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THE Boston Rapid Transit Commissioners have made a report, favoring the construction in Boston of a circuit railway, partly above and partly below ground. The line starts from Park Square, with a tunnel under the Common to a point nearly opposite West Street; thence, by tunnel under Tremont Street, Tremont Row, and a part of Court Street, to private land near Staniford Street, where it takes advantage of the steep slope of Staniford Street to come to the surface, and continues thence as an elevated road through Causeway Street to Haverhill Street. There the road turns, and runs through Haverhill Street to Haymarket Square, continuing nearly in a straight line through Blackstone Street to Faneuil Hall Market, which it pierces in the middle, and continues in nearly the same direction, through various narrow streets, and over private land, to Liberty Square, from which, by a slight turn, it reaches the Post-Office. Here it turns again, and runs down Congress Street to Atlantic Avenue, where it turns again, and continues through Atlantic Avenue and Federal Street to Kneeland Street. Here another sharp turn is made, and the line passes through Kneeland Street, in front of the Old Colony and Boston and Albany stations, and then turns again, through Utica Street, following the line of the Boston and Albany tracks, to Pleasant Street, through which it reaches its point of beginning at Park Square. The road will all be double-tracked, and trains will run in each direction continuously, so that there will be no shifting of cars and making over of trains. As may be seen by reference to a map of the city, the proposed circuit reaches every railway station in the city, except the ferry station of the Boston, Revere Beach and Lynn Railroad; and it is the avowed purpose of the plan to arrange connections with all the existing railways, so that the immense suburban population may enjoy the advantage of being transferred from their regular trains to the circuit tracks, over which they may pass directly to any part of the line. This feature strikes us as one of very great value. No great city in the United States has so large a suburban population as Boston, and in no city is the suburban population, or, indeed, the travelling population of all kinds, so poorly accommodated. In London, which very much resembles Boston in the distribution of business and population, the inhabitant of one of the pretty villas of Sydenham, or Bedford Park, or Peckham, has only to go to his railway station to be transported, often without change of cars, and, at worst, with nothing more than

going up or down a flight of stairs, to any part of London. When he comes home from a Continental trip, he finds at Folkestone or Dover a train, with the cars marked, "This carriage for Charing Cross," "This for Waterloo," "This for Cannon Street," and so on; and he has only to get into the one which will land him nearest his house, if he lives in the city, or from which another train will take him to Devonshire or Scotland, if he wishes to go there; or a Metropolitan train will transfer him most quickly to his home, if he is a dweller in the suburbs. It is true that his original walk, or cab-drive, from his house to the station, may be a mile or so, but, after once entering the train, he has, so to speak, all Great Britain before him as a point of arrival.

IN Boston, although the scale is smaller, all the arrangements appear to have been made with a view to making railroad travelling as inconvenient as possible. Nothing whatever in the shape of a "union station" exists in the city. On the contrary, one railroad has three terminal stations, entirely disconnected with each other; and another two; so that a passenger from one suburban station to another may have to come into Boston, and, after reaching it by one terminus, be obliged to walk half a mile to the other terminus of the same road, and go out again. As for communication between the terminal stations of the different roads, there is none, except by horse or electric cars, which, in Boston, are intended only for people of leisure. A man who lands in the city at one station, and wishes to reach another within a definite time, must either take a carriage or walk, either method of transfer being more rapid and certain than that afforded by the street-cars. Why, notwithstanding the continual complaints of the public and the newspapers, this state of things should have been allowed to continue so long, is a mystery which can only be explained by the general indifference to suburban business of all the railroads entering Boston. There are stations within ten or twelve miles of Boston, at which fewer trains stop now than thirty years ago, although the towns in which the stations are situated have trebled in population; and it is notorious that trains ran faster in 1845 and 1850 on these roads than they do now. It was hardly to be expected that railroad companies which have acted consistently and unanimously for forty years on the theory that they were doing a favor to any person whom they allowed to ride in their cars, and that he ought to be too thankful to be permitted to ride in them at all to care for the difficulties which he had to surmount in reaching them, would be very ingenious or energetic in devising schemes for promoting the movement of the public toward their establishments; and the Rapid Transit Commissioners have wisely taken the remedy for this, the most glaring deficiency in the transportation facilities of Boston, into their own hands.

THE importance of the general system proposed being conceded, there will undoubtedly be some criticism of the details of the route. For instance, the turning of the elevated line through Haverhill Street to Haymarket Square, apparently with no other purpose than to reach the Boston and Maine station, is open to the objection that it will render permanent the most unmitigated nuisance in the whole city, the crossing of Causeway Street at grade by the Boston and Maine tracks. Haymarket Square itself is not a point where much business centres. The Boston and Maine station furnishes nearly all the traffic originating or terminating there, and the rest is simply through business between the southern parts of the city, and the other northern stations, and Charlestown and Chelsea. Instead, therefore, of encouraging the Boston and Maine company to continue its Haymarket Square station, which ought to have been abolished long ago, there will probably be a certain demand for a change of the route to Atlantic Avenue, where it will accommodate the larger traffic reaching Boston by the ferries, and by the summer steamboats, which probably bring into the city on some days in summer as many passengers as all the railroads put together. Atlantic Avenue, moreover, is very wide, and could accommodate an elevated railway without any injury to business, while Haverhill and Blackstone Streets are narrow. The location of the line directly through the great market, with a station inside the market building, is a very happy thought, and the rest

of the route, as a circuit, seems unexceptionable. Whether the tunnel portion of the line gains anything by being carried under Tremont Street and Tremont Row, instead of directly from Temple Place to Staniford Street, may perhaps be questioned. Although Tremont Row is usually crowded with people, this is due much more to its being the shortest route, for persons who do not like climbing steep hills, from the shopping region to the northern railway stations, and the Cambridge street-car lines, than to any attraction presented by the street itself, or the second-class shops and dime museums which line it; and to carry the proposed tunnel under it, besides lengthening the line, would probably involve more expense, for securing the foundations of buildings above, than would be needed by the more direct route. It is an error to suppose that, because a street is always crowded, people wish to go to or through it, and would not prefer a shorter route if they could travel on it with equal convenience. Those people who remember New York before the time of the elevated railroads will recollect that Broadway, from Madison Square to Wall Street, was crowded to suffocation nearly all day long. Few of the people who thronged the sidewalks had business to transact on the street, but it was the habit of every respectable person who walked up or down town to walk through Broadway, even though that might be a longer route. In those days, indeed, a walk down town through the Bowery and Chatham Street, or Green and Church Streets, was not always pleasant or safe, and most persons preferred Broadway. Now, the case is very different. Although the population of the city has nearly doubled, Broadway is far less crowded than it was twenty-five years ago. Although the elevated roads run through Third and Sixth Avenues, instead of Broadway, they give just as good accommodation to most of their passengers; and the idea of lengthening the route now, to reach Broadway, would meet with very little favor.

ONE service which, it is to be hoped, the Boston circuit line may be adapted to render, is the transportation of packages between the different railways. If we were to mention any peculiarity as distinguishing Boston from all other American cities, it would be the enormous multitude of express-wagons which throng its streets, generally carrying one or two small packages. A very large part of these packages are in transit from one railway station to another, and if a few parcel cars could run around the circuit daily, not only would the cost of transportation be reduced to a trifle, but the streets would be relieved of a considerable portion of the wagon traffic which now encumbers them. If the circuit tracks could be used at night for heavier goods, still more would be accomplished for the public benefit, and something would be added to the revenue of the line. The Union Freight Railway, which connects the freight-tracks of the existing railroads, and serves for the transfer of cars without breaking bulk, answers a good purpose, but it is not intended for single packages, or to take draymen's loads. It used to be a common saying in New York, that it cost more to transport a case of goods from the Pennsylvania station, or one of the North River piers, to Forty-second Street, than to bring it from Chicago by rail, or from Liverpool by sea. In Boston, the same conditions exist, and if they could be so modified as to permit of direct and cheap transfer of cases or bales, coming in from the factory on one railroad, to the line by which they were to be transported to the consumer in the West or South, it seems certain that the manufacturing and mercantile interests, not only of the city, but of the State, would be benefited.

A DISCOURSE was recently delivered before the London Architectural Association, in commemoration of the late John D. Sedding, by Mr. H. Wilson, who, after an interesting account of Sedding's work, went out of his way to deliver a rather uncalled-for slap at the people before whom he was speaking. The Association has appointed a committee to provide a memorial to Sedding, who was greatly admired by the younger architects; and Mr. Wilson chose to express his "regrets" that "while with one hand the Association was preparing a memorial to Sedding's labors, with the other hand it had erected an insuperable bar to the progress which he so urgently desired to see." This "bar" it appeared, was the scheme of education over which the Association has spent so much labor, but which, according to Mr. Wilson, is only good to "create a set of professional prigs, a set of business agents

—men qualified to have the superintendence of a plan-factory, but nothing more." The experienced reader of architectural literature will not be surprised to learn that Mr. Wilson immediately went on to explain that "the birthplace of art is the workshop, and not the *atelier* or drawing office. The only hope for the architecture of the future is that the architect must become a craftsman, and set up a workshop, and not a studio or office; and his assistants and pupils should work at the mason's 'banker,' and the carpenter's bench and at the smith's forge."

IT seems a little strange to meet again with this sort of talk, which was popular ten or fifteen years ago with amateurs and reviewers, but has long ceased to make much impression on architects. To a young man intending to enter the profession of architecture, the notion that the proper way to learn this art is not to study it at all, but to learn several other arts instead, is, fortunately, never likely to commend itself, and it is astonishing that any one who knows as much about the subject as Mr. Wilson should fall into the notion. Any carpenter's apprentice can testify that a year or two of practice at the bench is required before the student learns to take a board out of wind, and to use tools without slicing his fingers. The young blacksmith needs quite as much time to learn to manage the bellows cleverly, and not to burn his iron; and a stone-cutter is as long in learning to cut a rough block into a cube. Supposing a young man to have spent five or six years in arriving at this pitch of perfection in all three of Mr. Wilson's crafts, how much farther would he be on the road to the acquisition of the art of architecture? Obviously, not a hair's-breadth. There is some reason for supposing that a skilful blacksmith, or a first-rate wood or stone carver, has a knowledge of materials which would be useful to an architect, but it takes a lifetime to learn each trade, and the performances of the most skilful carpenter as a designer of architecture are not usually such as to encourage the supposition that he has found the short road to pure art. The whole notion that skill in the art of architecture is to be obtained by studying something else has always seemed to us a piece of unhealthy sensationalism. It answers well enough to startle the public, which has very little idea of architecture, but among architects, who know perfectly well in what the perfection of the best old work consists, and who find that constant study and practice, not with the cross-cut saw and the bush-hammer, but with the sketch-book and drawing-board, is the only thing that brings them toward their ideal, it has never been taken seriously, and probably never will. There is, however, one point in which both Sedding's example and teaching, following also that of Mr. Ruskin, Viollet-le-Duc and some others, are worthy of more attention than they now receive. Sedding, as may be seen from his rather incoherent, but earnest book on "*Garden-craft*," was very fond of nature, and undoubtedly derived from his study of natural forms the variety and freshness which constitutes the greatest charm of his work. Any reader of Ruskin will remember the force with which he urges the necessity, for every artist, of recurring constantly to nature for new inspiration; and Viollet-le-Duc's most interesting essay is that in which he traces the introduction of new details, modelled, curiously enough, from plants of small, but vigorous growth, which accompanied the development of the great system of Pointed architecture. From nature, it is to be remembered, every artist gathers what suits his own art. The painter finds there endless combinations of color for his instruction, and the architect, besides effects of line and form for the improvement of his sculptured detail, can study light and shade, and contrasts of masses, and get ideas of texture, from rocks and other objects; while drawing from the figure is an inexhaustible source of refinement in sense of proportion and modelling. The blacksmith, too, if he wishes, can get from plants and flowers and animals numberless suggestions for the improvement of his work, and both he and the architect will be better off to see and interpret what suits them best, in their own way, without borrowing each other's spectacles.

THE Art Club of Philadelphia opens its annual exhibition on February 23, and will make an attempt this year as it did last to make the architectural exhibit both interesting and comprehensive. Contributions should be in the hands of the committee, of which Mr. Wilson Eyre, Jr., is chairman, not later than February 1.

ITALIAN ARCHITECTURE.¹—X.

CONTEMPORARY TIMES.

ECLECTICISM in architecture is, then, triumphant at present in Italy. At the beginning of the century, however, it was less eclecticism than a timid imitation of the so-called Greco-Roman Classic art—a more or less wisely directed fusion of elements borrowed from Greece and Rome. This return to the Classic style manifested itself nearly everywhere with the same characteristics. After the flowering-out of the seventeenth century in Italian art, the Classicism of the close of the eighteenth—the development of which was partially comprised in the present century—was reached by a natural reaction. It follows, then, that the Italian nineteenth-century architecture is based upon the Classic school, like painting and sculpture, which seemed early in the century wholly unworthy of notice unless inspired directly from Greece or Rome.

The architectural field seized by the Classicists was afterward enriched by ideas of the most conflicting nature. Thus, eclecticism was already winning its way while the sentiment of imitation still continued to sway certain artists. It is for this reason that Italian architecture, properly so-called, may be said to have ended with Bernini; when he was gone, imitation gradually cast its spell over the nation, carrying *manierism* into art. Imitation has always proved the most formidable foe to artistic expression. To-day, in our enthusiasm for the study of the styles, we are getting farther and farther away from the true source of art, namely, originality. In fact, our architects have long been lacking in originality. The times through which we are passing are said to be incapable of fructifying the great architectonic ideas. We study all the styles, and, forgetting that the style is of the man himself, do not concern ourselves about forming one of our own.

As these remarks are necessarily restricted to Italy, I will say that here teachings and criticism, critics and public alike, are bound to old and dangerous traditions, which, most happily, are at least beginning to be discussed. Several important structures have been reared in Italy during the last fifty years. Following the establishment of political unity, new needs made themselves felt; to such a degree, in fact, that several cities were roused to activity in the field of architecture; but it must be said that their works, in these circumstances, have contributed to the interests of speculation rather than of art.

Victims of an insufficient or otherwise defective training, in the great competitive contests opened by the State or by municipalities, Italian architects have attempted to copy the different styles, and have produced sometimes works of good

taste, but never works of art. This imitative feeling, intensified by the development of historic studies, has generated an architecture of *savants* and archaeologists, which has been particularly exercised on the old monuments. Many Italian mediæval and Renaissance structures have been restored, and a few have been completed. In Florence, Niccolò Matas († 1872) constructed the façade of Santa Croce, and Santa Maria del Fiore has received a new façade (Figure 1), completed in 1887, in accordance with the plan of Emile de Fabris (1808 † 1883); while the façade of the Cathedral of Milan is about to undergo a restoration after the designs of a young architect, Giuseppe Brentano (1862 † 1889), which won the first prize in an open competition in 1888. The example of Milan has been followed at Bologna for the façade of San Petronio, and, if the artistic impulse continues, other competi-

tions of the same kind will, perhaps, be opened.

But, in the meanwhile, what is becoming of art? Or rather, what is the watchword, what is the tendency, what is the aim of the new art? It has no watchword; a few isolated individuals are endeavoring, in discussion rather than in deeds, to walk in a new path, as though actuated by a desire to follow Buonarroti, who said: "*Io vo per vie non calpestate e sole.*" But their efforts have thus far proved fruitless. However, the field of action is never entered until facts have thoroughly ripened in the field of ideas, and for this reason we may yet hope for the future. Besides, much has been accomplished in Italy, and the work is going on particularly in response to the new demands raised by the establishment of national unity.

Among the cities in which architectural activity has had widest scope of late, Turin, Milan, Florence, Rome and Naples must be mentioned. The chief construction of this time at Turin, the

Mole Antonelliana, is the boldest and most original edifice in Italy. It is by the architect, Alexandro Antonelli (1798 † 1888), and is a masterpiece before which the intelligent builder stands amazed. In the construction of the dome the ordinary technical rules have been utterly disregarded, and the static laws have been applied with great learning and originality. It was begun in 1863 by the Jewish community of Turin as a synagogue, but, at the instigation of a number of prominent citizens, in 1879 it became the property of the city, and was completed as a national museum in honor of Victor Emmanuel. The architect, who must have struggled hard to realize his gigantic project, died while the iron bar supporting the terminal statue, 538 feet above the street level, was being put in place. The work is still very far from complete (Figures 2, 3, 4, 5, 6). Antonelli, it must be remembered, made bold flights in his constructions, to which no other modern Italian architect would dare to aspire.

The most remarkable Milanese production of recent times is

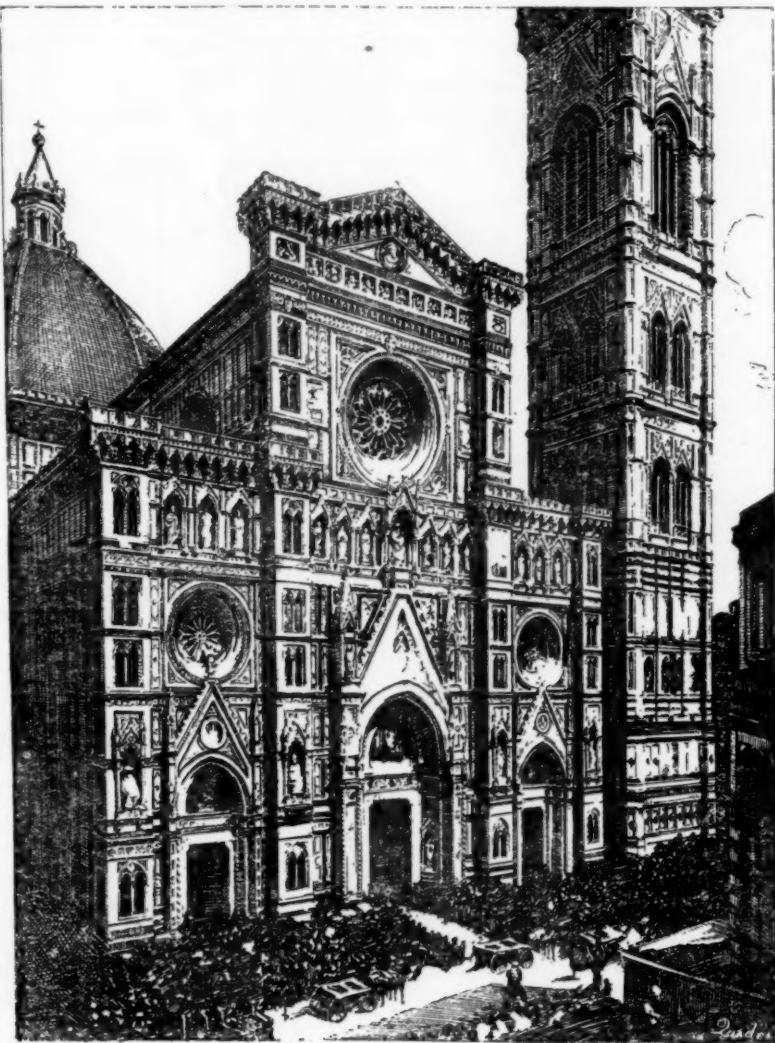


Fig. 1. Façade of Santa Maria del Fiore, Florence.

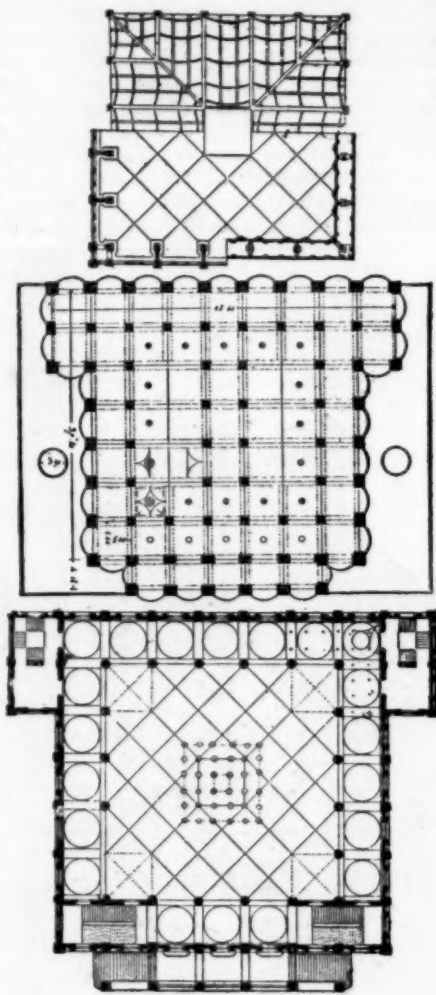
¹From the French of Alfredo Melani, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 837, page 21.

the Piazza del Duomo, with the gallery Victor Emmanuel. The idea of rearing these constructions is by some said to go back to Napoleon I, or rather, to men of his day. Plans were made in 1839, 1857 and 1858, but the beginning of the work on such of the structures as have been built does not date prior to 1859. It was not until 1861 that a competition was opened for designs for the square. Among the plans presented by the eighteen competitors, that of Guiseppe Mengoni, of Bologna (†1877), was the only one that obtained any special notice or met with public approval. This trial was

and executed between 1864 and 1877 should be noticed. The city having become the capital of the kingdom, the questions of enlargement and improvement at once, and of necessity, assumed great importance. It was at this time that the celebrated Viale dei Colli and the small villas bordering it were constructed; of the same date also are the improvements along the Arno and the edifices in the Piazza d'Azeglio, which were inspired by the Classic Florentine art, that is by the architecture of Brunel-



Fig. 2. Elevation of the Mole Antonelliana, Turin.



Figs. 3, 4 and 5. Plans of the Mole Antonelliana, Turin.



Fig. 6. Vertical Section of the Mole Antonelliana, Turin.

followed by a second, and Mengoni, who again competed, was so fortunate as to have his plan for the gallery accepted, though not that for the entire square, with the edifices about it. The City Council, however, entrusted the designing of the square to Mengoni, instructing him to alter such portions as had not received the approbation of the examining board. The contract for the work was given out January 11, 1865, and on the 7th of March following Victor Emmanuel laid the first stone of the mighty undertaking. Two years later, in 1867, the gallery was opened, but without the arch designed for the entrance from the cathedral square. Financial embarrassments had prevented the completion of the work; the municipality assumed charge of it, setting aside an English company which was forced to make a settlement in 1869. Operations were thus carried steadily forward down to 1877, when the whole was finished (Figures 7, 7a). But the architect who had conceived this vast project did not have the satisfaction of witnessing the consummation of his labors; the 30th of December, 1877, almost on the eve of the dedication, having mounted a scaffolding in order to study the effects of some decoration, Mengoni fell from a height of 130 feet, and was instantly killed.

As the gallery is the largest construction of the kind, it will not be out of place to give a few figures. Its length from the base of the columns of the portico fronting on the Piazza del Duomo to the façade on the Piazza della Scala is 215 yards. The length of the small nave is 115 yards. It contains 1,260 rooms and cost 7,000,000 lire.

In Florence, the works directed by Signor Poggi (living)

lesco, and possess the capital defect of being too nearly alike. As Florentine architects are extremely fond of Classic forms, their productions develop mechanically along a line including

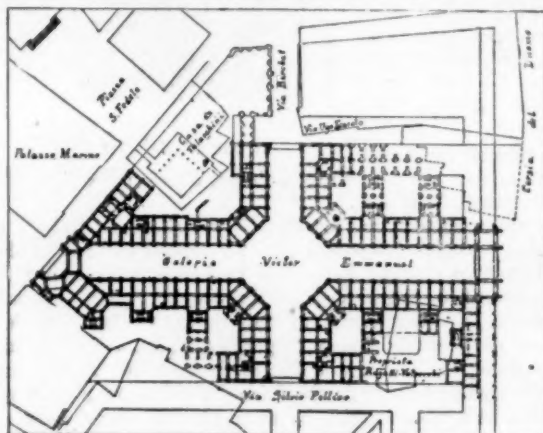


Fig. 7a. Plan of the Gallery Victor Emmanuel, Milan.

only a small number of types; so that the outlook for art is almost hopeless here.

Among Florentine constructions wholly unconnected with the improvements just referred to, may be noted the National Bank by Antonio Cipollo (†1872) whom we shall encounter

at Rome engaged on the Savings Bank in the Piazza Sciarra (completed in 1871) and the Jewish synagogue, a delicate structure which, though not as imposing as the synagogue of Turin, is charming and worthy of praise from an artistic standpoint. The Hebrews of Turin also applied to Mariano Falcini (1804 † 1885), Marco Treves (living) and Vincenzo Micheli (living) the architects of the Florentine temple.

[To be continued.]

ARCHITECT, OWNER & BUILDER BEFORE THE LAW.¹—XVII.

THE ARCHITECT'S DUTIES TOWARD THE BUILDER. — ARCHITECT MUST ACT FAIRLY TOWARD THE BUILDER.

IN his relations to the builder, the architect, although employed by the owner, is bound to act fairly. However strict he may be in holding the builder to his contract, he must not try to overreach him, or enter into any secret arrangement with the owner to deprive him of any part of the money justly due him. In all cases, the architect is presumed to be

the decision. So in another case,³ where the architect had assured the owner that his building would not cost more than a certain amount, although he did not give any guaranty to that effect, the court held that the architect's decision, given under such a bias, was not to be considered binding, and directed that the amount due the builder should be ascertained by an auditor, under the authority of the court.

Occasionally, the architect is led so far by his zeal for his employer's interests as to take a rather questionable advantage of his position, without any profit to himself, but it should be remembered that such conduct exposes him to personal liability to make good to the contractor the loss which his want of fairness may have caused. A builder⁴ had nearly finished a house, under a contract of the usual kind, when he came short of money, having been disappointed in receiving a large sum that was due him. He applied to the architect of the house on which he was at work for a certificate for another payment, but in vain. At last, his men, not being able to get their wages, became desperate, and he was warned not to come to the place where the work was going on, as his men had re-



Fig. 7. Entrance to the Gallery Victor Emmanuel, Milan.

an impartial man of science, and the contract between the owner and the builder usually makes him the final referee in matters relating to the construction of the building and the regulation of the accounts; but if it can be shown that he has a personal interest in distorting the facts in favor of either party, his award loses its validity, and both parties are absolved from accepting it.

In an English case,² the architect, before the signing of the contract with the builder, guaranteed the owner that the cost of his building should not exceed a certain sum. The contract with the builder contained the usual stipulation, that the architect should decide all matters relating to extra work. After the completion of the work, there were extra bills, which the architect refused to certify; and, although the builder had agreed by his contract to accept the architect's decision in such matters as final, the court held that as the architect's guaranty tended to influence his judgment, and the builder had no knowledge of it when he signed his contract, he was not bound by

solved to have him arrested if he came within their reach. Nevertheless, he went that same evening to the spot, and was received by a mob of his men. Escorted by them, he went to see the architect, who proposed to him that he should abandon his contract, and leave the question of how much should be paid him for what he had already done to be settled by appraisal by an expert. The architect drew up a paper containing an agreement to that effect, and said that if the unhappy builder would sign it, he would advance him money enough to pay off his men. The builder did so, and the architect gave him fifty pounds, and dismissed him, and the building was completed by other parties. The builder afterwards brought a suit in equity to have the agreement which he had signed set aside. Although the contract gave the architect the power of deciding without appeal all questions relating to the building, the court declared the agreement invalid, and ordered an accounting to be made of the value of the work and materials furnished by the plaintiff on the house, and the balance, if

¹ Continued from No. 838, page 38.

² *Kimberly vs. Dick*, 13 L. R. Eq. 1.

³ *Kemp vs. Rose*, 8 C. L. Giff. 258.

⁴ *Ormes vs. Beadel*, 2 Giff. 166.

there should be any, after deducting what he had already received, to be paid over to him.

In a case¹ of a different kind, estimates were obtained for building a house, and the tender of a certain builder was accepted. He was notified by telegraph to come to the architect's office and sign the contracts. He happened at the time to be suffering from an inflammation of the eyes, which rendered him nearly blind, and asked the architect to let him take the contracts home, and have them looked over by his lawyer. The architect refused, and intimated that if he did not sign them at once, the job would be given to another person; but he offered to read the contract over to him.

He read the contract accordingly, but omitted to read a clause which provided that the architect should be the sole arbitrator in any dispute which might arise in regard to the building. The builder then signed the contract.

Certificates for payments were given very sparingly, and while there was yet a large amount of money due the builder, and before the work was finished, the architect suddenly took possession of the building, and proceeded to have it finished by other parties. No account of the value of what had been done was furnished to the original contractor, and in completing the work changes were made, which would affect the cost. The builder sued to have an account taken of what was due him, and the balance paid him; and the owner placed his defence on the ground that the contractor had agreed in the contract to abide by the decision of the architect in all such matters. If the builder had signed the contract without reading it at all, as will be seen later, or if the architect had faithfully read it all to him, and he had then signed, this defence would probably have prevailed; but the court held that the omission of the clause constituting him sole arbitrator released the builder from any obligation to be bound by it, and ordered the amount due the contractor to be ascertained and paid him, and condemned the owner and architect together to pay the costs of the suit.

One more case,² where the charge of unfair practices against the architect was disproved, but in which the court took occasion to explain the law relating to the matter, will be sufficient to illustrate this part of the subject. A man named Davis contracted to build a theatre. By the contract, the architects were to be the sole judges upon all matters relating to the contract, and their certificate was to be "binding and conclusive on both parties;" and, on any dispute connected with the works, their decision was to be "final, without appeal." Davis failed before the building was finished, and his assignee filed a bill in equity against Smith, the owner of the theatre, and the two architects, alleging that, although the architects "had not expressed and could not reasonably or fairly have expressed any dissatisfaction with the execution of the works, but were, in fact, satisfied therewith, they declined to ascertain or certify the amount due to the plaintiff, and withheld their certificate, contrary to and in violation of the duties undertaken by them." The complaint further alleged that in so refusing and declining the architects had "been and were acting under the authority and at the instigation of and in collusion with Smith, who had, in fact, forbidden them to accede to the said requirements."

COURTS OF EQUITY WILL INTERFERE IN CASE OF COLLUSION.

The Court of the Rolls, in Chancery, before which the case was tried, held, in general, that courts of equity would interfere where there was collusive dealing and concert between the person whom he had appointed architect, overseer or agent, for the purpose of injuring the contractor, or defeating his claim; and it would also interfere in cases where the accounts between the parties were so complicated that they could not be properly adjusted by a court of law. In the present case, the court found that the charge of collusion against the architects was completely disproved, and dismissed the case, with costs, remarking, in the manner characteristic of English courts, that the trouble with the builder was evidently not that he was badly treated by the architects, but that "he was trying to carry out his contract on too small capital."

It will be observed that all these are English cases; but as the decisions seem to throw more light on the relations of the architect and the builder than the similar ones in our courts, in which the relation of the builder and the owner is made the principal point, and as these particular cases are much quoted as precedents in our courts, it seems best to give them.

¹ *Pawley vs. Turnbull*, 3 Giff. 70.

² *Bliss vs. Smith*, 34 Beav. 508.

DELAY THROUGH ARCHITECT'S FAULT.

It occasionally happens that delays occur in building through the fault or neglect of the architect; and in this case the architect must see that he does not try to push off the burden of responsibility for them from his own shoulders onto those of the builder. The latter would probably not be allowed, if he had made no objection at the time to the delays, to pretend later that they had been the cause of a failure on his part to fulfil his contract; but, at the same time, the architect, if he had really caused serious delay by neglect to furnish drawings, for example, when the contractor needed and asked for them, would not be allowed to use his position as final arbitrator in matters relating to the contract, to impose penalties upon the contractor for the delay caused by his own neglect. In an English case,³ the architect had delayed the plans, and in consequence, the operations on the building. The contractor asked the architect for an extension of the time set for completion, but it was refused. The building not being finished at the agreed time, the contract was declared forfeited, and the work put into other hands. On the suit of the original builder, the contract was held to have been wrongfully forfeited.

GREAT AUTHORITY OF ARCHITECT IN ENGLAND.

In English practice, an amount of authority is given to the architect which is not so common here. Of course, the kind and degree of the authority which he shall have over the builder is always limited by the contract between the builder and the owner, and if the contractor does not wish to agree to take any particular architect as final referee in all matters relating to the building, he has only to refuse to sign a contract making him so. If, however, he agrees with the owner that certain matters shall be left to the architect as final referee, he will be understood as being willing to trust implicitly in his judgment and skill, so long as they are honestly exercised; and he will not generally be allowed to call that judgment and skill in question in court, unless he is prepared to prove that they have been dishonestly and fraudulently perverted for his injury. A builder once,⁴ being disappointed in the amount of the final certificate which he had received from the architect, and finding it impossible to collect from the owner any more money without an additional certificate, sued the owner for the balance which he conceived to be due him, and endeavored to evade the clause in the contract which made the obtaining of a certificate the indispensable preliminary to the payment of any money by the owner, by alleging that the architect did not use due care and skill in ascertaining the amount due, and that he had knowingly or negligently certified to a much smaller sum than was, in fact, due, and had refused to reconsider his certificate. The court held that "no cause of action was disclosed." If the builder had charged that the architect fraudulently, and in collusion with the owner, had given a certificate for less than was due him, his complaint would have shown a good cause of action, although, of course, he would have had to substantiate his charges, or lose his case; but the court would not help a man to escape from the award of an architect in whose skill and care he had agreed to trust, on the ground that he had turned out not to be so skilful and careful as had been supposed.

This rule is, however, not without certain exceptions in this country, which will be treated of later, so that architects should not fail to show diligence and care, as well as perfect honesty, in their adjustment of accounts between the owner and the contractor, if they would escape all blame.

THE BUILDER'S DUTIES TOWARD THE ARCHITECT. — BUILDER MUST KEEP HIS PROMISES.

After the builder has signed his contract, agreeing to do certain work under the supervision, according to the directions, and to the satisfaction of a certain architect, he must see that his promises in this respect are strictly complied with. Many builders, especially in the country, where work is very commonly done from the builder's own plans, and without the supervision of an architect, appear to be tormented by jealousy of any architect under whose direction they happen to be placed, and, notwithstanding their promise in their contract to obey his instructions, take pleasure in disregarding them, and in varying wantonly from his drawings, apparently with no object except to show their independence of him. These

³ *Roberts vs. Bury*, 4 L. J. C. P. 755, 5 L. J. C. P. 310.

⁴ *Stevenson vs. Watson*, 4 C. P. D. 148.

actions are not only very annoying to the architect, but are decidedly injurious to him, as the effect of the building, as a work of art, may be ruined by slight variations in the projection of a cornice, or the spacing of string-courses; yet, if the materials and workmanship are good, so that the builder cannot be accused of cheating his employer, the architect dislikes to delay the structure by ordering, as he has an undoubted right to do, the portions incorrectly executed to be pulled down, and rebuilt in accordance with the drawings to which the builder has agreed to conform.

Moreover, he knows by experience that the owner is likely, if he says anything about the matter, to consider him conceited and unreasonable in making so much fuss about conformity with his design, which, as the builder maintains, is no better than any carpenter could make, and not so good as the modification which has already been executed; so that, unless he is sure that the owner will support him, even to the extent of waiting a little longer for his house, in demanding exact compliance with the plans, he will probably let the matter go, and content himself with a resolution never to have anything more to do with that builder.

IMPORTANCE OF SATISFYING THE ARCHITECT.

Such conduct as this, while dishonorable and wrong, is extremely dangerous for the builder. It will be shown later, by many examples, that if the owner should choose to take the architect's view of the matter, the contractor may be compelled to correct every intentional or accidental variation from the plans to which the architect has objected, even if he should have to pull down and rebuild the house from the foundations to do so.

Where the builder finds himself in a predicament of this sort, he usually tries to escape from it by alleging that he did not understand the plans, or that they were obscure, or impracticable; and it is well to be forewarned that this defence would avail him nothing before a court. It has been held by the two highest courts of Illinois¹ that "a contractor is not excused for 'not understanding the plans. His undertaking to erect a 'building in accordance with certain drawings and specifications implies that he does understand them, and he cannot 'escape liability on the ground that he exercised ordinary skill 'and care to understand them, and failed to comprehend them. 'In such a case, if there is obscurity in the drawings, contractors must apply to the architect for directions, where 'work is to be done under the direction of an architect. If 'they rely on their own judgment, they must take the consequences."

In regard, also, to the clause embodied in most building contracts, which provides that the work shall be done to the satisfaction of the architect, and that payments are to be made only on the production of his written certificate that he is satisfied with it, the builder may find that the dissatisfaction which he has given the architect a right to feel may show itself very unpleasantly when he calls for his final payment. Under such a clause, even though no important violation of the contract may have been committed, if the architect honestly believes that the building has not been carried out in entire compliance with the drawings and specifications, and is therefore worth less to the owner than it would have been if the contract had been strictly performed, it is not only his right, but his duty, to make such deduction from the contract price as he thinks fair; and the builder will not be permitted to appeal from his decision on the ground that he ought to have been satisfied, or that he was unreasonable in not being so.

SATISFACTION.

In fact, to agree to do any sort of work to another person's satisfaction is a more serious matter than most people suppose. The majority of mankind are easy-going and honest, and would rather accept something that they did not want than oppress a person who had agreed to furnish them something different; but there is no question that if a man makes a contract for a certain thing, he is entitled to receive just that thing, if he chooses to require it; and if he stipulates that the object shall be satisfactory to himself, or to another specified person, it must be made satisfactory before he is obliged to accept it, and he need not give any reason for his dissatisfaction, provided it is sincere, and is not pretended for the sake of escaping from a just obligation. A sculptor once secured a commission for

making a portrait bust through a third person, who, in soliciting the work for the sculptor, said that the lady for whom the bust was to be made "need not take it unless she was satisfied with it." The bust was artistically executed, and was a good likeness of the person represented, and was made in accordance with the suggestions of the lady; but, when it was done, she said that she would not take it or pay for it. The case² was brought into court, and the plaintiff proved that the defendant's dissatisfaction was unreasonable, and was due to her ignorance of the necessary qualities of sculpture in white material; but the Supreme Court of Connecticut said that "he who 'contracts to do work which will satisfy one, does not make 'out a case by showing that the work done will be satisfactory 'to ten thousand others'; and held that the contract was not performed, and that the plaintiff could not recover.

In a somewhat similar case,³ decided in Michigan, the plaintiff called on a man, and solicited the privilege of making a portrait of his deceased daughter. He said he would take a small photograph, and send it away to be enlarged and finished, and when it was done, if it was not satisfactory to him in every particular, he need not take it or pay for it.

The picture was done, and shown to the defendant, who was dissatisfied with it, and refused to accept it. The plaintiff endeavored to ascertain what his objections to it were, but could not learn clearly. He then sent the picture back to the artist, to be changed. The next day, he received a letter from the defendant, repeating that the picture was not satisfactory, and that he declined to take it, or any other similar picture, and countermanding the order. When the altered picture was received from the artist, the plaintiff took it to the defendant, who refused to look at it, and he did not see it until the trial of the suit, when he examined it, and found the same objections still existing. The Supreme Court held that under the agreement, the defendant was the only one to decide whether the picture was satisfactory, and that he had a right to say whether he would accept or pay for it.

In the same manner, where it was agreed that a portrait should be paid for only if the defendant's "friends" should decide that it was a good likeness, it was held in New York that the plaintiff could not recover, although the jury were satisfied that it was a good likeness. In this case,⁴ as no particular persons were named as the "friends" to whom the decision was to be confided, the plaintiff's counsel argued that the provision was void from being too indefinite; but the court thought that it was sufficiently definite.

In these cases, it was distinctly agreed that the work should be done to the satisfaction of some specified arbiter. Where this stipulation is not made, it will rest with the jury to say whether it has been properly performed.

In a case⁵ where a man had a portrait of a yacht painted, it was held in New York that the employer was not the sole arbiter as to whether the work had been properly performed, unless there had been a stipulation to that effect.

It occasionally happens in building contracts that two persons are named, to whose satisfaction the work must be done; these two being sometimes the architect and the owner, or sometimes the architect and a superintendent. In these cases, it seems to be the law that it is only necessary to satisfy one of them, although much would depend upon the wording of the contract.

A contract in Wisconsin⁶ provided that the work should be done in a good, substantial and workmanlike manner, to the satisfaction of the architect; and, further on, it said that the work was to be executed to the full satisfaction of the architect, and to the satisfaction of the owner. The court held that this last clause was put in the contract only to prevent changes of plan or design without the owner's approval, and that, if no such change was made, and the architect accepted the work, the contract was fulfilled.

So where a contract⁷ said that certain work should be done "to the satisfaction of the architect or his assistant or superintendent," it was held that work done to the satisfaction of either party named complied with the contract, and that it was not required to do it to the satisfaction of both.

[To be continued.]

¹ *Zabski vs. Clark*, 44 Conn. 218. See also *McCarren vs. McNulty*, 7 Gray, 139. *Brown vs. Foster*, 113 Mass. 136. *Smith vs. Briggs*, 3 Denio, 73. *Glacius vs. Black*, 50 N. Y. 145.

² *Gibson vs. Cranage*, 39 Mich. 49. See also *Clarke vs. Watson*, 114 Eng. C. L. 278. *Scott vs. Corp. Liverpool*, 60 Eng. C. L. 334. *Moore vs. Goodwin*, 43 Hun. 534.

³ *Hoffman vs. Gallagher*, 6 Daly, 42.

⁴ *Basford vs. Oelrichs*, 40 Hun. 637.

⁵ *Tetz vs. Butterfield*, 54 Wis. 242.

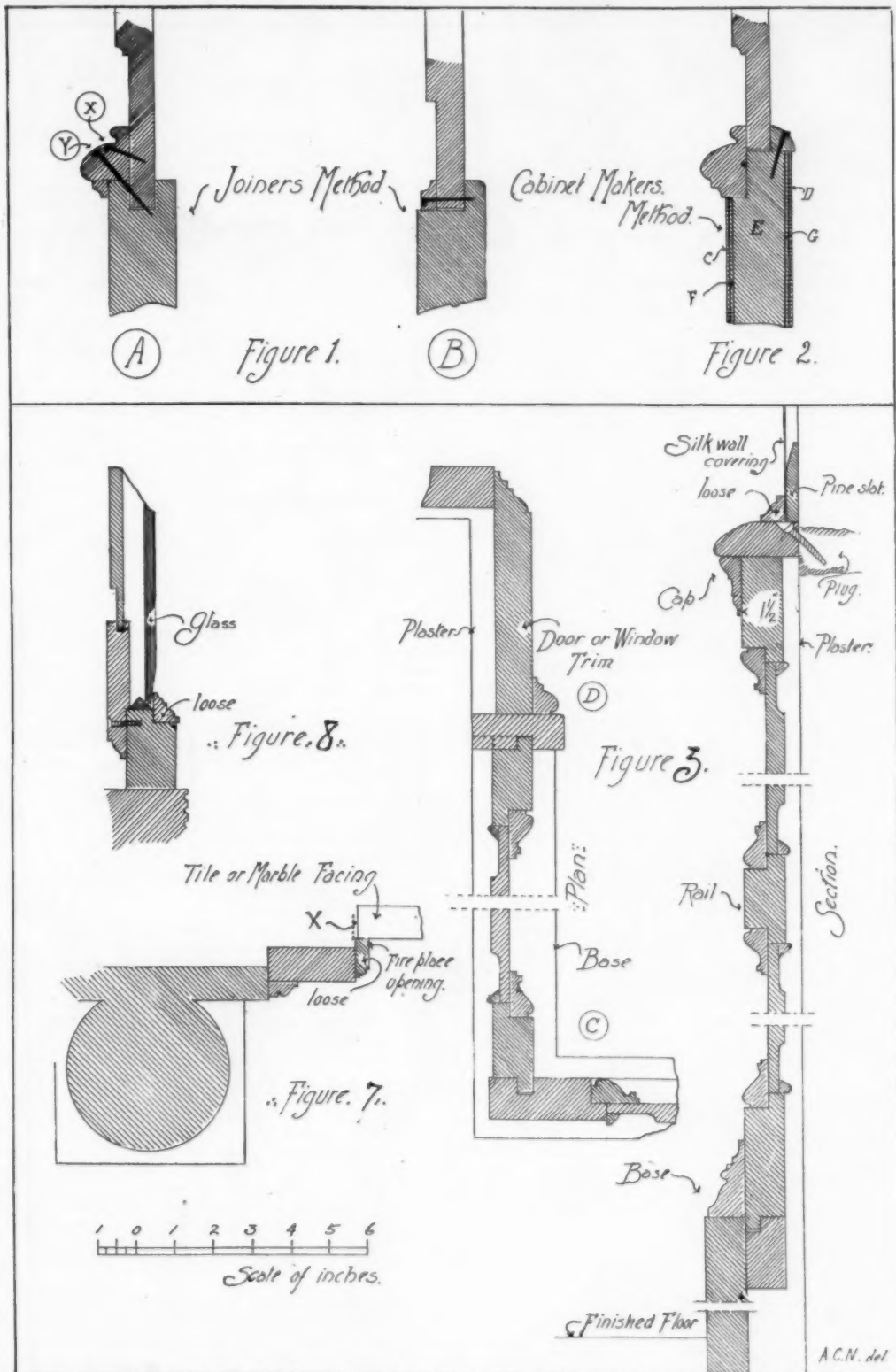
⁶ *Vermont St. Church vs. Brose*, 104 Ill. 206. *Wilkey vs. Paw Paw*, 25 Mich. 419.

⁷ *Clark vs. Pope*, 70 Ill. 128. *Trustees vs. Platt*, 5 Bradw. 567.

It is believed that this manner of hanging cures the tendency that shutters have to spring out of the box. It also can be folded by a movement always in the same direction which certainly is an advantage. Whereas if hung on butts of the usual make the folding movement alternates from left to right.

One thing will be noticed on the drawing, Figure 5, which should always be done. It is that the top of the shutter is not carried to the soffit of the window but is separated by a quarter or three-

close to the shutter-box as we can get it. If, however, it is desired that the curtain be kept inside the trim, or if the shutter-box does not project sufficiently to clear the plaster line of the wall, a fitting-piece is made use of. The curtain-poles are then fastened to this. Should the fitting-piece be wide enough to receive both the heavy pole for the drapery curtains, and the small pole for lace curtains, the latter is placed directly back of the former. When the curtain-poles are placed on a level, or a little below the soffit of the window



eighths inch bead; and the bottom is similarly treated on the elbows and seat. (Figure 6.) Outside the shutter-box is placed the trim. This is made and framed together ready to be placed directly against the shutter-box. It should, however, be kept back a little from the edge. The sketch shows it back three-quarters of an inch. In laying out the drawing for the window, how and where the curtain-poles are to be placed is considered.

If they are to be set on the outside of the trim it may be set as

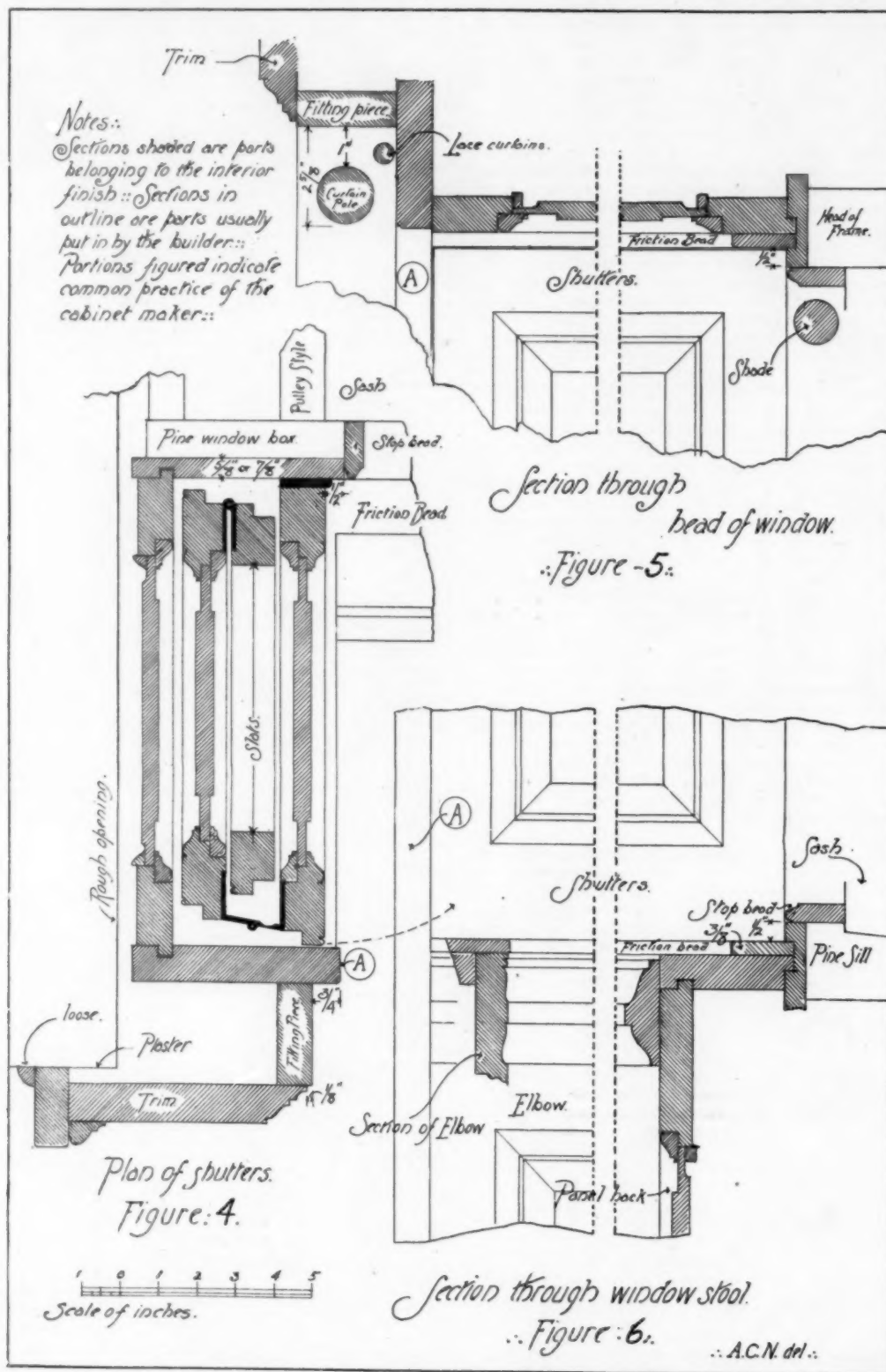
light shows above them. To avoid this a rebate, or angle is constructed by setting the fitting-piece across the head of the window two and five-eighths inches above the soffit. (Figure 5.) This, of course, increases the height of the trim by so much.

The mantel, perhaps, differs in its construction from the joiner's method less than any other portion of the woodwork, because in both instances the piece is made complete before it leaves the factory. Yet there are two things taken into consideration in drawing the

details for a mantel that should not be forgotten. The first is to construct it so that the fireplace facing may be set after the mantel is in place. It may, of course, happen that the facing can be set before the woodwork is put in. If this can be done it is certainly the best way, but it often happens that the woodwork is set first. In order to admit, therefore, of slipping the facing in place easily a loose moulding is left around the fire opening. This when removed increases the opening nearly an inch. (See Figure 7.) After the facing of marble, tile or mosaic, as the case may be, is in position,

the solid. (Figure 8.) When the mantel is designed to fit round the chimney-breast it is made three-quarters of an inch longer than the breast itself. This leaves a play on each side for irregularities in plastering, etc.

In connection with the mantel, the picture-moulding plays an important part. The mantel, holding, as it does, the most conspicuous position in the room, is often the highest piece of woodwork, windows excepted. The picture-moulding, consequently, butts against some portion of the "over-mantel" or mirror frame. To make the connec-



the moulding can be nailed or glued in place, thus covering the joint X and making a neat piece of work.

The second point requiring attention is the arranging of the mirror, if one is called for by the design, that it may be removed easily without the necessity of taking the whole mantel from the wall. This is accomplished by making the moulding next the glass of a separate piece of wood from the rail instead of cutting both in

tion agreeable and interesting, it is desirable to continue some member of the mantel cornice, as the picture-moulding. Should a heavy moulding, a species of cornice, be carried round the room below the frieze, the picture-moulding is concealed by making it serve as the bed-mould.

The majority of cabinet-makers, I believe, follow the so-called Old English method of stair-building; that is, a rough staircase is first

constructed, which is usually used by the workman during the progress of the building, and afterwards encased with the finished woodwork. There is a difference in opinion relative to whether this is a good method or not, but, aside from the fact that it is more costly than building directly on the carriages themselves, I see no disadvantage, and it certainly has several advantages.

The finished stair has a seven-eighths-inch thick riser and one-and-one-quarter-inch thick tread, framed together by inserting a tongue on the tread in a groove on the riser next above. A groove in the under side of the tread also receives a tongue on the upper edge of the riser below it, and the angle formed by riser and nosing is filled with a moulding.

The strings, particularly the wall-strings, and sometimes the front strings where they are close, are tongued and grooved to the treads and risers.

These are things which are noticed in examining the drawings for interior woodwork, but it is at the factory and the building where a difference between the two classes of work will be observed.

The joiner runs out his work in lengths: so many feet of door-trim; so many feet of cornice; so many feet of base, etc. This is carted to the building, where it is fitted and put in place. It does sometimes happen in the best joiners' shops that the joints and mitres are made before leaving the factory, but it is seldom that they are fastened together until their accuracy has been tested at the building. This method involves a great deal of labor in the house and many inconveniences. Moreover, the work is then nailed in position one piece at a time; in fact, built up against the plaster. The wood, during all this slow process of fitting, is in an unfinished state, and is not protected from the action of the atmosphere in any way. The air in any building where new plaster has been put in or alterations are being made is more or less damp, and liable to great changes in temperature.

The freshly-cut wood absorbs moisture very rapidly, particularly when it has been dried in a hot-box, and swells accordingly. After it is up and varnished in this swollen condition, the first artificial heat in the building causes contraction, open mitres, cracked panels and loose mouldings.

The varnishing of woodwork after it has been set in place cannot be done easily; hence it is often slighted and only half rubbed.

In cabinet-work, everything that can be done properly before it leaves the factory is carefully finished. Door and window trims are made, fastened together, varnished *both sides* and rubbed before they are sent to the building. The same can be said of every part of the woodwork. As little is left to be attended to at the house as possible. The varnishing is *all* done at the factory, where the wood is kept perfectly dry, the varnishers giving it the first coat of shellac as soon as the woodworker has finished his part.

It is noticeable that cabinet-work is made from wood that is "glued up"; that is, no large piece of solid wood is used, it being well understood that a large block of wood is liable to crack or warp. Hence, wherever such a piece is needed, it will usually be made by glueing a veneer of more or less thickness on a core of pine or other wood. This core is itself made of pieces glued together, so that the grain of one runs at right angles to the grain of the other, in hopes of preventing all twisting. Figure 2 shows how a panel frame would be made. *C* is the mahogany or other choice wood veneer. *D* is oak. *E* is the core, and may be of ash, pine or chestnut. *F* and *G* are of oak, the same thickness as veneers *C* and *D*.

Another thing to be noticed is that no nails are used. Only on rare occasions is it that a nail, brad or screw is placed in the "show-wood" of real cabinet-work. Dowels and glue make as sure and as secure a piece of work, without in any way injuring the appearance. No putty-holes will be seen on good work, for they do not exist. The use of nails is even avoided in setting-up the work. It is all made and fitted with tongues, grooves or rebates, so it may almost be put together like children's toy building-blocks, and left without fastening.

In reality, however, it is fastened with *screws* driven through the wainscot below the level of the finished floor, and beneath the loose moulding of the cap, which is afterwards glued in place.

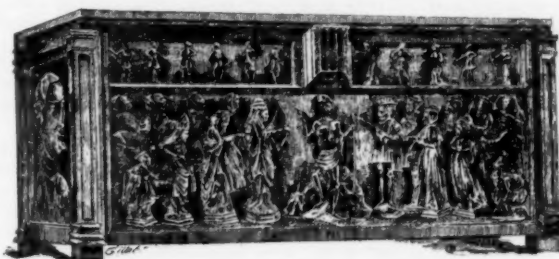
Door-trims, window-trims and mantels are fastened above the head and below finished floor. Then, when the floor is down, all indications of how the woodwork is fastened are hidden. Not a hole is left to be filled with plugs or putty. As the woodwork is varnished before setting, nothing more needs to be done except to clean it. This is accomplished in a day or two by skilled men, who wipe off all dust and dirt with cloths dampened with crude kerosene oil.

By working in the above manner, the best establishments will make all the woodwork for the interior of a house in any portion of the globe; ship it, ready finished, to the building, with an experienced foreman to superintend the "setting-up," which requires but a very short time.

Now it is understood why such care is taken in making the measures and drawings; for should a single error occur in the proper arrangement or size of some portion of the work, it would cause endless amount of trouble and no small expense. It is, too, this care in draughting which gives such a perfect adjustment and prevents finding, when the work is being set, that it is impossible to put the mantel or cornice or something else in the place the architect wished to have it. It also prevents patching, or cutting down a little

here or there to have the work fit. Everything fits, and it is known how each angle, moulding or trim will connect with the adjoining piece before work in the factory is begun. A. C. N.

THEATRICAL ARCHITECTURE.—AN ADDENDUM.



XVI Century Bread-box. From Havard's "Dictionnaire de l'Ameublement."

THE series of articles which have recently appeared in the columns of the *American Architect* upon theatre planning and construction, under the above title, may, I think, be again referred to by me in consequence of a recent disaster that has occurred in the theatre at Gateshead, in England, and I believe that some valuable and practical lessons may be deduced therefrom. Long before this, the details of the shocking panic which caused the death of ten persons under the most harrowing circumstances will be familiar to those who study the most important questions of fires in theatres and of theatre building and construction. It appears that an alarm of fire was raised during the performance of a pantomime at the Theatre Royal, Gateshead, a small town in the north of England. The theatre, which is the only place of public amusement in the town, was originally "an ill-built Methodist chapel." It was then converted into a music-hall, and finally into a theatre, with one-story shops abutting in the front. From this it is evident that the building was one not built wholly and solely for the purposes of a theatre, as so strongly urged to be necessary for perfect theatre-planning in the articles on this subject above referred to. The additional risk of shops must be also noted.

Now the cause of the panic must not be overlooked by architects: although there is nothing novel in the details, there are yet many lessons which must be repeated again and again with untiring energy until the question of theatrical architecture is fully understood. By the way, I have been severely criticised for the term theatrical architecture, as it appears to convey to some of your readers in England the scenic artist's ideas of architecture; but surely, if we speak of domestic architecture and ecclesiastical architecture, we can speak of theatrical architecture in the same broad and solemn way.

I am quite certain that the question of planning and constructing theatres with the safety of the public in view is no more understood by the great body of architects in America than by the majority of architects in Great Britain. A paper recently read by Mr. Townsend before the Royal Institute of British Architects on American theatres impressed me with the many deficiencies and errors in the examples he placed before us, rather than with the novelty and excellence of their planning; but the examples may have been bad ones. At any rate, the example of a London theatre, which he chose as a peg whereon to hang his comparisons, was most unhappy.

I do not think therefore, even after devoting so much space in the *American Architect* to the subject that it will be labor lost to see how far the methods already advocated were wanting in the Gateshead disaster, as it will put the articles to a practical test.

On the Saturday night after Christmas day the theatre was, of course, packed, especially in the gallery, where five hundred persons were assembled. This is worth noting. In the lower circle on the left-hand side facing the stage a lighted match fell: some accounts say it was struck by a man who had dropped something on the floor, others say it was thrown down after lighting a pipe. By this means a piece of paper on the floor caught fire, and the paper and sawdust smouldering together caused a flame which, though slight, was sufficient to ignite a wooden partition and to raise the alarm of "Fire! Fire!" A rush was the consequence. It is impossible to govern human beings to such an extent as to absolutely prevent them rushing from their seats panic-stricken, it is idle to expect good sense from any crowd especially one confined within the four walls of a closely-packed, ill-built provincial theatre; a crowd's collective intelligence may only equal that of the most foolish individual who makes part of it.

The lighted match started the mischief, but even this enemy would have been powerless without the presence of the paper and sawdust, which created the smoke. No provision for the escape of this smoke, which collected in the gallery, appears to have been made, as I have so strongly urged as necessary. Here is a practical proof of such necessity, for but for this smoke in the gallery, I very much doubt if there would have been the fatal rush therefrom.

The fire was, as is doubtless known, a mere nothing and put out by a few buckets of water. How I advised the use of buckets of water as the best means of extinguishing fire, will be still fresh in memory.

The gallery had only one exit, which was also the entrance. One of the doors leading from the gallery, and blocking the course of a surging, struggling crowd was found to be bolted. The delay in opening it, short though it seems to have been, was long enough to intensify the pressure behind. Had one of the "panic bolts" been fitted to this door (as illustrated on page 133, November 28, 1891, of the *American Architect*), or one of some other equally effective pattern, there would have been no block on this staircase and no loss of life as far as we can judge.

That five hundred people should be allowed to be seated in a gallery to which there was only one exit staircase, seems almost incredible. It is stated that the heap of human bodies dead and alive found in the block on the gallery staircase was six feet deep.

There was a door on this staircase fastened or bolted, the sudden opening of which caused the check-taker to fall, the next behind fell over him, and so on. This is the oft-repeated tale of panics. When shall we learn to profit by such lessons?

The Gateshead disaster is small compared with the historical calamities of the Ring Theater, the Exeter Theatre or the Sunderland disaster, where nearly two hundred children lost their lives, crushed or suffocated in a space of twelve square feet on a staircase leading to a bolted door. It must be remembered that there was no panic at Sunderland—only a desire on the part of the little ones to descend hurriedly to the body of the hall, and to obtain some prizes which were being distributed by a conjuror. But, although the present trouble is small compared with these, it should none the less receive our anxious attention and deepest thought, for it seems that it is only by constant reminders that the importance of this subject can be impressed upon the minds of the public. When disasters like this occur, it is true, there is a hue-and-cry; but a month or two after, the public are happy in their pathetic security. The more I study the subject, the more convinced I become that enormous advantages must be obtained by uniformity and simplicity in the planning, placing exits and entrances in prominent positions, equally balanced on either side of the auditorium, giving the public a theatre in which they know they are safe, in which they are sure of the ample means of exit, in which they are confident that they can, when necessity arises, help themselves without doing injury to others.

As regards the construction of the theatre, we hear that the fire, slight as it was, was fed by a wooden partition in the auditorium. No construction other than fire-resisting should be allowed in any auditorium.

We learn, further, that to restore ventilation on the gallery staircase, it was found necessary to smash the windows. Here is a practical proof of the need of ample ventilation to all parts of a theatre. The usual details of horror that accompany these accounts are to be found, telling of death and broken limbs, caused by jumping from windows. Would such reckless loss of life have occurred had outside balconies and staircases been provided.

This was but a provincial theatre, not even built as a theatre, and we do not expect to find all modern improvements in such a building; but why not? I, for one, fail to see why houses totally unfit for the purpose should be permitted to be used for placing human beings in such danger of loss of life. We have developed of late years in theatre-planning, and, as time goes on, we may hope that invention, science and labor may further assist us in improving our places of public amusement. As long as we do not (even in obscure provincial towns, where life is as valuable as in great cities) take full advantage of the knowledge we have got, it is useless seeking for more, and my papers on theatrical architecture have been written in vain.

ERNEST A. E. WOODROW, A. R. I. B. A.

SOME SOUTHERN CAPITOLS.¹—III.

FLORIDA.



Florida State-House, Tallahassee.

WHO has ever heard of any event occurring in Tallahassee? The name is familiar enough to us who learned the names of all the State capitals in our school-boy days. Its manifest Indian origin served to fix it permanently in our memories, where

¹ Continued from No. 780, page 146.

it has rested ever since as the capital of Florida. Yet all the while Tallahassee has modestly hidden itself among the orange groves of the State of whose government it is the seat, has entertained every other year a legislature consisting of thirty-two senators and seventy-six representatives, and apparently never has done anything either very good or very bad to invite the attention of the outside world. It is a town of about three thousand inhabitants, containing substantial residences supplied with ample lawns and gardens; and passing up its broad streets, a visitor might dismiss the State capitol with a glance, supposing it to be a residence only a little more capacious than any of the others; or finding only in the well-kept grounds about it something to differentiate it in appearance from a court-house of the conventional Southern type.

When Florida, after twenty-three years of territorial existence under our national government, was, in 1845, admitted into the Union as the twenty-seventh State, the erection of this building was begun, and it was finished in 1850 at a cost of \$150,000. The material used in its construction was brick, and elegance was subordinated to solidity throughout. The only attempt at ornamentation is found in a pediment supported by six Ionic pillars, which rise from a platform in front of the main entrance reached by a flight of steps. The building even lacks the dome by which one learns to distinguish a State capitol from less important buildings, in the South. The structure consists of two stories and a basement, and furnishes ample room for the usual complement of State officials, Supreme Court, Senate and House of Representatives. It furthermore fitly represents the economy of the Floridians as well as their evident integrity in the management of the affairs of their commonwealth. The rapid influx of population, consisting largely of Northern men invited thither by a Bureau of Immigration, may in time serve to overcome the present conservatism of the native government and demand that the prosperity of the State be exhibited to the world in an architectural display at the seat of government that will cause Tallahassee to sacrifice its natural modesty and present seclusion.

ARTHUR HOWARD NOLL.

FLOATING BRIDGES.



FLOATING or pontoon bridges, of one kind or another, have been used for the passage of rivers or arms of the sea from a very early period. The supporting medium, or pontoon, is formed of boats, casks, leather bottles or inflated bladders, or any other convenient or suitable material; the roadway is generally of planks supported by the pontoons. The earliest bridge of the kind of which I have been able to find any mention, is that used by Cyrus, King of Persia, about the year 538 B. C. In this bridge the pontoons are said to have consisted of stuffed skins. Darius, King of Persia, threw bridges of boats across the Bosphorus and the Danube, in his war against the Scythians about 513 B. C. We have no detail of their construction, but they must have been pretty strong, as he is said to have taken an army of 700,000 men over them. The architect or engineer of this bridge was Mandrocles, of Samos. Xerxes, King of Persia, had a bridge of boats constructed, 481 B. C., across the Hellespont, about a mile in length. This bridge has been described as being constructed between Sestos and Madytus in the Chersonesus of the Hellespont. The Phœnicians used a cordage made of linen, and the Egyptians used the bark of the biblos. A great storm destroyed this bridge, which so enraged the king that he ordered the heads of the engineers to be cut off, 300 lashes to be given to the sea, and a set of strong fetters to be thrown into it. Having administered this punishment, and fettered the unruly sea, he reconstructed his bridge on a double line of boats, 360 on the side next the Euxine Sea and 313 on the Hellespont side; the former were placed transversely and the latter in the direction of the stream or current, to diminish the strain on the cables. These boats were secured on each side by anchors. Three openings were left for the passage of light boats. The cables were of white flax and biblos or papyrus, two of flax to four of biblos, united together and all of

same thickness. They were laid from shore to shore and strained tight with wooden capstans. A cubit of cable weighed a talent. Timbers were laid across the cables and secured to them; these were floored over and the roadway formed. A fence was erected along each side to prevent the horses looking over into the sea. The Greeks employed a bridge of boats in crossing the River Tigris, about 400 B. C., in their retreat from Persia.

Alexander the Great, when on the march, occasionally carried along with his army a kind of boat divided into portions, and so constructed that it could be easily put together for crossing rivers. To enable him to cross the Oxus with his army (about 327 B. C.) he is said to have constructed rafts, made of the hide tents of the soldiers and stuffed with dry hay or straw, all the river boats having been burned. Xenophon describes a similar method as used by him in his march through the desert, when he came to Carmandi, on the Euphrates. Herodotus, Lucanus the Roman poet, and others about the beginning of the Christian era, mention the use of casks by the Romans to support rafts for the passage of armies. Vegetius also mentions that it was customary for the Roman army to carry with them small boats made from the hollowed-out trunks of trees, with planks and nails and ropes, so that a bridge could be quickly constructed.

In the fourth century, A. D., the Emperor Julian used bridges of boats to cross the Tigris, Euphrates, and other rivers. These were formed of skins stretched over osier frames.

Coming down to more recent times, the Germans in the seventeenth century constructed pontoons of timber frames covered with leather, and the Dutch used similar frames covered with tin. The different forms and varieties of material used from time to time for pontoon bridges have been numerous. Some of the pontoons are open like an undecked boat, others are decked over, and others again are much in the form of cylinders. It is claimed for the closed or decked form, that they cannot be submerged by the river, and that only by too great a weight being put upon them can they be sunk. Amongst its disadvantages may be mentioned that it is difficult to keep water-tight, and cannot be used as a row-boat if occasion required.

During the Peninsular War, the British followed the custom of Europe and used the open form, but afterwards abandoned it, because if large it was inconvenient to transport, and if small it was only useful in small streams, being liable to fill and sink. These pontoons were placed at about 12 feet 6 inches apart, and the width of roadway was about 10 feet. General Colleton designed the first substitute for the open boat. His pontoon was cylindrical, with conical ends and made with wooden staves like a cask. General Pasley followed with a pontoon like a decked canoe, with pointed bow and square stern. These pontoons were made of light wooden frames covered with coppered sheets, decked with wood, and divided into water-tight compartments and supplied with the necessary apparatus for pumping out water. One complete bay, or in other words one pair of these pontoons, with their due amount of roadway, weighed about 2,103 pounds. Blanchard's pontoon followed, and was used in the British army for some time during the time of peace. This was a cylinder cased with tin and with hemispherical ends; one bay weighing 1,500 pounds to 1,600 pounds. It was, however, experimented upon and abandoned as likely to break down in time of war. British engineers seem to have concluded that the open form of pontoon, to which Continental nations had adhered, is the best. Captain Fowkes has invented a folding pontoon, or boat, constructed with sliding ribs and covered with waterproof canvas, so that for transport it will close up like an accordion. The central interval is 10 feet 7 inches, the width of roadway is 10 feet, whilst one pontoon and one bay of superstructure weighs about 1,250 pounds. It is not, I believe, altogether satisfactory, being rather short in its supporting power. Colonel Blood is, I believe, the inventor of the open form with decked ends, and the sides partly decked where the rowlock blocks are fixed. The central interval is 15 feet, width of roadway 10 feet, and the weight of a single bay is about 2,300 pounds.

In America, india-rubber has been used instead of the skins, etc., employed by the Greeks and Romans, in obtaining the floating power. Floating bridges were not, however, confined purely to military purposes, nor yet are they always temporary constructions. A very primitive bridge, of early times, for crossing wet, marshy grounds, was formed by tying bundles of rushes together, and laying them at intervals on the surface to support boards or planks.

In Africa floating bridges have been constructed of trees and bamboos bound together and forming a continuous and flexible roadway, which would rise and fall with the river. They are, however, generally carried away by every large flood, and have to be frequently renewed.

There is a bridge of 130 boats, joined by strong iron chains upon which are laid the timber beams and planks that form the roadway across the River Kan-tcheou-fou, in China. In this bridge two or three boats are removable to allow of passage of river traffic, and it also carries the custom house, which is built upon it. On the river at Ning-po, in the same country, there is another bridge of boats, also so constructed that one of the boats and roadway can be slipped out to allow of the passage of river boats.

At Rouen a pontoon bridge was constructed to take the place of the old Roman bridge which had previously existed there. It is about 300 yards long. The boats are strong and firmly moored with

chains. The roadway is paved with stone in the same manner as a street. There are also floating bridges at St. Petersburg, Presburg, Coblenz, Seville, and other places. In 1865 one was constructed at Carlsruhe 1,190 feet long, and of this 768 feet are supported on 34 pontoons, each 65½ feet long by 12 feet wide. This bridge carries both a railway and carriage road.

Many years ago Mr. George Stewart, of Port Hope, Canada, constructed a floating bridge across a swamp and river between Lake Scugog and Sturgeon Lake. Carrying out the idea of the corduroy roads, he constructed a bridge of about three-quarters of a mile in length. Rafts were formed of flatted timber 30 feet square, connected by six or seven longitudinal beams on which transverse pieces were laid forming the roadway. The rafts were chained together and anchored to large boulders in the water.

Many of the great rivers of India are crossed, on the main roads, by floating bridges. Of these I will only mention the great Hooghly pontoon bridge. The necessity for a bridge over the Hooghly at Calcutta, to connect that town with Howrah, on the opposite bank, became imperative. The great expense of a fixed bridge, the time it would require for construction over the deep and rapid river, with a shifting bed, the risk of accident by breaking adrift of shipping in cyclones and storm-waves, gave the preference to a pontoon bridge, although it was thought impossible by many, owing to the great floods and "bores," and the bad holding of the silt and sand. The designs were prepared in 1868, and adopted by the Government, and the work was commenced in 1873, and the bridge opened in 1874.

The bridge is 1,530 feet long, and the total roadway is 62 feet wide. It is carried on 28 pontoons, each 160 feet long by 10 feet beam, coupled together in pairs by timber sills bolted to the decks and forming the bottom members of the trusses after mentioned to secure stability. They are rectangular iron boxes, with rounded bilges and wedge-shaped ends, divided into water-tight compartments, and securely anchored fore and aft. Four longitudinal wrought-iron girders, 16 feet apart, raised by timber trusses, at a convenient height above the river for ordinary boat navigation, support joists 13 inches by 6½ inches, placed 2 feet 4 inches apart, and these carry the planking of roadway. Adjusting ways are arranged at both ends of the bridge for connecting with the land in similar manner to what we see used on floating landing-stages. Arrangements are made by which a portion of the bridge can be bodily removed for the passage of large ships. This structure was the first, and, so far as I am aware of, the only bridge of its kind, elevated above the water to give headway for the ordinary river traffic, and, as it is one of the latest and most important of its kind, it forms a good termination for this section of the subject. — C. R. Manners, in *Engineering*.



[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

THE LYMAN GYMNASIUM FOR BROWN UNIVERSITY, PROVIDENCE, R. I. MESSRS. STONE, CARPENTER & WILLSON, ARCHITECTS, PROVIDENCE, R. I.

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

IT may be remembered that in the *American Architect* for February 21, 1891, we published some remarkably workmanlike drawings of the details of this building.

ROYAL ARCANUM BUILDING, BOSTON, MASS. MESSRS. J. R. & W. P. RICHARDS, ARCHITECTS, BOSTON, MASS.

THE building for the Royal Arcanum now in process of erection on Shawmut Avenue and West Brookline Street, extending to Newland Street, is designed for the business purposes of the Order and not to contain lodge-rooms. On the first floor will be a store and a large supply-room. On the second floor there will be two large rooms to be used for general purposes, and the offices of the medical-examiner-in-chief. The secretary's office and clerks' rooms will be on the third and fourth floors; and the fifth floor will be used as required by the rapidly increasing business of the Order hereafter. Each of the four floors below the upper has a vault 5' x 42', made convenient and useful by the modern adjustable trolley track system, which for this apparently narrow lot leaves commodious rooms, perfectly lighted, for the large number of clerks required on each floor: the vault being parallel with the party-wall. There are separate toilet-rooms on each floor, an elevator, front and back stairs from the top to bottom of the building. Electricity will be used for lighting, fireplaces and steam for heating and ventilation. The first two stories have Deer Isle granite, and above brick with Indiana limestone dressings and belts. Cost \$40,000.

HOTEL AT MESILLA PARK, NEW MEXICO. MR. SEYMOUR DAVIS, ARCHITECT, TOPEKA, KANSAS.

HOUSE FOR JOHN HAIGH, ESQ., SOMERVILLE, MASS. MESSRS.
LORING & PHIPPS, ARCHITECTS, BOSTON, MASS.

BUILDING FOR THE EQUITABLE LIFE ASSURANCE COMPANY,
DES MOINES, IOWA. MESSRS. ANDREWS, JAMES & RANTOUL,
ARCHITECTS, BOSTON, MASS.

CORRIDOR OF THE SAME BUILDING.

[Additional Illustrations in the International Edition.]

TOWER OF THE CHURCH OF ST. JACQUES, ANTWERP, BELGIUM.
[Gelatine Print.]

NEXT to the cathedral this is the most important church in the city and because of the character of the monuments and paintings within it, it is more noted even than the cathedral. The building was begun in 1491 by H. de Waghemakere. Continuous work upon it was suspended in 1526. Beginning with 1602 work went on again until 1656, at which time it acquired substantially its present condition.

BANQUE NATIONALE, BRUSSELS, BELGIUM.
[Gelatine Print.]

THE HOTEL DE VILLE, AUDENARDE, BELGIUM.
[Gelatine Print.]

THIS building, of which a detail was published a few weeks ago, was built between 1525-35 by H. Van Peede and W. de Ronde.

LOCAL BOARD OFFICES, BRENTFORD, ENG.

CHURCH OF ST. MARY-LE-STRAND, LONDON, ENG. MR. J. GIBBS,
ARCHITECT.

CENOTAPH FOR MELBOURNE, AUSTRALIA.

THE bust in statuary marble, which forms an important part of this cenotaph, is Mr. Story's work, and was executed in Rome. The frame is in English red alabaster, with red marble columns and panels. The heraldic devices in white alabaster are painted in proper colors and gilded. The carving was done by Mr. Lawrence Turner; the decoration by Mr. H. A. B. Smith; Mr. E. Prioleau Warren was the architect. The monument is to be erected on the wall of a church at Melbourne.

HOUSE AT EASTBOURNE, ENG.

For description see *American Architect* for January 2, 1892.

COTTAGE DISPENSARY, WALTHAM ST., LAWRENCE, BERKS., ENG.
MR. E. PRIOLEAU WARREN, ARCHITECT.

THE cottage contains a parlor-kitchen, with scullery and offices, a dispensary and a waiting-room on ground-floor, and three bedrooms above. The ground-floor walls are fourteen inches thick; those of the first floor half-timbered. The cost was about £540.

MANSFIELD HOTEL, GOSPEL OAK, N. W. MR. A. E. PRIDMORE,
ARCHITECT.

THIS building has been erected on the site of the old hostelry which was known for many years as the Old Flat Iron, named through the peculiar shape of the site on which it stands, and is situated at the junction of Lismore and Mansfield Roads, Gospel Oak. The whole of the ground-floor is faced with Aberdeen and Dalbeattie red and gray granite, and the upper part is of Boreham red bricks and Coombe Down Bathstone, relieved by pilasters, etc., of Lawrence's Bracknell rubbers. The ceiling of the bars is of enamelled-iron supplied by Messrs. Simpson and Co. The whole of the internal fittings are executed in Cuba mahogany.

THE MOUNT OF FOOTPRINTS.—The Rev. Owen Watkins has been prospecting in Mashonaland, in the interests of the Wesleyan Missionary Society. In a recent letter he says he is presumably the first white man to see the Mount of Footprints, which he thus describes: "At last we came to one large mount of rocks on the top of the hills. Here are thousands of impressions on the granite rock. Hundreds of human footprints, thousands of footprints of animals—lions, jackals, wolves and antelopes. On the top of the mount the appearance is as if a crowd of animals and men had rushed together in fright. At whatever period these footprints were made, it must have been before the outer surface of the rock had hardened. The distance from where the footprints begin to where they culminate on the mount is 200 yards."—*St. James's Gazette*.



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

AUTOMATIC SPRINKLERS IN THEATRES.

BOSTON, December 19, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I observe that your correspondent who has laid down so many good rules for the safe construction and protection of theatres, makes the following statement:

"In some theatres water-sprays or rows of perforated pipes are placed over the stage, but I do not think one can place much reliance upon them, especially where they are brought into play by an automatic action, such as the melting of solder by the heat of the fire, thus actually requiring the presence of the very enemy they are provided to subdue, before they can be brought into action. I have elsewhere spoken of the evil in placing trust in mechanical automatic appliances of any sort; where reliance is put on these as safeguards, the ordinary and more effectual precautions are left unprovided."

I venture to ask your correspondent exactly what his experience has been in dealing with the system of automatic sprinkling in theatres. As a matter of course, theatres do not come within the classes which are insured with the factories, but in many respects a textile factory is subject to greater danger from fire than a rightly constructed and rightly furnished theatre. As we have found the automatic-sprinkler system the most effective auxiliary to the main system of pumps, pipes and hydrants, that has ever been invented, it is important for us to know where the automatic-sprinkler system may have failed in other departments. I therefore request Mr. Woodrow to give the facts on which he has based his opinion that "not much reliance can be placed upon automatic sprinklers in theatres."

I may add that although theatres are outside my own supervision, we keep a record of all the workings of automatic sprinklers in every position, in order to keep fully informed, and we already have the record of several cases of complete success in the automatic-sprinkler system in extinguishing fires in theatres, for which I have urgently recommended it.

Yours truly,

EDWARD ATKINSON.

LONDON, ENG., January 5, 1892.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In reference to your letter of December 21, 1891, enclosing one from Mr. Edward Atkinson of December 19, I am gratified to find my articles on theatres have raised sufficient interest to bring doubt into the mind of such an authority on these matters as Mr. Edward Atkinson.

I will endeavor, as briefly as possible, to relate why I asserted that "not much reliance can be placed upon automatic sprinklers"; but before doing so I must draw your attention to Mr. Atkinson's letter, in which he tells us that automatic sprinklers have been found the most effective auxiliaries to the main system of hydrants, pumps, etc., in factories.

Now, Sirs, had I been dealing with factories I should not have said that automatic sprinklers were unreliable. I agree with Mr. Atkinson that in factories they are effective auxiliaries; but the two classes of buildings cannot be compared in any degree. The height from floor to ceiling of a factory is considerably less than the height, from stage to gridiron, of a theatre, where the sprinklers are situated. This height in a Bijou Theatre would be about 60 feet.

Before an automatic sprinkler could be set in action on a stage by the presence of flame, the fire would be past all the auxiliary aid of pumps, hydrants, etc. This is not so in the case of factories, where the height of the room is limited.

If a sprinkler be set in action by the presence of heat alone, it will be subject to this same condition by the accumulated heat over the stage, apart from the actual presence of fire. It will doubtless be asserted that the extract ventilating-shafts over the stage will keep the air sufficiently cool to prevent such an accident as an unexpected shower of water from the automatic sprinklers; but my experience is, that theatrical people hate ventilation and fresh air, and six months or less after the building leaves the hands of the architect, every ventilator is effectually stuffed up.

It is needless, after the length to which I went in my articles upon the question of panic, to again draw your attention to the awful consequences that would follow an alarm, through the inadvertent starting into action of an automatic appliance, indicating the presence of the danger it was designed to avert. An automatic sprinkler, without fire, would be equally appalling in its consequences to the fire itself. Panic kills more people than fire, and in this particular factories and theatres cannot be compared.

I may add that these views are held by the London architects who make theatre-building their specialty; so strong, indeed, is their disbelief in automatic sprinklers, that I know of no instance here

where they are in use. All our modern theatres are fitted with non-automatic sprinklers over the stage, and the taps, on the stage as well as in the street, are placed in charge of the firemen.

I, like Mr. Atkinson, am a thirsty soul for information. There is more to me in the concluding lines of his letter than in the inquiry. May I ask Mr. Atkinson for some account of the several cases in your country of the "complete success in the automatic-sprinkler system in extinguishing fires in theatres," of which he has the record?

Yours faithfully,

ERNEST A. E. WOODROW, A. R. I. B. A.

A PARTY-WALL QUESTION.

PHILADELPHIA, PA., January 5, 1892.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In your issue of January 5 there is mention of a "Party-wall Question," Page 15. The answer as published below is entirely unsatisfactory to us as you will observe on investigation.

First, persons should always discriminate between a "party-wall" and a "partition."

A party-wall with which the laws of the several States deal and regulate, must be a wall built on land owned by two separate owners. If there is but one owner with two separate deeds for the two contiguous lots, and he build a wall resting on these two separate lots will not make it a party-wall within the meaning of the statute. The wall which was taken down by A, without opposition by B, was clearly a "partition" wall merely. As B willingly became a party to the change and assisted all he could like a good neighbor in righting the error made by the first builder; neither A nor B being a party to said error, nor in any way responsible in law for the error of a former builder, why should A or B be charged with anything, or compelled to do anything by either A or B. If A has expended his cash in righting a wall so as to place equally on both all future expense on said wall by making it clearly a "party-wall," now why should not B repair the slight damage done with his permission and consent in rectifying a wrong by which he evidently agreed to suffer his share of the cost. Now while A has borne two-thirds of the said cost why should not B bear the balance?

I do not see how there can possibly be any "piecing out of old walls to meet new party-wall." As A must have had to cut four and one-half inches off B's front and back wall on inside four inches only in order to place party-wall four and one-half inches over on B's lot? If B intended to be crooked at first, why did he not say to A: "The wall suits me as it is all right; but if you wish to make a party-wall of it, let it stand and let us make it a party-wall by a written contract now and I'll pay you for the four and one-half inches of land. I gain by the transaction, which will be much cheaper than pulling the wall down and rebuilding and save me the annoyance and dirt. On the other hand, if you, A, refuse this offer and insist on taking it down, you must do it at your own expense and repair all damage both on your own side and on my side, by replastering and repapering and repainting, besides putting up a suitable partition for my protection against the storm during the alteration and you assume all risk and I hold you responsible for all damage resulting from your action or that of your servants."

Then, if A refuse this also, B should have got an injunction from the Court and stop him till he does so become responsible, or stop him absolutely on the ground that the division wall had been the old landmark for a period of twenty-one years, which renders it now immovable.

A wall built as this wall seems to have been, is not a "party-wall" nor ever can become so—any more than a child who is born a man can become a woman, no matter how often he is sold and resold; but only by a mutual agreement.

Very respectfully yours,

NOMAG.

[This is a view of the case which we did not take, and which has some interest. "Nomag" assumes that the placing of the wall entirely on A's land was a mistake of the original builders; and that the subsequent transactions tended to the correction of the mistake. Our idea was that the wall originally belonged entirely to the party on whose land it stood; and that B's predecessor obtained permission to rest floor-beams in it under some contract, or agreement, the terms of which would form the sole law between the parties; but what those terms were, it would be impossible to guess. It might have been that B's predecessor agreed to allow the former owner of A's land, and his successors, to pull down the wall at their pleasure, and to pay part of the cost of rebuilding it; but it is much more likely that he got from A's predecessor a promise to assume all expense in case a change was made, and B's conduct now looks as if he knew of the existence of such a contract. — EDS. AMERICAN ARCHITECT.]

TAKING CARE OF THE AMERICAN ARCHITECT PLATES.

MINNEAPOLIS, MINN., December 26, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Having read with great interest the remarks of others concerning the care of *American Architect* plates, the writer takes the liberty to add a few ideas which may be of interest to some one.

Mr. Barber's question, I believe, refers only to gelatines and photogravures. A handy case for keeping such plates is manufactured by the Minneapolis Blank Book Mfg. Co., 407-9 Sixth Ave., S., Minneapolis. It is a neat box about two inches deep. Inside is fixed a sort of scrap-book containing about forty leaves, with a num-

bered tag to each leaf. An index by topics may be made on the first leaf, e. g., thus:

Details of Entrances, p. 6-10.
French, p. 6.

Italian, p. 7.
American, p. 8-9.

These may be further indexed as far as desired. In this way the plates can be kept as handily as if bound in books; they can be classified much better and as fast as received; and they are protected from dust. The inside of the case may be arranged differently if desired, and, if many plates are received, several cases may be used, and indexed as desired. The case is neat and durable, and the price, I believe, only about a dollar.

As to the ordinary plates or etchings, the plan of Messrs. Cook, Hapgood & Co. is probably as good as any. The writer, however, contemplates binding his by decades or oftener, arranging them by topics: 1st, because a large number of loose plates is inconvenient; 2d, because the character of the illustrations, particularly the rendering, will change considerably in the course of a couple of years. Before binding, I reject many plates which I consider useless, or representing subjects of which I have better illustrations. Thus the *American Architect* plates of seven years previous to 1890 have been boiled down to five volumes, entitled "Ecclesiastical," "Dwellings," "Government and Mercantile," "Educational and Public," "Sketches and Details." An index to each volume by topics is contemplated, the plates being arranged numerically throughout the book. I make a distinction between plates whose chief value is the rendering and those merely representing subjects. Thus in the volume of sketches will be found some of the best works of Kirby, Deane, Ellis, Gregg, Davison and others, though the subjects might properly place them in other volumes. My volumes are bound flat—that is, the size of two pages, and only about an inch thick. Thus there are fewer leaves to turn over, and the double-page illustrations are not distorted by the curve of the back. This is not an original idea with me, but is borrowed from a prominent Philadelphia architect.

In my opinion the plates and the text should never be bound together, because when consulting the text one does not want the plates, and *vice versa*; one simply has to handle twice the avoidrupois necessary.

The remark of Messrs. Cook, Hapgood & Co. that they have given up the idea of preserving the text because they found that it was never read, is not surprising, considering the inaccessibility of the material. To labor through the indices of a dozen or more volumes to find a desired article is a task which few architects and fewer draughtsmen will undertake. The present plan of a quarterly index is, to my mind, simply worthless. Nevertheless, much useful information is stored in the different volumes; and, believing that there are many architects who have not given up the idea of preserving the text, the writer would respectfully suggest that the publishers issue an index of the volumes up to 1890, and afterwards one every five or ten years. The text of one year makes a fair-sized volume when bound separately, and if not overtaxing the publishers' patience, I should also like to request an annual index to the text, instead of, or in addition to, the four quarterly ones.

OLOF HANSON.

[The quarterly indices to which our correspondent objects, are made compulsory by the existence of the International Edition, which is so bulky that it has to be bound in quarterly volumes. Nothing would give us greater pleasure than to issue a decennial index of text, but our experience with the "Decennial Index to Illustrations" was so little satisfactory that it would not be safe to undertake it except on the guaranty of advance subscriptions. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

PROPOSED REBUILDING OF HEIDELBERG. — Once more the project of rebuilding Heidelberg Castle has been mooted. The Germans must, of course, be the sole judges of what is best for themselves, and if the Badeners will feel happier or stronger or more modern with a brand-new "Schloss," instead of the picturesque ruins which all the world admires, then, we take it, no protest from anybody else would tempt them to stay their hand. Mounting guard in a sleepy fashion over the fair valley of the Neckar, the castle forms, in its present dismantled condition, the most magnificent of all crowns to the wooded slope of the Königstuhl, and, perhaps, looks to-day a great deal lovelier to the townsfolk at its feet than it did any time of the four centuries during which it was contended for by the hereditary foes of the Fatherland. Thousands of holiday people know the pretty Burgweg which leads from the corn-market to the castle, and the still prettier one which passes along the Hauptstrasse, through the tree-planted Karlsplatz, and then by many a turning, with glimpses of river here and there, until the Great Terrace affords a resting-place from which the eye never wearies of the delightful landscape stretched before it. The Elisabethen-Pforte, the Stückgarten, with the Haardt Mountains in the distance, the Dicke-Thurm of festive memory, the Schlosshof, the Ruprechts-Bau, and the Alte-Bau — not to speak of the Great Tun — are familiar to every one who has halted at a town more famous nowadays for men of the pen than for men of the sword. They wander through the courts of Otto Heinrich and Friedrich, stroll along the great balcony, and admire the massive walls of the Gesprengte Thurm — a tower, however, which was not so strong as to resist the gunpowder of the French victors of 200 years ago. And the memory of the havoc wrought by the rough-shod raiders of that date on the castle — which

even yet, in its fallen glories, has been compared with the Alhambra—may have had more influence in stirring the present movement to efface the traces of their handiwork than the promoters of the idea care to acknowledge. For if the Germans love the artistic, and have written poems out of number, and romantic tales too many for the brief immortality of print, on the ivy-covered battlements—their historical associations and modern uses, the striking contrast which they present between the undying youth of nature and the instability of human monuments—they are sore over every trace of the days which they are determined shall return no more. The home and pride of a score of Electors and Kings, from Ludwig the Severe, to Karl, the magnanimous Prince who wrote to Turenne that rather than the Palatinate should be devastated by the troops of the "most Christian King," he would willingly meet the Marshal in single combat, Heidelberg Castle was—as castles will be—the centre round which many a contest raged, and during the Thirty Years' War suffered so much that it took all Karl Ludwig's spare funds to rebuild its broken walls. But it was Mélas, the French General, who, contrary to the stipulations of its surrender executed between Louis XIV and the Emperor, ordered it to be blown up. To this day the legends of the cruelties perpetrated by the French, the ruthless massacre of the inhabitants, and barbarities unknown even in the rough campaigns of the North, attach to many a broken tower and court-yard. Still, "restoration" has not in Germany, any more than in England, been such an aesthetic success as to lead us to regard with satisfaction the prospect of the historic ruins of Heidelberg Castle being handed over to the masons. — *London Standard*.

THEY BOUGHT BURNING HOUSES.—One of the strangest businesses in Ancient Rome is mentioned by Juvenal in his "Satires," and we hear of it also, as a writer in the *Evening Standard* observes, from historians. It consisted of buying houses on fire. The speculator hurried to the scene, attended by slaves carrying bags of money, and others carrying tools, judged the chances of salvage, and made a bid to the distracted house-owner, who was glad to accept anything, as a rule. The bargain struck in all haste, the earliest of fire-assurers set his slaves to work and secured what he could. Sometimes even he put out the flames, and so made a *coup*. It was a business for capitalists, but the poorest who speculated in a small way could hardly lose if he had presence of mind enough to grasp the chances. Thus Cato the Elder, and, above all, Crassus, laid the foundations of their great wealth. The latter had a passion for such gambling. He gradually collected a force of carpenters, masons and such artificers—slaves of course—which reached 500 men. Not only did he buy houses on fire, but also, enlarging upon the common practice, he made a bid for those adjoining which stood in danger. His proposals were commonly welcome, we learn, so helpless were the people and so great the peril. By this means Crassus became the greatest owner of house property in Rome.

SETTING TYPE AT THE TELEPHONE.—The management of the *London Times* has utilized the telephone in a unique way. Telephone wires have been laid in the underground-railway tunnel between the composing-room in Printing-House Square and the Parliamentary reporters' gallery in the House of Commons. A copy-reader placed at the telephone reads the stenographic "turns" from the note-book as fast as it is possible for the compositors to take them on their typesetting machines in the *Times* Building, a mile and a half away. At first the reporters did not take kindly to the innovation, but when they found that they could dictate their notes direct to the composing-room without the trouble of transcribing them they began to look at the arrangement in an entirely different light. Proofs, of course, are sent to them for correction. Each machine can produce from five to six columns of solid minion a night. Errors will sometimes creep in, but there is no doubt that the practice will become a permanent one. Its great advantage becomes apparent when the fact is considered that the *Times* is able, by adopting it, to print in time for the 5 A. M. newspaper trains going to all points of the United Kingdom the whole of the debates, which are often continued until after 3 A. M. — *Electricity*.

WOOLEN AGAINST LEAD.—The Yaqui Indians long since used tactics in war that were unknown to civilized troops. In a former uprising they were attacked by General Pesquerias, who was much amused to see the savages use blankets as a shield against the soldier's bullets. Holding up a blanket at both ends, so that the edge just touched the ground, the Indian riflemen marched boldly toward him behind this apparently flimsy protection. The Mexican general was soon alarmed, however, to find that his bullets did not stop the strange advance, and the moving fort of blankets soon came so close to him and poured in such a deadly fire that he was fain to fly the field in confusion and with great loss. The Yaquis had become acquainted with the simple fact that while a bullet will pass through twenty blankets strained over a frame or laid against a firm surface, it will not penetrate a single one if moistened and hung up so as to swing clear of the ground. The bullets which General Pesquerias imagined were passing through the Indian blankets and thinning the ranks of the savages, were all falling harmlessly on the woollen bulwarks. — *San Francisco Call*.

PROPOSED GOVERNMENT TESTING OF ARTISTS' COLORS.—The French artists, who have been complaining for a long time of the difficulty of procuring colors and varnishes of decent quality, have combined at last in an effort to punish the color-men for their unscrupulous adulterations. The need for a reform of some kind is all the more urgent, inasmuch as the paints which they get from England are not much better than the home article. There are laboratories in Paris where everything in the shape of food and drink, as well as toilet products, scents, powders, and so forth, can be analyzed. A petition signed by most of the leading artists of the day has just been addressed to the

French authorities including the Prefect of Police, requesting that all paints and varnishes may henceforward be analyzed at the public laboratory, and the makers of such are found to be adulterated duly punished. The effect of this move remains to be seen. As matters now stand no buyer can be sure that a picture will retain its original brilliancy for more than a few years. — *New York Evening Post*.

ONE OF THE OLDEST HOUSES IN AMERICA.—What is said to be the oldest house now standing in America is at Guildford, Conn. It is reported to have been erected in 1639 [but the Cradock house at Medford, Mass., was built in 1634.—Eds.] by the Rev. Henry Whitefield, one of the original settlers of Guildford, for the accommodation of his family and as a fortification for the protection of the inhabitants against the Indians. According to tradition the stone of which the house is built was brought by the Indians on hand-barrows from the rocks about eighty rods east of the house, and an ancient causeway in the swamp is pointed out as the path employed for the purpose. The house is of two stories and an attic, the walls being three feet thick. In the recesses of the windows are broad seats. At the southwest corner of the second story there was originally an embrasure commanding the approach from the south and west. It was about a foot wide, with a stone flooring, and was evidently made for defensive purposes. In the attic there were two recesses, and at the end of the wing by the chimney in the second story was another recess, all evidently intended as places of concealment. The house is said to have been kept in its original form until 1869, when it underwent such alterations as to greatly change its internal arrangement and exterior appearance. The beams are of oak, and the floors, doors and window sash were originally of the same material. The window-panes were of diamond shape. When the house was repaired in 1868 it was necessary to remove some of the oaken timbers, and from one of them the present stair rail and balusters were made. The house is owned by Mrs. Sarah B. Cone of Stockbridge, Mass., and is occupied by F. S. Hall. — *Carpentry and Building*.

TRADE SURVEYS

THE true and abiding prosperity of the country depends more on what has been termed an equitable disposition of wealth among its producers than on the magnitude of traffic or dividends or surplus reserves. If the country to-day is on a stronger foundation than five or ten years ago, it is because this equity of division has been more widely established. A number of agencies have been silently at work for years to make it possible for the producer to get nearer the theoretical justice than in our earlier history. These agencies have in a sense created themselves, and work out their own results. In this respect, a transition from old to new conditions is taking place, and things are now being done, almost without our knowing, which a few years ago it was thought could only be accomplished by legislation, if accomplished at all. This movement, if such it may be called, has no head, is not managed, but it goes of its own inherent power. The outcome of it, as it now appears, is greater industrial opportunity, more, nearer and better markets; steadier values and a reliance on more permanent conditions, fewer panics and depressions, and less tendency thereto, more money and more stable financial values, fewer middle-men exactions, and less tyranny from corporate power. There are other advantages secured, not so easily defined, but which, nevertheless, made more solid and safe the footing of every business man in the land. These favorable influences will continue to work, and they will do tenfold more than legislation ever could accomplish. As stated above, one of the effects of these agencies is to give to each producer more, and to leave less for toll on the world's highway. The very struggle of late years of corporate and other interests to combine for greater protection and greater or more permanent profit has resulted already, and soon will more fully result, in greater security to the individual. Rapid as is the growth of corporate power, and accustomed as we are to denunciations of its threatening power, the individual is stronger to-day than ever, and there is a wider field for individual enterprise. Without drifting towards the essay style, it is desired to particularly emphasize this tendency and force, acting beneath the surface of business and trade for their good. There is to-day, in the face of a vaster productive capacity than the world ever knew, a less tendency to over-production or to high prices. Combinations have been ostensibly fighting against these results, but, in reality, they have been serving the interests of the masses of consumers. Profits were never so narrow, and yet the country was never more solvent. Commercial evils, such as post-dating of bills, while by no means over, are less hurtful. Cash dealings, or the equivalent of cash dealings, are much more general than a few years ago. While there is a steady but normal growth in the number of commercial failures, there is greater commercial strength and security. The flow of gold has been checked for the present, but financiers see no other way for future balancing of accounts than in gold shipments. The growth or surplus reserve shows what is regarded as good financial management by the banking interests. The agitation for a greater supply of currency is the ideal purpose of a very strong element in the West, and the contingent of sixteen senators and members of the House shows that it is a move to be watched. Much of the proposed financial legislation is crude and visionary and impossible, especially that portion proposing the manufacture of five thousand millions of paper money, to be divided up among the counties of the various States, to be loaned on real-estate security. The manufacturing interests are prosperous in a moderate degree. Raw material is even in price. Iron and steel production is under control, and the best informed regard stronger prices as a not remote contingency. Lumber manufacturers report more favorable conditions. Coal-producers predict an increased output this year over last. Textile-goods manufacturers do not regard an advance in prices as likely to occur. Boot and shoe makers are having, for the most part, a prosperous season. Architects report increasing activity. The easy placing of a few railroad loans shows growing confidence in such securities, though a careful selection is very advisable. The increasing capacity of paper-mills seems to argue favorably for that industry, though most of the increase is in localities where power can be had at lower cost. There is quite a stir among the small shops and factories of the West engaged in the furnishing of equipments for farm purposes and small machine-shop requirements.

THE HISTORY OF THE UNITED STATES OF AMERICA

BY

WILLIAM F. STODOLSKY

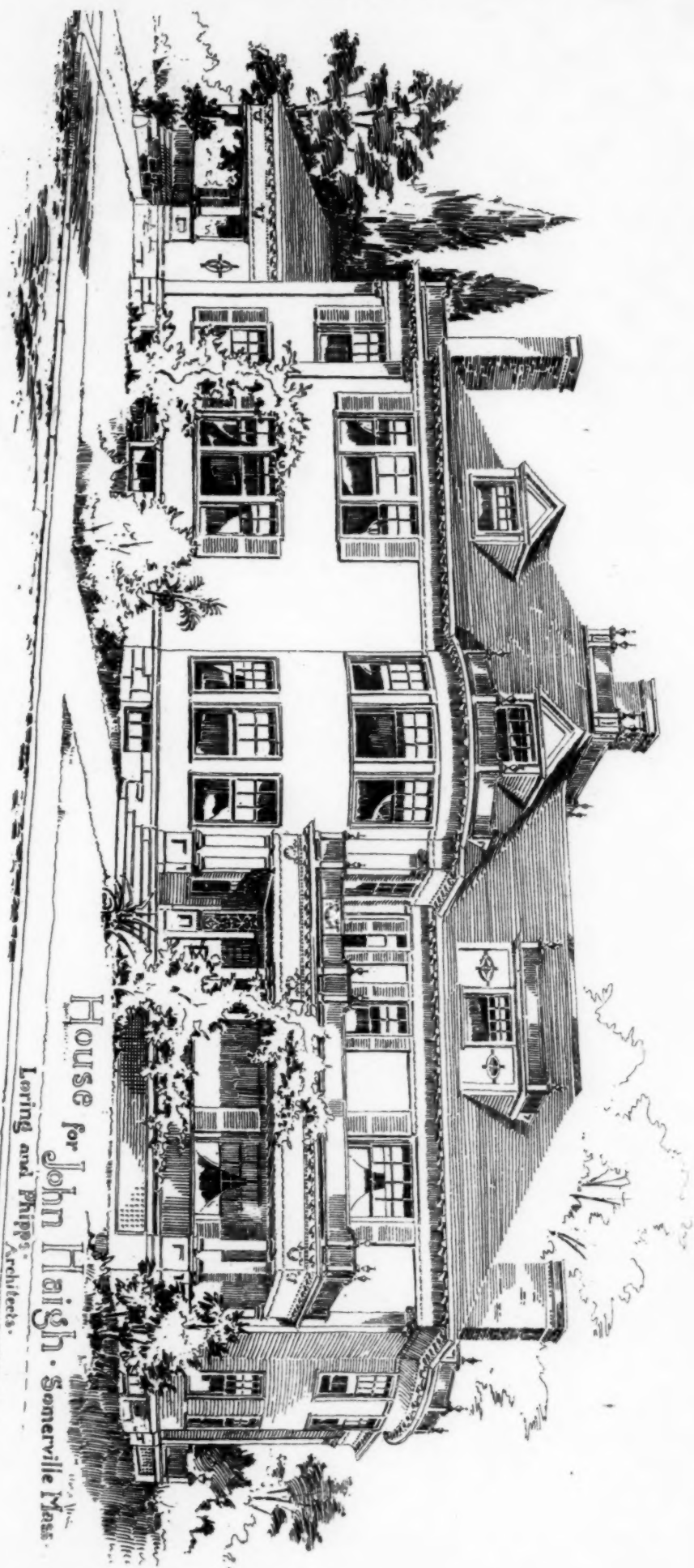
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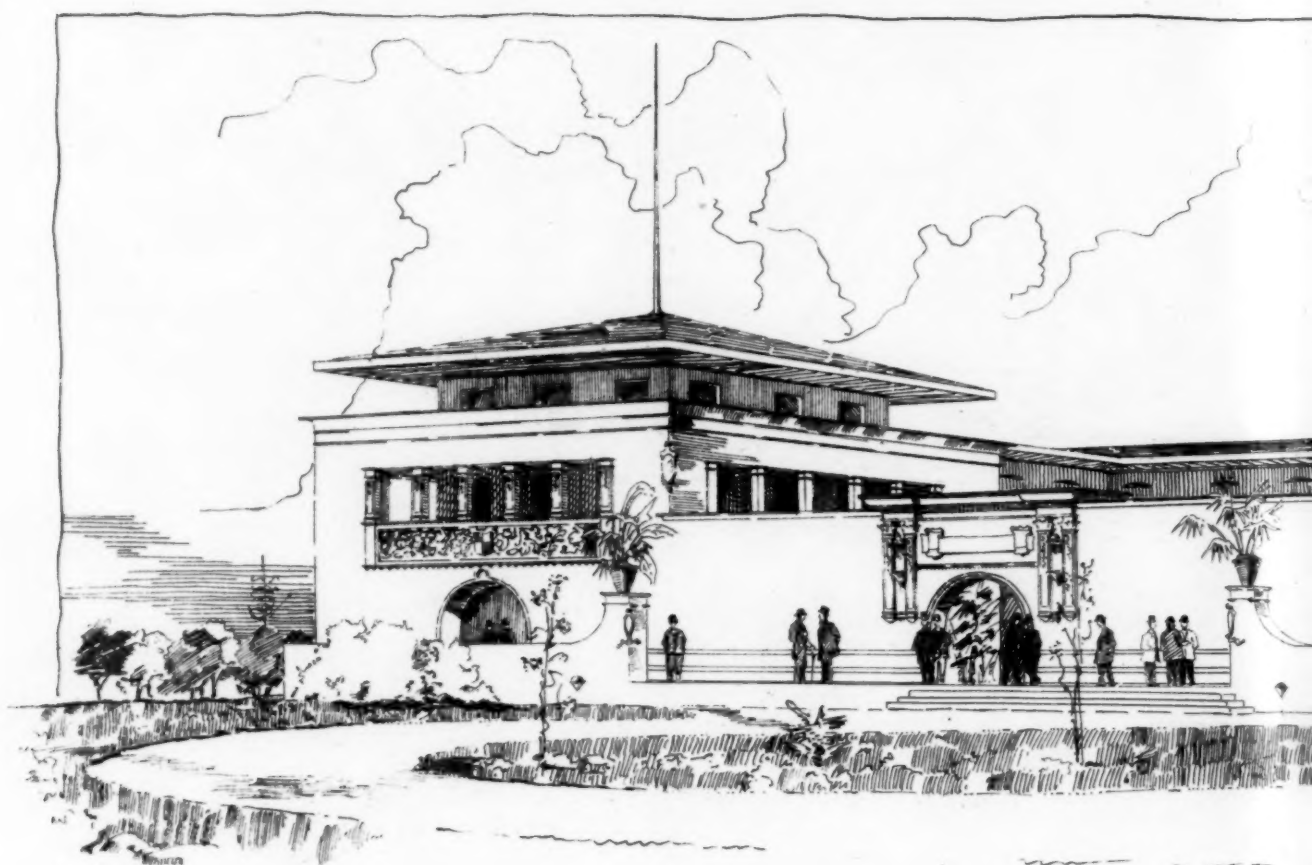
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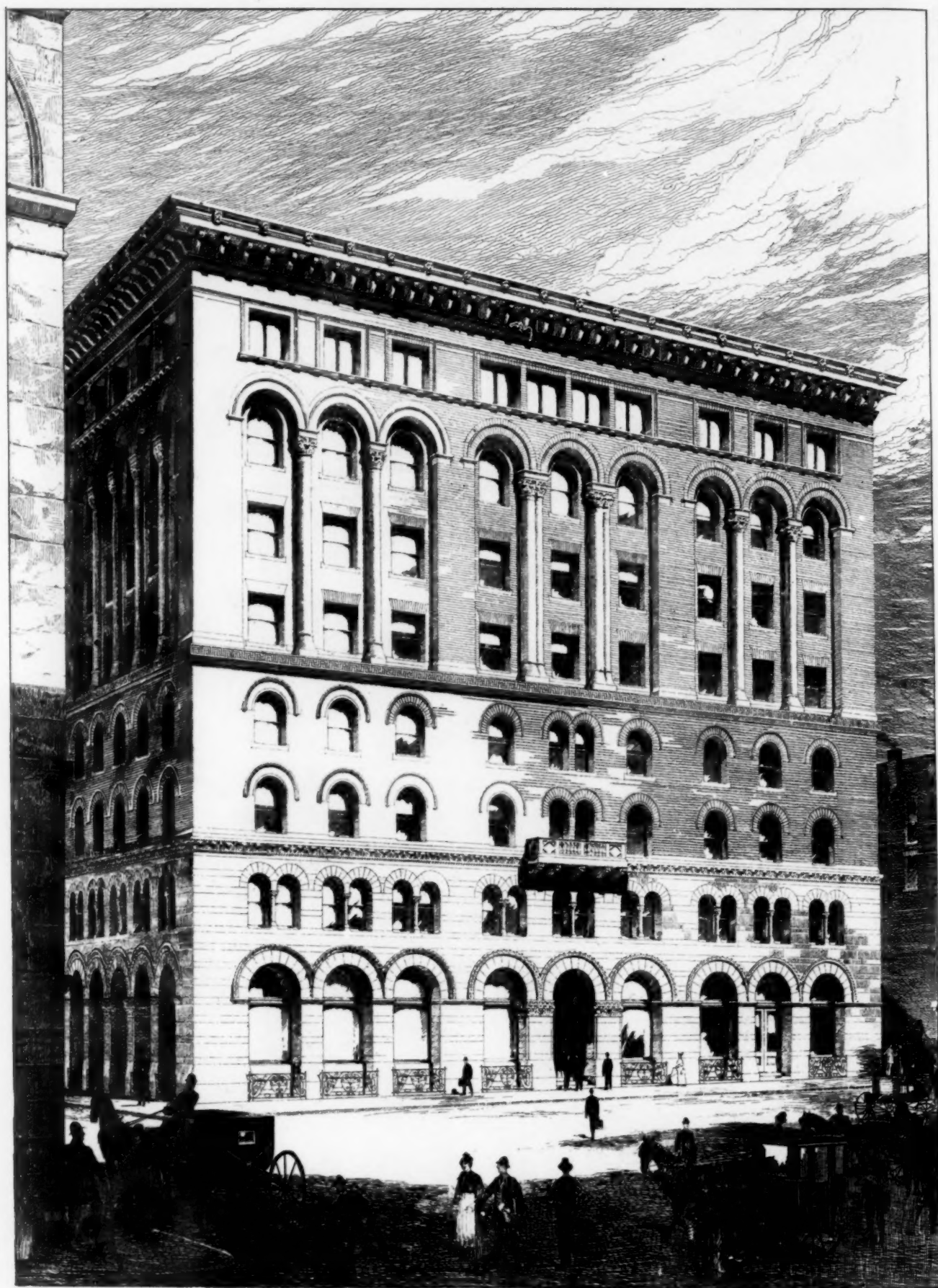




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