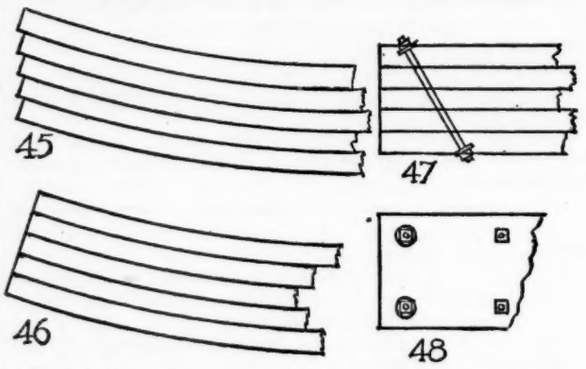
*a.* By merely resting on the lower flanges.

*b.* By means of angle pieces resembling those used for wrought-iron beams and girders, riveted or bolted to the girder and joist or beam. Figs. 53 and 54.



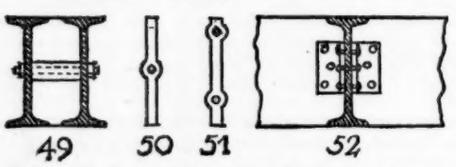

IV. — *Wrought-iron girders.*

These are much to be preferred to those of cast-iron, as they are far less liable to defects, and the process of manufacture renders them of more nearly uniform quality. In many cases they are also cheaper, and are not so liable to injury from sudden shock. They are not fire-proof, though incombustible, being much affected by heat, and therefore require protection by means of some fire and heat resisting material.




Wrought-iron girders are usually made of uniform section from end to end.

Certain stock forms are principally used in the manufacture of girders, as these can be more cheaply obtained than special forms of section, and it is essential for the architect to pay attention to this point in designing a girder. Examples of these sections can be found in the pocket-books published by the different iron manufacturers, especially in that of Carnegie Brothers, edition 1881, and in that of the Phœnix Iron Company.

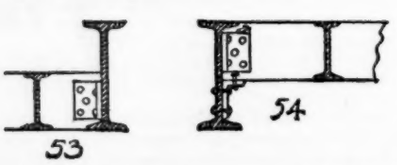



Compound wrought-iron girders are built up from the following:

*a.* Wrought-iron plates of various thicknesses and widths.

*b.* I-beams or channel-bars of various sizes.

*c.* Angle irons, which are principally used for connecting together the different parts of the girder.




These are fastened together by rivets, rarely by bolts, and these are spaced farther apart than in boilers. The arrangement of the rivets is usually left to the manufacturer, the architect determining the section of the girder and the kind and dimensions of the parts.

The vertical plates or webs are usually quite thin and require to be stiffened, which is usually done by riveting on vertical T-bars with the stems projecting as shown in Figures 57 and 58, in horizontal section.

19. The I-beam or girder. Fig. 27.

Sometimes used singly as a girder, but more commonly as a floor joist.

20. The deck beam or girder. Fig. 28.

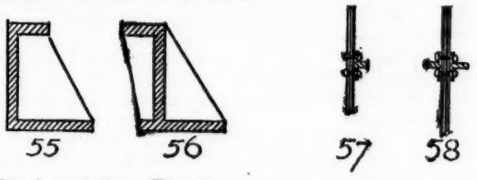
Chiefly used as a floor joist in ship-building.

21. The double-I girder. Fig. 49.

Composed merely of two I-beams placed side by side, with cast-iron separators placed between them, shown edgewise in Figures 50 and 51, and then bolted together. This has no top or bottom plates, but makes a very good and cheap girder for supporting walls over openings, etc.

22. The I girder. Fig. 29.

Composed of an I-beam and top and bottom plates riveted on each flange of the I-beam. Liable to tip unless the vertical web is carefully stiffened by vertical T-bars.

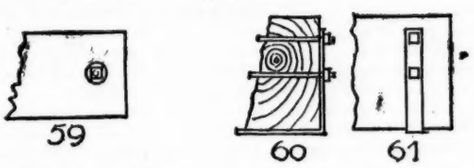



23. The box girder. Fig. 30.

Composed of two I-beams with top and bottom plates. An excellent and economical form, especially for heavy floors, supporting walls, etc.

24. The U. S. box girder. Fig. 31.

Composed of top and bottom plates, with four I-beams placed in two tiers and riveted together and to the plates. This is much used in the construction of buildings for the United States Government, and is excellent, as a much deeper girder can be constructed than is possible with a single depth of I-beams. It is also quite stiff sideways. Not quite so economical theoretically as the form shown in Figure 33, but probably as cheap practically.




25. The I girder. Fig. 32.

Composed of top, bottom, and web plates, with four angle irons. May be made of any size, but must have vertical stiffening bars.

26. The ordinary box girder. Fig. 33.

This is the usual form, and is composed of top, bottom, and two web plates, with four angle irons.

27. The double box girder. Fig. 34.

Similar to the last, but having an additional web and four more angle irons. Sometimes preferable, especially for very large or heavily loaded girders.

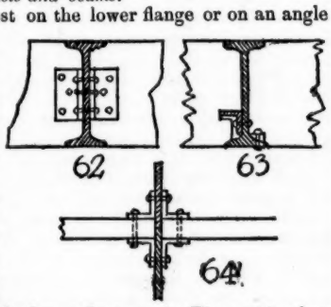
28. The box girder. Fig. 35.

Composed of top and bottom plates with two channel-bars. Rarely used, except for very light work.

Wrought-iron requires careful protection from dampness or water; large girders should therefore be painted inside before they are put together, unless large enough for a man to crawl through.

*Mode of supporting joists and beams.*

*a.* Wooden joists either rest on the lower flange or on an angle iron riveted to the side of the girder, as in Figure 63. They are held in place by angle pieces riveted or bolted to the side of the girder and through the joist, as shown in Figure 62, or in horizontal section in Figure 64.




*b.* Iron beams, if of the same depth as the girder, rest on its lower flange, and are held in place by angle pieces, as in Figure 52. If of less depth, they rest on an angle iron as in Figure 54, or on the lower flange as in Figure 53, when the girder is not to be visible beneath.

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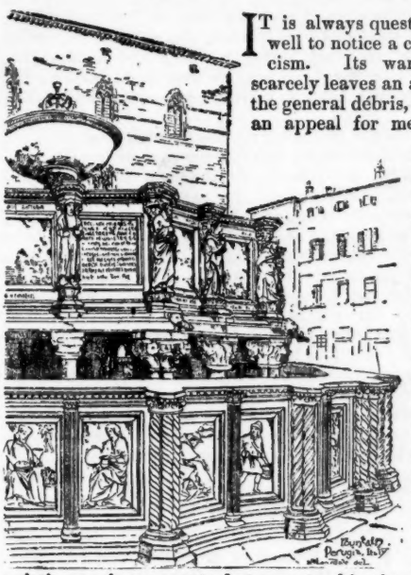
LEGAL CASE ARISING OUT OF THE NICE THEATRE DISASTER. — The tribunal of Nice has given judgment in a suit arising out of the fire at the Italian theatre in that town. After that calamity a subscription was opened for the families of the victims, and a committee was organized by the municipality to preside over the distribution of the funds raised. The majority of that body, in spite of strenuous opposition from the minority, required from some of the parties relieved a receipt by which they renounced all right to bring any further claim against the committee, the town of Nice, or any other person, with regard to the fire, declaring themselves satisfied with the compensation given. Some of the parties, however, repudiated that engagement, and claimed compensation from the municipality, which replied that the applicants were barred by their receipts. The affair has come before the Tribunal of Nice, which has given judgment that the condition was void. It has still to decide who is responsible for the fire, and must indemnify the sufferers by it, also whether the sums received from the produce of the subscription shall be deducted from the damages that may be awarded, or not be taken into account. —*Fireman's Journal.*

## ARCHITECTURE IN AMERICA.

VENICE, ITALY.



IT is always questionable whether it is well to notice a certain class of criticism. Its wanton destructiveness scarcely leaves an available ruin, amidst the general débris, upon which to fasten an appeal for mercy. The only resource, to impugn its method seems unpleasantly like a "*tu quoque*" form of argument. Mr. Cook's article upon architecture in America obviously belongs to this class of criticism.

There was an ancient and time-honored custom amongst the Malays, when under mental excitement, which allowed them to dispose of their neighbors summarily, with any weapon that presented itself. It was a rapid method for quieting one's opponents, but open to objections: it seemed to imply a mental inefficiency to deal with that kind of a problem. Activity of that sort raised more opposition than it subdued, and could hardly be called praiseworthy. Criticism, however, occasionally adopts such a method, and in such cases need expect to be considered accordingly.

Hamerton states in his paper upon art criticism, which we hope Mr. Cook has read, that one of the duties of the art critic is that "of defending true living artists against the malice of the ignorant;" and proceeds, "A peculiar form of this duty is the defence of young artists whose powers, as yet, are but imperfectly developed." This duty Mr. Cook naturally evades; possibly it may be but an unwieldy, two-edged sword in his hand, with the backward edge uncomfortably sharp. However that may be, the feeling that *noblesse oblige* may even be rife amongst critics without sensibly diminishing their influence, and the "little wanton boys" upon their "sea of glory" whose brilliancy naturally blinded their eyes to the merits of Mr. Cook, may justly think that they deserve at least the right of attention.

We appeal to Mr. Cook's mercy and will try to give some reason for our being, apart from that of being toys for critics of his calibre.

Versatility of powers is given to but few men to any extent, and the general tendency is for men to become specialists. The architect's "specialty" can hardly be called by that name, as it embraces a number of subservient specialties and is greatly benefited by contact with the world of letters upon the one side, and that of the artisan upon the other. It is rather a well-balanced collection of specialties.

To occupy such a position successfully necessitates long and varied study and much discrimination and judicious application. Distasteful as well as tasteful subjects must be assimilated. The usual tendency upon the part of the younger men is towards partiality in certain directions. They naturally make mistakes; it is almost their prerogative. To be perpetually *en regle* would be apt to imply monotonous mediocrity.

Is it not more the duty of the critic to encourage the good intention which created the mistake than to sneer at the failure? Eclecticism is a hard mistress, and yet the only true one. Liberality in education only too frequently becomes merely superficial; but is that any argument against a liberal education? In the name of common sense, what is it that Mr. Cook would have us do?

We study in "studios and offices," and make "pedestrian tours," and apparently to no purpose. What substitute has Mr. Cook to offer for the attainment of what he appears to be anxious for, that "every building should show itself fitted by its plan and proportions for human occupation and enjoyment?"

It has been thought to be an axiom among architects that one of the tests of skill was the power of making as grateful to the eye as possible an exterior or an interior which from mere utility would be offending. Therein it was thought lay the principal *raison d' être* for the artistic education of an architect.

Apparently we must reform all that. Mere utilitarianism has, we will say, usually the tendency to be naturally beautiful (according to Mr. Cook), the innate hideousness of many small, active American and European towns to the contrary notwithstanding. It is an old doctrine; but is it not barely possible Mr. Cook may have overlooked the important factor of time as a beautifier?

The second and complementary reason for the existence of the architect was closely allied to that for a military commander — his position was to be paramount, his decision arbitrary and final. Somebody nad to decide necessarily: the proprietor, who occupied somewhat the position of a Home Government, neither having time

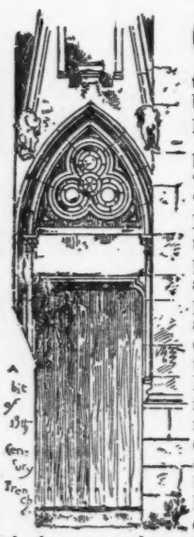
nor knowledge to attend to detail, but holding the power of criticism and removal. Under such a state of things the builder would necessarily take a "back seat," and the chief difficulty has been that he has not been sufficiently held there: the obvious reason for the supremacy of the architect being that *very* liberal education which Mr. Cook at one moment seems to depreciate, and at the next to eulogize. Has Mr. Cook any better system of relative positions to advocate?

It would be superfluous to formulate the architectural creed of the younger men. It undoubtedly differs somewhat with each individual, and with each has many flaws; but the doctrine of simplicity is by no means original with Mr. Cook, or absent in the code of the young men; on the contrary it is nearly universal. But simplicity, with most people, is an acquired habit. Youth naturally delights in exuberance, and a wall-surface is as tempting to a young architect as a sheet of white paper to the embryo artist. The artist later has the advantage that he can focus his subject and get simplicity by the mere suggestion of surroundings; while the architect is bound to rigid line and tint, and must balance his proportions with much more nicety than Mr. Cook does his opinions.

We are entering upon the field not without timidity, with the intention of using what advantages we may possess to the best of our abilities. The intention is certainly not to erect unworthy buildings; it certainly *is* to try for an intelligent and just respect, and it would be pleasant to hear some tones of appreciative regard even from Mr. Cook.

C. Howard Walker.

## GAS-BURNERS.[1]



COAL-GAS, as now supplied to the public, consists of hydrogen and marsh-gas to the extent of about 80 per cent, and the remainder consists of luminous hydro-carbons of various qualities, with traces of sulphur in the form of disulphide.

The gas-supply of London is watched over by a Commission, appointed by the Board of Trade, called gas-referees, who are Professor Tyndall, Professor Vernon Harcourt, and Mr. Pole. They are empowered to prescribe the manner of verifying the illuminating power and purity of the gas, and they have also authority to act in cases of dispute in public lighting. Their prescriptions, as emanating from the only legal body in the kingdom, are accepted as the proper methods, so that in effect, though they are appointed in London, they may be said to be gas-referees for the whole kingdom. But the use that is made of gas is a matter which is altogether out of the control of gas-companies and their engineers, and here the proverb about food and bad cooks may be paraphrased. The great hinderance to the improvements in the use of gas has been the general public themselves, who have not taken sufficient interest in the kind of apparatus employed, but have, as a rule, supplied themselves with the cheapest burners, stoves, and other apparatus, utterly regardless of the waste and annoyance which this system entailed; and when they have complained, they have always attributed the causes of failure to the quality or pressure of the gas, instead of ascribing it to the true cause.

In 1871, the gas-referees made an examination of a number of gas-burners which they had collected from various large establishments, newspaper offices, warehouses, shops, and dwelling-houses, and they found that those burners (samples of those generally employed by the public) would only give about one-half the light that the gas was capable of yielding per cubic foot consumed, and several of the burners tested by them gave only one-fourth of the proper light of the gas.

They say in their report to Parliament: — "The economy to the public, arising from the use of good gas-burners instead of bad ones, is so obvious as hardly to need remark. The gas-rental of London amounts annually to more than two millions sterling. Taking a very moderate estimate, upwards of one-fourth of this sum (£500,000 per annum) might be saved by the use of good burners. This is the saving which might be made in London alone; how much vaster the sum thus economized if good gas-burners were to come into general use throughout England."

Now, the quantity of gas used in London last year, according to the analysis of the London Gas Companies' accounts, prepared by Mr. John Field, was, in round numbers, 20,230,000,000 cubic feet, which is equal to a bulk of one mile square by 726 feet high, and its cost to the public was £2,911,000.

The result of careful trials, made with a number of burners taken lately from private houses and shops, shows that, as a rule, the amount of light obtained by the general public, from five cubic feet of gas, is less than one-half of that which it is capable of giving. The iron and metal burners, of which a great many are used, give the best result in light when they are worn out, although the shape of the flame is bad. The reason why, is that in order to obtain from what is a compound of hydrogen, marsh-gas, and carbon, its best effect in light, the burner must be so made that the quantity of gas required to be consumed is proportionate to the size of the burner, so that it cannot exceed the maximum quantity which the burner is made for. Then the outlet of the burner itself, whether it be of the argand or the flat-flame form must be so arranged that the gas issues forth at a sufficiently low rate of velocity, so that it has time to get heated to a proper degree by the hydrogen and marsh-gas before it comes into combustion with the oxygen of the atmosphere. When this rate of velocity is obtained in an argand burner, the pressure at the point of ignition is almost *nil*. In flat-flame burners the pressure of the gas must be raised to a point sufficient to blow out the flame to a fan-like shape, but it must only be sufficient to do this if it is desired to obtain a good result per cubic foot of gas consumed.

One more point is of great importance in the construction of a gas-burner: that is, that the gas should not be heated until it arrives at the point of ignition. The body of the chamber below the point of ignition must therefore be made of material which is a bad conductor of heat, so as not only to prevent the undue expansion of the gas before it arrives at the point of ignition, but also to maintain the heat in the flame.

Sir Frederick Bramwell very ingeniously pointed out, some time since, that the important point in the proper combustion of gas is not so much to keep the gas cool as to keep the flame hot. The distinction is extremely subtle; but, nevertheless, a non-conducting gas-chamber performs both these important functions. If a gas-chamber made of metal or any good conductor of heat is used, then the gas becomes expanded in bulk and the velocity of the issuing gas is greatly increased, less time being given for chemical combinations necessary to produce a proper amount of light from it. In addition to this, as Sir Frederick Bramwell has pointed out, the heat which should remain in the flame is conducted away from it into the lower fittings of the burner, where it may burn the fingers of the incautious consumer, but it is of no manner of use in the evolution of light.

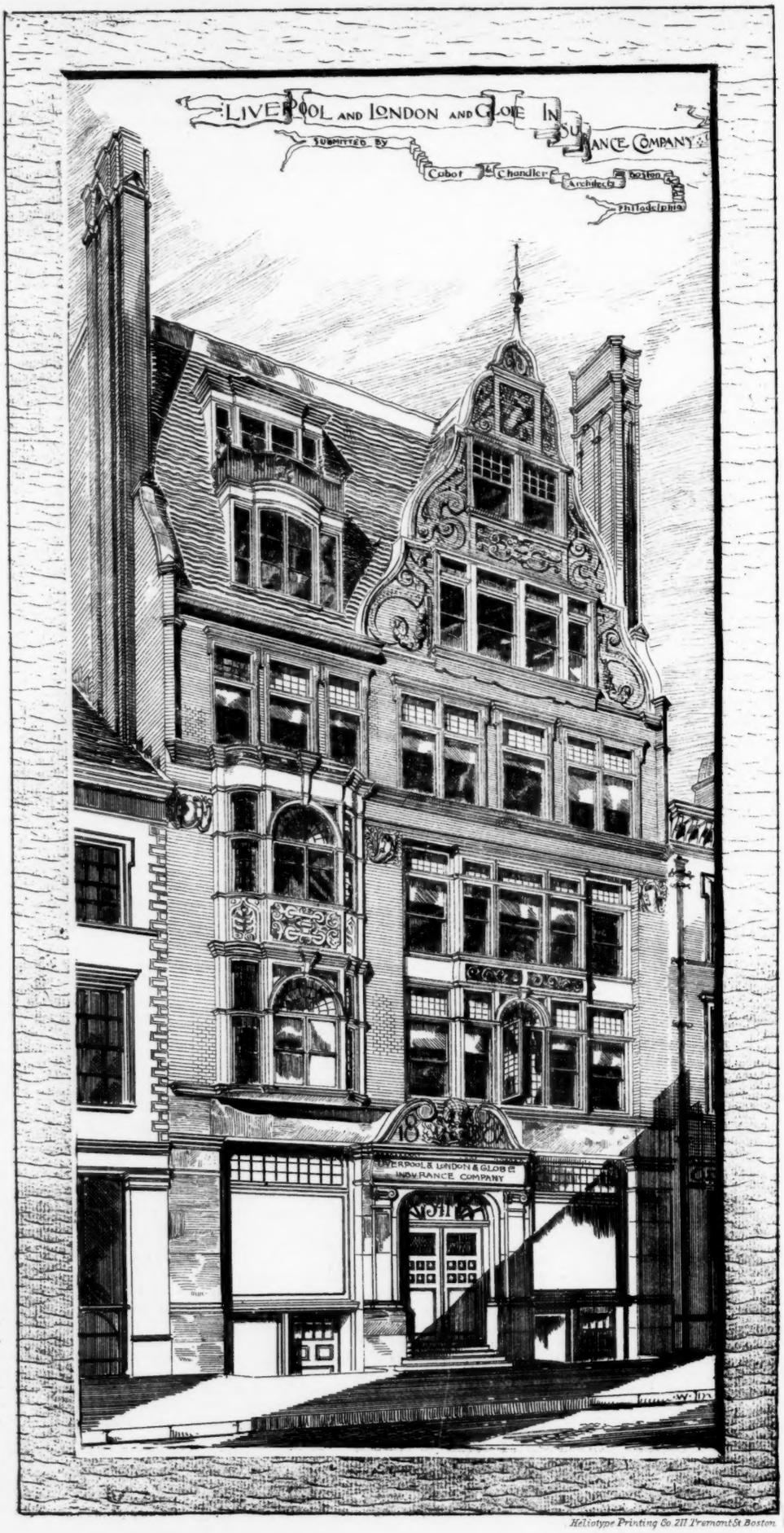
You will, perhaps, say it is not possible to conceive how the flame can be kept hot without keeping the gas cool at the same time, because if the heat is to be kept in the flame, and not conducted away down the stem of the burner, the gas must be kept cool by the means employed. But nevertheless there is a difference in the effects produced, and the ingenious definition of Sir Frederick is scientifically accurate. As an explanation of the expansion theory, it may be stated that if one cubic foot of gas is heated to about 500° Fahr., it will occupy the same bulk that two cubic feet do at the mean temperature of the atmosphere. Now, supposing it is issuing in a cool state from the aperture of the burner at a velocity equal to one and a half miles per hour, it must then issue at the rate of three miles per hour if the rate of consumption is equal in both cases. Therefore it has only half the time in the heated state to combine with the oxygen of the air that it had in the cooler state, and a loss of illuminating power is the result. Again, as regards the maintenance of the heat in the flame: supposing the chamber from which the gas issues is a conductor of heat. In this case, the heat from the flame is conducted away from it down the stem of the burner, expanding the gas and leaving the flame so relatively cooled as to require more gas to raise it to the necessary state of incandescence to allow the oxygen to combine with it in the proper proportions. In this case, as the two operations are simultaneous, it is difficult to apportion the effect produced; but that the effect is produced is proved by the following experiments, made some time since by the late Mr. F. J. Evans.

Two argand burners were made precisely alike in every respect except that one had a combustion-chamber made in steatite, and the other in brass. The same quantity of gas was consumed through both of these, the result being that the burner with the non-conducting chamber gave more light per five cubic feet of gas consumed than the other, the proportion being as fifteen candles to thirteen. The burner with a non-conducting chamber was quite cool immediately below the chamber, while the other was so hot that it could not be touched without burning the hand. The metal burners which are now used in enormous quantities in London and the provinces become exceedingly hot, so much so as to communicate the heat to a considerable distance down the fittings. The velocity of the issue of five cubic feet per hour of gas from these burners varies from ten to sixty miles an hour. The worn-out burners generally give the lowest velocity. As a rule the metal burners give the lowest result in light per cubic foot of gas consumed.

For example, a metal burner of the flat-flame type, which has been stated in the columns of the *Journal of Gas-Lighting* to be identical with the steatite hollow-top burner, invented in 1868, gives the following results: a large-sized burner, No. 8, burning five cubic feet per hour, gave a result equal to 11.5 candles, whilst the result obtained with a like quantity of gas from a steatite burner of corresponding size, which has a non-conducting gas-chamber was 14.5 candles, a difference in favor of the steatite of 3.1 candles, or nearly 25 per cent more light. Another metal burner, of a size more generally in use by the public, only gave 6.2 candles for the five cubic feet, or considerably less than half the latent value of the gas, which was 16 candles.

The fact of the difference of illuminating power with like quantities of gas clearly shows that the two burners are not the same by

[1] Abstract from a paper by William Sugg, A. I. C. E., read before the Mechanical Section of the British Association, at Southampton, and published in the *Journal of the Society of Arts*.

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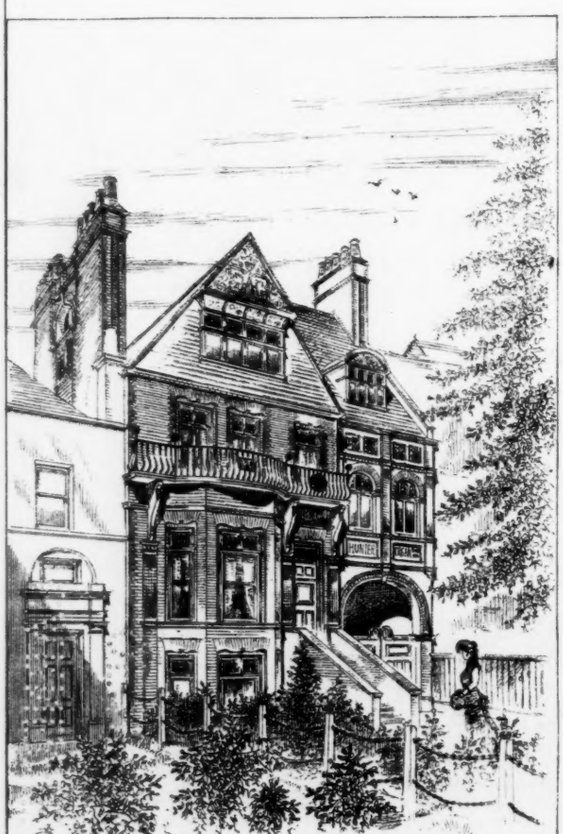
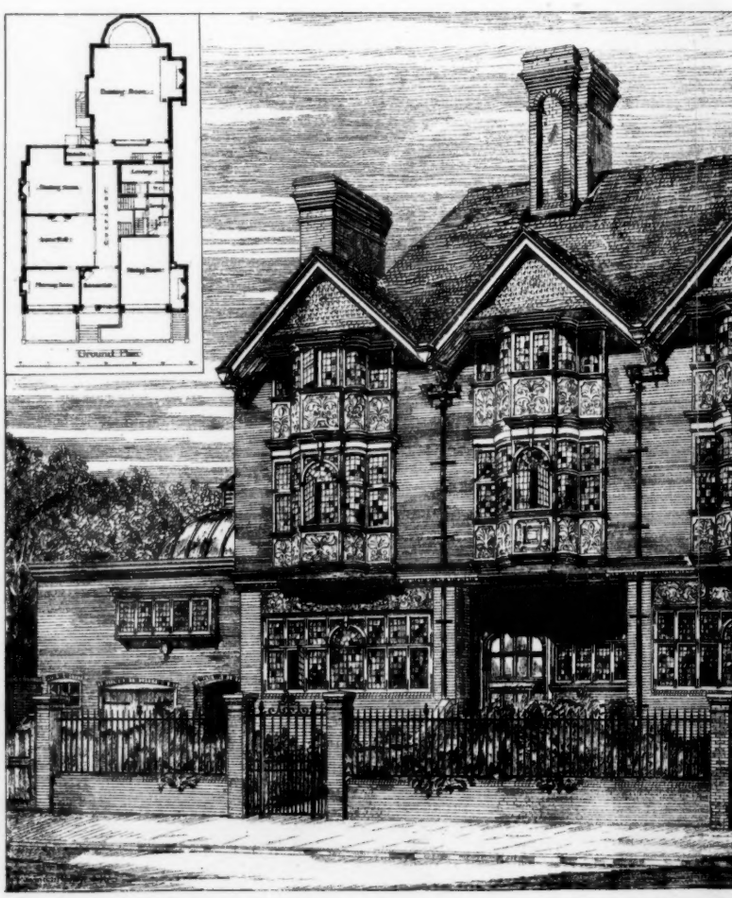


HOUSE IN THE CLAPHAM ROAD, LONDON.—Mr. Sidney R. J. Smith, Architect.




ARTISTS' HOMES No 19 THE House and Studio of FRANK HOLL ESQRE A.R.A.

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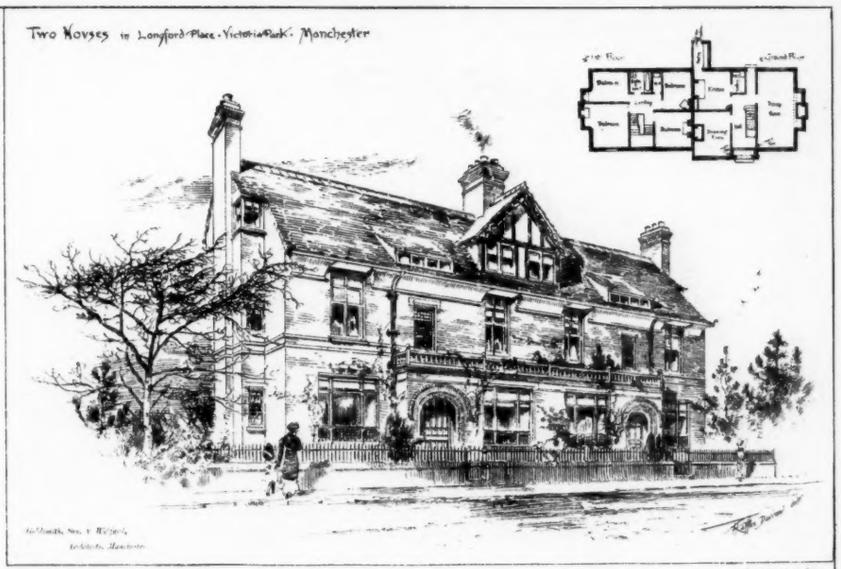
LA SEMAINE DES CONSTRUCTEURS.

Two Houses in Longford Place, Victoria Park, Manchester



The British Architect.

DESIGN FOR PUBLIC BUILDINGS, LEAMINGTON
BY R. KNILL FREEMAN.

...ESQRE A.R.A. HAMPSTEAD. R. NORMAN SHAW R.A., ARCHITECT.

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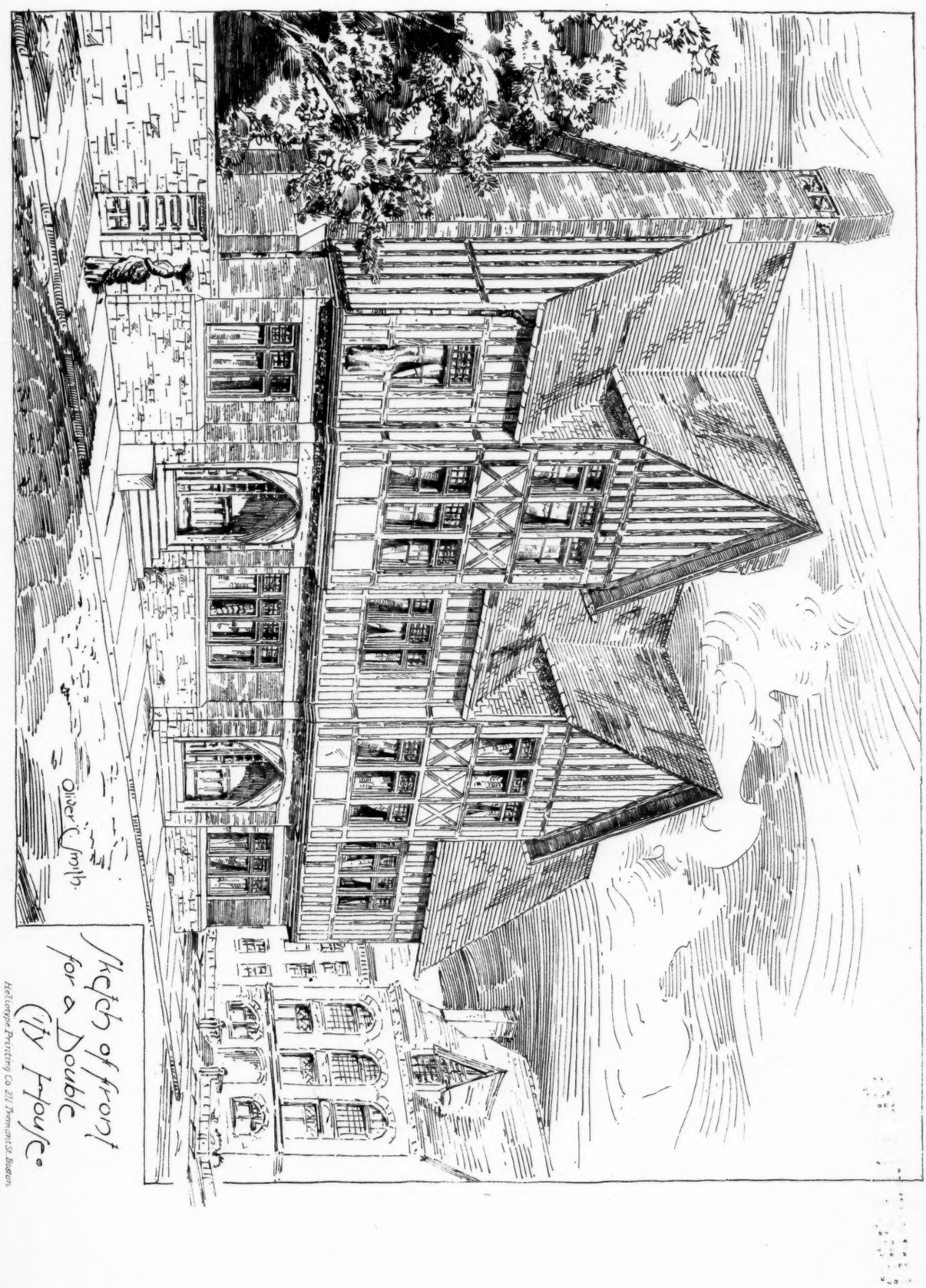


Sketch of front for a Double City House.

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any means. The statement gravely made in the columns of the *Journal of Gas-Lighting*, that they are identically the same, clearly shows that if this is the belief of the gas-trade generally with respect to these two burners, it is no wonder that the public, who rely on the recommendations of the trade, continue still to waste their gas in the manner pointed out by the gas-referees in 1870 and 1871.

As before stated, careful tests of a collection of burners, bought from different gas-fitters and iron-mongers in various towns in England, and from their recommendation, prove that the knowledge of the proper use of gas possessed by these persons is still most incomplete, and therefore the general public continue still to burn gas in the same wasteful manner as they did when the gas-referees made their report.

The remedy for this enormous waste of gas is in the hands of the public only. Gas-producers, whether they are corporate bodies or public companies, are almost powerless to oppose the vested interest which derives large profits from the sale of gas-burners constructed with a view to require frequent renewals. It is only fair to say that the producers of gas have always shown the greatest interest in the improved use of gas in every way; but the speculating builder and his colleague, the local plumber and gas-fitter, hold a final power for evil over the employment of gas, which till very lately has been paramount.

Happily for the gas interest, the general public are beginning to take a deep interest in gas, and are acquiring a great amount of information concerning it, through the numerous gas exhibitions which have been held under the auspices of gas-companies and corporate gas-committees throughout the kingdom, and it is to be hoped that the forthcoming exhibition at the Crystal Palace, in October, will very largely aid the good work of instructing the public how to use gas to the best advantage. Thus we may hope that soon the ring of interest inimical to the progress of gas will be broken through and fresh encouragement given to the inventors of improvements in the use of gas. It will be impossible, in the limits of this paper, to give you a complete idea of all the improvements which have been and are still being made; but I propose to indicate the direction they are taking, and give you a general idea of what they are.

It has been found that a comparatively large quantity of gas, about four to six times that ordinarily used, will give a much better result from one burner per cubic foot of gas consumed than can be obtained from four or six separate burners consuming the aggregate quantity of gas equal to that consumed by the large one, and this is true of both argand and flat-flame burners. This is by no means a new idea; it was known to Faraday and others before him. I have in my possession an old burner made many years ago; it has several rings and a silver top drilled with very fine holes. The quantity of gas used is large; the effect is small — in fact, it is more useful for boiling water than for giving light. But this old burner is a type of a large argand of twenty or thirty years ago; they did not succeed because, although they produced a great amount of light, it was at the cost of too much gas. Modern argands will produce just double the amount of light for the same quantity of gas.

There is also incorporated in some of the newest burners now before the public an idea which was originated by Professor Frankland more than ten years ago, viz.: that if the air for combustion supplied to a burner be heated before it arrives at the point of ignition, a much better result per cubic foot of gas consumed can be realized. This, you will perceive, is a mode of carrying out Sir Frederick Bramwell's idea of keeping the flame hot, and undoubtedly a better result can be obtained. This burner, although it did not come much into use, has very lately been repeated, and is now being sold on the Continent. The burner is so much like Dr. Frankland's that there is no difficulty in recognizing it at once.

Of the modern argands there are now several kinds; one is made with two or three concentric rings of flame and a glass chimney, and is made with non-conducting steatite gas-chambers and apertures permitting the gas to issue under an almost inappreciable pressure at the point of ignition, the velocity per hour being only about one and a half miles. In this kind of burner the gas is kept cool and the flame hot. These were first used in the public lighting of Waterloo Road in 1879, and in Waterloo Place and Queen Victoria Street.

Another kind, of newer type, is made on the theory of keeping the flame hot by making use of the products of combustion to heat the air-supply; this also combines the low velocity of emission theory, and likewise heats the gas itself. It is made by inverting the flame of the burner, the heat generated by the products of combustion being carried away by a concentric flue fastened round the burner, through which metallic tubes convey the air necessary to produce combustion, which thus becomes heated.

A third is constructed on the principle of keeping the flame hot and the gas cool, but has besides an arrangement for admitting separate currents of cold air round the flame, for the purpose of keeping the chimney cool. It is important to observe that, although this burner does not warm the air admitted to it for promoting combustion, yet the results per cubic foot of gas consumed are stated to be as high as any of the others, showing clearly that there is no advantage in heating the gas before combustion. As to the advantage obtained by heating the air, the practical effect upon an argand suitable for use by such ordinary unskilled labor as is usually employed to look after gas-lights has not yet been clearly demonstrated; although it is without doubt a great advantage to burners of the flat-flame type, because these have always too much cold air supplied to them.

The argand, with its more complete regulation of air and its immunity from the effect of surrounding cold air, is able to evolve from fifteen to thirty per cent more light per cubic foot of gas consumed than can be obtained from the best flat-flame burner; but although the general public have no objection to glass chimneys in paraffine and other oil lamps, they do not appear to look with favor upon the general employment of glass chimneys for gas-burners, no matter how much better the result to be obtained. I need not say that the cordial support of the ring inimical to the true interests of gas is given to the public on this point, and a great deal of very strong literature condemnatory of the argand burners has been widely disseminated. But it is impossible, in the face of the improvements which are continually being made in gas-burners of the argand type, to believe otherwise than that they are destined to play an important part in the gas-lighting arrangements of the future. The improvements in the flat-flame burners, though not producing such high results as those obtained from large argands, are great, and concurrently with improved lanterns have placed the lighting of the public streets on a much improved footing. Here, again, about three times the amount of light per cubic foot of gas is obtained from the use of large burners than with the old-fashioned small ones. The consumption of gas by the large ones is only equal to the aggregate consumption of four or six smaller burners. In addition to this, the improvements in the reflecting tops of the lanterns make the new lamps still more effective, and may fairly be said to double the effective power. In internal lighting the progress of gas has been very considerable of late years. Small burners for rooms have been greatly improved; for large rooms and theatres new kinds of sun-burners are made, to give three times the amount of light obtainable from the old ones, and to ventilate the buildings at the same time.

One of the greatest advantages of gas is that the heat generated by the combustion can, if properly applied, be made to do the work of ventilation, and it is in this direction that the future progress of gas-lighting lies. There are many ways of utilizing this heat; some are extremely easy to put into practice, others require more preparation. Among the simplest is the method of ventilating rooms by the fish-gill ventilator, invented by the late Goldsworthy Gurney. It consists simply in covering an opening made in the wall with strips of calico fastened across the hole by tacks put into the two upper corners of each band. The bands are made just long enough for the lower part of the superior band to cover the top part of the inferior one. When fixed properly they open like the gill of a fish, hence the name. They can be used to let in fresh air or carry off heated air from the top of a room.

These useful and simple ventilators, if employed in rooms where gas is used, would tend greatly to the comfort of the public, who require a good light, but complain of the resulting heat. They work when closed by diffusion, the heated air passing through the porous medium of the calico, and the cooler air from outside the rooms passing in without draught. For the ventilation of ball-rooms it is very easy to put into the windows a frame fitted with muslin or washed calico of half or even the full size of the window. Ventilation will thus take place by diffusion, and the draughts and danger resulting from incautiously-opened windows will be avoided. If the wind blows hard on this opening it may be protected by a loose curtain of muslin or calico hanging in front of it.

You will perceive, therefore, from what I have said, that the progress of invention in gas-lighting is great and continuous, and that in the future, if the public will only interest themselves just sufficiently to obtain a moderate amount of information on the subject of gas, they will be enabled to use it with great economy and comfort to themselves in every way. The facile manner in which gas can be employed to produce the light of a rush-light or the blaze of a thousand candles by the mere turn of the wrist, joined to the readiness with which it can be conveyed to great distances without any practical loss, will always ensure a large and growing demand for it everywhere.

But it must be remembered that its extreme adaptability renders it capable of being used with the most crude apparatus as well as the most perfect, and when we see in the public streets the blazing pipe and shovel, a rough but powerful burner of from one hundred to six hundred candles power, rigged up in a few minutes by a navvy, we must not be surprised at the prevalence of crude apparatus of smaller dimensions put into practice by the public, who are not aware that they can do better with a more perfect burner.

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London Theatres. — Statistics have been published in London showing the seating capacity of each theatre in the metropolis. The one that has the largest is the Britannia, which will seat 2,972; next comes the Standard, 2,878; then Drury Lane, 2,781; Her Majesty's, 2,444; Covent Garden, 2,299; and the Alhambra, 2,208. Of other well-known houses the capacity is as follows: Sadler's Wells, 1,568; Lyceum, 1,455; Adelphi, 1,367; Savoy, 1,274; Gaiety, 1,243; Haymarket, 1,158; Globe, 942; Vaudeville, 792; Court, 728; Strand, 704; Criterion, 675; Toole's, 657; Prince of Wales's, 504. For the 41 houses the total is 55,326.

## THE ILLUSTRATIONS.

SEMI-DETACHED HOUSES IN VICTORIA PARK. MESSRS. GOLDSMITH, SON & WELFORD, ARCHITECTS, MANCHESTER, ENGLAND.

[From the *British Architect.*]

THESE houses have been built with a view to get something different from the ordinary, both in plan and elevation; and an effort has been made at the same time to insure that they shall be well built and moderate in cost. The dining-room is an exceptionally large room, running from front to back and lighted at both ends; it contains an arched recess for the fireplace, which has two small tinted glass windows forming peep-holes looking out back and front. The halls and staircases are also wider and better lighted than is usual in this class of houses. This is done by returning the stairs over the entrance, and thus getting a staircase window. There are detached wash-houses and coal-places connected to the houses by covered ways, keeping all steam and dust out of the houses. Each house contains four bed-rooms, bath-room and lavatory, water-closet on first floor, and two large bed-rooms and box-room on second floor. These upper rooms are lit by angle windows, from which very extensive views are obtained. The houses are fitted up with slow-combustion grates, tile-hearths, and curb-fenders. The dining-room chimney-pieces with over-mantels are of wood, with bevelled mirror, and the drawing and dining rooms have dado and frieze moulds round each. The halls are paved with marble mosaic tiles in patterns. The drains are of glazed earthenware pipes carried outside the houses, and at the bottom of each soil-pipe is a Potts's patent Edinburgh air-chambered sewer-trap, the soil-pipes being carried up to eaves as a ventilator. The bath-boilers are of copper, and the cylinder is encased in an air-tight chamber having a fresh-air inlet, and a hit-and-miss grid into hall; this being opened in the winter heats the halls and staircases.

HOUSE IN THE CLAPHAM-ROAD, LONDON. MR. S. R. J. SMITH, ARCHITECT.

[From the *Builder.*]

The house is built of bright-colored stock and rubbed red brickwork, with a Portland-stone balcony and cantilevers under; the gable of the house in the lower part is tile-hung, and the cove and upper part are finished in plaster-work, carved and stamped by the architect. The roofs are covered with red tiles. The whole of the window-frames are shown outside, and have a moulding round where they meet the brickwork, the upper lights of windows above the transoms have lead glazing in, and all the wood-work throughout is painted white. A pleasing feature has been introduced at the side of the house, where a window which lights the upper staircase is brought between the two chimney-stacks with an arch over. A large organ factory has been erected at the back of the house, from which it is separated by a court-yard, and the archway at the side is made so that carts can have access to it. There is a large show-room above the archway nearly the whole depth of the house in length. In the interior there are some turned newels, balusters, and other wood-work, in old-fashioned style. The chief aim in all the work has been to keep close to the homely English brick style, which prevailed in the last century.

ARTISTS' HOMES, NO. 19.—THE HOUSE AND STUDIO OF MR. FRANK HOLL, A. R. A., HAMPSTEAD, ENGLAND. MR. R. NORMAN SHAW, ARCHITECT.

[From the *Building News.*]

We reproduce Mr. Norman Shaw's Royal Academy drawing for this year, Mr. Frank Holl's new house in Fitz-John's Avenue, at Hampstead. The plan shows the principal arrangements of the building, in which a large studio is reached by a direct corridor from the entrance porch. The materials are red brick and Broseley-tiles, the wood-work being painted a cream-white, and quarry glazing being used throughout for the windows.

ALTERNATIVE DESIGNS FOR THE PUBLIC BUILDINGS, LEAMINGTON, ENGLAND. MR. R. K. FREMAN, ARCHITECT.

[From the *Architect.*]

CHATEAU DE SAINT AIGNAN, FRANCE.

[From *Le Moniteur des Architectes.*]

HÔTEL OF M. LE COMTE DE ROZARD, PARIS, FRANCE. M. L. COCHET, ARCHITECT.

[From *La Semaine des Constructeurs.*]

COMPETITIVE DESIGN FOR THE LIVERPOOL, LONDON AND GLOBE INSURANCE BUILDING. MESSRS. CABOT & CHANDLER, ARCHITECTS, BOSTON, MASS.

This design was not accepted for execution.

SKETCH FOR A DOUBLE CITY HOUSE. MR. OLIVER C. SMITH, ARCHITECT, PITTSBURGH, PA.

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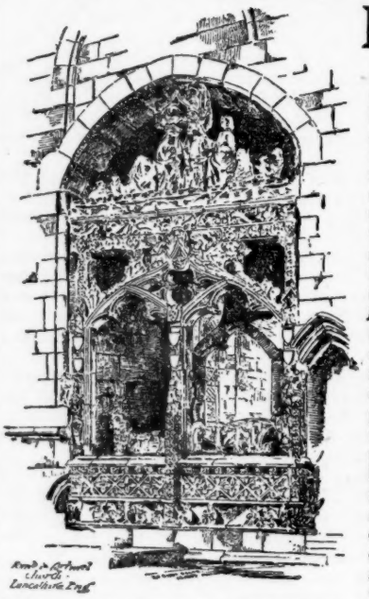
Gallery of Modern Art at Rome.—The King of Italy has signed a decree for a gallery of modern art at Rome. It will be situated in the cloister of Michael Angelo, in the Baths of Diocletian, and will be opened next month. There will be 100,000 francs annually in the budget for the purchase of works by contemporary artists.

## LEGAL NOTES AND CASES.

*Mechanic's Lien.—Against Husband.—Wife's Interest in an unexpired Lease for Nine Hundred and Ninety-nine Years.*



IN an action to foreclose a mechanic's lien filed for services rendered to a husband in erecting a dye-house on land which his wife held as owner of an unexpired term of nine hundred and ninety-nine years, the lienor was defeated, on the ground that the interest of the wife was personal property, to which the husband had no claim. In this case, *Flannery vs. Rohrmayer*, decided by the Supreme Court of Errors of Connecticut, at its last term, Judge Loomis delivered the opinion, the important part of which is as follows: To entitle the petitioner to a sale of the land in question he must show that he has acquired an interest in it. The only interest claimed was derived from the filing of a mechanic's lien for services rendered to George Rohrmayer in the erection of a dye-house on the land, and a subsequent foreclosure of that lien. If Rohrmayer had any interest subject to a mechanic's lien, then it must be conceded that the proceedings referred to had the effect to transfer that interest to the petitioner; but he had only such interest as the law gave him by virtue of his marriage in 1863 to Mary Rohrmayer, who afterwards, on the 1st of December, 1877, became the owner of an unexpired term of a lease of the land for nine hundred and ninety-nine years. And what interest was that? Obviously not that of a tenant by the courtesy initiate, for only estates of inheritance are subject to such a tenancy. 1 Hilliard on R. P. p. 117, § 15. The wife's estate was a mere chattel real. In *Goodwin vs. Goodwin*, 33 Conn. 314, it was expressly decided that an estate in land for the term of nine hundred and ninety-nine years, subject to the payment of an annual rent, is personal property, and that the widow of the tenant could not claim dower out of it. It is elementary law that "chattels real are interests annexed to or concerning realty, as a lease for years of land; and the duration of the term of the lease is immaterial, provided it be fixed and determinate, and there be a reversion or remainder in fee in some other person. It is only personal estate if it be for a thousand years. Falling below the character and dignity of a freehold, it is regarded as a chattel interest, and is governed and descendible in the same manner." 2 Kent Com. 342; Co. Litt. 46 *a*. In *Gay's case*, 5 Mass. 419, it was held that an administrator may sell land holden by his intestate under a lease for nine hundred and ninety-nine years as personal property, without obtaining a license from the court, as in the case of selling real estate for the payment of debts. In *Brewster vs. Hill*, 1 N. H. 350, it was held that a term for nine hundred and eighty-five years would pass by a will under the expression "personal estate."

At common law the husband could dispose of a chattel real during his life, and it might be taken on execution for his debts, but if undisposed of during his life it went to the wife if she survived him, but if he survived her it became his absolute property. 2 Kent Com. 134; 1 Swift Digest, 24. But the common law in this respect no longer applies. The interest of the wife being personal property in contemplation of law, the husband's rights in respect to it are to be determined and limited by the act passed in 1849, which provides that "all the personal property of any married woman, married since the 22d day of June, 1849, and all the personal property thereafter acquired by a married woman, and the avails of any such property if sold, shall vest in the husband in trust for the following uses: To receive and enjoy the income thereof during his life, subject to the duty of expending from such income so much as may be necessary for the support of his wife during her life and of her children during their minority; and to apply any part of the principal thereof, which may be necessary, for the support of the wife, or otherwise with her written assent; and upon his decease the remainder of such trust property shall be transferred to the wife, if living, otherwise as the wife may by will have directed, or in default of such will, to those entitled by law to succeed to her intestate estate." Gen. Stat. Rev. of 1875, p. 186, § 3. Now if we concede, for the purpose of argument, that a leasehold estate may be subject to a mechanic's lien against the owner, or that such an interest as the husband had in it at common law might be so subject, yet in a case like the present, where the above statute applies, it is clear that a mechanic's lien cannot attach to the husband's in-

terest, because it is utterly inconsistent with the trust to which the property is irrevocably devoted by the statute. H. E.

*Fellow-Servant. — Negligence. — Loading Lumber.*

In September, the Supreme Court of Wisconsin, in *Hart vs. Peters*, decided that a foreman or superintendent in a lumber-yard is a fellow-servant of a workman therein, for whose negligence the employer was not liable in damages for a resulting injury. In this case the workman was directed by a yard foreman to count the number of pieces of a certain length piled on a car which he, the workman, had just assisted in loading, and while engaged in making the count, the foreman negligently caused the car to be moved, thereby jarring one of the piles of lumber so that it fell on the workman, and injured him severely. H. E.

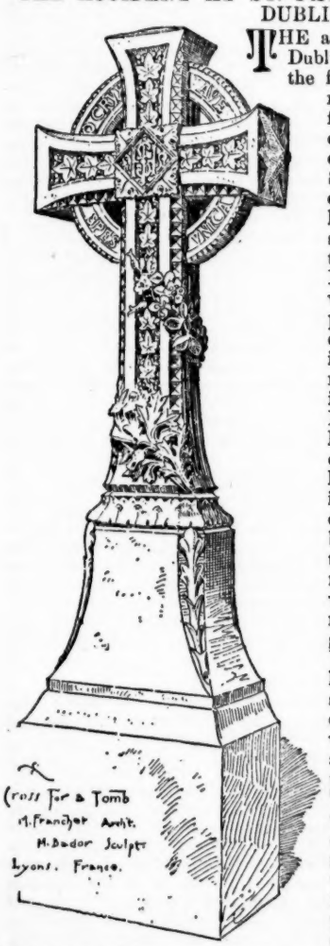
*Mechanic's Lien. — Waiver. — Mutual Accounts. — Repairs. — Other Items.*

1. The right to a mechanic's lien for labor or materials furnished for the erection or repair of a building may be waived by an agreement either expressed or implied. 2. Where no contract is shown except such as is implied from the running of mutual accounts between the parties for many years, with semi-annual settlements, a mechanic's lien cannot be asserted on such accounts, the items of which generally were furnished for current repairs upon machinery attached to a rolling mill. Other items, however, did not relate to repairs of the machinery or building. H. E.

*Chattel Mortgage. — On Household Furniture.*

A mortgage of furniture in a dwelling-house which is made to include also furniture afterwards to be purchased, will cover only the furniture of which the mortgageor was the owner when he made the mortgage. *Griffith vs. Douglass*, Supreme Judicial of Maine, May 31, 1882. H. E.

## THE ACCIDENT AT ST. PATRICK'S CATHEDRAL, DUBLIN.




THE accident which happened in Dublin a few days ago, through the fall of a buttress of St. Patrick's Cathedral, calls for a few remarks, although some of the circumstances of the case have yet to be explained. St. Patrick's is one of the two cathedrals possessed by Dublin, and which have been restored at the cost of manufacturers of intoxicating drink. It is a large Gothic structure, with a high steeple that is comparatively modern, and in the opinion of many of the inhabitants of Dublin is the most remarkable part of the building. Swift was dean of St. Patrick's in the early part of last century, or, to use his own words, was "absolute lord of the greatest cathedral in the kingdom." The cathedral revenues were husbanded by Swift, but in later times they were barely sufficient to meet the expenses. There were no funds available for repairs, and the building was gradually falling into ruin. When the late Dean Pakenham was appointed he resolved to appropriate a part of his income to pay for works, and for several years a few men were to be seen pottering about the cathedral. The way in which the repairs were carried on would gladden the hearts of the opponents of restoration. There was no system, for no architect was allowed to prepare a plan dealing with the cathedral as a whole. The patching of the building was in fact one of those desirable jobs which builders are eager to secure, as they allow of the utilization of spare days. Under such circumstances it would be vain to expect that substantial work was to be executed. Dean Pakenham appeared to be the only man who had an interest in the condition of the building, and it was not difficult to satisfy him. The workmen understood the state of affairs, and they might be trusted to make light of their responsibility. After a time Mr. Guinness, a wealthy brewer, offered to take charge of the restoration of St. Patrick's, and the Dean was glad to hand over the cathedral to him to be operated on. A wholesale restoration was at once undertaken, the extent of it being left to the discretion of Mr. Guinness's builder. The sum expended was so large as to be without precedent in Ireland, or even in England; but, inasmuch as there were no architects' fees, everybody concerned was no doubt satisfied. It would be strange if the fortunate contractor were otherwise.

The Cathedral of St. Patrick's thus became not only an illustration of the munificence of a citizen of Dublin, but a striking example of the success of the policy of dispensing with an architect. It might long have continued to be distinguished on those accounts but for the catastrophe of last week, the origin of which may now be described. The site of the building is at a low level; near it runs a dirty stream called the Poddle, and which is a sort of Fleet Ditch. The lower part of the cathedral was of late years periodically flooded, and at length the authorities were compelled to undertake works for the drainage and security of the foundations. The works consisted of the underpinning of the walls and buttresses, the laying down of a tile floor, and the construction of an engine-house in connection with the hot-water apparatus. The old precedents appear to have been disregarded, for the works were under the superintendence of an architect.

The underpinning of the buttresses was commenced last week. A trench was opened near the north wall, and was excavated a few feet under the foundations. The first buttress that was underpinned is the one which collapsed, killing in its fall a woman and two boys. It was about 70′ high, 4′ wide, and projected 7 feet from the body of the church. As the underpinning was supposed to be simple and likely to be completed in a short time, it was not supposed that any shoring of the buttress was necessary. The foreman mason in describing what was done, said to the coroner and jury that "he took a foot and a half down, a foot and a half at the right, and a foot and a half at the left, and that he pinned up each portion of it before he commenced another." It is possible that the material beneath the buttress was barely sufficient to carry a mass of masonry of which the weight has been calculated to be more than 90 tons, but when a part of the foundation was removed the remainder was overweighted. The remarkable part of the case is that the whole weight came upon the foundation. The buttress was, in fact, stuck on the wall without being tailed in or tied throughout its entire length, and consequently there was nothing to take the load off the ground. It is easy to imagine what followed. A space between the buttress and the wall became evident, but it is needless to say the foreman did not apprehend danger, and nothing was done to prevent an accident. In the middle of the day the buttress fell suddenly in a mass which was not broken until the railings and ground were struck. The street adjoining the cathedral is rather wide, otherwise there would have been damage to some of the houses.

The buttress, which was constructed in so peculiar a way, would seem to be the work of the builder who was employed in 1845 by Dean Pakenham. It is precisely the kind of make-believe that might be expected when work is allowed to be carried on without the superintendence of an architect, and a scrutiny of the building would probably reveal many other examples of defective masonry. The main cause of the accident consequently does not arise from negligence on the part of those who now have charge of the cathedral. It might have been possible to preserve the buttress if the architect and builder were aware that the buttress was practically detached from the wall, but it was not unreasonable to assume that a compact mass of masonry could stand for a few hours if partially supported. — *The Architect.*

## AMERICAN SOCIETY OF CIVIL ENGINEERS.

THE Society met Wednesday, October 18, 1882, at 8 P.M., Vice-President Wm. H. Paine in the chair, John Bogart, Secretary.

The death of Henrique Harris, M. Am. Soc. C. E., on October 10, was announced, and the preparation of a memoir was directed.

A paper by Henry D. Blunden, M. Am. Soc. C. E., on the "Care and Maintenance of Iron Bridges," was read by the Secretary. The writer observed that while many papers and much discussion had been published on the design and construction of bridges, there had been little or nothing on the subject of their care and maintenance after erection. Indeed there seems a prevalent idea that, once erected, they will last forever with no care but an occasional coat of paint, and even that is often not attended to. A close examination during nine years past of a large number of bridges shows constant, shameful neglect. The fact is that the immediate care of bridges is generally left to men who know nothing either practically or theoretically of their design or manufacture. The single idea is to screw everything up tight and to replace all rivets without asking why a rivet drops out several times in the same place. The paper enumerated various causes of undue wear in bridges — uneven bearing of rails and ties; insufficient freedom of expansion-gear, often caused by accumulation of dirt; improper anchoring of fixed ends; poor masonry; uneven adjustment of laterals; uneven bearing of suspended floors; over-tightening of counters; corrosion of iron; false economy in construction of floors, rendering renewals very expensive; too large joints between ends of rails.

The writer also gave a number of suggestions as to the proper care of bridges, particularly insisting upon constant inspection, and frequent reports to the office of the Chief Engineer.

The paper was discussed by Messrs. C. Macdonald, S. H. Shreve,

Theo. Cooper, Wm. H. Paine, J. P. Davis, W. E. Worthen, J. G. Sanderson, C. E. Emery and J. C. Campbell. In the discussion the great necessity of attention to the care of bridges in use was forcibly brought out. Instances were mentioned of the serious results of entrusting this duty to incompetent men, and of the advantage found by the few corporations now taking proper measures. Reference was made to the great difficulty of adjustment in bridges with parts in cast and parts in wrought iron. A case was described in which an iron rod in contact with sulphur became seriously corroded. It was stated that the ordinary commercial sulphur had an amount of sulphuric acid sufficient to cause rust, but that when properly washed it was safe. The use of sulphur or lead for joints was discussed. An ordinary misapprehension as to scale was illustrated by an instance when the actual amount of iron in the scale was found to be but one-tenth of the scale. The use of lime whitewash to protect iron was considered and instances of its good effect were mentioned.

## A PAPER ON WATER-CLOSETS.

Washington, D. C., October 23, 1882.

To the Editors of the American Architect:—

*Sirs,*—The copy of the final programme issued by the Committee of Arrangements for the Sixteenth Annual Convention of the American Institute of Architects, to be held in Cincinnati this week which I enclose herewith, was sent to me by the Secretary of said Association, Mr. A. J. Bloor. By comparing this programme with the account which appears in your last issue, you will see that although my name is down in said programme for a paper on "Water-Closets," to be read the second day of that convention, no mention whatever is made of this fact in the account published by you. Presuming that you desire your statement in this particular to be accurate, and believing that you have no intention to do me an injustice, I deem it right and proper, both as an old subscriber to your paper and a member of the said Institute, to call your attention to the error in the account of the proceedings published by you, and to request correction thereof. Yours, etc., Glenn Brown.

## BOOKS ON PERSPECTIVE.

Chicago, October 21, 1882.

To the Editors of the American Architect:—

*Sirs,*—Will you oblige me by mentioning the titles of any books on perspective giving particularly the Brook Taylor method which puts the *plan* in perspective; also, any modern books on the subject giving the use of the centrolinead and the curvilinear method, and where the books mentioned can be obtained, and much oblige

An Old Subscriber.

Winona, Minn., October 20, 1882.

To the Editors of the American Architect:—

*Dear Sirs,*—Will you be kind enough to give me information with regard to the best book on perspective drawing, and where I may obtain such a work?

Yours respectfully, Austin W. Lord,
With Maybury & Son.

[Messrs. James R. Osgood & Company will shortly publish what they confidently expect to be the most thorough and scientific work on architectural and other perspective drawing in the English language, the work of Professor William R. Ware, of Columbia College School of Mines. The book will fully explain curvilinear perspective and the method of putting plans into perspective, referred to by "Old Subscriber," but whether the use of the centrolinead is explained we are not informed.—Eds. American Architect.]

## NOTES AND CLIPPINGS.

An Anti-Restoration Society in Miniature.—It was recently announced in England that Father Ignatius was collecting subscriptions for a restoration of Llanthony Abbey. This abbey belongs to the Landor family, and at present is in the possession of Walter Savage Landor, the son of the great Walter Savage Landor, and the heir and lord of the manor. Mr. Landor writes to a London newspaper protesting against money being raised on any pretense of restoring this edifice, and warning Ignatius not to trespass on or meddle with his property. "I have given orders," he says, somewhat after his father's manner, "to my agent not to allow any monks to skulk about the property." He hopes his announcement will put a stop to subscriptions which cannot restore Llanthony Abbey. It was in relation to the holding of services in this abbey that his father wrote the famous second letter to the Bishop of the diocese, in which he declared: "God alone is great enough for me to ask anything of twice."—*New York Times.*

Expansion and Contraction of Iron and Steel.—Some of the anomalies presented in the expansion and contraction of iron wire, as observed by Professor Norris, have led him to the conclusion that in steel and iron containing free carbon there is a contraction or shortening which is excited by heat, and which proceeds simultaneously with the dynamical expansion and marks its true amount; this is divisible into high and low temperature contraction. In cooling a strained iron wire from redness, it was found that the contraction due to cooling was, at a certain point and for a limited period, changed into action of elongation; in good iron wire this irregularity could not be detected, but in hard wire and steel was very apparent. The wire has to be raised to a very high temperature before the temporary elongation during cooling can be seen, and it does not take place if the wire is heated only just beyond the temperature at which it occurs.—*National Scientific American.*

Proposed Tests for Materials used in Drainage Construction.—The *Deutsche Bauzeitung*, of Berlin, has lately called attention to the importance of special tests for the materials used in drainage constructions, in view of the increasing adoption of the modern system of sewerage in the various cities of Germany. It is remarked that the tests used in connection with the construction of open water-courses are of no practical value when applied to drain-pipes, even when materials of an analogous nature are employed. This arises from the nature of the liquids carried through sewer-pipes, which contain, in most cases (although in a very diluted form), a certain percentage of alkalies and of different acids—the latter being found in greater abundance in the sewage of industrial towns. Thus it is suggested that the tests of the materials used in constructing drains should be conducted with a view to determine their properties of resistance to muriatic, sulphuric, and nitric acids. Some time ago Dr. Kämmerer, of Nuremberg, instituted a series of tests of this description, with special reference to the drainage works of that city. Pieces of the various substances to be tested were left for a certain length of time in a solution of one per cent of sulphuric, muriatic, and nitric acid, or ammonia, and their loss in weight was accurately observed. The results arrived at showed that ammonia exercises an effect of such slight importance that its action can, as a rule, be disregarded. The destructive properties of muriatic and sulphuric acid were, however, fully demonstrated. In the various kinds of brick the loss was from .02 to 23.50 per cent. The losses in the instances of concrete and cement pipes varied from 13.94 to 37.11 per cent. Glazed pottery-ware pipes withstood the influence of the acids better than any of the other kinds tested, their loss only being from 0.13 to 0.17 per cent. These tests, which were made in 1878, were noticed at the time in various technical journals, and although they led to the prohibition of the pouring of the refuse water from chemical factories into the sewers of Nuremberg (mostly built of cement-concrete), they have not been regarded to any appreciable extent in the smaller towns in Germany. Cement-concrete and cement pipes do not, however, seem to be used in the more important drainage operations in the principal German capitals. In connection with the destructive influences of certain acids upon substances containing lime, silicate of lime, and more particularly carbonate of lime, it is remarked that mechanical causes also act in an injurious manner. When the lower part of the drain is attacked in such a way that a cavity is formed, solid matters sink into it, and in smaller drains a stoppage may after a time result. The expenses of excavation and other labor bear such a heavy proportion to the total cost of drainage operations, that a slight difference in the outlay for the materials used does not seriously affect the entire expenditure. Works of this description occasion such disturbances of traffic, and are of such vital importance to the public health, that it is with justice remarked that only such materials should be used as promise the longest period of service without need of repair. Thus any partiality to local industry may lead to the most troublesome results in the end.—*The Building World.*

The Most Visionary of Schemes.—A Rochester gentleman, said by the *Democrat* to be "of liberal education and pleasant address," has devised a scheme as astonishing as Keely's, Henkle's, or any of the other don't-stop-at-trifles inventors of the day. The idea of this gentleman is to furnish power to run the whole world, so to speak, but more particularly the ocean steamers and ships of all kinds, railroad trains, factories, etc. Like the other inventors, he proposes to get his power very cheap—in fact, for nothing. His idea is to construct a turbine wheel, nearly one mile in diameter, with all the modern improvements. This wheel he intends to have placed in the great maelstrom off the coast of Norway, attaching to it cables which shall span the oceans, and which, when the wheel once starts in motion, as it is of course sure to do in this wonderful current, will furnish power for everybody. All the expenses attached to this will be repairs to the wheel and the cables which may occur from time to time, "and," said the inventor to a *Democrat* reporter, "you know that will amount to almost nothing." The projector of this extraordinary enterprise wishes his name withheld for the present, or until he has his plans and drawings nearer perfection, when he promises that they shall be accessible to everybody for inspection. He proposes to form a stock company to be known as the National Cable Towing Company, and will probably find no difficulty in getting subscribers to pay the expenses of his puttering over his visionary scheme.—*Chicago Tribune.*

A bas, Bismarck.—Prince Bismarck's traditional three single hairs as the sole ornaments of his massive head have long been a favorite subject of caricature with the Berlin comic journals, but the Chancellor may now recognize this characteristic of his appearance depicted in stone over several windows in Potsdam. The owner of these houses, according to the *American Register*, is a rich capitalist who has worked his way up from a simple mason, with only one disaster in his life—the loss of his only son in the Franco-Prussian War. He regards Prince Bismarck as the author of the war, and therefore as his son's murderer, and so adopts a somewhat singular method of revenging himself upon his enemy. Over the grave of his son in the Potsdam cemetery he has erected a splendid mausoleum, surmounted by an owl with the face of Prince Bismarck, three hairs and all. On one of his houses the Bismarck head looks over the cornice of each window, with the three hairs represented by small cannon. On another building, similarly adorned, three serpents take the place of the hairs; while a third house is now being built, and the capitalist's neighbors are eager to see what fresh flattering ornament will be bestowed on the Prince's head.—*London Graphic.*

Icelandic Ruins.—Further ruins, believed to have been the foundations of Icelandic settlements, have been discovered in Greenland, and on the east coast in latitude 60° 31′. A building was found forty paces long by ten broad, in which were stones large enough to warrant the title of Cyclopean. Similar ruins are reported by the natives at other points on the coast.

# BUILDING INTELLIGENCE.

**(Reported for The American Architect and Building News.)**

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

## BUILDING PATENTS.

*[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]*

265,940. MANUFACTURE OF SAND-PAPER. — Chas. Baeder, Jenkintown, Pa.

265,951. FASTENER FOR MEETING-RAILS OF SASHES. — Jacob K. Foss, Reading, Mass.

265,954. SAFETY ATTACHMENT FOR ELEVATORS. — Dennis Frisbie, Philadelphia, Pa.

265,981. EAVES-TROUGH HANGER. — Charles L. Pierpont, Red Wing, Minn.

265,998. REAMER. — George R. Valentine, New Bedford, Mass.

266,010. BRICK FOR BUILDING ARCHES AND FURNACE ROOFS. — William G. Bell, Allegheny City, Pa.

266,015. SKYLIGHT AND VENTILATOR. — William Conolly, New York, N. Y.

266,033. KNOB AND ROSETTE ATTACHMENT. — Francis J. Harper, Norwich, Conn.

266,045. CLAW-HAMMER. — Henry D. Morris, San Francisco, Cal.

266,062. FIRE-ESCAPE. — Chas. F. Spencer, Rochester, N. Y.

266,075. LIGHTNING-ROD JOINT OR COUPLING. — Charles E. Ball, Philadelphia, Pa.

266,092. PRESERVATION OF WOOD. — Rudolph G. Bürstenbinder, Hamburg, Germany.

266,099. DRAWING-TABLE. — Edwin C. Cleaves, Cortland, N. Y.

266,107. ELECTRIC SAFETY DEVICE FOR ELEVATORS. — Robert M. Curtiss, Brooklyn, N. Y.

266,108. HYDRAULIC ELEVATOR. — Chas. G. Curtis and Schuyler S. Wheeler, New York, N. Y.

266,142. AUTOMATIC FIRE-EXTINGUISHER. — Ozro C. Heath, Providence, R. I.

266,156. MORTISING-MACHINE. — Levi Houston, Montgomery, Pa.

266,170. LOCKING-LATCH. — Jos. Loch, New York, N. Y.

266,183. FIRE-ESCAPE. — Elbridge J. Moore, New York, N. Y.

266,196. COMPOSITION FOR ROOFING. — David H. Priest, Everett, Mass.

266,208. TRAP AND OVERFLOW STOP FOR WASH-BASINS, ETC. — William D. Schuyler, New York, N. Y.

266,213. DOMESTIC GRATE OR FIREPLACE. — Chas. William Siemens, Westminster, County of Middlesex, England.

266,216. WATER-CLOSET CISTERN. — Samuel F. Sniffen, New York, N. Y.

266,252. BURGLAR-ALARM. — Marcellus Decker and James K. Deming, Chicago, Ill.

## SUMMARY OF THE WEEK.

### Baltimore.

BUILDING PERMITS. — Since our last report thirty-one permits have been granted, the more important of which are the following: —

Graswick & Horshman, 3 two-st'y brick buildings, s w cor. Alice-Anne and Durham Sts.

G. W. M. Crook, two-st'y brick stable, in rear of 287 Madison Ave., between Hoffman & Dolphin Sts.

John B. Biemuller, two-st'y brick stable, e s Burgundy Alley, between Stockholm and Ostend Sts.

Protestant Episcopal Church of the Atonement, brick and stone church, Chester St., between John and Biddle Sts.

Jenkins & Gilbert, two-st'y brick building, 25′ x 50′, s w cor. Ridgely and West Sts.

A. C. Meyers, 2 six-st'y and basement warehouses, 27′ x 80′ each, n s Lombard St., e of Sharp St.

Central Passenger Railway Co., two-st'y brick building, s e cor. Preston and Constitution Sts.

B. Hanrahan, 3 three-st'y brick buildings, e s Cary St., n of Lanvale St.

E. F. Baldwin, 4 three-st'y brick buildings, e s Cary St., between Lanvale and Townsend Sts.

Gotlieb Menken, two-st'y brick building, w s Haubert St., s of Nicholson St.

Anton Koerber, two-st'y brick building, w s Haubert St., s of Nicholson St.

A. R. Shipley, two-st'y brick building, cor. Gilmor and Calhoun Sts.

Thomas H. Paul, one-st'y brick machine-shop, 50′ x 150′, s s Ohio Ave., w of Byrd St., and one-st'y brick machine-shop, 40′ x 130′, in the rear.

All Saints' Church, chapel, in rear of s e cor. Monroe and Baltimore Sts.

Wm. Wurtzburger, 2 three-st'y brick buildings, w s Light St., n of Fort Ave.

### Boston.

BUILDING PERMITS. — Owing to the removal of the office of Inspector of Building from City-Hall to the old State-House, the building permits have not been written up for the past few days. The following two are the only ones of importance: —

*Wood. — Murdock St.*, rear, near Sparhawk St., Ward 25, for Mrs. F. B. Sears, stable, 20′ x 24′; S. M. Davenport, builder.

*Walnut Park*, rear, near Walnut Ave., Ward 21, for Wm. D. Cotton, stable, 40′ x 50′.

### Brooklyn.

BUILDING PERMITS. — *Eleventh St.*, s s, 125′ e Fifth Ave., two-st'y brick dwell., tin roof; cost, $6,000; owner, W. A. Bliss, 292 Eighteenth St.; architect, R. B. Eastman; builders, John Shorrick and J. B. Jacobs.

*Ellery St., Nos.* 174, 176 *and* 178, s s, 44′ w Delmonico Pl., 3 three-st'y frame tenements, tin roof; cost, total, $10,000; owner, Adam Schauf, Flushing Ave., cor. Whipple St.; architect, Th. Engelhardt; builders, Wolf & Hofgesang and Jno. Rueger.

*Herkimer St.*, 250′ w Ralph Ave., three-st'y frame dwell., tin roof; cost, $5,000; owner, Rev. Ignatius Zeller, 931 Herkimer St.; architect, J. Platte; builder, F. J. Berlenbach.

*Suydam St.*, n s, 200′ w Bushwick Ave., three-st'y frame dwell., tin roof, cost, $5,400; owner, Wm. Schildknecht, 33 Moore St.; architect, J. Platte; builders, W. Dafeldecker and C. Weiber.

*Pierrepont St., No.* 44, between Hicks and Henry Sts., four-st'y brick and stone dwell., slate and metal roof; cost, $20,000; owner, Franklin E. Taylor; architects, Parfitt Bros.

*Concord St.*, s s, about 80′ w Washington St., four-st'y brick home, tin roof; cost, $15,000; owners, Trustees Home for Friendless Women and Children; architects, Parfitt Bros.; builders, O. Nolan and Morris & Selover.

*Hewes St.*, s s, 300′ e Marcy Ave., 4 three-st'y brownstone dwells., tin roofs; cost, each, $7,000; owner, James Sheridan; architect, E. F. Gaylor.

*Central Ave.*, e s, 50′ s Myrtle St., 2 three-st'y frame tenements, tin roofs; cost, total, $8,000; owner, A. Sedlmeyer, Myrtle St., cor. Central Ave.; architect, Geo. Hillenbrand.

*Linden St.*, n s, 200′ e Broadway, 4 two-st'y brownstone dweils., tin roof; cost, each, $4,500; owner, S. M. Meeker, Bushwick Ave., cor. Linden St.; architect, E. F. Gaylor; builders, John McQuade and Jenkins & Gillies.

*Elizabeth St.*, n s, 100′ e Richards St., three-st'y brick factory, tin roof; cost, $3,500; owner, J. A. Knowles, 495 Clinton St.; architect, J. N. Stanley; builders, P. Carlin & Sons and C. M. White.

*Dean St., No.* 159, three-st'y brick hospital, slate and metal roof; cost, $8,000; owner, the Sheltering Arms Nursery Assoc.; architects, Parfitt Bros.; builder, T. W. Rollins.

*Greene Ave.*, n e cor. Knickerbocker Ave., 5 two-st'y frame dwells., tin roof; cost, $7,000; owner and architect, James C. Bower; builders, Cardwell & Hawkins.

*Vernon Ave.*, n s, 250′ w Marcy Ave., 4 two-and-a-half-st'y frame dwells., tin roof; cost, each, $4,000; owner and architect, Thomas E. Greenland, 256 Kosciusko St.; architect, I. D. Reynolds.

*Ninth St.*, s s, 177′ 6″ w Eighth Ave., 4 three-st'y brownstone dwells., tin roof; cost, each, $7,000; owner, architect and builder, E. L. Pierson, Ninth St., between Seventh and Eighth Aves.

*McDonough St.*, n s, *and Macon St.*, s s, 125′ w Reid Ave., 6 two-st'y brownstone dwells., tin or gravel roof; cost, each, $4,500; owner, Henry A. Foster, 155 East One Hundred and Third St., New York; architect, J. E. Styles.

*Ninth St.*, s s, between Seventh and Eighth Aves., 12 three-st'y brick dwells., tin roof; cost, $8,000 each; owner, etc., E. L. Pierson, Ninth St., between Seventh and Eighth Aves.

*Vanderbilt Ave.*, w s, near Park Ave., three-st'y brick dwell., tin roof; cost, $6,500; owner, Jacob Gouenes; carpenters, Long & Barnes.

### Chicago.

BUILDING PERMITS. — H. C. Durand, six-st'y and basement brick warehouse, 50′ x 81′, Jackson St., near Market St.; cost, $20,000.

John Wegfroth, two-st'y and basement brick store and dwell., 24′ x 56′, No. 632 West Twelfth St.; cost, $2,800.

Mrs. H. O'Connell, two-st'y and basement brick dwell., 21′ x 50′, Loomis St., near Taylor St.; cost, $3,500.

W. Kosse, two-st'y and basement brick store and dwell., 22′ x 58′, 789 West Twelfth St.; cost, $4,000.

James Mouatt, two-st'y and basement brick dwell., 32′ x 54′, 767 West Van Buren St.; cost, $3,000.

A. Cummings, two-st'y brick dwell., 22′ x 50′, 213 McGregor St.; cost, $3,000.

J. D. McAuley, 4 two-st'y and basement brick dwells., 66′ x 84′, 3305 Calumet Ave,; cost, $20,000.

C. W. Munger, 2 three-st'y and basement brick stores and dwells., 50′ x 85′, 518 and 520 West Madison St.; cost, $12,000.

C. Goodman, two-st'y brick dwell., 22′ x 50′, 243 Ramsey St.; cost, $3,500.

Andres & Fitch, 2 two-st'y brick flats, 47′ x 65′, 3022-3024 Indiana Ave.; cost, $11,000.

S. P. Parmly, 2 three-st'y and basement brick stores and flats, 50′ x 63′, 302 and 304 Douglass Ave.; cost, $20,000.

J. J. Luther, two-st'y and basement brick dwell., 20′ x 57′, 400 North State St.; cost, $5,000.

J. W. Hobson, two-st'y and basement brick dwell., 25′ x 50′, 402 North State St.; cost, $5,000.

A. B. Lawther, two-st'y and basement brick machine-shop, 50′ x 75′, 118-120 North Market St.; cost, $9,000.

Fred. O. Ernest, two-st'y and basement brick dwell., 22′ x 40′, 1028 North Halsted St.; cost, $4,500.

James P. Dwyer, three-st'y and basement brick dwell., 30′ x 70′, 180 Cass Ave.; cost, $12,000.

Burdett & Smith, three-st'y brick warehouse, 114′ x 164′, Johnson St., cor. Sixteenth St.; cost, $20,000.

E. E. Swiney, two-st'y and basement brick dwell., 24′ x 48′, McAllister St., near Loomis St.; cost, $5,000.

John W. Stewart, 4 three-st'y and basement brick stores and dwells., Cottage Grove Ave., cor. Prospect Pl.; cost, $20,000.

John Hoffman, three-st'y brick dwell., 28′ x 70′, 3637 Ellis Park; cost, $12,000.

Sophia Fahlbush, three-st'y brick store and dwell., 2950 South State St.; cost, $8,000.

Call & Johnson, 3 three-st'y and basement brick stores and dwells., 48′ x 80′, Nos. 1311 and 1313 State St.; cost, $14,000.

Henry Van Buren, two-st'y and basement brick dwell., 22′ x 36′, 1364 West Washington St.; cost, $4,000.

H. McRae, two-st'y brick dwell., 21′ x 46′, Roby St., near Polk St.; cost, $2,500.

Jacob Greenebaum, two-st'y brick store and dwell., 24′ x 60′, 619 West Madison St.; cost, $3,800.

John Borden, 2 four-st'y and basement brick stores, 80′ x 105′, 208 to 214 Randolph St.; cost, $50,000.

Bullock Manufacturing Co., two-st'y brick factory, 60′ x 167′, Tallman St., near Lake St.; cost, $20,000.

L. H. Evans and W. M. Adams, 2 three-st'y brick dwells., 37′ x 44′, 564 and 566 West Washington St.; cost, $10,000.

John Germok, two-st'y and basement brick store and dwell., 602 Throop St.; cost, $2,500.

### Cincinnati.

STORES.—Mr. Nathaniel Ropes is to build on Main St., near Court St., a four-st'y pressed brick front to be used as stores on the ground floor and apartments above. The building is 45′ x 100′, and will cost about $35,000; Mr. James W. McLaughlin is the architect.

BUILDING PERMITS. — Michael M. McKiernan, 3 two-st'y buildings, Fulton Ave.; cost, $4,000.

Louis L. Dankel, two-st'y building, Hammond St., bet. Eden and Vine Sts.; cost, $3,000.

Repairs, $11,000.

### New York.

BUILDING PERMITS. — *Baxter St., Nos.* 114 *and* 116, fronting on Canal St., at rear, six-st'y brick and brownstone warehouse, tin roof; cost, $39,000; owner, Martin Schrenkeisen, 809 East Seventeenth St.; architect, H. Fernbach; builders, Van Dolsen & Arnott.

*Frankfort St., Nos.* 32 *and* 34, six-st'y brick warehouse, tin roof; cost, $10,000; owner, M. Giblin, care of the architect, T. R. Jackson, 61 Broadway.

*Grand St., No.* 387, three-st'y brick store and tenement, tin roof; cost, $7,000; owners, Adolf and Emanuel Alexander, on premises; architect, J. Boekell.

*Thirteenth Ave.*, from Bethune St. to Twelfth St., 4 five-st'y brick warehouses, gravel roof; cost, each, $31,000; owner, John T. Johnston, 8 Fifth Ave.; architect, Jas. Renwick; builder, Thomas Stone.

*East Seventeenth St., No.* 512, five-st'y brick tenement, tin roof; cost, $7,000; owner, Joseph M. Ohmeis, 114 East Seventh St.; architect, Wm. Graul.

*East Seventeenth St., No.* 514, five-st'y brick tenement, tin roof; cost, $9,000; owner and architect, same as last.

*West Twenty-first St., No.* 529, between Tenth and Eleventh Aves., three-st'y frame lumber-shed, tin roof; lessee, Chas. Hofferberth, on premises; builders, Fessler & Wolfart.

*East Seventeenth St., Nos.* 512 *and* 514, rear, one-st'y brick stable, gravel roof; cost, $3,000; owner, Joseph Ohmeis, 114 Seventh St.; architect, Wm. Graul.

*East Thirty-fourth St., No.* 415, four-st'y brick store and tenement, tin roof; cost, $12,000; owner, Ann H. Marshall, 413 East Thirty-fourth St.; architect, Andrew Spence; builder, Joseph Marshall.

*Thirty-ninth St.*, s s, 65′ e Twelfth Ave., one-st'y brick factory, gravel roof; cost, $4,500; owner, Jas. McClenahan, 531 West Thirty-ninth St.; architects, Thom & Wilson.

*West Forty-fifth St., Nos.* 423, 425, 427, 429 *and* 431, between Ninth and Tenth Aves., 5 five-st'y brick tenements, tin roof; cost, each, $1,000; owner, Margaret E. Niebuhr, 131 East One Hundred and Twelfth St.; architect, W. Scott West; builders, Niebuhr Bros.

*Forty-eighth St., No.* 431, between Ninth and Tenth Aves., four-st'y brick tenement; tin roof; cost, $11,000; owners, architects and carpenters, Findley & Gardner, 427 and 429 West Forty-eighth St.; mason, J. T. Stevenson.

*Sixty-ninth St.*, n s, 100′ e Third Ave., 5 four-st'y brick and brownstone flats, tin roof; cost, each, $20,000; owner, Andrew Kelly, 404 East Eighty-second St.; architect, G. A. Schellenger.

*Ave. A*, w s, from Seventy-ninth St. to Eightieth St., 8 four-st'y brownstone stores and tenements, tin roof; cost, each, $13,000; owner, Michael Duffy, 156 East One Hundred and Second St.; architect, Andrew Spence.

*Seventy-ninth St.*, n s, *and Eightieth St.*, s s, between Ave. A and First Ave., 24 four-st'y Connecticut brownstone tenements, tin roof; cost, each, $12,500; owner, Michael Duffy, 156 East One Hundred and Second St.; architect, A. Spence.

*Seventy-third St.*, s s, 350′ e Tenth Ave., 5 four-st'y brick and brownstone dwells., tin roof; cost, each, $35,000; owner, Margaret Crawford, 956 Third Ave.; architect, G. A. Schellenger.

*Sixth Ave.*, e s, 25′ s One Hundred and Twenty-fourth St., one-st'y wood and glass front dwell.; cost, $4,000; owner, John R. Kelly, Sixth Ave., s e cor. Twelfth St.; architect, M. L. Ungrich.

*One Hundred and Twenty-fifth St.*, s s, 200′ e Eighth Ave., 2 five-st'y brick and freestone tenements, tin roof; cost, each, $12,000; owner, Sarah Darragh, 23 West One Hundred and Twenty-third St.; architect, Jno. E. Darragh; builder, Theo. Darragh.

*One Hundred and Twenty-seventh St.*, n s, 85′ w Seventh Ave., 2 three-st'y brownstone dwells., tin roof; cost, each, $14,000; owner, Samuel H. Bailey, 186 East One Hundred and Fourth St.; architect, F. T. Camp.

*One Hundred and Thirtieth St.*, n s, 250′ w Eleventh Ave., four-st'y brick tenement, tin roof; cost, $11,000; owner, Charles Bornkamp, 170 Robbins Ave.; architect, James Barrett.

*One Hundred and Fortieth St.*, n s, 325′ w Grand Boulevard, two-st'y brick stable, tin roof; cost, $4,000; owner, Henry L. Hoguet, 48 West Twenty-eighth St.; architect, W. H. Hume; builders, Isaac A. Hopper and C. E. Hume & Co.

*One Hundred and Forty-first St.*, n s, 100′ e Eighth Ave., two-st'y frame dwell., tin roof; cost, $4,000; owner, John Barthel, One Hundred and Forty-first St., w of Eighth Ave.; architect, Wm. Kusche.

*One Hundred and Thirty-fourth St.*, s s, 150′ e Lincoln Ave., one-st'y brick factory, gravel roof; cost, $15,000; owner, New York Wood Turning Co., 16 Cortlandt St.; architects, Smith & Howe; builders, J. V. Donovan and W. L. DeGraw.

*Tinton Ave.*, w s, 50′ n One Hundred and Forty-fifth St., 4 two-st'y frame dwells., tin roof; cost, each, $4,500; owners, J. & M. Haffen, One Hundred

and Fifty-second St., near Courtlandt Ave.; architect, A. Pfeiffer.

Alterations. — *Broadway, No. 471, and Mercer St., No. 44*, repair damage by fire; cost, $3,547; owner, Jane A. Gibson, 256 Lexington Ave.; builder, E. Smith.

*Water St., Nos. 265 and 267*, repair damage by fire; cost, about $5,000; owner, Wm. E. Treadwell, 172 West Eleventh St.; architect, Chas. Mettam.

*East Third St., No. 306*, three-st'y brick extension, tin roof, interior alterations, etc.; cost, $3,000; owner, Catharine A. Smart, 300 Delancey St.; builders, J. Hamel & Son.

### Philadelphia.

House. — House for Barton Miller, Esq., to be of brick and brownstone; cost, $32,000; located on Walnut St., below Forty-second St.; Geo. Hewitt, architect.

Building Permits. — *Mary St., No. 4025*, two-st'y dwell., 18' x 31'; Jno. Anderson, owner.

*Mould St.*, e s, n of Wharton St., 7 two-st'y dwells., 15' x 40'; Alex. Beck, owner.

*Grayson St., No. 1732*, three-st'y dwell., 14' x 40'; Jas. F. Scott, owner.

*Garden St., No. 429*, two-st'y shop, 14' x 50'; S. W. Moore, contractor.

*Scott St.*, s s, between Ninth and Tenth Sts., 4 two-st'y dwells., 16' x 24'; Jas. McCall, contractor.

*Reese Ave.*, s e cor. Lehigh Ave., three-st'y store and dwell., 20' x 48'; C. H. Keyser, contractor.

*Fifth St.*, n e cor. Huntingdon St., three-st'y store and dwell., 21' x 70'; Chas. O'Kronlowicz, contractor.

*Walnut St., Nos. 331 and 333*, four-st'y office-building, 30' x 60'; Liverpool & Globe Insurance Co., owners.

*Twentieth St.*, e s, n of Fairmount Ave., three-st'y dwell., 18' x 58'; Jos. B. Evans, owner.

*Palethorp St.*, w s, s of Susquehanna Ave., 12 two-st'y dwells., 12' x 28'; Chas. Bossert, contractor.

*Twelfth St.*, e s, n of Columbia Ave., three-st'y tavern and dwell., 23' x 80'; Chas. Casper, owner.

*Howard St.*, e s, n of Lehigh Ave., four-st'y factory, 40' x 100'; Jas. McCartney, contractor.

*Twenty-eighth St.*, e s, s of Oxford St., 2 two-st'y dwells., 18' x 42'; W. H. Lower, contractor.

*Bridge St.*, near Walker St., four-st'y ice-house and brewery, 35' x 61'; Jas. B. Doyle, contractor.

*Fifth St.*, s e cor. Willow St., six-st'y ice-house and brewery, 62' x 114'; Jas. B. Doyle, contractor.

*Edward St., No. 113*, four-st'y ice-house, 47' x 50'; Jas. B. Doyle, contractor.

*Ellsworth St.*, n s, e of Twenty-first St., four-st'y factory, 56' x 60'; Thos. Little, contractor.

*Maria St., No. 410*, three-st'y dwell., 18' x 45'; Emma H. Lentz, owner.

*Lafayette St.*, e s, between Adams and Green Sts., three-st'y dwell., 16' x 42'; Henry Harrison, contractor.

*East Dauphin St., No. 829*, three-st'y dwell., 18' x 32'; Jno. S. Baldt & Son.

*Grape St.*, n s, w of Thirty-eighth St., 2 two-st'y dwells., 13' x 40'; Jas. C. Shedwick, owner.

*Twenty-eighth St.*, cor. Albrecht St., 2 two-st'y dwells., 14' x 40'; W. F. Albrecht, owner.

*Adams St.*, s s, between Coral and Emerald Sts., 2 two-st'y dwells., 15' x 42'; Jno. Mitchell, contractor.

*Venango St.*, s s, cor. Frankford Road and Emerald St., 2 two-st'y dwells., 16' x 40'; D. C. Schuler, contractor.

*Haines St.*, n s, w s Chestnut Hill R. R., 2 two-st'y dwells., 15' x 25'; Wm. Kohl & Co.

*Potter St.*, e s, between Leamy St. and Lehigh Ave., 4 two-st'y dwells., 14' x 28'; Jos. Lutz, contractor.

Alterations and Additions. — *Fairmount Ave., No. 1417*, fourth-st'y addition to dwell., 25' x 50'; Jno. England, contractor.

*Germantown Ave.*, cor. Nicetown Lane, third st'y addition to factory, 38' x 45'; Benj. Walker, contractor.

*Buttonwood St., Nos. 927 and 929*, 2 third-st'y additions to dwells., 17' x 30'; P. H. Somerset.

### St. Louis.

Building Permits. — Thirty-four permits have been issued since our last report, of which sixteen are for unimportant frame houses. Of the rest, those worth $2,500 and over are as follows: —

Adam Weber, two-st'y brick dwell.; cost, $4,000; G. W. Pipe, architect; J. B. Asper, contractor.

Mrs. S. A. Wilson, two-st'y brick dwell.; cost, $3,500; J. B. Legg, architect; S. L. Jones, contractor.

B. Proetz, two-st'y brick dwell.; cost, $4,000; J. J. Rosevelt, contractor.

B. Proetz, two-st'y brick dwell.; cost, $4,000; J. J. Rosevelt, contractor.

S. B. Jones, two-st'y brick dwell.; cost, $6,000; Henry Roach, contractor.

J. H. Teasdale, two-st'y brick dwell.; cost, $10,000; Young & Johnston, architects; Henry Roach, contractor.

P. Roeder, two-st'y brick dwell.; cost, $7,500; Gas. Koch, contractor.

P. Roeder, two-st'y brick dwell.; cost, $4,500; Gas. Koch, contractor.

W. J. Beattie, two-st'y brick dwell.; cost, $3,000; W. J. Beattie, contractor.

### General Notes.

Alliance, O. — Frame house for Lafu Wonders; cost, $3,000; John Bartley contractor; Guy Tilden, architect.

Asbury Park, N. Y. — Mrs. L. H. Annibaldi of New York, is erecting another cottage; Palliser, Palliser & Co., architects, Bridgeport, Conn.

Baltimore Co., Md — All Saints Episcopal Chapel, frame, stone foundation, seating capacity, 300; cost, $3,000; C. E. Cassell, architect, Baltimore.

Academy addition; three-st'y addition to Hannah Moore Academy; cost, $5,000; C. E. Cassell, architect.

Frame addition to John Gill's house; cost, $2,000; Wyatt & Sperry, architects.

Three-st'y frame cottage for A. H. Rutherford; cost, $5,500; Wyatt & Sperry, architects.

Batchtown, Ill. — Plans have been received for the public school-house to be built here, of brick, two stories; Palliser, Palliser & Co., architects, Bridgeport, Conn.

Bloomington, Ind. — Residence for John Waldron; cost, $5,000; C. A. Wallingford, architect, Indianapolis, Ind.

Bridgeport, Conn. — Four brick houses for E. Warren, on Broad St.; cost, $16,000; foundations now in.

P. Day, two houses, 38' x 40'; Myrtle Ave.; cost, $4,500.

A block of four brick houses is building at East Bridgeport for D. E. Marsh, at a cost of $9,000; Jas. Spargo, builder.

Palliser, Palliser & Co., are architects for all above.

The plans bearing the motto "*Palman qui meruit ferat*," and adopted by the Cleveland School Board in the competition of May last, were submitted by Palliser, Palliser & Co., of this city, who are preparing the working plans, details and specifications.

Plans are being prepared by Palliser, Palliser & Co., architects, for the new works of the Elwell Hardware Co.

Brookline, Mass. — Mr. O. F. Smith, of Boston, is the architect of a frame stable measuring 36' x 42', for Mr. A. S. Young.

Collegeville, Pa. — Cottage and stable for W. F. Snyder, Esq., 35' x 44', 40' x 41'; Geo. T. Pearson, architect, Philadelphia.

Crawfordsville, Ind. — Residence for W. H. Restine; cost, $6,000; C. A. Wallingford, architect, Indianapolis, Ind.

East Palestine, O. — Brick hotel for Chamberlain & Co., to cost $15,000, Harton & Tallon, contractors; Guy Tilden, architect, Alliance, O.

Far Rockaway, L. I. — Mrs. M. B. Smith, is building another cottage on Wave Crest, from designs of H. Edwards Ficken, of New York.

Fernwood, Pa. — Cottage for W. B. Bullock, Esq., 24' x 44', to be of brick and shingle; Geo. T. Pearson, architect, Philadelphia.

Also cottage for J. D. Mitchell, Esq., 22' x 44'; Geo. T. Pearson, architect, Philadelphia.

Germantown, Pa. — Stone stable for C. N. Williams, Esq., 18' x 38'; Geo. T. Pearson, architect.

Harrisburg, Pa. — Three-st'y brick dwell., with brownstone finish, for Isaac Frazer; 26' 3" x 80'; cost, $15,000; C. E. Cassell, architect, Baltimore.

Hartford, Conn. — Mr. G. C. Mead is the architect of a wooden house for Mr. O. B. Colton, on Laurel St.; the building measures 37' x 50', and will cost about $5,000.

Haverstraw, N. Y. — Brick house for Adam Glassing; cost, $2,000; architect, H. G. Knapp, of New York; builders, Carson Bros.

Double brick dwells., for Charles Lane; cost, $3,500; architect, H. G. Knapp, of New York; builders, Carson Bros.

Schoolhouse to accommodate 800 scholars; cost, $12,500; architect, Horace G. Knapp, of N. Y.

Haverhill, Mass. — Cottage for W. H. Underhill; cost, $2,000; Palliser, Palliser & Co., architects, Bridgeport, Conn.

Indianapolis, Ind, — Residence for James G. Douglass; cost, $20,000.

Twenty-five workingmen's cottages for Malleable Iron Works; cost, $20,000.

Ten workingmen's cottages for James Loge; cost, $6,000; C. A. Wallingford, architect, Indianapolis, Ind.

Ticket-Office, C. H. & D. R. R.; cost, $7,000; C. A. Wallingford, architect, Indianapolis, Ind.

Kalamazoo, Mich. — C. D. Nelson,, two-st'y frame house; cost, $5,000; Palliser, Palliser & Co., architects, Bridgeport, Conn.

Kinsman, O. — For W. Youmans, a frame cottage to cost about $8,000 is to be built from designs of Messrs. Price & Freeman, of New York.

Lawrence, L. I. — House and stable for Mr. J. F. Scott, from the designs of H. Edwards Ficken, of New York.

Mr. A. A. Hayes will also build a cottage here, near the new hotel, from the designs of the same architect.

Mansfield, O. — Brick stove foundry for the Perry Stove Co., to cost, $20,000; Guy Tilden, architect, Alliance, O.

Naugatuck, Conn. — Geo. M. Allerton, Jr., is building a house, 64' x 68', from plans by R. W. Hill, Waterbury, Conn.

Dr. Meers, house in Queen Anne style; A. M. West, architect, Waterbury, Conn.

Toledo, O. — Two-st'y brick store building, Adams St., for Mr. Rothfuss; cost about, $4,500; E. O. Fallis, architect.

Brick building for Transfer Co., Madison St.; cost, about $7,000; Gibbs & Stine, architects; A. Bentley, builder.

Frame dwell., two-st'y, Monroe St., for Mr. Walbridge; cost, about $3,000; A. S. Young, architect; A. Lombard, builder.

Two-st'y Queen Anne cottage (brick and shingles), Monroe St., for Mr. M. A. Scott; cost about, $2,500; N. B. Bacon, architect; J. H. Tappan, builder.

Four-st'y brick building, 40' x 110', St. Clair St., for Citizen's Electric-Light Co.; cost, about $12,000; N. B. Bacon, architect; A. Bentley, builder.

Two blocks containing four dwellings, frame, two-st'y and cellar, Thirteenth St., for I. P. Pagsley, Esq.; cost about, $7,000; N. B. Bacon, architect; A. Lombard, builder.

Thomaston, Conn. — Brick school-house; R. W. Hill, architect, Waterbury, Conn.

Hose, Hook and Ladder House, pressed brick, and Plymouth granite trimmings; R. W. Hill, architect.

Waterbury, Conn. — The basement of the new St. Patrick's Church has been covered with a temporary roof, so that services may be held in it while the superstructure is being built; Arthur Crooks, of New York, is the architect.

Thos. Kelley is building a brick block, with Plymouth granite finish, on Banks St., A. B. West & John Gaffney, builders; Thos. F. Jackson, contractor for stone work; R. W. Hill, architect.

Two cottages in the Queen Anne style are being built on Bank St., from plans by Mr. Joseph A. Jackson.

Chas. Hart is building a house on Grove St., from drawings by Albert M. West, architect.

The Baptist Church is being altered into a brick block with stores, from plans by R. W. Hill.

Brick block for Mrs. T. D. Dougherty, cor. E. Main and Spring Sts.; R. W. Hill, architect.

A brick school-house is now being built in the "Abrigador," from plans by R. W. Hill.

Dwelling-house for D. F. Webster; R. W. Hill, architect.

Wellsville, O. — Remodelling brick dwelling for Gen. J. W. Reilly, into a law office; cost, $3,000; Guy Tilden, architect, Alliance, O.

Wilkesbarre, Pa. — For the First Methodist Episcopal Church, an edifice to seat 800 persons is to built of stone and brick at a cost of about $50,000, from designs of Messrs. Bruce Price & Geo. A. Freeman, of New York.

Winona, Minn. — The Winona Rushford Wagon Co. are making extensive additions to their shops, to increase their manufacturing capacity from two thousand to five thousand wagons per year; building of brick, two st'y, 52' 8" x 182', with iron-room, 67' x 91' attached; C. G. Maybury & Son, architects.

An elevator, storage capacity, 40,000 bushels, is being finished for G. H. Krumdick.

Winsted, Conn. — House for R. E. Holmes, brick and Ohio stone; cost, $20,000; R. W. Hill, architect, Waterbury Conn.

## PROPOSALS.

### River and Harbor Improvements.

United States Engineer Office,
Portland, Me., October 22 1882.

Proposals in duplicate, addressed to the undersigned, will be received at his office in Portland, Maine, **until 2.30 P. M., on Tuesday, the 7th day of November**, for improving the following named rivers and harbors, viz.:

1. *Newburyport Harbor, Mass.* — About 15,000 tons of *rubble-stone* for the southern jetty at Plumb Island, and the construction of a *dike* about 700 feet in length across "the basin."
2. *Lamprey River, New Hampshire.* — About 13,000 cubic yards of *dredging*.
3. *Cathance River, Maine.* — About 13,000 cubic yards of *dredging*.
4. *Moose-a-bec Bar, at Jonesport, Maine.* — About 25,000 cubic yards of *dredging*.

Persons desiring to make proposals for any of the above works, are requested to apply to the undersigned, at his office, No. 453½ Congress St., Portland, Me., for specifications, instructions to bidders, and the requisite blanks, and such further information as may be desired concerning the same.

GEO. THOM, Colonel of Engineers,
358 Bvt. Brig. General, U. S. A.

### Wrought-Iron Beams and Other Iron. [At Rock Island, Ill.]

Rock Island Arsenal, Ill., October 7, 1882.

Sealed proposals are invited to deliver on board cars at this Arsenal the following wrought-iron beams and other iron:

About 700 tons of 15-inch, 12-inch, 9 or 10½ inch and 4-inch wrought-iron beams; 35 tons of 7-inch deck-beams; 16,000 lbs. of 6-inch channel-bars, 22½ lbs.; 15,000 lbs. T-iron; 6,000 lbs. angle brackets; 16,000 lbs. flat iron, various sizes.

Full bills of and specifications for the iron and forms for bids can be obtained from the undersigned.

The successful bidder must enter into contract and give good and sufficient bonds for a faithful performance of the same.

The contractor can have until April 1, 1883, for the delivery of the iron.

Bids should be addressed to the undersigned and be endorsed "Proposals for Beams." Bids will be opened **at 10, A. M., November 8, 1882.** Bidders are invited to be present. The United States reserves the right to reject any and all bids.

D. W. FLAGLER,
358 Lt.-Col. of Ordnance, Commanding.

### Locks and Lock-Gates. [At Chicago, Ill.]

Office of the Department of Public Works,
Chicago, October 16, 1882.

Sealed proposals will be received by the Department of Public Works at their office **until 11 A. M., Thursday, October 26, 1882**, for the construction of a lock, with the necessary cribs, docking, gates and appurtenances, to be placed in the channel of the Illinois & Michigan Canal, near Ashland Ave., in the city of Chicago, according to plans and specifications on file in said office.

Proposals must be addressed to the Department of Public Works, indorsed "Proposals for Canal Lock," and be accompanied with $500 in money, or a certified check for the same amount on some responsible bank doing business in the city of Chicago, and made payable to the Commissioner of Public Works.

The Commissioner of Public Works reserves the right to reject any or all bids. No proposal will be accepted unless the party offering it shall give evidence satisfactory to the Commissioner of Public Works of his ability and integrity, and that he has sufficient pecuniary resources to fulfil the contract promptly, in accordance with the specifications thereof, if awarded to him. Companies or firms bidding will give the individual names as well as the name of the firm.

DEWITT C. CREGIER,
Commissioner of Public Works.

### Sea Wall. [New York Harbor.]

U. S. Engineer Office, Room 59 Army Building,
Corner Houston and Greene Sts.,
New York City, October 10, 1882.

Sealed proposals, in duplicate, will be received at this office **till 12 M., Wednesday, November 22, 1882**, for furnishing materials and labor for the construction of a granite sea wall on Governor's Island, New York Harbor. Appropriation, $30,000.

For information, blank forms, etc., apply at this office.

G. L. GILLESPIE,
359 Major of Engineers.