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THE French *Caisse de Defense Mutuelle* has intervened successfully in a lawsuit of a kind rather out of the common way, but of considerable professional importance. A certain Hébert, proprietor of a house in Rouen, wished to underpin and strengthen the front of the building, and applied, in the usual way, to the city authorities for a permit to do the work. It happened that the house was "*frappée d'alignement*," that is, had been placed within the operation of the French law under which, when a street widening is determined upon, the necessary land for the widening, exclusive of the buildings, is taken and paid for, but the buildings themselves are left undisturbed, provision being, however, made that no repairs shall be made on the buildings which will prolong the existence of the portion projecting beyond the new lines; so that, as fast as the buildings fall down, or are rebuilt, the street finds itself gradually widened. The city authorities refused the permit, on this ground, but it seems that an exception is made to the general prohibition of repairs where the part of the building projecting over the new line is so great that the remaining portion would be of little use; and, on appeal to the prefect of Seine Inférieure, it was decided that the Hébert house, which projected nearly twenty-three feet over the new street-line, came under this exception. The prefect, therefore, annulled the action of the city officials, deciding that the refusal of the permit was unauthorized.

ALL this discussion took nearly eight months' time, and it was not until April 13, 1892, that the prefectural decree was issued, declaring the illegality of the decision of August 21, 1891, by which the permit was refused. On the announcement of the decree, Hébert made another application for a permit. This time, the city functionaries thought of an ingenious scheme to baffle him, and took no action whatever on his application. There is a statute of 1852, intended originally only for Paris, but extended to Rouen in 1853, which provides that the architect or builder shall file with the proper authorities a plan and figured sections "of the constructions which he proposes," and that, twenty days after filing them, he may commence work according to his plans, if he has not meanwhile been notified of any prohibition. Hébert's architect, Gouault, filed his plan and other drawings in due form, with the application for a permit, and, at the expiration of twenty days, no word of any sort having been received from the city officials, the work was begun by setting shores against the front, preparatory to underpinning. This was on June 9, 1892, nearly ten months after the first application. As soon

as the shores were set a complaint was lodged against Hébert, and he was arrested, fined five francs, and condemned to remove the shores at once. To the representations of Hébert that the twenty-day limit had expired, the city authorities, supported by the judge of the police-court, replied that this part of the law applied only to permits for new work, and had nothing to do with operations for repairing or consolidating old buildings. In this emergency, M. Gouault applied to the *Caisse de Defense Mutuelle* for advice. The secretary of the association consulted not only the members and regular advisers of the standing committee, but the chief of the "*Bureau des Alignements*" of Paris, and other experts, and returned answer that the claim of the Rouen officials was without foundation. Gouault then appealed for Hébert from the judgment of the police-court to the Tribunal Civil, which held that the police-judge was in error in deciding that the statute of 1852 applied only to permits for new buildings, and declared that this statute made no distinction, and was applicable to works of all sorts, whether new constructions or modifications of old ones, and ordered that the proceedings against Hébert should be annulled, and that he should be allowed to continue the work which he had commenced.

THE *British Architect* says that the lease of a house in London, having nineteen years to run, at a ground-rent of twenty-two hundred and fifty dollars a year, was recently sold at auction for one hundred thousand dollars. The house is numbered 77 and 78 Pall Mall, and was formerly the town mansion of the Marquis of Ailesbury. It is now divided into two stores, and the value for business purposes of that location has risen so much as to make it seem profitable for a purchaser to pay what is equivalent to about ten thousand dollars a year for the next nineteen years for the privilege of hiring two stores for eleven hundred and twenty-five dollars apiece. Such an increase in rental value of property in what was, twenty years ago, a narrow and dingy street with only a few shabby shops in it, surpasses anything that we know of in our older cities. It is common enough with us, where new streets are opened, or new street-car lines built, to see selling-values multiplied by five or even ten; but rental-value is a very different thing, and many an estate which could be sold now for five times what it was worth twenty years ago will only bring a little more rent, the increase in selling-value being almost purely speculative.

M. LÉON MAURUC, who writes the real-estate articles in *La Semaine des Constructeurs*, calls attention to the fact that the dynamiters have done great injury to real-estate interests in Paris. Not only are the owners of buildings, who are exposed to the danger of having their property blown to pieces if a person unfriendly to anarchy should happen to take a lodging in the neighborhood, disposed to sell, but persons who would otherwise favor a real-estate investment in Paris now prefer to keep their money somewhere else. After the last explosion, real-estate transactions in the city were for some time nearly suspended, and prices have fallen greatly. In reality, the danger to the proprietor's pocket is not, perhaps, so serious, if he himself keeps discreetly out of the way. For the present, the State undertakes to reimburse all losses caused by dynamite explosions, and, besides this, several insurance companies have been formed, both on the mutual and the ordinary plan, which will insure houses in any part of Paris against the consequences of explosive politics.

IT appears that the Trustees of the Boston Public Library have set apart a room over the main stairs in the new building which is to be known as the "architect's room," where, amongst other things of correlative interest, are to be placed memorials of those American architects of high worth to whose efforts death has put an end. It is proposed that one of these memorials shall be devoted to perpetuating the name and commemorating the life-work of the late Prof. Eugène Létang, and a committee has been appointed by the Boston Society of Architects to secure the necessary funds, decide on the character which shall be given to the memorial and take steps for its preparation. It is assumed that the many pupils who benefited by M. Létang's advice will be not only willing but desirous to aid

in so appropriate a movement as this; but, although it can be ascertained who these pupils were, it is not so possible to discover what their addresses at present are: therefore we request that all persons who are willing to join in bringing into being the proposed memorial will put themselves into communication with Mr. Alexander S. Jenney, 218 Boylston St., Boston.

AS the gas-companies in many of our large cities, and some of the small ones, have taken up the practice of furnishing water-gas for heating purposes, at the "reduced" price of about a dollar a thousand feet, it may be interesting to recall the history of the first large water-gas plant in England, which was established by a private corporation, for its own use. This corporation was the Leeds Forge Company, which, for certain portions of its work, needed a more intense heat than could be obtained even with a Siemens regenerative-furnace. As it is well known that the combustion of hydrogen produces a more intense heat than any other available chemical action, the company resolved to build apparatus for generating hydrogen on a scale sufficient for its requirements. The simplest way of producing hydrogen pure enough to be used for burning in a furnace is to pass vapor of water over intensely heated carbonaceous matter, which retains the oxygen, setting free the hydrogen. The Forge Company, therefore, set up several "generators," consisting principally of iron tubes, which were heated to whiteness by a blast. In the tubes were placed bits of coal, or coke, and, after the requisite temperature was reached, the blast was shut off, and steam admitted. This was instantly decomposed, the hydrogen, very impure, and mixed with carbonic oxide and carbonic acid, escaping through outlets provided for it. After the process had received its full development at the works the generators were charged every fifteen minutes, producing seventy thousand cubic feet of crude hydrogen per hour. A portion of the crude gas was led immediately to the steam-boilers, where it was used, to the exclusion of all other fuel, for generating steam to supply the establishment. Another portion was purified by passing through water, and conducted thence to feed the forges and welding furnaces; and the rest, after further purification, and mixing with naphtha vapor, was used as illuminating-gas for lighting the establishment. The advantages of the gas-flame for forging and welding, over that of burning coal, are obvious enough, but it appears that a great saving was made in the cost. The production of gas was about thirty thousand cubic feet for each ton of coal consumed. The cost of the coal was about two dollars per ton, and the labor and other expenses incidental to the production of the gas amounted to about eighty-five cents more, making the total cost of the gas, delivered at the forges, four and one-third cents per thousand cubic feet; while its effectiveness was so much greater than that of coal that the Forge Company made, almost from the outset, a saving in cost of fuel for the works of about fifty thousand dollars a year.

IT seems that the church of St. Mary, at Oxford, is undergoing repairs, and, curiously enough, it is not the original fabric which was built in the fourteenth century, and is, therefore, between five and six hundred years old, but some restorations, executed about forty years ago, which need overhauling. The present trouble comes mostly from the pinnacles around the base of the spire, which were practically rebuilt during the last restoration, but were executed in stone of such inferior character that they have already decayed badly, and this, with the imperfection of the joints and bedding, has left them in a condition where little more than a touch is required to push them over. This is by no means the first illustration of the fact that the mediæval architects possessed a knowledge of stone which no modern engineers or architects can approach. Not only does modern work, placed by the side of the old, as often happens in church restoration, often decay in a few years, while the old, after several centuries, shows no sign of deterioration, but, even where stone is taken by the moderns from the same quarry as that which furnished material for the old work, it is apt to be far less durable. In most cases, this is due, not to the inferiority of the stone itself, but to the absence of the consummate skill with which the mediævals employed stone, using it in such a way as to prevent its decay, even when the stone itself was of inferior quality. Viollet-le-Duc, in his *Dictionnaire Raisonné*, under the head of "*Pierre*," gives most interesting details on this subject. In our own country, the problems presented by stone construction are perhaps more

difficult than anywhere else in the world. Stones which resist the soft climate of England and France for centuries, like the Caen stone, and other oolites, are rapidly and deeply affected by the alternations of warm soaking rains and intense cold, which are characteristic of our winters; and granite, marble and the harder limestones, with, perhaps, a few intensely hard sandstones of the Potsdam type, seem to be our only reliable building-stones. Of the native oolites, some appear to be much more compact than the Caen and Bath stones, and may prove to have their good qualities, without some of their bad ones, but they have hardly been thoroughly tested as yet. In North Germany, which has a climate much like ours, stone is little used, the ordinary building material being brick, so we have only our own intelligence to guide us in the matter, and as hardly any subject is of more importance to the architect, and all additions to our present knowledge will be welcome, students in architectural and engineering schools might, with advantage, devote a good deal of their thesis work to investigations which ought to be made, but which architects in active practice have neither time nor facilities for attempting.

THE disclosure of the attempted fraud, by which the Louvre came very near purchasing, at an enormous price, an antique, or rather a Renaissance, statue of modern fabrication, has brought out many amusing stories in both the French and German papers. It is said, for example, that a regular manufactory of relics of the lake-dwellers exists in Switzerland,—we believe at Neuchâtel,—and Roman and Egyptian antiquities are produced in great numbers in various places. Perhaps the most ambitious, as well as most successful, imitators of the antique are to be found in Paris, and their ingenuousness in regard to their affairs is certainly charming. One of the contributors to *La Semaine des Constructeurs* says that he was once lunching, with several other guests, with one of the most distinguished collectors of antiquities in Europe. In the course of the repast the host went to the stove, to take a dish out of the plate-warmer attached to it, and, in moving the dish, knocked over two or three beautiful bronze statuettes of the Gallo-Roman period. One of the guests asked the collector what the statuettes were doing in the plate-warmer. "They are aging," was the smiling reply. Some time afterwards, the writer of the letter was in the same house, where he found the collector selling one of the Gallo-Roman statuettes to an amateur. The transaction was concluded at an exorbitant price, the seller taking care, however, to say, as is the custom with dealers in antiquities, that he guaranteed nothing in regard to the genuineness of the object. As the amateur departed with his prize the collector turned with an apology to his friend: "That was a German," he said. "I only sell my copies fixed up in that way to foreigners."

ON another occasion, the same correspondent was visiting the famous Retrospective Exposition at the Trocadéro, in company with a skilful and noted manufacturer of earthenware. As they were examining the collection of ancient Rouen faience, the potter pointed out five or six pieces, and said: "Those objects came from the factory of your humble servant." "But the glaze is crackled," said his friend, surprised. "Yes," replied the manufacturer, "it is my daughter who has charge of that little trick. She is very skilful in matters of the sort; but we only sell such objects to *bourgeois*." Whether the rich Americans who bring home antiquities from Europe count as "*bourgeois*" or "foreigners" we cannot be sure, but there is reason for supposing that they appear to dealers in bric-à-brac as both at once, and they will do well to be very much on their guard. Even here, the trade of making false curiosities is not unknown. Many years ago, when the "Cardiff Giant," a mysterious statue, which was supposed to have been dug out of the bed of a brook somewhere in New York State, and to belong to some pre-historic civilization, was exciting the attention of the credulous, we had occasion to write to a stone-carver about some work. He replied, saying that he had an order for, we think, six Cardiff Giants, to be delivered within a very short time, and, until they were completed, he could not undertake any other work. What became of his statues later we do not know; but, as the Cardiff Giant still figures occasionally among the attractions of the dime-museums, we presume that they are still going the rounds among the ignorant.

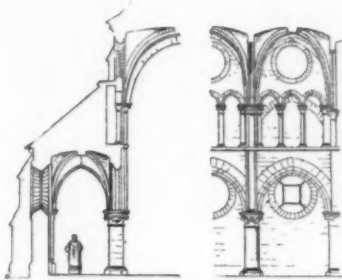
THE ILE-DE-FRANCE SCHOOL OF ARCHITECTURE.¹—IV.

Fig. 18. Church of Arcueil.

FROM about 1165, when Notre-Dame de Paris was begun, several essential modifications were made in the plans and general arrangement of the churches of Ile-de-France. Notre-Dame itself was destined to found a school in the capital and vicinity, with its five aisles and deambulatory without any semicircular recesses. By examining the Paris churches of Saint-Séverin (see *American Architect* for August 16, 1890, "Religious Architecture," Fig. 29), Saint-Nicolas-des-Champs and Saint-Eustache, it is easy to trace the transmission even into the very heart of the Renaissance. Double side-aisles are found in churches whose quite secondary importance seems not to warrant their presence, for example, at Beaumont-sur-Oise. Of deambulatories without chapels, we will cite those at Gonesse, Domont and in Saint-Nicolas of Meulan; of flat chapels, those in the Paris churches named above, and in many others down to the eighteenth century, for instance, at Saint-Nicolas-du-Chardonnet and at Saint-Sulpice. Morienvall had taken the initiative in this rather graceless arrangement a century and a half at least before Notre-Dame (we know that at Notre-Dame the choir chapels were added at the close of the thirteenth century: see the primitive plan under "*Cathédrale*," Fig. 25), but this is not what the Parisians of the thirteenth and following centuries intended to copy. At Notre-Dame de Mantes, which so resembles Notre-Dame de Paris that it is impossible not to attribute both to the same architect, though no one can venture to say which is the older, there were likewise no radiating chapels before the latter part of the thirteenth century.

When no deambulatory exists, and when each side-aisle terminates in a chapel, the latter, if not in the form of a hemicycle or a demi-polygon, often has for its base the diagonal rib of the bay on which it opens, and consequently presents an inclination of 45°; examples are seen at Ferrières [see "*Abside*," Figs. 5, 6], and especially at Braisne, where they are double on each side, resting, on one hand, against the transeptal arms, and, on the other, against the central apse [see "*Abside*," Fig. 7]; this is certainly the plan of Saint-Yved of Braisne, which was transported by Vilard de Honne-court, perhaps, to the Cathedral of Kaschau, in Hungary, where it is copied (see *American Architect* for November 15, 1890, "Austrian Architecture," Fig. 19). Sometimes, to compensate for the lack of a chapel proper, a single, simple recess was made in the *chevet*, whether the latter was straight or rounded. This disposition, indicated externally by a projection terminating in a gable, is to be noted particularly at Vernouillet [see "*Abside*," Figs. 9, 10], at Villers-Saint-Paul, and here and there in Soissonnais.

In Valois, the thirteenth-century architects conceived a way of disposing the transept without interfering with the arrange-



Fig. 19. Church of Saint-Jean-des-Vignes, Soissons.

ment of the nave vaults: they included two of the latter in its width, and prolonged the intermediary transverse arch into both arms, thus dividing them, as it were, into two equal aisles; examples occur at Saint-Jean-aux-Bois, at Vauciennes and Verberie, of the thirteenth century, and at Roberval and Fresnoy-la-Rivière, of the fifteenth. Another, and much more important creation, is also due to Valois: Saint-Frambourg at Senlis, a church of equally admirable proportions and style, begun in 1177 and quickly completed, — as may be inferred from its perfect unity, — is unquestionably the prototype of the *saintes chapelles*; the nave is simple, with no side-aisles, transept or annex of any kind, but with an apse of the same diameter and height as itself.

In elevation we retain only one stroke of originality, but this is quite marked; we refer to the extremely supple rôle, if one may so express it, of circular apertures. The influence of Notre-Dame apparently counts for much in this frequent adoption of the *ail-de-bœuf*, for it is confined to a restricted area around the capital. Within this district the *ail-de-bœuf* takes the place of windows in the side-aisles as well as in the

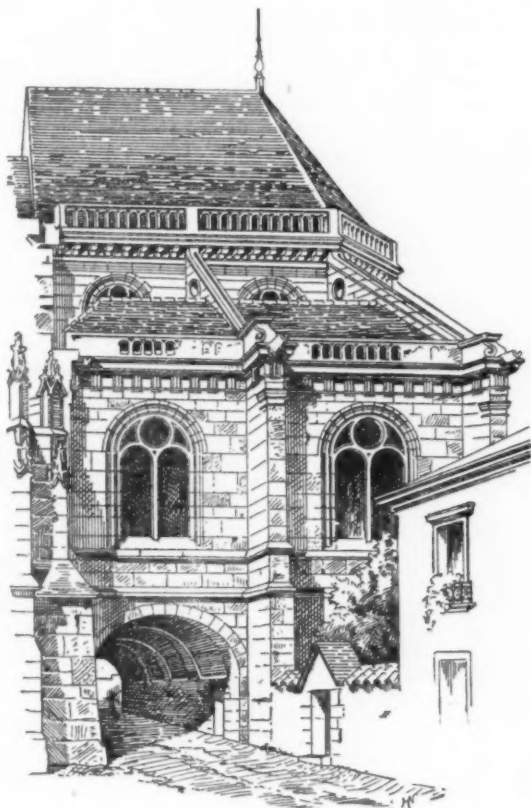


Fig. 20. Apse of the Church of Triel.

nave, as at Arcueil (Fig. 18); here it replaces the upper windows only; this is the case usually; other examples may be studied at Bagneux, Bougival, Louveciennes, Mareil-Marly, Champigny, Montreuil-sous-Bois, Ferrières, Jouy-le-Moustier, etc.; sometimes it is found in the triforium, and it was in this part of his edifice that the architect of Notre-Dame had introduced an entire series of these openings, transformed into rose-windows by means of mullions of various patterns [see "*Cathédrale*," Fig. 24, a bay of Notre-Dame restored by Viollet-le-Duc, as it was prior to the middle of the thirteenth century]. At Vitry-sur-Seine, at Gouvernes, near Lagny, and in the collegiate church of Champeaux, there are *ails-de-bœuf*, which fulfil an analogous function. In small churches with a normal triforium and only circular bays in the upper story, the whole blends into a single disposition framed-in by the *formeret*. The oculus, in lieu of a window on the sides of the church, constitutes one of the features by which the influence of the Parisian school can be recognized outside its own territory; this it was that enabled us to detect it in the choir of Saint-Étienne at Caen and in a church of Béarn, at Sauveterre.

As though exhausted by the inventive efforts of nearly two centuries, and content with its renown, the French school rested from its labors after the reign of St. Louis; but, from

¹ From the French of Anthyme Saint-Paul, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 893, page 68.

the moment when it ceased to create, it lost considerably in originality. The churches of Saint-Martin-aux-Bois [see "*Contrefort*," Fig. 27], and of Saint-Sulpice-de-Favières are, notwithstanding the incomplete state of the towers, monuments of finished elegance; but if they were removed to any other part of northern France they would hardly seem out of place in their new setting; a similar observation might be made concerning the basilica of Saint-Denis, which was largely rebuilt between 1231 and 1280, in a style approaching that of Notre-Dame of Amiens. It was the belfries and plans of the choirs especially that retained the local stamp: this was usually to their advantage.

In the thirteenth, fourteenth, fifteenth and sixteenth centuries, under influences radiating probably from Senlis, a large number of stone spires were erected in Valois and Soissonnais, at Senlis, Crépy, Creil, Plailly, Ève, Montagny-Sainte-Félicité (this last about 1600, in the reign of Henry IV, according to Woillez), etc.; they were mostly of moderate dimensions. At Saint-Jean-des-Vignes at Soissons, above the façade, which constitutes all that remains of the monument, rise two more important spires, of the fifteenth century (Fig. 19); they are

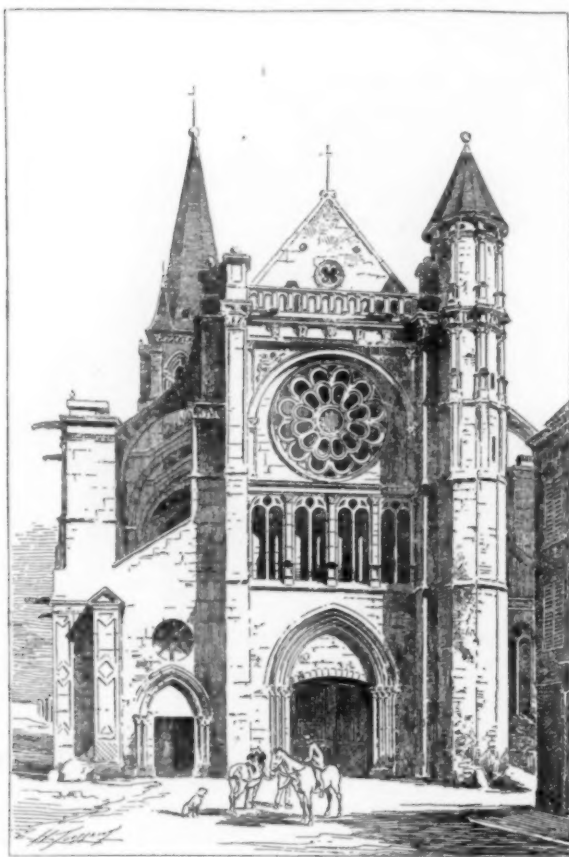


Fig. 21. Church of Brie-Comte-Robert.

established by a sort of fusion of the two types described above.

As appears from observations already presented, the plan of Notre-Dame was perpetuated at Paris, where Saint-Eustache, the largest and most complete of the religious structures of the French Renaissance, is a striking reproduction of it. The trace of the choir of the church of Triel (Fig. 20), in the arrangement of its chapels, is related to the rather singular plan of a thirteenth-century edifice, Saint-Quiriac of Provins. Still, the Renaissance was not a period of inaction in the Parisian school. Aside from Saint-Eustache and the church of Triel, it produced the nave of Saint-Étienne-du-Mont and the choir of Saint-Leu at Paris; the graceful façade of the church of Belloy; a number of small churches—in whole or in part—in the section bounded by Senlis, Saint-Denis and Pontoise, and including the first and last of these towns; the church of Montfort-l'Amaury, the façades of the churches of Brie-Comte-Robert (Fig. 21) and Othis; the choir of Notre-Dame de la Ferté-Milon; and, on the confines of Normandy, several interesting works which M. Palustre, in "*La Renais-*

sance en France," attaches to a wholly local school having its seat at Gisors.

The history of Parisian civil architecture is devoid of any special interest down to the Renaissance. The vast structures reared under the orders of Francis I, Henry II, Charles IX, Catherine de Medici and Anne de Montmorency, and directed by architects or sculptors such as Pierre Chambiges, Bullant, Lescot, Delorme, Cousin, Goujon and Pilon,—the Louvre, the castles of Blois, Fontainebleau, Saint-Germain-en-Laye, Villers-Cotterets, Madrid, Châlulau, Monceaux, Écouen and Chantilly, the fountain of the Innocents at Paris and the mausoleums at Saint-Denis,—belong to the general history of the national art of France. An exception should be made for the dwellings of Orléans, which, with their small arcaded courts, their pavilions, some of which are broken

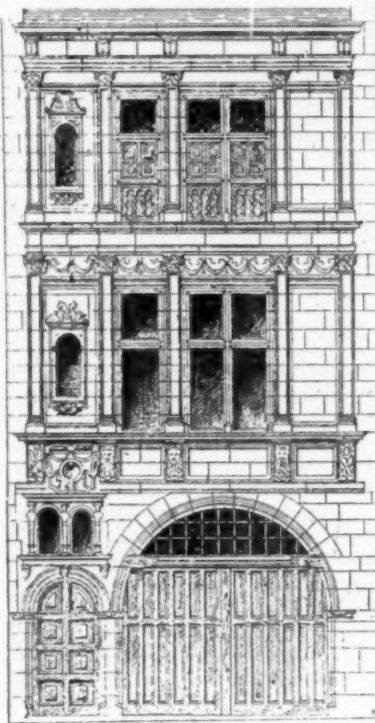


Fig. 22. House at Orléans.

with projections and recesses, and the charming windows of their façades, have the merit of being entirely local in type (Fig. 22). Chartres also presents a few interesting, though less original, houses (Fig. 23).

The private residences of Blois, Vendôme and Paris, the hôtels-de-ville of Paris, Dreux, Beaugency and Orléans belong, like the great châteaux and the great works of sculpture referred to above, to the history of the Renaissance of all France.

In military architecture the school asserts itself solely, though amply, in the donjon. From the eleventh century, and perhaps from the tenth, if the big tower of Châteaudun is really the one reared by the notorious Thibaut le Tricheur [see "*Châteaudun*," Figs. 3, 5, 7], Ile-de-France adopted the cylindrical donjon in opposition to the Norman oblong with buttresses. The latter was, however, copied out and out at Beaugency and, in a more or less altered state, at Moret and at Chevreuse; as an offset to these we find in Normandy, near the Epte, at Château-sur-Epte and at Neaufles-Saint-Martin, donjons of the French type, whose influence told on the constructions of Richard-Cœur-de-Lion, notably on the Château-Gaillard. Some of the twelfth-century donjons are externally in the form of polygons of twelve to sixteen sides, the angles being sometimes bare and sometimes covered with flat buttresses; for example, those of Châtillon-sur-Loing (Fig. 24)

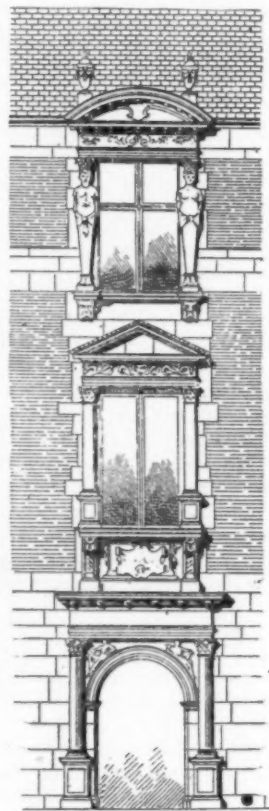


Fig. 23. House of the Physician, Chartres.

and of Maurepas. The tower of the Louvre was a Parisian donjon; but the triumph of the type, the king of all donjons, is the well-known big tower of Coucy. In the twelfth and thirteenth centuries some very curious varieties of form sprang

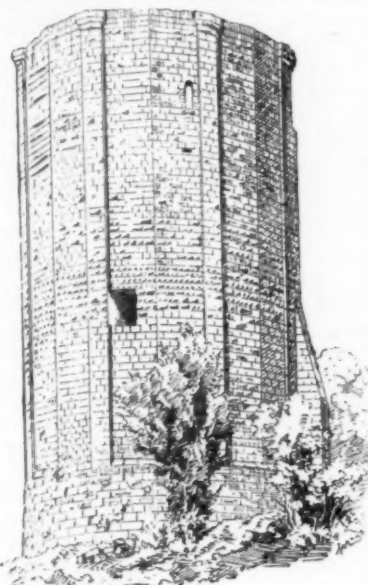


Fig. 24. Donjon of Châtillon-sur-Loing.

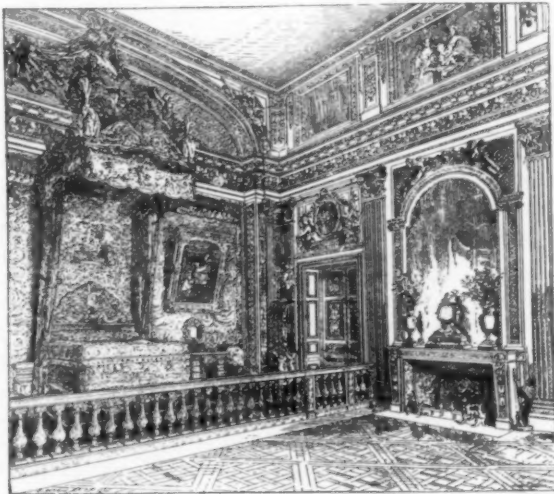
up: at Étampes the Guinette, built by Louis le Gros, consists of four semi-cylinders [see "*Donjon*," Figs. 6, 7]; the tower of Houdan is one huge cylinder cantoned by four round turrets; that at Provins is square and is surmounted by an octagon with which it is united by means of turrets and flying-buttresses [see "*Donjon*," Figs. 8, 9, 10]. Under St. Louis, at Montlhéry, the architect had returned to the purely cylindrical donjon; but in the time of Philippe le Bel or under the first Valois kings, the square flanked by round turrets was adopted, a type of which the donjon of Vincennes furnishes the noblest example. In the thirteenth century it was sometimes admitted that a château could be built without a donjon — as at Yèvres-le-Châtel, near Pithiviers.

All stamp of a special school disappeared from the military architecture of the Paris district from the end of the fourteenth century; for this reason nothing need be said here of the castle of Pierrefonds.

In conclusion, we would remark that it is in the field of religious architecture, and especially because of the part that it had in the creation of the Pointed style, that the School of Ile-de-France merits a fame that is still far inferior to its deserts.

ANTHYME SAINT-PAUL.

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



Royal Chamber at Versailles. From "*La France Artistique et Monumentale*."

EVEN where the work done costs more than that contracted for, the person who does the work runs a serious risk of not being able to get his pay for it, if the deviation from the contract was intentional. A contract² was once made for the erection of a saw-mill, to be 50 feet wide and 100 feet

long. The contractor, for reasons of his own, built it 100 feet long and 78 feet wide. When it was done the owners refused to pay for it. The plaintiff proved that, as built, the mill cost more, was of greater value, and was better adapted to the purpose for which it was to be used than it would have been if built according to the contract. The Court rejected all these representations, and held that the structure was not a substantial compliance with the contract, and nothing could be recovered.

In a New Jersey case,³ the judge, in giving his decision, made an admirable comparison of the doctrines held by the courts of different States on the subject.

In this case, a contract had been made for the erection of a house, in accordance with certain plans and specifications, for the sum of \$26,880. The house was not built as specified, and the owner made some changes. After the house was completed, suit was brought by the builder for \$13,005.74, as balance due under the contract and money due for extra work. The owner refused to pay it, on the ground that the contract, which was under seal, was entire, and that, as the work had not been done according to the contract, or accepted by him, nothing was due. It was proved that the roof leaked on account of the specification not having been followed, and there were other serious variations from the contract, which were not denied by the contractor; but the owner had occupied the house and given some evidences of having virtually accepted it. The judge before whom the case was tried instructed the jury that the plaintiff might establish his claim in this form of action either (1) by proof that the contract had been, by the agreement of the parties thereto, so deviated from as to evince that the contract was abrogated or abandoned, and that the work directed by the owner was done under another and implied contract; or (2) by proof that the defendant, notwithstanding substantial discrepancies between the building as completed and that required by the contract, accepted and retained the same, and derived benefit therefrom. In regard to the first point, however, the attention of the jury was directed to the meagreness of the evidence in relation to it, and the judge observed to them that, as the contract itself provided for deviations and changes of plan, they could not properly draw the conclusion that the contract was abrogated merely from such deviations and changes.

In regard to the second point, the judge explained that "Where a defendant has accepted the work and materials furnished by a plaintiff, has taken possession of and derived benefit from such work and materials (although there was a special contract) under such circumstances as amount to acceptance, the law implies a promise on the part of the defendant to pay such remuneration as the benefit conferred on him is reasonably worth, and, to recover that quantum of remuneration, an action of *indebitatus assumpsit* is maintainable." "This rule," the judge said, "applies to buildings on land of the defendant, as well as to mere personality. The principal question is, if there has been acceptance of the building by a defendant. Mere naked occupation of a building erected on the land of the owner does not, by itself, waive the special contract unless the possession is coupled with some act or some language from which acceptance and acquiescence may be reasonably inferred." The jury were required to find whether, in the present case, the house had been thus virtually accepted by the owner, and found, from the evidence, that it had been. The Court thereupon gave the plaintiff judgment for his claim, deducting \$300 as the amount to be allowed for the deviations from the contract.

The defendant appealed to the Supreme Court, objecting, through his counsel, particularly to the charge of the judge to the jury in the court below about the virtual acceptance of the building. In regard to this, the judges of the Supreme Court, in their final decision, said: "It will be at once perceived that 'the consideration of the subject brings up several of the 'vexed questions respecting the rights and liabilities of parties 'to a contract for the erection of buildings on land. Such a contract deals with a subject-matter of a peculiar nature. When 'an agreement for the manufacture of a chattel out of materials furnished by the maker is not performed according to 'its terms, the remedy of the party for whom it is made seems 'perfect, and the rejection of the chattel, while completely 'protecting him, does no injustice to the maker, for it leaves 'in his hands the materials with which his labor has been

¹ Continued from No. 890, page 21.

² Swain vs. Seamans, 9 Wall. 254.

³ Bozarth vs. Dudley, 15 Vr. 304.

"united. But when, under a contract for building, labor and materials of the builder are put into an edifice immovably affixed to the lands of another, and the title to which goes with such lands, the right of rejection, while it may be said, theoretically, to exist, is difficult to enforce in practice without apparent injustice to one party or the other. If the building be wholly unlike that contracted for, the owner is put to the delay and expense of removing it from his land, which it encumbers. If, as is more usual, the building is not so unlike that contracted for as to permit the owner to feel reasonably justified in removing it, or if he is driven by necessity to use the shelter of the building, and if, by protest and rejection, he may escape payment, yet, if the building adds anything to the value of the land, eventually he or his heirs become benefited thereby.

"These considerations have led to some contrariety of judicial views, as cases with differing circumstances have been presented.

"There is a line of cases, of which *Ellis vs. Hamlin*, decided at nisi prius by Chief Justice Sir James Mansfield, and reported in 3 Taunt. 53, and *Munro vs. Butt*, 8 El. & Bl. 738, in which the judgment of the Queen's Bench was delivered by Lord Campbell, are examples. They hold that when the contract remains open and unperformed, though in slight particulars, no recovery can be had, either upon it, or upon an implied contract. This line of cases was elaborately reviewed by Judge Comstock in *Smith vs. Brady*, 17 N. Y. 173, and contrasted with cases in the New England States, which seem at variance therewith.

"The rigor of this rule has been frequently modified. Thus, we find another line of cases holding that recovery upon such and similar contracts will not be refused for mere technical, inadvertent or unimportant deviations from the terms, but that whenever there has been a substantial compliance with the contract recovery may be had thereon, a proper allowance or reduction from the contract price being made for deficiencies. See *Gladius vs. Black*, 50 N. Y. 145; 2 Addison on Contracts, Sections 864, 865; *Cutler vs. Close*, 5 C. & P. 337; *Dallman vs. King*, 4 Bing. N. C. 105; *Stadhard vs. Lee*, 3 B. & S. 364.

"A like variance of judicial views exists in cases where the contract has not been so performed as to justify a recovery thereon even under the modified rule above stated. On examination, we shall find two classes of cases permitting a recovery under such circumstances, as upon a *quantum meruit*. One class adopts the view that recovery should be had in such cases whenever the work and materials are of any value to the owner of the lands to which they have been affixed, and that the proper measure of damages is the contract price, deducting therefrom so much as the house was worth less on account of variations from the contract. This is the view of the Massachusetts courts, as expressed by Chief Justice Parker in *Hayward vs. Leonard*, 7 Pick. 180; *Smith vs. First Congregational Church*, 8 Pick. 178; and see also *Snow vs. Ware*, 13 Met. 42; *Atkins vs. Barnstable*, 97 Mass. 428; *Fitzgerald vs. Allen*, 128 Mass. 232.

"The other class presents the view adopted by the Supreme Court of the United States in *Dermott vs. Jones*, 2 Wall. 1, which holds that while a contractor guilty of fraud, or having wilfully abandoned the work unfinished, cannot recover in any form of action, he may recover in *assumpsit* when he has, in good faith, done work which, though not done according to the contract, has been accepted by the owner. In this event, it is also held that the recovery is to be founded, as to amount, upon the contract price, making such deductions as required by the contractor's deviation from the contract.

"These cases do not differ so much as at first appears. In the Massachusetts cases, the conclusion is put upon the ground of a practical acceptance of the building on the part of the owner. Thus, speaking of the distinction between the manufacture of a chattel and the erection of a building, Chief Justice Parker, in *Hayward vs. Leonard*, says: 'In such case the owner of the land necessarily becomes the owner of the building. . . though the owner may at first refuse to occupy, he, or his heirs or assignees, will eventually enjoy the property.' He also declares that in cases of a gross and fraudulent violation of the contract, as, for example, where the building is wholly variant from the contract, no recovery can be had except upon an express or implied acceptance. He confines the rule to cases where

"there has been an honest intention to go by the contract, and a substantial execution of it, with variations comparatively slight.

"In each class of cases, acceptance is the basis of recovery. One class, however, requires the acceptance to be actual; the other assumes it to exist in all cases where value has been conferred upon the property, and there has been no gross or fraudulent violation of the contract; when such a violation occurs, actual acceptance is necessary to recovery. . . . In *School Trustees vs. Bennett*, 3 Dutch. 513, this Court declared the necessity of an entire completion of such a contract as a condition precedent to the right to payment of the contract price; but this action was upon a guaranty for the performance of a contract by a builder, who had, though paid part of the price, wholly failed to complete."

"The rule most agreeable to the principles governing contracts is, it seems to me, this: When a contract for erecting a building has not been so performed that a recovery can be had thereon, a recovery in *assumpsit* upon the common counts for work and materials furnished in the erection will only be permitted when the owner has actually accepted the building erected. The view that assumes acceptance from the mere fact that the edifice adds value to the land on which it stands, in my judgment, unduly restrains the force of the contract of the parties, and deprives the owner of the right to reject an edifice not in substantial conformity with its terms. If thereby any apparent injustice seems done to the builder, in retaining the materials put upon the property, it is the result of his own default, to which he must submit.

"Such acceptance by the owner may be express, or implied from his conduct. It seems well settled that mere occupancy of the building by the owner, while appropriate, is neither presumptive nor conclusive evidence of acceptance. The reason is obvious. The building belongs to the owner of the land on which it stands. As was said by Lord Campbell in *Munro vs. Butt*, the owner cannot be appropriately said to take possession of the building, for he has not been out of possession of that which is thus affixed to his own land."

The jury in the court below having found that the building had been accepted by the owner, it seemed, on the theory of the Supreme Court, that the contractor was entitled to recover something; but the judge said that the deduction of \$300 from the plaintiff's claim, which the Court below made, was not large enough in view of the circumstances, and a further deduction must be made of \$3,000, with interest from the time that the building was to have been completed, amounting in all to \$4,790. If the plaintiff, he said, would remit \$4,790 of the verdict which he had obtained in the court below, it might stand for the remainder.

In Maryland, as in New York and New Jersey, the stricter view of the law seems to prevail. The Hoopes Artificial Stone Company¹ agreed to cover a church with artificial stone, warranted not to come off, and to be of a gray color, like a certain sample. The work was done, but the coating proved not to be like the sample, and was streaked and spotted. The church people refused to accept or pay for the work; and the Supreme Court held that they were not bound to do so.

In New England, as has been before observed, the law is, in theory, more favorable to people who fail to comply with building contracts. A contractor in Connecticut² agreed to build a church according to certain plans and specifications. Partly by his error, and partly by that of the architect employed by the church, the ceiling was made two inches lower than the plans required; the windows were made shorter and narrower; the seats were made narrower, and there were other variations of minor importance from the contract. The church authorities called attention to these changes and objected to them, but occupied the building when it was done; claiming, however, that a deduction should be made from the contract price equal to the cost of making the structure conform to the plans and specifications. This would involve almost the entire rebuilding of the church, and the contractor appealed to the courts. The inferior Court decided practically in favor of the contractor, holding that he was entitled to receive the contract price, deducting from it, not the cost of making the building conform to the contract but only the amount of the diminution in the value of the building due to the deviations from the contract. The case was appealed to the

¹ Presb. Ch. vs. Hoopes, 66 Md. 598.

² Pinches vs. Swedish Luth. Ch., 35 Conn. 183.

Supreme Court, and was finally decided by a majority of the full bench, three judges holding that the decision of the Court below was correct, and two dissenting.

The judge who delivered the decision said in explanation of it, "In cases where only some additions to the work are required to finish it according to the contract, or the defects in it may be remedied at reasonable expense, it seems proper to deduct from the contract price the sum it will cost to complete it." But the judge said, "In the present case, the result of the plaintiff's labor and materials is a structure adapted to the purpose for which it was built, but which cannot be made to conform to the special contract except by an expenditure which would probably deprive the plaintiff of any compensation for his labor."

In a previous Connecticut case,¹ decided by the Supreme Court, the Court laid down the law as follows: "If a contract is carried out in good faith, but with deviations from the specification, the builder can recover to the extent of the benefit conferred, having regard to the contract price for the entire work"; and the reporter in another case amplified this statement of the law by adding that, "this means, deducting from the contract price what it would cost to make the work comply with the contract; or, if that is difficult or impracticable, deducting a fair valuation of the reduced value, with damage shown to have been suffered."

The principal Massachusetts case² of the kind is *Hayward vs. Leonard*, which was decided in 1828, but has served ever since as the precedent to be followed by the Massachusetts courts. In this case, the Chief Justice, Parker, laid down the law as follows: "The point in controversy seems to be this: 'whether, when a party has entered into a special contract to perform work for another, and to furnish materials, and the work is done, and the materials furnished, but not in the manner stipulated for in the contract, so that he cannot recover the price agreed by an action on that contract, yet nevertheless the work and materials are of some value and benefit to the other contracting party, he may recover on a quantum meruit for the work and labor done, and on a quantum valent for the materials. We think the weight of modern authority is in favor of the action, and that on the whole it is conformable to justice that the party who has the possession and enjoyment of the materials and labor of another shall be held to pay for them, so as in all events he shall lose nothing by the breach of contract. If the materials are of a nature to be removed, and liberty is granted to remove them, and notice to that effect is given, it may be otherwise. But take the case of a house or other building fixed to the soil, not built strictly according to contract, but still valuable, and capable of being advantageously used, or profitably rented — there having been no prohibition to proceed in the work after a deviation from the contract has taken place — no absolute rejection of the building, with notice to remove it from the ground; it would be a hard case indeed if the builder could recover nothing."

"And yet he certainly ought not to gain by his fault in violating his contract, as he may, if he can recover the actual value; for he may have contracted to build at an under price, or the value of such property may have risen since the contract was entered into. The owner is entitled to the benefit of the contract, and therefore he should be held to pay in damages only so much as will make the price good, deducting the loss or damage occasioned by the variation from the contract."

In a case in Vermont,³ a man agreed to build a wall, of certain dimensions, at a given price. A part of the wall was not built to the height stipulated, and the owner refused to pay anything for it. The Supreme Court held that the contractor was entitled to the contract price, less the cost of making the work conform to the contract, and any additional damage caused by the contractor's failure to comply with the agreement.

In California, the curious conclusion has been arrived at that the two views of the law set forth in the preceding portions of this chapter are really harmonious. In an action for

the contract price of labor and materials, the Court below instructed the jury⁴ that if the defendant received any benefit from the work he was liable to the extent of the benefit he had received; deducting from the contract price any damage that he might have sustained by omissions or defects in the work; and that if he was injured more than he was benefited, or was not benefited at all, by reason of such defects or omissions, the jury should find for him; and it gave another instruction, that if the plaintiff and defendant had entered into a contract the plaintiff must show a substantial compliance with the terms of the contract on his part before he could recover. The defendant's counsel appealed from the decision of this Court, on the ground that the two instructions given to the jury were inconsistent with each other; but the Supreme Court held that they were not inconsistent, and, together, they stated the law correctly.

THE COURTS ON LOCAL CUSTOMS.

There are a few more cases, which may be considered under this head, in which the question to be decided relates to the work which the law assumes to be included in a building contract, where the specifications and plans are silent on the subject.

In most instances, the answer to this question is determined by local custom, but, as has been before mentioned, custom, to have the force of law, must not only be generally known to persons engaging in building contracts, but must be reasonable in itself.

In Missouri,⁵ a custom has been proved and accepted by the Supreme Court, that, in measuring stonework for the laying, doors and windows should be measured solid and corners twice, and a decision given accordingly in a suit by contractors for their pay.

In Maryland,⁶ the same custom has been proved and accepted, with the additional one, that curved work should be measured at one and one-half times its actual length; but it is unsafe to rely too much upon the legal validity of customs in the trades, which, as architects know, often vary greatly in different towns in the same State.

In New York,⁷ a plaintiff was allowed to prove in the lower court that it was the custom in Buffalo for plasterers to charge for the full surface of walls to be plastered, without deduction for baseboards, cornices, or doors and windows; and evidence that

PLASTERERS' MEASUREMENT.

the defendant had no knowledge of this custom at the time of contracting was excluded. The defendant's counsel appealed, claiming that that evidence in regard to the custom should not have been admitted; that the custom was unreasonable in itself, and that the defendant ought to have been allowed to testify that he had no knowledge of it when the contract was made. The Court of Appeals held that the evidence of the custom was proper, and that the custom itself not unlawful or unreasonable, and raised a presumption that the defendant contracted with reference to it. As to the direct testimony of the defendant, that he did not know of it, however, the Court held that it ought to have been admitted, one judge dissenting.

On the other hand,⁸ it has been held in Pennsylvania that "A custom of plasterers to charge half the size of the windows at the price agreed upon for work and materials is unreasonable and bad."

In Tennessee⁹ a man agreed to pay \$8.00 per thousand for brick "in the wall." A controversy arising about the payment, evidence was offered that it was the custom among masons to determine the number of bricks in a wall by measurement, rather than by counting. This evidence was held by the Supreme Court to be inadmissible.

In a Massachusetts case,¹⁰ a man contracted to build "two brick dwelling-houses," to be similar to a certain other house. The "certain other house" had a wooden extension kitchen,

"A BRICK HOUSE."

and the contractor refused to build similar extensions to the new houses, on the ground that they were not included in his contract. The question, which certainly presents some difficulty, was brought before the Supreme Court, which decided

¹ *Blakeslee vs. Holt*, 42 Conn. 226. See, also, *Smith vs. Ridge Sch. Dist.*, 20 Conn. 318. *Sch. Dist. vs. Dauchy*, 25 Conn. 530.

² *Hayward vs. Leonard*, 7 Pick. 180. See, also, 1 *Stephens N. P.* 306. *Thornton vs. Place*, 1 *Mood. & Rob.* 218. *Moulton vs. McOwen*, 103 Mass. 591. *Smith vs. Lowell Cong. Ch.*, 8 Pick. 177. *Powell vs. Howard*, 109 Mass. 192. *Veazie vs. Hosmer*, 11 Gray, 396. *Walker vs. Orange*, 16 Gray, 193. *White vs. Quincy*, 97 Mass. 430. *Blood vs. Wilson*, 141 Mass. 25. *Yeats vs. Ballentine*, 56 M. 530. *Eyerman vs. Mt. Sinai*, 61 M. 489.

³ *Gilman vs. Hall*, 11 Vt. 510. See, also, *Dyer vs. Jones*, 8 Vt. 205. *Morrow vs. Huntoon*, 25 Vt. 9. *Joslyn vs. Morrow*, 25 Vt. 185.

⁴ *Hunt vs. Elliott*, 77 Cal. 588.

⁵ *Haynes vs. Second Baptist Ch.*, 88 Mo. 285; *Fitzsimmons vs. Christian Brothers*, 81 Mo. 37.

⁶ *Patterson vs. Crowther*, 70 Md. 124.

⁷ *Walls vs. Bailey*, 49 N. Y. 461.

⁸ *Jordan vs. Meredith*, 3 Yeates, 318.

⁹ *Sweeney vs. Thomason*, 9 Lea, 359.

¹⁰ *Ricker vs. Cutter*, 8 Gray, 248.

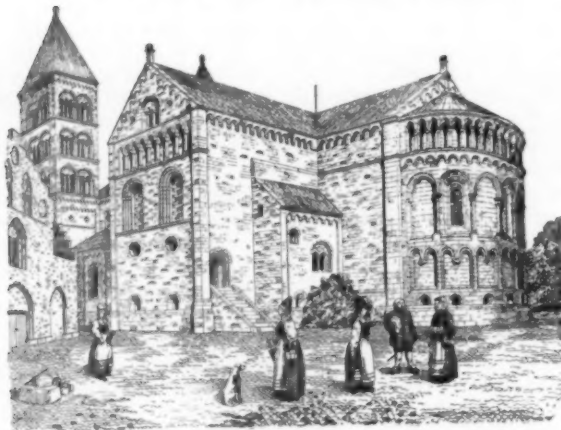
that wooden extensions, such as existed in the house specified as the model, were to be regarded as included in a contract for brick dwelling-houses.

A New York contract¹ provided that "the provisions of the building-law will be complied with in the construction of the buildings herein described, whether the same are herein specified or not." It turned out that the law required the erection of fire-escapes on the buildings, although nothing was said about them in the specifications; and the Supreme Court decided that they were included in the contract. A very similar decision has been given in Pennsylvania.²

It is quite common for architects to stipulate in their contracts that the contractor shall comply with all the directions of the Inspector of Buildings, or his deputies, and that these directions shall be regarded as part of the contract. As these directions have not been given at the time of signing the contract, and no one knows what they may be, it is sometimes claimed by the amateurs of fine-spun theories, in regard to matters of law, that they cannot form a part of the subject-matter of a contract, and that the stipulation referring to them is void. The Courts, however, hold a different opinion. A firm once contracted for some railroad work,³ including the stations, which were to be built "after such plans and dimensions as may be adopted by the engineer." Preliminary plans were shown for the stations, as well as for the other work, at the time of the signing of the contract. When the time came for building the stations the engineer called for larger and more expensive buildings than those shown in the preliminary drawings, and the contractors claimed additional pay for them. The Supreme Court of Connecticut held that the contractors took the risk of deviations by the engineer from the original scheme in this, as well as other particulars, and, no bad faith being shown toward them, they were not entitled to extra compensation.

(To be continued.)

THE GOVERNMENT BUILDINGS BILL.



Lund Cathedral, Sweden.

AT the meeting of the Board of Directors of the American Institute of Architects, recently held in Washington, a portion of the duties of said Board consisted of a meeting, by appointment, with the committee on Public Buildings and Grounds of the Senate, for the purpose of urging, at this session of the Congress, the passage of House Bill No. 9592, a copy of which was published in the *American Architect* for January 21.

Owing to the death of Senator Kenna, which took place while we were in Washington, and the indisposition of the acting chairman of the committee, Senator Morrill, and, after waiting two days, we were enabled to secure a hearing with but one member of the committee, Senator Pasco, of Florida, to whose courtesy and kind attention we are greatly indebted.

At the suggestion of members of the Board and by the direction of the president, Mr. Kendall, it was decided to mail to members of the profession in each State copies of the bill and such other matter as seemed pertinent, with the request that they in turn forward it to the Senators of their respective States, urging upon them the desirability of its passage. It is impossible with the time at command to communicate with all who would be glad to lend a helping hand, but it is hoped those who receive these papers will call the attention

of their fellows, and such others as may be possessed of influence, to the matter, with a request for their cooperation.

It is particularly desirable that those who receive this circular who reside in the States represented by Senators who compose this committee, or any who are able to bring influence to bear upon them, should communicate with them at once, urging favorable consideration on their part, to the end that the bill may not be lost in committee. The influence of prominent men not members of the architectural profession would be of value in this connection.

The importance of this matter cannot be too strongly urged. The present Congress expires on March 4, and, in case of failure, will require the entire work to be done over again in both House and Senate. It is believed that, should the bill under consideration become a law, it will be the entering wedge to a better order of things, and with such modifications of it as will naturally arise there will be inaugurated a system by which the Government will secure a class of work that will compare favorably with that executed by foreign governments, and in which the whole nation can take pride.

Should additional copies of these papers be desired, they will be forwarded to any address, by request, to the undersigned.

The following named Senators compose the Committee on Public Buildings and Grounds:

LELAND STANFORD, of California.
JUSTIN S. MORRILL, of Vermont.
MATTHEW S. QUAY, of Pennsylvania.
WATSON C. SQUIRE, of Washington.
JOSEPH M. CAREY, of Wyoming.
GEORGE G. VEST, of Missouri.
JOHN W. DANIEL, of Virginia.
SAMUEL PASCO, of Florida.
CALVIN S. BRICE, of Ohio.

Yours truly,

GEO. B. FERRY, Secretary, pro tem, A. I. A.

ERECTION OF PUBLIC BUILDINGS.

HOUSE OF REPRESENTATIVES, 52D CONGRESS, 1st Session, REPORT No. 1078.

APRIL 14, 1892.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed.

Mr. Tarsney, from the Committee on Public Buildings and Grounds, submitted the following report: [To accompany H. R. 8152.]

The Committee on Public Buildings and Grounds, to whom was referred House Bill 261, make the following report, and submit the accompanying substitute [H. R. No. 9592] for said bill, and recommend the passage of the same for the following reasons:

The United States Government has at this date nearly three hundred public buildings in the various stages of progress, of planning and construction, all under the supervision and control of the Supervising Architect of the Treasury, and from fifty to sixty new buildings are authorized to be constructed by each Congress. To carry on these works and to provide for the construction of these buildings many millions of dollars are annually appropriated and expended. For the expenditure of the moneys thus appropriated, as for the expenditure of moneys appropriated for any other public purpose, methods should be adopted which will secure the largest degree of utility from and economy in the application of the moneys expended. Your committee do not believe that these results and other beneficial results that should be obtained are obtained under the existing methods for planning and constructing the public buildings of the United States.

While the employment of the best artistic thought, the best and most approved systems of construction and equipment, and the utmost development of structural economies ought to be represented in the public edifices of this great nation, the contrary of these propositions is the result obtained under existing methods.

Your committee are advised that the best and highest types of artistic thought and architectural skill, producing the greatest development of structural economies in European countries, is found in the government buildings of those countries; that such government buildings, in artistic design, if not in economy of construction, surpass those erected by municipal or private enterprise, while in this country the reverse is the rule, and superiority of architectural design and economy of construction are represented in State, municipal, and private buildings, and not in those erected by the General Government.

A comparison of modern municipal buildings in our great cities, and business buildings erected by private citizens and corporations in such cities, with those belonging to the Government of the United States, will show, as to the former, constant progress in construction, equipment, and artistic expression, and that this progress has been accompanied by a continual increase in economy of construction, while in the case of the buildings of the United States there has been but little, if any, advance upon methods of construction or equipment in recent years; in fact, the buildings constructed recently by the United States, as compared with those constructed a quarter of a century ago, show a marked deterioration of artistic

¹ De Kay vs. Bliss, 42 Hun, 659.

² Mittnacht vs. Wolf, 6 Pa. (St.) 44.

³ Cannon vs. Wildman, 28 Conn. 472.

quality; that, despite the marked inferiority of the typical Government buildings, the cost has been relatively and positively much greater than that of private buildings of the best type.

Your committee has been furnished reliable and trustworthy information and data showing that the cost of the best types of buildings constructed for States, municipalities, corporations, and private citizens ranges from thirty-eight to fifty cents per cubic foot of space, while the cost of the buildings constructed by the United States ranges from fifty cents to one dollar per cubic foot.

Thus it is demonstrated that the Government of the United States, in the methods it employs, does not avail itself of the best and most approved systems of construction or utilize the developments of structural economics, and when we add that it does not employ the best artistic thought in the design of its structures to make such structures to serve as models and standards of excellence and superiority for the works of private ownership, but that such designs and plans fall so far behind the standards of the age that they are obsolete almost before they are drawn, and are always wasteful and extravagant, it is not surprising that it requires double the expenditure by the Government that is required to be expended by the private citizen to obtain like structural space results.

The conditions and results to which your committee thus call your attention are the conditions and results which necessarily follow the methods and practices now employed by the Government in planning and constructing its buildings, and in no respect gives warrant for criticism of, or for impugning the capability or integrity of, the officers of the Government charged with the responsibility for such works.

The office of Supervising Architect of the Treasury was established at a time when but a few buildings were constructed by the Government annually, when the planning and general supervision of such few buildings were easily within the scope of the capacity of one man, and the purpose of the Government in creating the office was to obtain the exclusive benefit of the artistic skill and scientific knowledge of one learned and eminent in the profession of architecture for the planning of the buildings to be erected for its use. The main purpose in the creation of the office was that its incumbent should be the artistic designer of such buildings.

If by the development of conditions, methods, and practices it now transpires that the time of the Supervising Architect is wholly employed in matters of administrative detail, matters pertaining to contracts for construction or with details relating to the actual construction of buildings, and the architectural work of the office, the plans, designs, and specifications are prepared by mere copyists, cheap clerks, such was not the intention of Congress when the office was created. It was to obtain architectural skill in the designing of buildings; to obtain and utilize artistic thought, not mere mechanical or clerical skill, that a supervising architect was wanted. It was not intended that, as now, clerks and copyists should do the work of the learned architect, and that the learned architect should be occupied with the work of clerks and copyists. Yet this is the present condition of the conduct of the work of that office, and it is necessarily so. It need not be urged that it is physically impossible for one man to devote sufficient thought and time to the proper designing and preparation of plans and specifications for fifty or sixty buildings each year which in their artistic expression shall be creditable to the nation, to the age, and to the architectural genius of the country, and that, in the economy of construction, shall do justice to those from whom the cost of such construction is drawn.

How much of the time of the Supervising Architect may be devoted to the work of designing and preparing the plans for buildings may be conjectured when the amount of administrative work devolved upon him under the present methods is understood. The volume of work thrown upon him relating to repairs, maintenance, and alterations of existing buildings alone is far greater than was the entire business of the office twenty-five years ago. In addition, every matter of detail relating to contracts for or the construction of new buildings, the appointment of and correspondence with local superintendents of such buildings, has to receive his personal attention, as well as the administrative control of the large force of employes in the office. The Supervising Architect cannot himself design and make original plans for each new building. This condition necessitates that the plans and specifications must be prepared by clerks in the office, who possess no architectural skill or learning, and this results in the production of plans and specifications by the simple system of copying the drawings and specifications of a structure constructed in one locality to be used as the design for another in a different locality, and this regardless of the difference in geological or atmospheric conditions or space requirements, this resulting in the most wanton wastefulness of expenditure, and absolutely precluding the possibility of progress in architectural design.

The Supervising Architect rarely ever sees one of these buildings while in course of erection. Its construction is generally under the supervision of some local carpenter or builder who never made any pretence to architectural knowledge or study, and whose appointment was secured, not because of his skill or knowledge of the work, but because of the political influence he could marshal to secure him employment, and whose greatest solicitude is to prolong the tenure of his employment by delaying the completion of the work.

Another very serious evil resulting from the system and methods now employed relating to the construction of public buildings, to

which the committee would call your attention, is the length of time required to construct and complete one of these buildings. A building which, if the property of a private citizen, would be constructed in months, when erected by the Government requires years for its completion. This necessarily results in great wastefulness and loss of money to the Government by the payment of unnecessary salaries of superintendents and other agents, by the expense of watching and caring for the materials and structure, and by the loss, waste, and deterioration of such material, besides the inconvenience to the citizens resulting from such delayed construction. From three years upward is the time employed in constructing a building that a private citizen or a corporation would complete in one building season.

As an illustration of the extent to which this evil may extend under present methods, your committee would call your attention to the last annual report of the Supervising Architect in relation to the public building at Detroit, Mich., where the construction was authorized eleven years ago, and \$1,300,000 therefor has been appropriated by Congress years since, and the foundation walls are not yet completed. Indeed, the abuses in the method above referred to have become so serious that the committee cannot conscientiously recommend public buildings at many places where the economical and convenient transaction of the business would require or justify such buildings could they be provided at a cost not greatly exceeding the necessary expenditure by a private owner for similar purposes. Of the bills reported from this committee during the present session, many are so reported only on the assumption that the buildings contemplated can be erected under some plan less wasteful than that now in operation.

The scope and purpose of the measure herewith presented is designed to remedy the many evils herein pointed out. To give to the country a better type of architecture in its buildings, and to stop the wasteful extravagance that is the necessary result of the present methods, a system that is universally approved by the best business men and by the best-managed corporations of the country should be a good system for the Government if its adoption is practicable. This measure authorizes the employment of such approved system. It authorizes the Secretary, in his discretion, to obtain plans and specifications and local supervision for its public buildings by the system of competition among private architects. While not mandatory, it authorizes the Secretary to employ the architect whose plans are approved to superintend the construction. It is to be presumed that this will secure the best architectural ability in the formulation of plans and the construction of the work according to such plans; that the compensation of such architects will be determined, as in private employment, on fixed commission upon the cost of the work, and that this will secure speedy completion of the work.

The measure does not abrogate or take from the Supervising Architect any of the functions or authority belonging to the office which, under existing conditions, he is capable of performing. He will still, as now, retain general supervision and control of the work. He will remain and continue the representative of the Government in all matters connected with the erection and completion of the buildings, the receipt of proposals, the award of contracts therefor, and the disbursement of money thereunder, and perform all the duties that now pertain to his office, except the designing and preparation of drawings and specifications for such buildings, and the local supervision of the construction, and such drawings and specifications shall be subject to his approval and to modification by him.

In fact, this measure is intended to make him what the title of his office indicates, the Supervisor of Architects—not the Government's architect, but the supervisor of the architects of the Government's works.

Your committee, therefore, recommend that the accompanying substitute do pass.

[See the *American Architect* for January 21, 1893.]

ANECDOTE OF WERNER VON SIEMENS.—It may not be generally known that Von Siemens applied for his first patent from the cell of a prison. After graduation from the artillery school, in Berlin, the young man—then only twenty-one years old—was attached to a regiment in Wittenberg. It was there he began his experiments, to the great horror of his landlady, who upbraided him day after day for staining his clothes, furniture, and the window-panes with gold, silver, and acid spots. She could not see the use of "wasting money for such things." But Von Siemens went on with his experiments, and with staining his furniture and clothes. He became, too, the life of the garrison, and one of its most popular members. His popularity, however, led to his taking part as second in a duel between two of his comrades. As a result, he was sentenced to five years' imprisonment in the fortress of Magdeburg. The landlady was the only person in Wittenberg who was glad of the young lieutenant's departure. In the cell in the fortress, however, he was allowed to fix up a laboratory, and there continue his experiments. There, too, a month after his incarceration, he perfected his method of galvanic gilding and applied for the patent from the prison cell. It was granted, and with it a pardon. A pardon in all probability was never received with less glee. Siemens had other experiments under way in his prison workshop, and begged to be allowed to stay a while longer in prison to complete them. But the keeper sent him away, with the declaration that such a course would be an insult to his king and commander. Siemens then came to Berlin.—*New York Tribune*.

COMPARATIVE MUNICIPAL BUILDING LAWS. — XXI.

[Note: — In these tables bracketed letters invariably refer to preceding passages in the same column.]

Projections beyond Building Line.

Boston: — No bay-window or other structure, except fire-escapes, shall project over any public way or square without permission of Board of Aldermen, given after due notice and hearing, and then as approved by Inspector.

Baltimore: — No steps shall project beyond building line more than one-third width of foot pavement.

No column or bracket to form covering over steps shall project more than 2' beyond building line.

No wall, pilaster or architectural ornament shall project beyond the building line.

Permit may be obtained to project show-window not exceeding 16".

Bay-window fronting on street or alley may project 2' beyond building line, and not exceed 10' wide.

Bay-window on side of house and on first story shall not be less than 10' from front building line unless 8' above footway.

Bay-windows require special permit and fees.

Brooklyn: —

Chicago: — a. Above main water-table of building, no wall, pilaster or column shall project beyond building line unless merely part of a portico, window or window dressing.

b. Porticoes extending through one or two stories may have plinth extend 4' beyond building line, but bay or oriel windows of dwelling-house shall not have bay project more than 3', and no part of such windows shall be less than 8 1/2' above sidewalk.

c. Brackets projecting not more than 14" to be kept 5' above sidewalk.

d. Awnings attached to buildings shall have metal framework.

Cincinnati: —

Cleveland: —

Denver: — Projections allowed above first story, not exceeding 3' for balconies and bay-windows; the number and width of latter to be approved by Inspector. No other projections, except for open areas.

Detroit: —

District of Columbia: — Maximum projection: Upon any street or avenue 8' or more in width: Areas, 8' on parked street and 6' on unparked streets; show-windows, 3'; bay-windows and tower projections, 5' on parked streets and 4' on unparked streets; steps, 2' for unparked streets and 12' on parked streets, unless otherwise determined by Inspector.

On streets less than 80', projections not to exceed 4'.

" " " " 70', " " " " " 3'.

" " " " 50', " " " " " 2'.

In no case shall projections leave less than 10' of clear sidewalk, except by special permit.

Fireplace or chimney projecting beyond building line shall have shaft return to building line, and carried on iron beams.

Bay-windows and tower projections shall not exceed 14' in width unless approved by Commissioners. On buildings 15' or less than 15' wide, the building line must be preserved by not less than 2' 6"; on buildings 15' to 20' wide, by 3' 6"; on buildings from 20' to 35' wide, by 4' 10", spaced as approved by Inspector. Only one projection allowed on building 35' or less in width. On larger fronts, the projections shall not exceed fifty per cent of principal or entrance front and forty per cent on a side front, exclusive of corner tower projections.

Colonnades not to exceed 6' from building line may be built on Pennsylvania Ave.

No projections, except corner towers, show-windows and areas, shall be constructed on Pennsylvania Ave. between 7th St., E., and Rock Creek; on 7th St., W.; on 9th St., W., between B St., N., and New York Ave.; F St., N., between 6th and 15th Sts., W.; and D St., N., bet. 6th and 12th Sts., W.

All projections must be constructed in manner determined by Inspector and approved by Commissioner.

Kansas City: — No bay-window or other structure shall project over any public way or square; but bay or oriel windows may project not exceeding 18" over street line, provided no part is less than 12' above sidewalk grade, and constructed of or covered with non-combustible material, and strongly built and approved by Superintendent. No steps or columns to project over building line.

(d) and lower part not less than 8' above pavement, and curtain shall not hang more than 8" below.

Louisville: — (b). Brackets projecting not more than 14" shall be kept at least 6" above grade of sidewalk.

Face of wall, pilaster or column of any building above first-water table shall not project beyond property line unless merely part of bay or oriel window.

Memphis: — No porch, gallery, stoop, platform, bay-window or stairs shall extend over lot line, except above the first story, and in no case more than 3 1/2'.

Minneapolis: — (a). Porticoes extending one or more stories may have plinth extend 3' over street line. Bay or oriel window shall have body not project more than 3', and no part less than 12' above sidewalk grade in business building, and not less than 8 1/2' in dwelling-house.

(c). (d). No bay-window shall be allowed within 4' of any party-wall, nor in any alley, nor project into any street less than 50' wide.

Nashville: —

Newark: —

New Orleans: —

New York: —

Omaha: — No structure except fire-escapes shall project over any street or alley without permission of City Council, and as approved by Superintendent.

Philadelphia: — Bay or oriel windows shall not project from first-story front wall, nor from other walls, except within lines drawn from intersection of party line and building making angle of 20° with former and within 4' of latter. No bulk window shall project more than 1' beyond building line.

Pittsburgh: — No roof shall project farther than necessary for a reasonable cornice. No out-stairs, out-shots or other structure shall overhang any street, lane, alley, public square or pavement, and no jut or window or other encumbrance shall incommode passage of pavement, footway, street, square or alley.

(See "Cellar.")

Providence: —

St. Louis: — No part of building shall project beyond building line, except balcony on second floor not projecting more than 3', or a portico or balcony at main entrance or theatre or opera-house constructed with iron columns and approved by Board of Building Inspection.

San Francisco: — No bay or oriel window shall project over street line more than 3' or more than 9' wide, nor have bottom less than 13' above sidewalk, nor be constructed upon any street or place less than 35' wide.

Swell fronts shall have walls entirely of fireproof material, and no bay or oriel window shall project from swell front.

In frame buildings, piers or spaces between bay or oriel windows shall not be less than 8'.

In brick buildings, of two stories, piers or spaces between bay or oriel windows shall not be less than 6'; of four stories, not less than 8'.

No bay or oriel window shall be more than four stories in height above sidewalk, nor erected on the corner of a brick building.

In brick buildings, joints of bay-windows shall be supported on iron lintels at each story, lintels full width of wall, and resting 8" on each jamb; and top of opening covered with brick or stone arch, and the exterior framework covered with fireproof material.

Wilmington: —

Shafts for Elevators, etc. — Construction.

Boston: — a. All shafts for elevators, hoists, dumb-waiters, lifts, light, ventilation or other air-ducts shall (with exceptions as hereafter given) be constructed of substantial, unflammable material.

b. Tops of such shafts which do not pass upper floor shall also be covered with such material.

c. Exception. — Elevators or hoists for freight which do not pass ceiling of first story may be constructed without fireproof enclosure above basement.

d. Exception. — Elevators without fireproof enclosure may be placed in areas or hallways which are continuous, no part being separated by an intervening floor, provided no additional draught is thereby created.

e. Exception. — Such elevators may pass through first floor of any area or hall, provided fireproof enclosure is carried up to first floor.

f. Such shafts that do pass top floor shall be carried at least 18" above roof, and be covered with skylight.

g. Such shafts already constructed, except in dwellings occupied by not more than one family, and except shafts for lifts with areas of 28" square or less, shall be lined with tin or plastered on wire lathing, or otherwise rendered non-inflammable on inside.

h. Such shafts hereafter built for passenger or freight elevators shall be of brick at least 8" thick, or of metal covered on both sides with at least 1" thick mortar applied immediately to metal, or with some other equally substantial, non-inflammable, non-conducting material.

Baltimore: —

Brooklyn: —

Charlotte: —

Chicago: — f. Hoistways in which elevators are used shall be constructed entirely of brick from lowest point to, and extending through and 6' above roof. (See "Protections for Shafts.")

j. Area of light and air-shafts for habitable rooms must be, for three-story house, at least 12 square feet; for four-story house, at least 16 square feet; for five-story house, at least 20 square feet.

k. In every case, at least 2' wide in clear. Shafts between two houses at least double those areas, and be at least 4' wide.

l. When sides of shafts are of studding, they shall extend above roof at least 3', be covered with glass to admit light, and have openings protected with slats to admit air, such openings to have area as great as that of shaft.

m. Open passenger elevators within well-hole of open stairs not prohibited.

Cincinnati: — n. All elevators shall be enclosed within walls of incombustible material if Inspector judges necessary, or with substantial stud partitions covered with metal lathing and three coats of plaster on each side, and such walls carried through roof.

o. Roofs over such elevator-shafts to be formed with skylight; area of sheet-glass at least half area of skylight.

p. Elevators placed in well-holes of stairways shall, together with stairs and landings, be built of fireproof material.

q. Shafts common to two houses double those areas.

Cleveland: — (n); (o); (p); (q). never less than 3' in clear width; (q). square, and those in dwellings shall run in shafts with brick walls not less than 8" thick, or walls covered with incombustible material and tin stops, or in well-room of fireproof stairway enclosed in like manner, and carried up through roof at least 18"; said shafts covered with ventilating skylights.

Detroit: — Elevator shafts shall have brick walls at least 8" thick, commencing at lowest point reached by elevator, and extending at least 5' above roof of building.

District of Columbia: —

Kansas City: — Excepting for lifts 28" square or less, and those in dwellings, r. Elevator cars and hoists shall run in shafts with brick walls at least 8" thick, or walls covered with incombustible material, with proper fire-stops, or placed in well-room of fireproof stairway. Shafts provided with ventilating skylight.

s. Special permits may be given by Board of Public Works for freight elevators in warehouses without brick shafts.

Louisville: — Elevator-shafts shall be fireproof from lowest point at which elevator starts, the fireproofing extending at least 6' above roof.

Well-holes for stairways may be used for elevators, with latter enclosed in wire netting.

Memphis: —

Minneapolis: —

Nashville: —

Newark: —

New Orleans: —

New York: — Elevators (except in fireproof buildings, Sec. 492 of law) shall be enclosed in suitable walls of brick, or framework of iron with burnt-clay filling, or such other fireproof material and form of construction approved by Superintendent.

Such construction shall extend through and 3' above roof. Elevators may be placed in stair-well holes without fireproof enclosure if stairs are enclosed in brick or stone walls, and the stairs entirely constructed of stone, brick, iron or slate.

Elevators may be placed in stair-well or open court in building erected before passage of this law, under permit from Superintendent and approval of Board of Examiners, but framework and enclosure of the elevator must be fireproof.

Foregoing requirements for fireproof shafts apply to dumb-waiters in dwellings which extend through more than three stories.

Roofs over all elevators shall be of fireproof material, with skylight at least three-quarters area of shaft, made of glass set in iron frame.

All walls and partitions forming interior light-shafts shall be built of fireproof material approved by Superintendent.

Walls of all light-shafts, interior or exterior, shall be carried at least 3' above level of roof.

Omaha: — (r).

Philadelphia: —

Pittsburgh: —

Providence: —

St. Louis: —

San Francisco: — Passenger elevators shall run in shafts with walls at least 12" thick, or of substantial framework, with each side "covered with smoke-proof iron laths," and finished with three coats of mortar. Shaft to pass through roof at least 3', and covered with ventilating skylight glazed with glass not less than 3-16" thick.

Light-shafts shall be formed with substantial framing, both sides "covered with smoke-proof iron laths," and finished with three coats of mortar. (m) if stairways are fireproof.

Wilmington: —

THE DUTIES AND RESPONSIBILITIES OF ARCHITECTS.¹Bronze Fire-dog: designed by M. Morisot. From *L'Art pour Tous*.

WHERE have been so many decisions by the courts affecting the position of architects, that by drawing attention to this subject, and some of the principal cases decided, I may give, at any rate to the younger members of this body, some useful information, and be of assistance in our practice. It is proposed to divide the subject into three general heads, and to consider the duty and responsibility of the architect in connection with each as follows, viz.: 1st, the design of the structure; 2d, the supervision of its erection; 3d, the granting of certificates. Other points will be touched upon in the consideration of the matters arising under these heads, such as the authority of the architect to order variations, authority to order bills of quantities to be prepared, and other incidental matters; but the subdivisions adopted are sufficiently defined for the present purpose.

First, then, the responsibility of the architect in the preparation of the design: An architect is responsible for any errors in the preparation of the plans whereby the building-owner suffers damage. In other words, an architect in designing a structure is bound to act in a skilful and careful manner, so that, so far as can be foreseen by the exercise of care and skill, the building, if erected, shall carry out the purpose for which it is intended, in an efficient manner.

There is not, however, any implied warranty on the architect's part that his work is actually correct, nor can the architect be held liable for errors which might arise, providing he has exercised reasonable care and skill, and has honestly carried out his work to the best of his judgment and ability; but the meaning of this is evidently that if, in designing a building, an architect does that which any prudent and skilful person exercising care and skill would have done, and it fails, the architect is not liable for such failure. Of course, it must always be a matter of evidence as to what constitutes negligence or ignorance, and unless the work has been carefully designed, and the specification thoughtfully prepared, errors will arise, and unpleasant litigation ensue. Too much care cannot, therefore, be exercised in the preparation of the design, and in seeing that it fully carries out the requirements of the employer, and great pains should be taken to discuss fully all details of the plans and specifications, and to very carefully explain every contingency that can be foreseen in connection with them. Before the contract drawings are prepared, and tenders obtained, it should always be made a point to obtain, if possible, an acknowledgment that the sketch plans—i.e., those plans which form the data from which the contract drawings are prepared—are approved by the employer;

and these sketch-plans should not be destroyed. It might also be added, in passing, that this is a good opportunity for having a definite understanding, in writing if possible, not only of the remuneration to be paid to the architect but upon such other matters as the ownership of plans, and travelling and incidental expenses; for, although the usual five per cent commission is recognized by custom as the proper remuneration, plus travelling and incidental expenses, this is by no means the invariable practice, and many naturally view with suspicion payment based on the cost of the structure. As to the ownership of drawings, in the absence of any agreement to the contrary, the building-owner could claim them.

Another point which cannot be too strongly dwelt upon is the desirability of entering in as minute and full a manner as possible all verbal instructions received from the client relative to the proposed work, and to make such entries as soon as possible after the conversation. Having thoroughly assured himself that the wishes of his client have been embodied in the designs, and that they are prepared in a skilful and reliable manner, the specification must next be drawn, taking care that the interest of the employer is safeguarded in every way, and that the contractor is made responsible for all errors of omission and commission whereby the building-owner suffers damage, even if after the granting of the final certificate. Too much care and caution cannot be exercised in the preparation of the specifications and general conditions, as they are the basis of the agreement, and in the event of any dispute arising either between the building-owner and builder, or between the building-owner and architect, as to the method of carrying out the works, they are relied upon and interpreted very strictly by the Courts. Before inviting tenders for the works it is a good plan to have detail drawings to a sufficiently large scale to illustrate any ornamental portions of the design. It saves any question between the architect and builder as to the amount of work intended by the contract drawings, which, being generally prepared to a small scale, renders it impossible to say, with any degree of certainty, what is really intended, although it should be borne in mind that if details are given which show more work than can reasonably be presumed to be intended by the contract drawings, and the contractor execute these works without demur, the contractor cannot afterwards sustain a claim for extras on the ground that the detail drawings constitute an order for the work.

Assuming now that the plans and specifications are prepared, tenders invited, and one accepted, and the contract signed both by the building-owner and the builder, and that such contract contains the usual clauses as to the architect's certificate being a condition precedent to the builder's right of action against the building-owner, and also provides for the decision of the architect in cases of dispute, or difference of opinion either during the progress of the work or in the settlement of the accounts, the work is commenced, and we arrive at the consideration of the second division of the subject, viz., "The duty and responsibility of the architect in the supervision of the work." Before, however, dealing with this head, it may be added that the condition as to the decision of the architect being final and binding in case of dispute in the making up of the final accounts is by no means always inserted in the contract. It is now more usual to have a clause appointing an arbitrator (other than the architect or the building-owner) in the event of any dispute arising under the contract, and certainly, from the builder's point-of-view, this would seem the most satisfactory course to pursue. But so far as the superintendence of the work is concerned, the position of the architect is not materially affected by this clause. It should be distinctly understood that the position of the architect is materially altered directly a contract is entered into between the building-owner and contractor, for the purpose of carrying out the architect's design. Before any contract is entered into, the architect's position is simply that of professional adviser to his client; but after the contract is signed his position is something more than this, for not only has he his duties to perform to the building-owner, but he has to exercise his judgment and discretion in construing the specification as between the building-owner and builder. Not only has the architect to see that the building-owner receives justice at the hands of the builder but he must see that the builder is not hampered by an exacting and unscrupulous client; above all things, the architect must act in a thoroughly impartial and unbiased manner; and let him always bear in mind that, without express authority to the contrary, his duty is to see that the contract is carried out without substantial deviation.

It is often found, however, in practice, that the building-owner cannot realize the position in which the architect is placed as between the parties to the contract, and he will often act—or try to, through his architect—in the most exacting manner, and would construe clauses in the specification in such a manner as would render it quite impossible for the builder to carry out the work. A difference of opinion often arises between the building-owner and his architect as to what constitutes superintendence of the works: there are no definite rules laid down upon this point, and indeed it would be quite impossible to say how much superintendence is to be given to any work to bring it to a successful issue, so many matters having to be taken into account in each case. Oftentimes the building-owner appears to look upon his architect very much as a clerk-of-works, and expects such a large amount of supervision to be given as would render it impossible for an architect to have more than one contract in hand at a time; but this view of the matter cannot, of

¹By W. J. Jennings, F. S. L., M. S. A.; a paper read before the Society of Architects on Tuesday, January 10, 1893.

course, be upheld. The actual amount of supervision must of necessity depend upon the architect employed. If he is an exceptionally busy man it is impossible that he can give much time to the superintendence, and a clerk-of-works is indispensable. As a matter of fact, no question of "amount of supervision" can be entertained; but it should be clearly observed that as the architect is responsible for the work generally, he should give such amount of time to it as will enable him to see whether or not the works are being carried out substantially as specified, and in particular he should make a point of seeing every part of the foundations before any concrete is put in, and all drains before allowing them to be covered in. Architects take upon themselves a great responsibility when they do not—as is too often the case—insist upon a clerk-of-works. Certainly it ought to be made quite plain to the building-owner that in many matters of detail, in themselves most important, there is a great risk of having the building inferior to that specified unless there is constant supervision, such as only a clerk-of-works can give. If this were always put clearly before the employer, the Courts would attach more responsibility to the building-owner, and less to the architect for defective work, owing to the lack of minute supervision.

The employment of a clerk of works does not, however, relieve the architect of his responsibility, as the clerk-of-works is simply the agent, so to speak, of the architect, who has the sole control, and is responsible for seeing that the works are carried out substantially as specified. In the event of a building-owner bringing an action against the architect, and alleging want of supervision, whereby the building-owner has suffered damage, it would not be sufficient to show that so many inspections had been made during the progress of the works, for it is clear that the actual number of visits an architect pays to the work is no guaranty—in many cases at least—that there has been proper supervision. Of course, if other things are equal, the more frequently works in progress are inspected by the architect the greater will be the chance of their being well carried out; but there are many architects of great experience who would see more in one visit than others of less experience would in a dozen, and no one could plead with success that because he had made so many inspections during the progress of the works therefore he had not been negligent; so, then, it may be said that it is not so much the "amount of supervision" that is the essential as the "quality." So in the case of *Rogers vs. James* it came out in evidence that the architect had visited the works daily during the time the foundations were being put in; but this did not prevent his being held liable to the building-owner for the damage caused by the omission of concrete foundations in places, and for other defects. During the construction of the works the architect will often discover that something has been carried out or omitted contrary to the specification.

In these days of keen competition on the part of the builders to obtain work, and owing to the very general desire of the building-owner to obtain his work at the very lowest cost, irrespective of the character of the builder, the latter often resorts to the substitution of inferior materials and workmanship, to make up for a very low price. Such questions then arise as, for example, the quality of the timber. Very possibly the architect has specified that none but balk timber is to be used, but the builder will try and substitute deals and battens, and so save the difference in price. It is quite possible that the architect may not have discovered this substitution until a great deal of the timber is built-in, and the question arises as to what is the duty of the architect under these circumstances. It may be that the timber is the very best of its sort, and even it may be a matter of opinion which is the better of the two. The architect may be inclined to think that, as the taking of the timber out of the building and putting in that which is specified would be a very serious loss to the builder, and as there is not much difference between the two sorts after all, the case would be met by deducting from the contract price the amount of difference between the two sorts. In that case, one might assume that the employer had suffered no damage; but this is hardly the correct way to deal with such a case, neither is the mere difference in the price of the timber the proper measure of the damage. In a case of this sort,—and this view has been upheld in several cases,—the duty of the architect is clearly to insist upon the material as specified being used, no matter at what expense to the contractor. This brings us to another point, and that is the authority of the architect to order deviations from the drawings and specifications.

Speaking generally, and in the absence of any express condition to the contrary, the architect's relation to the building-owner in connection with the superintending of works would come under that class known as general agents, and he would have power to bind his clients to alterations which he may order the builder to carry out in the details of the work; but there must be no radical alterations in the plans, as the architect's duty is to carry out the plans and specifications which form the basis of the contract, and therefore he must be careful before ordering extensive alterations and variations. Of course, where an architect is employed simply to prepare plans, he is on a very different footing, and scarcely comes under the head of an agent at all. In this case he has simply to supply something for which he receives a certain sum of money, and the matter ceases; but generally architects are not only employed to design a structure, but to superintend its erection, and then the architect

may be considered in the light of a general agent, for all purposes for which he is employed, to the building-owner.

The case of *Kimberly vs. Dick* clearly shows that this is the position of the architect. The circumstances of this case were peculiar, inasmuch as there was a distinct understanding between the architect (White) and the building-owner (Dick) that the total cost, including all incidental expenses and architect's commission, was not to exceed £15,000. It was one of the conditions as between the building-owner and the builder (Kimberly) that all questions between the parties under the contract should be settled by the award of the architect. The plaintiff was unaware at the time he signed the contract—or for some time after—that there was any undertaking given by the architect to the employer that the house should be erected for the sum of £15,000, and the contractor claimed to be entitled to be paid by the employer for all quantities executed by him beyond those included in his estimate, and for extra work, and it was held by Lord Romilly, Master of the Rolls, that the architect was the agent of the employer; that his undertaking having been concealed from the builder, the arbitration clause in the contract could not be enforced, and that the plaintiff was entitled to an account for what was due to him for any works executed by him, under the architect's direction, not included in the contract, and for any works so executed under the contract the price for which was not therein included, and for any variations made under the architect's direction, of work included in the contract. This case has been upheld repeatedly, but of course it does not prevent the building-owner from recovering damages from the architect for exceeding his authority. During the course of the building it often happens that circumstances which could not be foreseen cause some alteration from the drawings and specifications, such, for instance, as extra concrete in foundations, and as this is a matter that could not be foreseen, the architect would not be exceeding his authority in ordering it, although it might amount, as it too often does, to a very considerable sum of money.

Speaking generally, if it could be shown that what is done is absolutely necessary for the stability of the building, and that without it the works would be defective, then the architect would be held not to have exceeded his authority; but this must not be taken to refer to works ordered by the architect to cover faults in the design which, by the exercise of skill and care, would have been avoided. In all cases, however, by simply advising the building-owner what is proposed to be done, a great deal of responsibility would be taken from the architect's shoulders; and this course should invariably be taken in dealing with building-committees and public bodies, and all alterations suggested by committees should be embodied in a resolution and entered in the minutes of the committee, and ordered in writing by the architect. While upon the question of authority, we may say a few words as to the authority of the architect to order quantities to be prepared. It is a difficult question to discuss, owing to the want of any definite decision, but the general ruling would appear to be that where the building-owner employs an architect to prepare plans and specifications, and obtain tenders for the work to be done, this constitutes an order for the architect to retain a quantity-surveyor, and take out the quantities; but as there is so much doubt on the matter, the only satisfactory method of proceeding is to let the building-owner know that this must be done and be paid for by him.

Thirdly, the granting of certificates. Under a contract for building, power is reserved to the architect to grant certificates during the progress of the building, and for giving the final certificates, the latter class taking into account all variations made during the progress of the building, and after adjusting all additions and deductions certifying for the balance. Certificates given during the progress of the works are usually provisional, and are subject to adjustment in the final certificate, but an architect having once given his final certificate it cannot be varied, and his duty is at an end under the contract.

There is considerable doubt on the question of the architect's responsibility in granting final certificates, owing to the recent decision in the case of *Rogers vs. James*. Previous to this decision, many people had been of opinion that an architect when acting under a contract—wherein his decision was to be final and binding as between the building-owner and builder in deciding any question as to workmanship or price—was in the position of a quasi-arbitrator, and in that position could not be held liable to either the building-owner or builder so long as he acted honestly and to the best of his judgment and ability (see the case of *Stevenson vs. Watson*, which decision was founded on that of *Pappa vs. Rose*). This was a case in which the plaintiff contracted with a company to build a hall, the plans, bills of quantities, etc., for which had been prepared by the defendant, who was employed by the company, and named in the contract as their architect to carry out the works. The contract provided that the architect might order additions to or deductions from it, and that the amount of them should be ascertained by the architect in the same manner as the quantities had been measured, and at the same rate as they had been priced; that the contractor and the company would be bound to leave all questions or matters of dispute which might arise during the progress of the works, or in the settlement of the account, to the architect, whose decision should be final, and binding on all parties, and that the contractor would be paid on the certificate of the architect.

The claim then alleged that the contract was signed by the plaintiff in the belief and expectation, as the defendant well knew, that the defendant would use due care and skill in ascertaining the amounts to be paid by the company to the plaintiff; that the work was done, that additions and deductions were ordered, and certificates given by the defendant, but that he did not use due care and skill in ascertaining the amounts, and neglected and refused to ascertain them in the same manner as the "quantities" had been measured, and at the same rate, and knowingly or negligently certified for a much less sum than was the net balance payable to the plaintiff, and refused to reconsider his final certificate, by reason whereof the plaintiff was unable to obtain payment from the company of the balance. On demurrer, it was held that the functions of the architect in ascertaining the amount due to the plaintiff were not merely ministerial, but such as required the exercise of professional judgment, opinion and skill, and that he therefore occupied the position of an arbitrator, against whom, no fraud or collusion being alleged, the action would not lie. The Lord Chief Justice was emphatic in pointing out that the architect is in the position of a quasi-arbitrator, and Mr. Justice Denman in his judgment supported that of the Lord Chief Justice. By this judgment the architect seemed placed in a very strong position indeed. Certainly this was an action brought, not by the building-owner against the architect, but by the builder against the architect; but it seems that if the builder was bound so rigidly to the decision of the architect, — fraud and *mala fides* not being suggested, — how much more so was the building-owner, who has the appointing of the architect, and whom the architect is naturally anxious to please. Certainly, under this decision, the architect was to a great extent made his own judge, in the event of the building-owner bringing an action against him; and yet, if he is liable to an action by one party, after having honestly exercised his judgment and ability in deciding matters in dispute, how is he to give an unbiased decision? In the case of *Rogers vs. James*, however, the architect is under a very different position from that previously ruled, — a decision which places him very much in the hands of an unscrupulous client, as a perusal of the case will show. The extract is taken from the professional notes of the Surveyors' Institution, Vol. V., Part 2: "In a building contract the architect's certificate is final as between the builder and building-owner, but not as between the latter and the architect himself." Action by an architect to recover £123, the balance of his account for services rendered to the defendant, in connection with the erection, by a builder, of a house at Bromley, Kent. The defendant counter-claimed for damages for negligence, owing to the plaintiff not properly supervising the building of the house, in consequence whereof the builder omitted to put certain concrete into the foundations, and omitted to do certain other works. The plaintiff denied he was negligent, and further stated, that in giving his final certificate to the builder he deducted £82 in respect of the omissions from the amount certified to be due to the builder, and contended that this certificate was binding upon the defendant under Clause 16 of the contract between the defendant and the builder. Clause 16 provided that: "The decision of the architect with respect to the amount, state and condition of the works actually executed, and also in respect of any and every question that may arise concerning the construction of the present contract, or the plans and specifications, or the execution of the works hereby contracted for, or in any wise relating thereto, shall be final and without appeal." The action was tried before Mr. Justice Mathew and a special jury, at Maidstone, where the jury found that the plaintiff had been guilty of negligence, and found a verdict for the plaintiff on the claim for £58, and for the defendant on the counter-claim for £90. The learned judge gave judgment accordingly. The plaintiff moved for judgment on the counter-claim, or for a new trial. The Court dismissed the motion. The Master of the Rolls said that the jury having found negligence in the plaintiff, the only material question arose upon the counter-claim. It was contended that the certificate which the architect gave under Clause 16 of the contract was a final settlement of the amount of damages, and could not be questioned by the defendant. It was said that the certificate was final as between the building-owner and builder; any question as between the building-owner and the architect would not be decided by that certificate.

As between the building-owner and the builder, the architect had, in the honest exercise of his judgment, awarded a sum which the building-owner could not question. As against the architect, the building-owner could question that. The jury had found that the architect was negligent, and that the architect had not awarded sufficient. The learned judge was satisfied with the verdict, and a new trial could not be granted. Whether the Court would have arrived at the verdict was not now the question. Lord Justice Lopes concurred. The architect must not act negligently. Clause 16 of the contract gave the architect no jurisdiction to decide any question of negligence as between himself and the building-owner, and the building-owner could bring an action of negligence against the architect. The jury found that the £82 allowed by the architect was not sufficient, and they awarded the building-owner a further sum from the architect. The judge was satisfied by the verdict, and that Court could not disturb it. Lord Justice Kay concurred.

By this decision, it will be seen that while the architect's certificate is final and binding as between the parties to the contract in

the absence of fraud or collusion, or any circumstances calculated to bias the opinion of the architect, and that while the building-owner cannot be held liable for more than the award certified by the architect, yet after the architect has honestly done what he considers to be his duty to both parties he is still liable to an action for negligence by the building-owner. Under these circumstances, it would seem that it would be more satisfactory to all parties if, in the event of any dispute between the building-owner and builder, the matter was left in the hands of an independent person as arbitrator. The certificate of the architect is binding between the employer and builder in the absence of any circumstances which would tend to bias the mind of the architect; but the architect having given an undertaking that the building could be erected for a certain sum, this was held in *Kimberly vs. Dick* to be a matter that would bias the architect in deciding between the building-owner and builder, and therefore his certificate was not upheld. Of course, too, undue interference on the part of the building-owner might reasonably invalidate an architect's certificate. Architects should be careful in giving certificates to see that they are in the form prescribed by the contract. A mere statement of accounts approved by the architects is not sufficient. Thus in the case of *Morgan vs. Birnie*, it was held that the fact of the architect having sent on the accounts to the employer, with a letter saying that they were correct, was no evidence of the work having been certified by the architect. This will show how essential it is that the spirit and letter of the contract in this, as in other matters appertaining to the building, should be carefully followed. There have now been pointed out some of the pitfalls that an architect will meet with in the exercise of his profession, but if he shows reasonable skill and ability, and acts with tact and judgment, he need be under but little apprehension in dealing with building-owners and builders, difficult though his position is sometimes made.

THE ENGLISH METHOD OF OBTAINING TENDERS.



I HAVE noticed, during my residence in this country, that there is no systematic method of obtaining estimates of the cost of a proposed new building. The way in which it is done entails waste of time, labor and expense to competitors, and frequently undue pressure.

It has been found necessary in England to establish system and uniformity. It was argued that no employer should desire to obtain from his builder more work or greater value, and that he ought not to obtain less, than is included in the estimate; whilst, on the other hand, he should have every facility to secure due allowance for omitted work; and that it was unreasonable to impose upon a number of builders the trouble and expense of preparing estimates, on the sole chance of one of the number obtaining a contract. Those builders whose standing best qualified them to have an estimate prepared in their own offices either refused to compete, or they employed a surveyor (often not properly qualified, but willing to undertake the work "on speculation") to prepare it. The smaller men who competed prepared their own estimates, and, more often than not, made mistakes therein, for which, if successful in obtaining the contract, they endeavored to recoup themselves during its execution by the substitution of inferior workmanship and materials for those required by the specification, the employer thus losing the advantages which a properly prepared "bill of quantities" would have given him, and having to pay for an inferior article.

To obviate this, and to secure the advantages above described, an intermediary between the architect (who is considered the agent of the building-owner or employer) and the builder, called "a quantity-surveyor," is employed. His duty is to prepare "bills of quantities," i.e., particulars intended to express in exact form the intentions and requirements of the architect as embodied in his general drawings and specification, which may be dealt with as a recognized exposition of the mutual responsibilities of employer and builder.

An expert "quantity-surveyor" is the result of long training and

diligent attention. He must be exact and methodical, have a thorough knowledge of construction and mensuration, be acquainted with the architectural styles, their characteristic differences, and the technical names of their parts. He must be able to write a specification from the architect's notes, to value the work as it progresses, if required, to enable the architect to grant certificates, and to measure and value additions or omissions. He also acts as technical adviser upon matters of construction and detail.

His work in preparing particulars for an estimate, to describe it technically, consists of five operations, viz.:

1. Taking-off; i. e. measuring the drawings and noting the dimensions, with their description obtained from the specification, upon dimension sheets prepared for that purpose.

2. Squaring the dimensions.

3. Abstracting them; i. e., transferring the squaring and descriptions of the dimensions to sheets where they are collected under proper headings.

4. Reducing the abstract sheets; i. e. casting up the columns of figures under each heading, and reducing the amounts to the denominations in use in each trade, such as rods, yards, squares, etc.

5. Billing; i. e. transferring the results obtained by the last operation, in proper order, to bills where they can be priced and moneyed out.

Each operation is carefully checked; i. e., one man squares the dimensions, another checks the squaring; and so with the abstracting, reducing, and billing. This obviates, as far as possible, liability to mistakes.

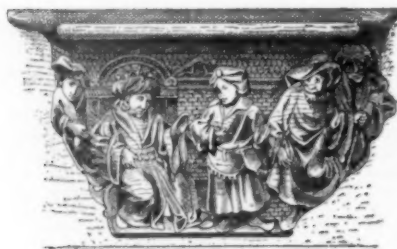
When the bills are checked they are copied by lithography, and a copy, with a "form of tender" in an envelope addressed to the architect and indorsed with the name of the work and the time and place for delivery of the tender, is sent to each competing builder and to the architect.

At the time named on the envelopes all the competitors, or their representatives, meet at the place appointed, usually the architect's office, each handing in his tender in a sealed envelope. These are opened by the architect or surveyor (who frequently attends for the purpose) in presence of the assembled builders, and the amount of each read out, each builder making a note of the amounts. The successful competitor is required to deposit a copy of his bill with the architect, after it has been compared with the original by the surveyor. This is sealed up and retained to be used in pricing variations, etc., should there be any, at the completion of the contract.

The surveyor's charge is a percentage on the net estimate of the successful builder, plus the cost of lithography and of any special services rendered, which is added to the estimate, the gross amount forming the completed tender. He receives this from the builder when the latter gets his first payment on account, the amount being included by the architect in his first certificate. The charge is usually two per cent, but it varies with circumstances, and is sometimes made a matter of arrangement between the architect and the surveyor.

This system is recognized by the government, has been perfected from time to time by committees specially appointed by the Royal Institute of British Architects, and is in universal use in England. I would suggest the adoption of some such system in this country, adapting it to local requirements, upwards of twenty-five years' experience of its working in England convincing me of its soundness. Its details could be determined by conferences between committees of the societies of architects and of the master-builders' associations in each State or city, or as otherwise thought best. SURVEYOR.

AN ENGLISH HUMORIST ON AMERICAN ARCHITECTURE.



Miserere in Choir of Amiens Cathedral. From *L'Art pour Tous*.

the *Architectural Record*, Vol. I, No. 4, published in New York City. It is bound in terra-cotta paper, and its price is twenty-five cents. It contains reprints of a paper by the late Mr. Freeman, and of one of Professor Aitchison's Academy Lectures,—one of the most amorphous of the professor's learned lubrications,—and the rest of the letter-press is not remarkable, except for the pleasant impudence which sits on the front of American journalists. But the illustrations are, indeed, quite fearful and wonderful; entirely original, purely American. Here you will find the Tower of Babel,

THE great American joke is now one of the best-established common-places of American journalism. If constant repetition will do it, we are likely to be persuaded that, in literature, art, science, and everything worth doing, the Britisher is an ass, and the American is his master; and so we turn with some expectancy to

—we beg its pardon, the Lancashire Insurance Company's office in New York,—a building of rectangular plan, of which the side is about seven times the width of the front, and the whole carried up to ten stories, though the adjacent house is three stories high, and the pediment of the Doric temple at the side barely reaches the sills of the fifth story. Then there is that amazing building, the Auditorium of Chicago, huge, enormous, spurning all rule and rhythm, where the great staircase is of iron girders fortified with slabs of marble running up the rake of the stairs. "*Ille robur et æs triplex*" who ascends the steps of that fearsome masterpiece, though, indeed, we should be inclined to award the palm of American architecture to the east-iron corkscrew stairs of the New York Life Insurance Company, for all the world like two shavings balanced on their tails, impending sinister over a sheer abyss of pavement. Nor should we forget the approved lighthouse manner, that now familiar congeries of round towers, conical roofs and battered basement, dear to the man of Massachusetts and Boston, U. S. A.

Then there is the iron construction, in which the Americans are so adept that they will build you a bridge, or a building, in which the failure of a single bolt will bring the whole thing down like a pack of cards. It appears that in New York City a fashion used to prevail of building entire house fronts in cast-iron, with Renaissance, Moorish, or any other approved detail, all complete in cast-iron. We are used to cast-iron mantel-pieces in England, but there is something Titanic in this idea of a house front in cast-iron which cannot but enthrall the imagination. The American architect is a versatile person. We are told by the *Architectural Record* that he must be a civil engineer, "he must outrank the mechanical engineer in his knowledge of electricity, hydrostatics," and a great many other things, and, withal, "be an accomplished financier." This shows the inferiority of the Englishman, who foolishly supposes that the business of a financier is finance, and the business of an architect architecture.

We had almost forgotten the lady architect who has designed the women's buildings for the Chicago Exhibition, and of whom gallantry forbid that we should speak anything but praise. If there are lady architects, there must also be lady architect pupils. The very thought of their presence and premiums must make the English architect grin with envy.

Then, too, there are the details. O the details! Byzantine columns are nothing accounted of in this land of wonders. Here will an architect give you a grate the size of a rabbit-hutch, set in an ocean of tiles; and anon a fireplace of massive marble large enough to roast an ox, with a frieze above it fit for a doll's house; and ingle-nooks with arches of machine-made bricks set in stamped leather and panelling—pleasing suggestion of the raw savage in the midst of culture; and chimneys of stone, with hoods of wooden planks. Odd that we English, who have studied fireplaces for some five hundred years, should never have thought of wooden planks for a chimney-hood.

There is much else in this publication to make one pause and meditate. This, then, is the revelation in architecture which America is to give our feeble civilization. We fear our civilization is too feeble to receive it, and, in fact, to be quite candid in the matter, we confess to the feeling that all that is good in it we have seen before, and all that is bad we hope never to see again. The balusters in the hall-way, by Messrs. Chamberlin and Whiddin, we fancy we have already admired in a design by Mr. Shaw. As for the ineffable proportions and exuberant details of American Romanesque, if they are inspired by similar work in England, they have assuredly gone one better in their absence of all scholarship and their ignorance of all restraint. On the whole, and with all respect to the great American nation, we venture to think that she is still young to instruct the Old World in architecture. There are in America a few plain Georgian buildings, of no particular magnificence, out of which her architects might develop a quiet reasonable style; but as for these tons of iron, these mountains of iniquity, these Galatin Banks, these seventeen-story buildings, we will have none of them. The American architects have indeed licked creation, but it is in erecting the most enormously hideous buildings that ever yet burdened the face of the earth.—*The Saturday Review*.



THE ARCHITECTURAL LEAGUE OF NEW YORK.

THE regular monthly meeting and dinner of the Architectural League was held in their club-room, 215 West 57th Street, on Wednesday evening, February 1st. There were forty-four members present and six guests, President Russell Sturgis presiding. Mr. J. Wells Champney, the speaker of the evening, handled his subject, "Pastels and Pastelists," in a most charming manner, and illustrated his remarks with many beautiful reproductions and photographs of famous pastelists and their work.

An interesting discussion followed Mr. Champney's paper, participated in by Messrs. Sturgis, Coffin, Dellenbaugh, Heins, Willard, Hardenberg, Berg, Rich and Briggs.

The League, as a body, by a unanimous vote, heartily approved

and supported bill No. 9592, now before the Senate of the United States, which authorizes the Secretary of the Treasury to obtain plans and specifications for public buildings to be erected under the supervision of the Treasury department, and provides for local supervision of the construction of the same. WARREN R. BRIGGS,
Treasurer and Acting Secretary.

THE WORCESTER CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS.

THE regular monthly meeting of the Worcester Chapter of the American Institute of Architects was held at the Parker House last week. The following officers were elected for the ensuing year: President, Elbridge Boyden; Vice-President, Stephen C. Earle; Treasurer, J. B. Woodworth; Secretary, C. H. Lincoln.

The secretary was instructed to write the different architects of the surrounding towns who are not already members of the institute with a view of having them join the Worcester Chapter. Other local business was transacted.



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

HOUSE OF HENRY D. WELSH, ESQ., WISSAHICKON HEIGHTS, PHILADELPHIA, PA. MESSRS. G. W. & W. D. HEWITT, ARCHITECTS, PHILADELPHIA, PA.

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

INDUSTRIAL TRUST COMPANY'S BUILDING, PROVIDENCE, R. I. MESSRS. STONE, CARPENTER & WILLSON, ARCHITECTS, PROVIDENCE, R. I.

DESIGN FOR A COLLEGE FRATERNITY CHAPTER-HOUSE. MESSRS. NOLAN, NOLAN & STERN, ARCHITECTS, ROCHESTER, N. Y.

HOUSE AT CYNWYD, PA. MRS. MINERVA PARKER NICHOLS, ARCHITECT, PHILADELPHIA, PA.

THIS house is being built of local stone first floor with walls above finished in stucco.

The thing most desired on the second floor was four communicating rooms, to accommodate a family consisting of small children, and if a look is taken at the location of the beds and the doors you will see what a small amount of space is travelled from the mother's room, in the centre, to each child.

HOUSE OF J. B. STETSON, ESQ., OGONTZ, PA. MR. GEORGE T. PEARSON, ARCHITECT, PHILADELPHIA, PA.

GREAT HALL IN THE SAME.

[Additional Illustrations in the International Edition.]

HOUSE OF E. H. VALENTINE, ESQ., CORNER GOETHE AND NORTH STATE STREETS, CHICAGO, ILL. MESSRS. BURNHAM & ROOT, ARCHITECTS, CHICAGO, ILL.

[Heliochrome.]

It may lend interest to this subject to know that this was the last dwelling-house designed by Mr. Root.

CENTRAL PORCH AND ROTUNDA OF THE FISHERIES BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MR. HENRY IVES COBB, ARCHITECT, CHICAGO, ILL.

[Gelatin Print.]

DETAIL OF THE SAME.

[Gelatin Print.]

THE STAIRCASE OF FRANCIS I, CHÂTEAU DE BLOIS, FRANCE.

THE castle of Blois is mainly the work of Louis XII, Francis I and Gaston, of Orleans. The part erected by Francis I is generally most admired, and among all the staircases not one has been so often drawn as that which we illustrate this week, and which is the central point of one façade. In a country where so much of life is spent out of doors it was an advantage to have free access to the balconies, and Blois is not the only case where the approaches are open. The raking lines, instead of horizontal, were inherited from Gothic rather than from Classic times. The figures under canopies are the work of Jean Goujon. He may also have carved some of the salamanders of Francis I, a device that is found throughout the parts which the king had erected. It has not yet been discovered who is the author

of this admirable work. Among the scenes of which Blois was the theatre was the murder of the Duke of Guise. The Vieux Cabinet, where the tragedy took place, was approached by this staircase.

DETAIL OF THE SAME.

TATE CENTRAL LIBRARY, BRIXTON, ENG.

THE new library recently erected at Brixton, and illustrated in this number, is from the architect's drawing, which was exhibited in the last Academy exhibition. The building (with site) was presented to Lambeth by Mr. Henry Tate, and was carried out from the design and under the superintendence of Mr. Sidney R. J. Smith, F. R. I. B. A. (the architect of the new picture-gallery which is being built at Millbank). The cost of the library and site was £15,000. The red bricks are from Elham Valley, the stone in the facings is Portland and Beer, the fittings, news-stands, tables, counters, etc., are all carried out in polished walnut. The dimensions of the main rooms are as follows: Magazine-room, 35 feet by 27 feet; newspaper-room, 45 feet by 35 feet; lending library, 46 feet by 37 feet; reference-library, 85 feet by 28 feet; and book-store, 46 feet by 38 feet. In the basement are book-stores, binding-rooms, strong-rooms, etc., and at the side is the librarian's house.



NEGLECT OF MONUMENTS IN PARIS.—Effigies of great men do not always command that respect and attention in Paris which true hero-worship enjoins. Any one will be convinced of this who chooses to take a walk or a drive around the principal metropolitan sites whereon statues are placed. The monument of Marshal Ney, for instance, has now been removed from the former historic spot, near where the famous soldier fell after his execution, to the neighborhood of the Bal-Bullier in the Latin Quarter. The change has been for the worst, as Ney is quite close to a common café, and looks as if he were leading a charge on the dancing-rooms opposite. Worse still, however, is the case of the statue erected to the astronomer Arago. The memorial is ready to be unveiled, and has been so for a considerable time, yet for some reason or other the ceremony has been postponed. In these days of fogs and rains the aspect of the statue is lamentable. The figure of the savant is like that of a ghost covered with a canvas winding-sheet tattered and torn. It gives the impression that the astronomer is reminding his successors at the observatory that he is being left mercilessly and ignominiously "out in the cold." Another pitiful object was, until a few days ago, the model of Dalou's group, "The Triumph of the Revolution," erected on the Place de la Nation. A few years since the pseudo memorial was solemnly unveiled by President Carnot himself while awaiting the termination of the real monument. The model, however, began to crack, under the influence of frost, rain, and sun, until it has at length been removed as a positive eyesore. Neglect of this kind is not rare, even where fully-finished memorials are concerned. In many instances monuments to public men are unveiled amid a great outpour of patriotic enthusiasm, and are then forgotten until attention is directed to their disgracefully weather-worn condition.—*London Daily Telegraph*.

HOW LUMINOUS FOUNTAINS WORK.—M. G. Trouvé has built a luminous fountain for Mme. Patti, at her residence at Craig-y-Nos, an account of which appears in No. 11 of the *Comptes rendus*: "The weight of this fountain is about 10,000 kilograms, and the basin measures 6 millimetres [*sic*] in diameter. The illuminating power is represented by four incandescent lamps of 110 volts, each consuming 6 amperes. Thus the total electric energy amounts to 2,640 watts; this gives, at three watts per candle, a light intensity of over 800 candles. The lamps are centred at the focus of four parabolic reflectors grouped under the glass chambers whence the water springs. As in the chamber fountains, the metallic ajutages, which would have cast shadows, are eliminated. The water which falls from the upper to the lower basin is utilized to drive a small bucket wheel, which governs the rotation of two superposed disks, concentric or otherwise, made of colored glasses, which turn in the same or in the opposite sense, with equal or unequal velocities as required, between the reflectors and the glass. This combination of two disks with opposite rotations renders possible a variation in the play of colors of the liquid sheaves, which succeed each other with the unexpectedness of the kaleidoscope. The motive power can be chosen at pleasure. It may be hydraulic, electric, or by clock-work, of forms and dimensions in keeping with the character of the decoration. These fountains need neither expenses of installation nor costs of maintenance, and their price depends solely upon their artistic perfection and their importance. Hitherto the construction of luminous fountains has only been hindered by the impossibility of sufficiently illuminating the jets. To-day the problem is reversed. Since the light can be projected without sensible loss to great heights, the only difficulty will be to give a sufficiently high pressure to the water."—*From London Nature*.

FIRES DUE TO ELECTRIC WIRES.—Fire underwriters are becoming convinced that a large proportion of the fires that occur and reported as of unknown origin are due to defective electric wires. The difficulty does not lie with the electric lights themselves nor with that system of lighting, but with the unskilful manner in which interior wiring is done. If the wires are properly insulated they may be strung anywhere, and will give safe conduct to the electric current, but the moment the insulation is disturbed there is danger. It is customary in

wiring buildings to run the wires in the most convenient places, and hence they are brought in contact with woodwork, with shelf goods, with old papers and waste of all kinds, and the insulation is readily broken by handling, being rubbed against, or other careless manner. The president of a fire-insurance company recently stated that the building in which he is located had been on fire three times within a few months, and in each instance the cause was ascertained to be a defect in the electric-light wires. Opportune discovery probably prevented a serious fire, but had such occurred it would have been classified under the heading "cause unknown." The combined wisdom of fire underwriters and expert electricians should be able to provide a remedy for bad and dangerous wiring of buildings. It may be necessary to insist that all wires shall be placed in some sort of tubing that is a non-conductor, and all contact with woodwork absolutely prohibited. The number of fires from unknown causes is rapidly increasing, and it seems reasonable to charge them to the increasing use of electricity for illuminating purposes. — *Spectator*.

THE TRUTH AS TO LABOR IN BELGIUM.—That periods of frugality and of prosperity should alternate in the history of civilized nations is in itself logical, but often forgotten. England has had its era of prosperity for some time past, during which frugality has not been a national characteristic. For long, certain Continental nations of necessity exercised the austere virtue, but recently—that is, within the last twenty-five years or so—have been gradually asserting their claims to greater luxury or comfort. Conspicuous among these is Belgium; a once rich country that became poor, the era of poverty having taught her people to put forth much effort in hope of small return—the beginning of business success. The small effort for much return, the despatch of the world of small things, and the bitter but necessary reaction, complete the economic cycle. To judge by the report of a committee recently appointed by the Belgian Government to inquire into the influence of the M'Kinley tariff upon the home industry of the country, the Belgian workman is rapidly increasing in prosperity, whereas his British *confrère* has reason to be glad. Comparing the year 1891 with 1846, there is a fairly universal rise in wages. In the latter year there were few workmen—some special trades excepted—who earned more than 2fr. 50c. (2s.) per diem, the average wages being hardly more than 2fr. (1s. 7d.) a day. At the time of the inquiry there were few who did not earn 4fr. (3s. 2d.) a day, the average rate being close upon 4fr. 50c. (3s. 7d.). The committee, however, did not content itself with determining simply the figure of remuneration, but also made a fairly exhaustive inquiry into the spending value of the money—manifestly a necessary part of the investigation in order to arrive at a satisfactory conclusion. It was assumed that 483 kilogrammes (1,065 pounds) of bread was accepted as the standard of a year's consumption, and in 1846 that quantity would have cost 178fr. 78c. (7l. 3s.). In 1891 the corresponding figures would have been 164fr. 24c. (6l. 11s. 4d.). Reducing this to a time standard, a workman would, on an average, have had to labor from eighty-five to ninety-five days in 1846 to obtain a year's supply of bread, whilst in 1891, forty-five days' work would have sufficed for the purpose as a maximum, and forty days would have been the average. Other things, of course, are required besides bread, and a typical case of a miner is quoted as an illustration. The dietary consists of 100 kilogrammes (220.4 pounds) of wheat-bread, 50 kilogrammes (110.2 pounds) of potatoes, 10 kilogrammes (22 pounds) of beef, 30 kilogrammes (66.1 pounds) of milk, 7 kilogrammes (15.4 pounds) of butter, and 2 kilogrammes (4.4 pounds) of coffee. In 1891, with wages at 4fr. 37c. per diem, about nineteen and a third days' work would have to be put in to produce the money needed to purchase the quantities of provisions enumerated. With the rate of pay current in 1853, which was 2fr. 40c. (1s. 11d.), the workman would have to labor 33.67 days. Further consideration shows that if the purchasing power of wages be taken as the standard of 100 in 1853, in 1886 it had risen to 125.12, and in 1891 to 142.56. The salient facts elicited by the inquiry have been set forth in *Reform Sociale* in a series of articles contributed by M. Armand Julin, from which—as recently stated in the *Times*—"the very important conclusion is to be derived that the assertions of the Socialists as to the increasing misery of the working-classes are unfounded. In Belgium certainly the evidence is conclusive that the poor are growing richer and not poorer." Before the latter assumption could be accepted as actually definite it would be required to know whether the constancy of work has not diminished. Probably there has been, at any rate, no marked falling off in this respect, but as we have not the original report before us, we do not know whether the point received due attention. It should be stated that the returns of wages were verified by the scrutiny of both workmen and employers, and were only accepted when declared correct by both. — *Engineering*.

SOME CURIOUS ORIGINS OF FIRE.—A suggestive list of unusual and curiously-caused fires comes from a German source. It includes a factory fire which was traced to a railway truck, an over-heated axle having thrown a car from the track and set fire to a petroleum tank from which the flames spread to the building. An instance is given in which a bucket of greasy waste was ignited by the friction of a belt which sagged against it. In a harmless case of spontaneous ignition of oily waste, this material, with some wood chips, had been thrown into the fire-box of an idle locomotive, shortly after which the workmen were surprised by the blowing off of steam by the engine. Another fire was due to oily waste in a manner which could not well be foreseen: only heavy mineral oils were used, and a place was provided for the waste, but a cockchafer crawled from the receptacle directly to a gas-jet, when the creature was quickly consumed, and the oily cotton filaments adhering to its body spread the fire. Well-known incendiaries are photographic and other lenses, which act as burning-glasses, and bright tin plates, which serve as concave mirrors. A plumber's exploit consisted in applying the flame-test to a newly-made joint in a gas-pipe, then covering the pipe without noticing a small blue flame, which was discovered some six weeks afterward, when the leak had become somewhat enlarged. A nail glanced from a carpenter's hammer

into the conveyor of raw material in a jute factory, rubbed against the drum and produced a spark, which set fire to the place. A flood burned one factory by causing a pile of iron filings to oxidize so rapidly as to become intensely heated. A stream from the firemen's hose started a second fire in New York while putting out one in a small building, a neighboring shed, containing quicklime, having been penetrated by the water. — *Exchange*.

A SEEMING NON-SEQUITOR.—Rummaging among the contents of old stalls and hunting for rare editions has been for centuries so favorite a pursuit with Frenchmen that the verb *bouquiner* and the noun *bouquineur* had, of necessity, to be added to the language; and it is safe to presume that in no other part of the world does the bibliophile carry his mania to such extremes as he does to-day in France. One famous collector of the last century offered the best proof of this assertion. He had accumulated so many books in his house that it became absolutely crammed full with them. Circumstances demanded his removal to a different part of the city than that in which he was residing, but he was afraid to remove his literary treasures lest the roof and walls of the house might subside in consequence. So, dire necessity kept him bound in his old quarters. At his death, his library, which had been bequeathed to a Jesuit college, was removed by his executors with the utmost caution and care. The front of his late dwelling was firmly shored up with timbers, and then, after an entire day of unremitting labor, the labor of years was wheeled off to its destination by the aid of no less than six large wagons. — *The Collector*.

TRADE SURVEYS

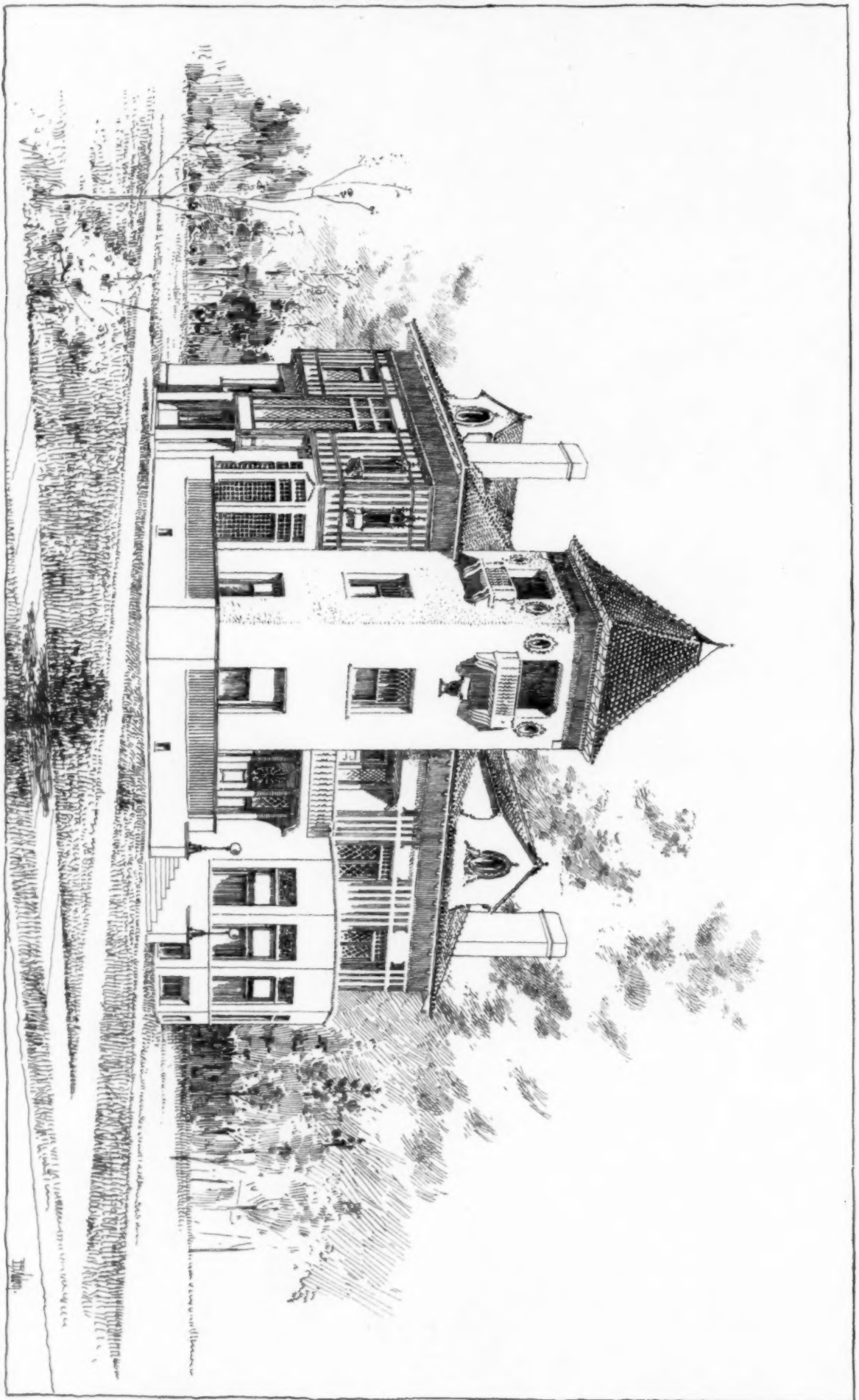
It is a fact that a great deal depends upon the character and meaning of the incoming president's inaugural address. It is seldom that so much hangs upon the mere utterances of an individual. If the manufacturing public is satisfied with what is said at Washington on March 4th, there will be a larger volume of business done soon after; if not, the same hesitating, hand-to-mouth policy will be pursued as has been for months past. The point in all this anxiety is: Will a spirit of hostility pervade future legislation? In business circles, East and West, there is a feeling that the change in administration is not to be feared in any manner; that, even were there a disposition to run counter to former economic policies, it will be practically impossible to do so; and that the early utterances of those whose privilege and duty it is to speak for the new political powers will be of a character to convince all that no harm or prejudice will be suffered by those industries which rely upon careful handling by the Government. The political action of the incoming administration has been pretty thoroughly discounted, or, at least, anticipated. The second month of the year has developed nothing of importance. Cautious procedure is apparent on all sides. Business men are afraid of big stocks. Manufacturers cannot be prevailed upon to run into large or long contracts for raw material. Storekeepers and traders, big and little, buy in small lots, trust as little as possible, and pay their debts with the greatest possible promptitude. As nearly as can be ascertained, the book-account indebtedness of the country was less at the opening of the year than ever before, considering volume of business done. Bank people say that "paper" is taken up with promptness, and that less than usual is carried over in renewals; that is, the country is learning to be economical, frugal and exact in its dealings. The volume of insolvency is not frightful among the exchangers of values. Frequent settlements are the rule. Jobbers do less urging upon traders to pile up goods; in short, jobbers and retailers now study each other's interests. Store-keeping is becoming more of a profession, and it is studied in its details, to the advantage of both sides. There is much to be said on this subject of a pleasing nature, and the progress made in the art of legitimate and safe dealing is certainly creditable to reason and experience. The ability of buyers to pay is now scanned carefully, and their credit is determined thereby. In this respect competition has declined, and decent traders in all channels have a better chance. The reports from all sections and all interests for the past week indicate a holding back. The volume of business has not increased. Railroad traffic is at a standstill. Freight-rates are maintained. Congressional legislation in pooling interests will probably be denied, though public sentiment, could it be sounded, might be found favorable to a certain carefully-measured liberality in this matter. In the building interests, quite a number of contracts have just been made for brick, which seems to be advancing at certain points, though the authorities consulted give no reason for the stronger prices, except that stocks were exhausted in several markets last fall. Cements have increased in stock. Lath, shingle, slate are also in large stock in primary and secondary hands, the manufacturers having decided to enter upon the spring trade with supplies ample for any probable demand. This means lower prices, should building operations be checked. Lumber stocks will be somewhat larger than a year ago, if lumber authorities can be accepted. A great many new mills have been built, and old ones enlarged, especially in the yellow-pine belt. In iron and steel, large orders were placed last week, and this for rails and ship-building purposes. In agricultural-implement industries, an impulse has been given to trade by a reported scarcity of equipments. The good prices realized on agricultural products, and the prospects for a greater export demand, are having the effect of expanding the agricultural area, or, rather, are strengthening the purpose of the farming interests to plant and sow more land. The distribution of bread-stuffs has been all that could be desired by all excepting speculative interests, and in the Gulf States the latest commercial reports are of a satisfactory nature. One feature of our progress deserves especial mention, viz, the extension of short railroads, the building of short steam and trolley lines, and the bringing together of so many people for the more rapid exchange of services. Electrical authorities last week counted up the projected construction of over one hundred lines and systems in as many cities and towns. The electrical engineers themselves say that their facilities are taxed, and that the outlook for work was never better. There are no actual dangers in any quarter. Rumors of labor troubles are rife on certain lines of railway, but the railway managers will surprise the public if they have occasion to show what they can do in meeting strikes. The month of February will probably pass without special incident, but the foundation has been already laid for an enormous business in 1893. Whether it will be done at the present low range of prices is the question merchants and manufacturers, big and little, would like to know.

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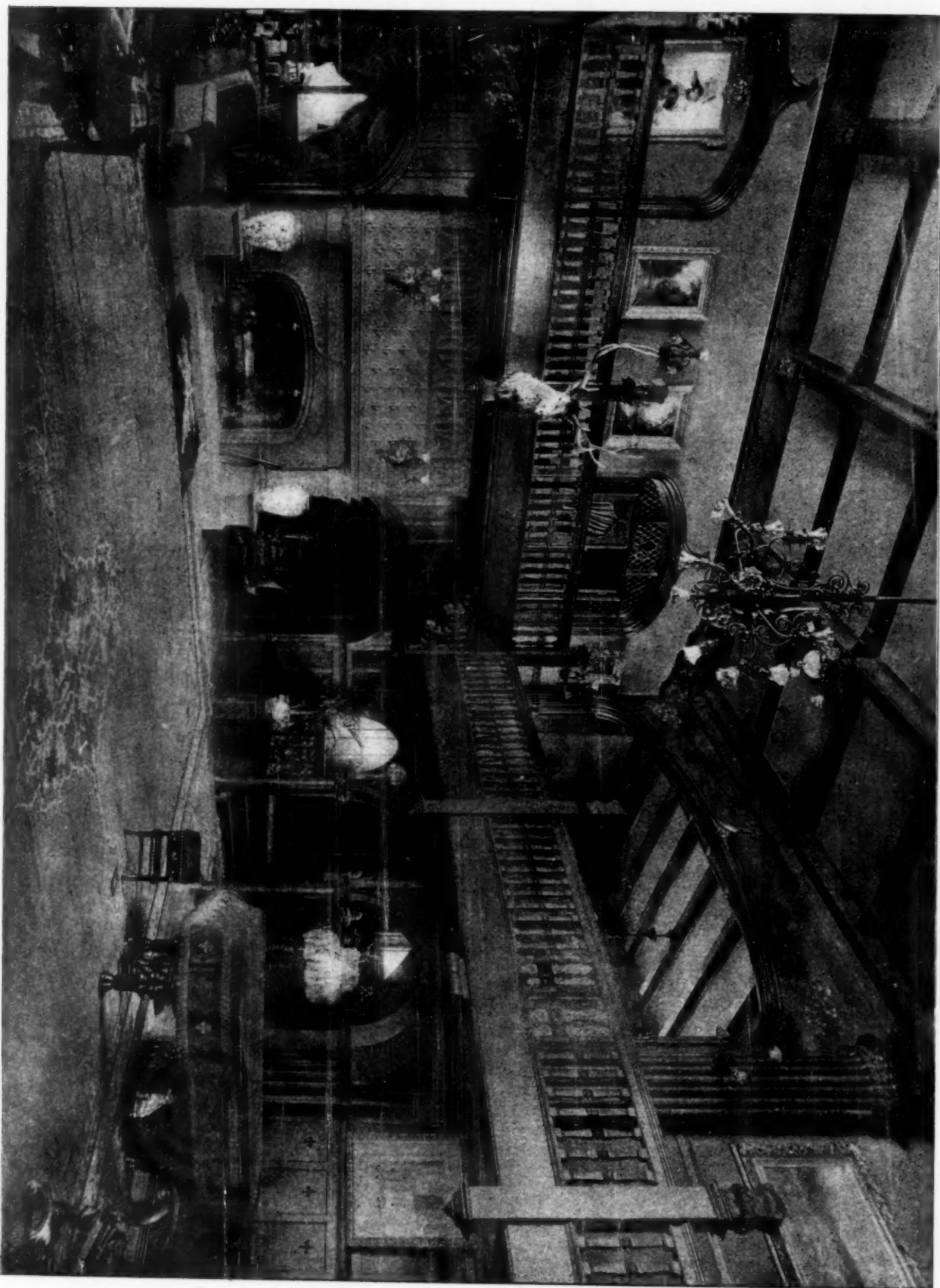
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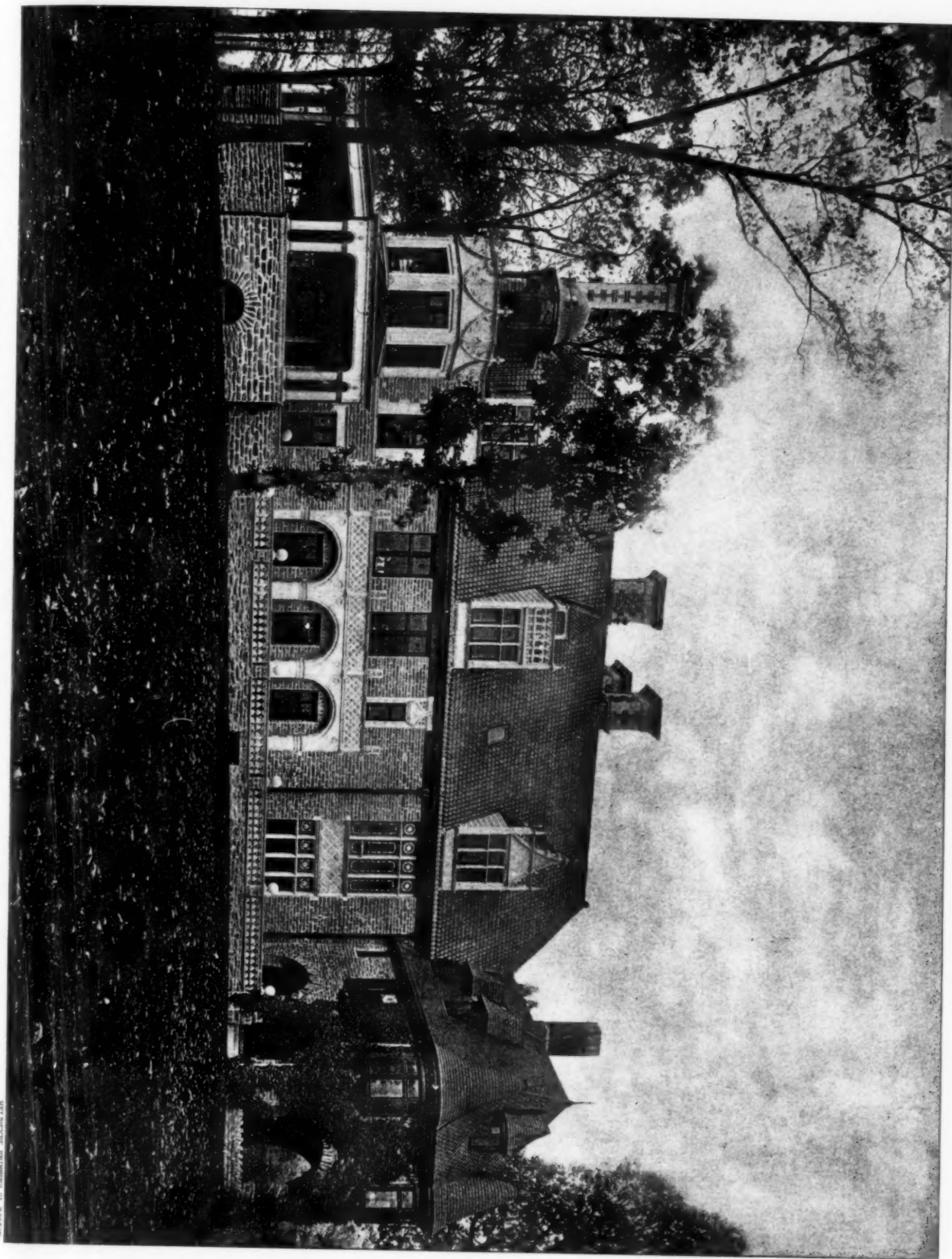
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RENTAL PRICES IN BOSTON

HOUSE AT CYNWYD, PA.

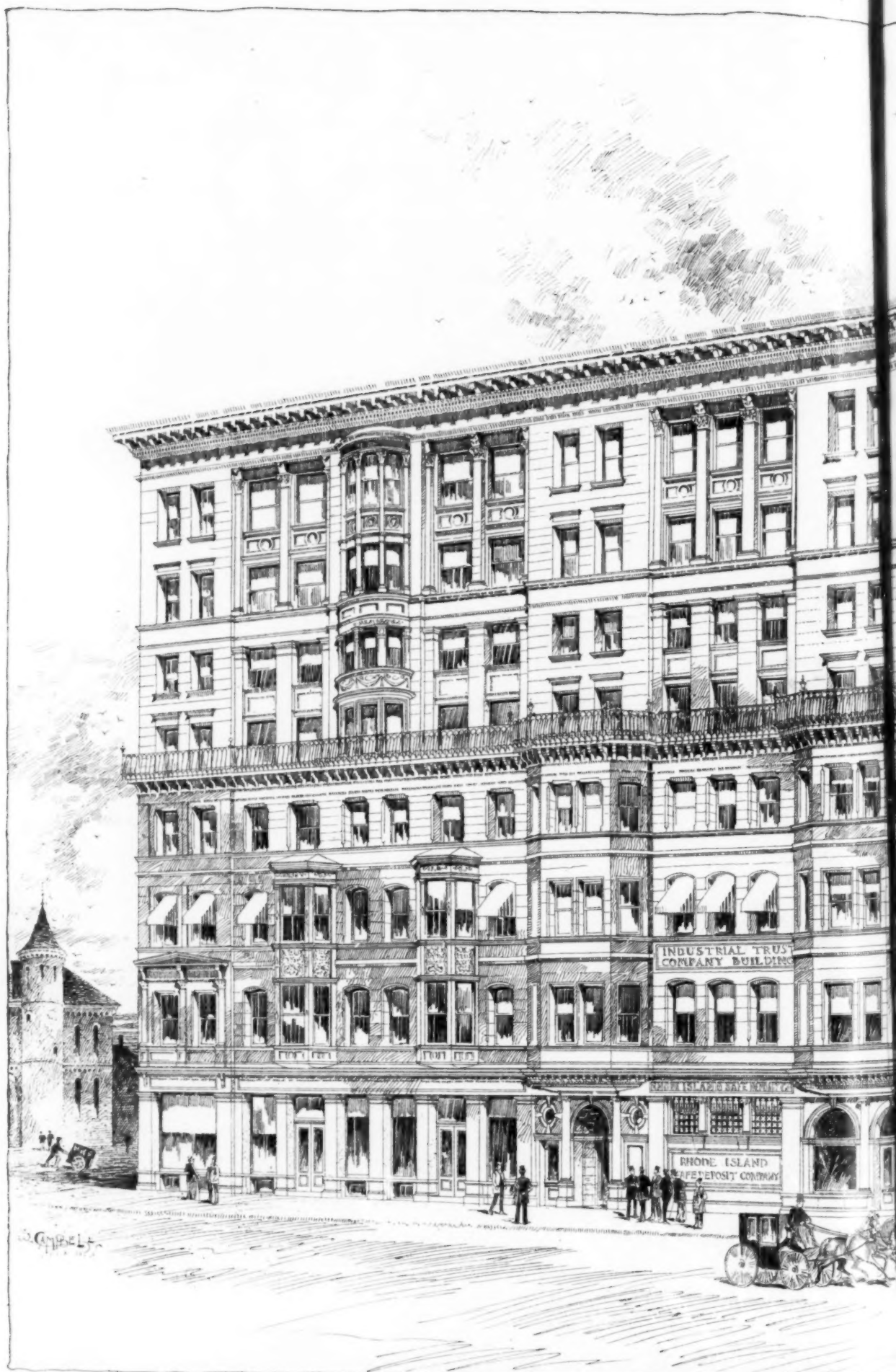


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