THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. III.] Copyright, 1878, JAMES R. OSGOOD & CO. [NO. 112.

BOSTON, FEBRUARY 16, 1878.

CONTENTS.

THE appointment of Mr. William W. Story as one of the nine Expert Commissioners at the Paris Exhibition is one of the good selections of the Executive. No American is better qualified by cultivation, experience, position, and familiarity with European languages and customs, and personal acquaintance with men whom he will be called on to meet there. All these things tell — much more than the politicians imagine who are ready to send the first "worker" who comes to them with a claim to represent us abroad — in giving position and efficiency to those who have to take charge of our interests among foreigners, as well as in doing credit to those who send them. There is no department of the Exhibition in which they will tell more than in the fine arts, and none for which it would have been easier to find an incompetent commissioner. No doubt Mr. Story will do us credit in this department: whether our exhibit will do so, remains to be seen. A sub-committee on art has been organized in New York, of which Ex-Gov. Morgan is chairman, and Mr. J. W. Pinchot is secretary. Mr. Pinchot has been highly commended for good service in the fine-art department at the Philadelphia Exhibition. The committee, without waiting the tardy movements of voluntary contributors, and possibly with a shrewd desire to secure a vantage-ground from which they can fulfil the necessary duty of selection, and of rejection of the impracticable contributions which are sure to come whether suitable ones do or not, have sent requests for pictures to a large number of artists, some fifty or sixty of whom have already promised to exhibit. They have wisely determined to have no exhibition of the pictures before they are sent to Paris. We have not yet heard of any serious preparation for an exhibition of architectural drawings. Considering how partial and inadequate the display was at Philadelphia, where it was much easier to provide one, it is perhaps not likely that much will be done to secure a good one at Paris. And remembering this last exhibit, we may candidly say, in spite of its good points, that we do not see in it any great encouragement for setting our productions as yet in competition with those of the architects who are likely to be represented in the coming Exhibition; the more so, inasmuch as it is difficult to secure a salutary exclusion, and because it is probable that not a great many of our architectural exhibitors would be there to profit by the comparison.

As for the general prospect of the American exhibit, the Commissioner General hopefully announces that it will be creditable; a word which may be used to mean a variety of things, without any of them being exactly what it says. As a matter of fact it can hardly be expected that after Congress had shirked and boggled over the simple duty of providing for it, till a year or so had slipped away, any thing more than a very slender American display can be got together; we may only hope that the diminution of it will be in quantity and not in quality. The fact that the delay of the Government had left but a very small space in the Exhibition assignable to the United States, will encourage selection; and we are told that there is not nearly room enough in some departments — the machinery for instance — for all that is offered even at this late hour. Two ship-loads of exhibits will sail on the 25th of this month, it is said. The French Government has notified our commissioner that the police of Paris will not be able to furnish protection for the American display, and has recommended that we send a military force for this duty. Unfortunately the standing army of the United States is not large enough to detail a squad of soldiers to mount guard over it, and so the Secretary of the Navy must come to the rescue with the marines.

A SINGULAR accident startled the people of London a short time ago. A large new building on a great thoroughfare, the Haymarket, suddenly fell all to pieces, carrying with it an adjoining house, whose occupant it buried and killed. The building stood at the corner of the Haymarket and Panton Street, was the work of a skilful architect and of a good builder, and apparently of excellent material and workmanship. It was six stories high, of stone and brick, with a considerable front on each street, supported on iron columns and girders, for shops; and at the time it fell, the roof was just going on. No sufficient cause has been established for its fall, about which opinions are divided, some persons imagining that the foundations yielded, others that the mortar was bad, others that the ironwork gave way; but there seems to be no particular evidence for any of these suppositions. What was very singular, the whole building tumbled together into its own cellar, both the walls falling inward, snapping the iron columns squarely like pipe-stems, and twisting the girders, — a fact which suggests that the first giving way may have been in the interior, since buildings are apt to fall towards the part that goes down first. Owing to the way it fell, or because no one was passing, no one was injured except the proprietor of the adjoining house. The English building journals take the occasion to read a warning against the dangers of the modern habits of iron construction; and certainly there is room for it. Setting aside the risks of constructors whose knowledge is not up to the scientific standard of the day, we are engaged — the best of us — in building-experiments as bold and as hazardous as were the men who developed the mediæval cathedrals; and apparently with no more consciousness of it. When we read that a church of the twelfth or thirteenth century fell down within fifty years after it was built, we shake our heads at the unscientific daring of its builders. Yet when we balance a huge building on the ends of a few thin columns, often with no lateral bracing, or next to none, we are using a construction as venturesome as that of the Gothic vault and flying buttress; and all the while we are experimenting with a material of whose ultimate behavior under continued stress our knowledge is as imperfect as was that of the mediæval builders concerning the principles of equilibrium on which their daring structures depended.

ANOTHER accident of a different kind, in London, brings out an example of severer application of law than we are used to here, though perhaps not severer than is wholesome. A Mr. Hackett was building a row of houses in Hackney, when one of them fell and killed a bricklayer. The coroner's inquest showed that the houses had been built with undue haste, and of inferior masonry. The District Surveyor had, while the work was going on, called the attention of the proprietor to the bad quality of the work and material, and had warned him that unless these things were mended he would be likely to find himself some day on trial for manslaughter. The proprietor (although in a singular way he combined the callings of plumber and decorator) disclaimed knowledge of building-materials, in respect to which he confided in his contractor and his clerk of the works. The clerk of the works, being called, perhaps hardly showed himself worthy of so much confidence; for he would not swear that there was concrete in the foundations, though he believed there was, nor could he tell how much loam had been put into the mortar. The coroner's jury brought in an unanimous verdict of

manslaughter against the proprietor, who was committed for trial. It does not appear that any proceedings were taken against the contractor.

The strikes in England and in Massachusetts continue apparently without change, excepting that the carpenters and joiners of London have given notice of their intention to demand the same increase of wages (to tenpence per hour) and the same decrease of time that the stone-masons have been striking for. At the same time the difficulties of the masters seem to be in some degree relieved by their importation of foreign workmen, chiefly from Germany; a resort which the British workmen look upon with truly patriotic disdain, declaring that the German masons cannot do good work. One of the builders, who was summoned before a magistrate a short time ago by a mason who claimed to be paid ninepence per hour, testified that he could get men enough and to spare at wages varying from fourpence to ninepence, from which it may be inferred that the vantage-ground of the strikers is slipping away from them. The work on the new Law Courts is still delayed, and is not up to the time demanded by the contracts. In Massachusetts the Crispin strike goes on. The manufacturers still hold to their position, refusing to deal with or recognize the Order, and insisting on treating with the men individually. A good many non-union men are at work, many having been imported from without; and there has been considerable violence on the part of the strikers. In Lynn, notwithstanding the resolutions against violence passed at the meetings of the Crispins, the disorders have gone so far as to threaten actual riot, and compel the organization of a large special police-force.

The committee appointed by the Underwriters of Chicago to inquire into the burning of Field, Leiter, & Co.'s building have made their report. The stores, it will be remembered, took fire in the garret, where the water from the engines could not reach it, and burned downwards, killing several firemen by the giving way of the staircase. The report is too meagre to give a clear idea of the building, but shows that though combustible enough, it was better protected against fire than most. It was solidly built, the roof covered with metal, was plastered mainly on wire lathing, and protected by iron shutters. It had two tanks under the roof, and stand-pipes with force-pumps and hose: whether there was any water in them or not, we are not told. There was also a Babcock fire-extinguisher on each floor. The interior construction was throughout of wood, excepting for the iron columns that supported the floors. Most of the committee's report is occupied with discussing the cause of the fire, which they ascribe to a defective chimney. This, however, is not the point of general interest, which is the lesson that secondary precautions against fire are entitled to little confidence when there are radical vices of construction. It was, in fact, one of these secondary precautions that did the fatal mischief; for it was one of the iron tanks, breaking away from its supports under the roof, that killed the firemen, and, crushing through the stairs, carried the fire down into the basement. The committee lay a reasonable stress on the danger of building open elevators, which act as fire-flues from top to bottom.

In one of our earlier numbers appeared a communication suggesting the establishment of a new profession, that of "house-physician" or "sanitarian," whose function it should be to examine and prescribe for houses that were out of condition, especially in those matters that affect the health of their occupants, as physicians do for disordered men and women. Such a function has really taken shape among us during the last three or four years, and we find here and there in our large cities a person who has devoted himself to it. But in Edinboro' people have gone a step further, and are forming a co-operative association for this purpose. The need of frequent inspection and frequent alteration of the sanitary appliances of houses, as they are built at present, has attracted general attention; but the cost of consulting an engineer whose standing is such as to command confidence in his opinion is found to be so great that the plan has been set on foot, of organizing an association, with an annual subscription of one guinea, which shall secure to all its members a proper supervision of their houses without additional cost. The association is to maintain a corps of well-educated young engineers, under supervision of a consulting engineer of high standing; and it will be their duty to examine and report upon the dwellings of members once a year, and in special needs whenever they are called upon, giving advice and estimates for any alterations that they think necessary. They would be held to confine themselves to strictly necessary matters, and would be for obvious reasons forbidden to hold any pecuniary interest in patents or appliances which they might prescribe.

THE GEORGIAN HOUSES OF NEW ENGLAND.—II.

[See vol. ii., p. 338.]

The chief beauties of the detail in colonial work arise from its disciplined and almost universal refinement and dignity, as well as the absence of vulgarity or eccentricity even when display is attempted. These virtues, not too common in our days, lend an added charm to it for us. The use of classical detail was universally agreed to, and the orders were naturally used by every carpenter; while so evident are the attractions of its detail, that the various societies of architects, giving voice to the general interest of the profession, are now proposing to sketch the old work with system. In view of this, one naturally inquires whence the information of the old builders came, and whether tradition and copying, as in mediæval times, could have led to such a varied use of Italian *motifs*. One asks whether there was not some more definite source of instruction for these carpenters in a new country; for to find this source might either enhance the value of the sketches, or else render them unnecessary.

The English mansions which Nash and Richardson have sketched for us so thoroughly were of an earlier period than the building days in our country. Longleat, Hatfield, Holland House, and many of those structures which like Longleat were built under Italian care, or, like the others, bore a more or less Italian detail on their mediæval forms,—date from about the time when the Pilgrims landed at Plymouth. Steep gables vie with pediments in these compositions, and mullions and pointed arches stand side by side with the orders. Of such work no examples of moment were raised on our shores, for it was doubtless long before buildings of any pretension were required by a struggling people. But this was not the case with movable objects, and this Jacobean period has been well handed down to us in the many pieces of furniture brought over or made by the early colonists. As is well known, the chairs reputed to have come over in the Mayflower might have laden a fleet, and the New England family that does not possess one or more has feeble claim to aristocratic pretension. The bulbous legs and posts, the ill-formed pediments, and the other details now so much studied, appeared however, in our country, in these forms alone.

But meanwhile Inigo Jones made his two visits to Italy, and, full of enthusiasm for Palladio's work, designed in a pure Italian manner, with well-understood detail. He even added an Italian portico to the noble mediæval cathedral of St. Paul. When he died in 1652, Sir Christopher Wren monopolized all the important English practice, working always with much regard for group and line, and mechanical skill, but with far less care for detail than his predecessor. He died in his turn in 1723. Vanbrugh, Hawksmoor, Gibbs, Campbell, Taylor, Adam, Chambers, such are the more or less familiar names whose work occupied the rest of the century; and the period when our colonial work was rich and interesting is thus included between the lives of Jones and Chambers. Their work is often reflected in it; often it may have been actually their work.

It is the period of rule and method; of aliquot parts, modules, and minutes. True, this discipline is confined to details; for, as in the case of the exteriors of the houses, the plans equally admitted very varied and picturesque effects. These principally regarded the stairs. At the Holmes and Longfellow houses in Cambridge, the front and rear stairs start from opposite ends of the house, and separate again after meeting on a common landing. At the Ladd and another house in Portsmouth, they in different manners wind up in the corner of the larger hall. At the Winslow house in Plymouth, the stair-landing crosses the door opening, and the portion left open above the landing is filled in with twisted balusters.

Yet, while picturesque effects add many charms to the old mansions, their distinguished and refined character still seems owing to careful rules and studied training in the orders and their details; and I find that old libraries furnish the clew to all this, much more than might be supposed. So very many and so carefully prepared are the English works alone on architecture, which appeared in the last century, that while the sketches proposed by the various societies will be most valuable as records of the groups and combinations of old work, as well as studies of interesting details, yet they will hardly cover simple *motifs* not already engraved in these books. I have found a large copy of Batty Langley's classical work in an old loft in New Hampshire;

and while I doubt not that such books were common in the days when our early work was executed, I even think that if studied, existing mantels, cornices, alcoves, etc., would probably be identified in these books.

Mr. Eastlake, in his History of the Gothic Revival, speaks of English works on classical design by Shute in 1563, and Sir Henry Wotton in 1624. These I have not seen; but one can readily see others in our libraries. Gibbs's works, published in 1739, included the engravings of St. Martin's Church in London. Batty and Thomas Langley, besides their Gothic book, which Mr. Eastlake ridicules, also published an excellent classical work, most of the plates in which are dated 1739. Ware's Architecture, which is voluminous, and has many plates of interiors, is dated 1756. Chippendale's book is dated 1762, and gives us furniture in the "most fashionable styles," which were evidently French; and it seems as if Gov. Langdon who built in 1784, or Jeremiah Lee whose house dates from 1768, had perhaps received a copy of this work before the Louis Quinze curves were cut on their great chimney-pieces at Portsmouth and Marblehead. This same Chippendale, whose chairs and tables, or their copies, are frequent in America, besides affecting a French taste, had a fancy for Chinese work, giving us designs for chairs and railings in the Chinese manner. Chairs of this make are to be seen at Portsmouth, and he seems an amusing forerunner to the Queen Anne Japanese designers of to-day. Swan's book follows these others in 1768, with many designs for mantels and other work, and Paine publishes fine plates in 1783; while the third edition of the correct and elegant Sir William Chambers is dated 1791. In 1811 Asher Benjamin published in Charlestown, Mass., the second edition of the "American Builder's Companion," which contains most of the types of cornices, mantels, and other details to be seen about the houses of that date east of the Connecticut river, — such as the Ticknor House on Park Street, the old Franklin Street houses in Boston, and the West Boston church, — while about the same date, on the other side of the water, Thomas Hope published a series of beautiful drawings of furniture, inspired by the discoveries at Spalatro and at Athens, and made familiar to us by the French furniture of the First Empire; and with him the Greek and Roman periods that we are intimate with are foreshadowed.

These books, which are probably but examples of a larger number, indicate how our forefathers obtained their knowledge. They are filled with designs of doors and windows, chimney-pieces, buffets, monuments, clock-cases, *bustos*, girandoles, tables, and chairs. Often the plates are very fine, but they rarely suggest the extreme delicacy and fineness of moulding so characteristic of the real work. Curiously enough however, while ramped rails and turned or carved balusters occur in these books, not one print have I seen of a twisted baluster such as were well-nigh universal in all houses of importance with us at that time. This is not because they were peculiar to this country; indeed, I have supposed ours were largely carved in England, and at any rate I well remember almost identical patterns in London. Why they do not appear in the plates I do not understand, in view of their being the most conspicuous ornament in American work of that time.

Almost all the designing found in these volumes is founded on a study of the orders, which is throughout held as almost synonymous with the study of architecture. Mr. B. Langley thus urges this fact on his hearers: "'Tis a Matter of very great Surprise to me, how any person dare presume to discourage others from the Study thereof, and thereby render them very often less serviceable to the Publick than so many Brutes. But to prevent this Infection from diffusing its poisonous Effluvia's any further," he, in short, peremptorily admonishes his readers to understand the five orders of columns, whose general proportions will not escape their memories "after having practised them about half a Dozen Times."

R. S. PEABODY.

APPLICATIONS OF THE EQUILIBRIUM POLYGON TO DETERMINE THE RE-ACTIONS AT THE SUPPORTS OF ROOF-TRUSSES. — III.

BY JAMES R. WILLETT, A. I. A.

[A paper read before the Civil Engineers' Club of the North-West, Chicago, Sept. 4, 1877.]

FIGURE 8

Illustrates the case of a truss with an arched lower chord or tie-beam. It also shows the effect of adding or subtracting any given amount of horizontal force to each of the supports, such amounts acting in contrary directions.

Diagram (II) is the equilibrium polygon for the set of forces acting on the rafters, and (III) for the set acting on lower chord: they are found as before described. Diagram (IV) is the polygon of forces for the lower set; and the double lines in diagram (V) is that for the upper set. The point Z on the closing line LL^2 (V) is found as before: on this point superimpose the point Z^2 (IV), so that the dotted line OR (V) represents and stands for the line MM^2 (IV). The whole polygon of forces (IV) might now be drawn on OR; but we will omit this, and proceed to show the effect of altering the horizontal components of the re-actions.

Suppose, now, that a horizontal line be drawn through one end of the dotted line OR, and another through the other end. These lines are Mm and M^2m^2. Now, assume any point in either of these lines, and through it draw a line parallel to OR [or, what is the same thing, MM^2 (IV)]; then the portion of this line lying

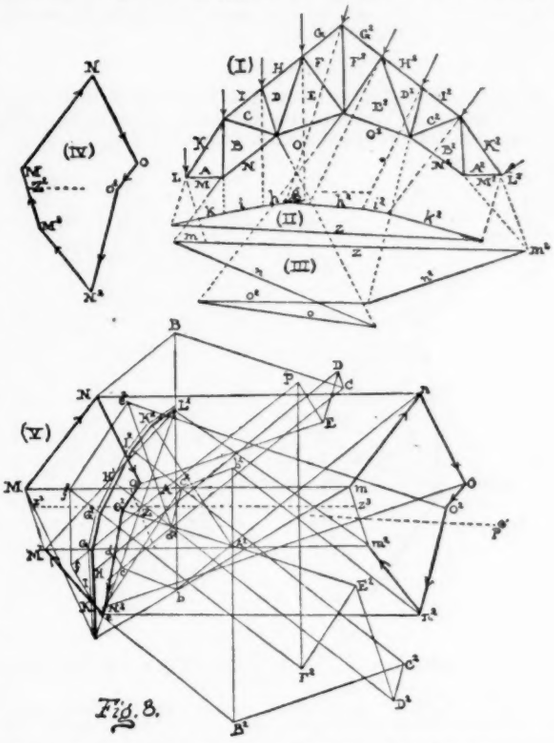


Fig. 8.

between the horizontal lines Mm, M^2m^2, may be taken to represent the closing line MM^2 (IV), and the polygon as shown in (IV) completed.

This is done in (V) in two places; the closing line in one place being represented by MM^2, and in the other by mm^2, and the polygon of forces shown in (IV) completed. Either of these polygons may be taken, and combined with the polygon of forces for the upper set, and the strains on the various members of the truss drawn out in the usual way; the re-actions in the one case being LM and L^2M^2, and in the other Lm and L^2m^2; the letters used in one case being A, B, C, etc., and in the other b, c, etc.

It will be seen that the strains on the members of the truss are different for each position of the polygon corresponding to (IV). Had the lower chord or tie-beam been straight, the strains in all of the members, except the tie-beam, would have been identical, as remarked under the heading of Fig. 4. Indeed, it may be noted that portions of the tie-beam AM and A^2M^2 are horizontal, and that, in the strain diagram, the points A and A^2 are identical for both positions of the forces corresponding to (IV).

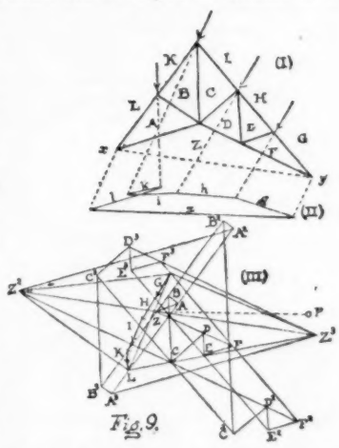


FIGURE 9.

We have previously shown how the horizontal components of the re-actions could be altered, provided that the same amount that was added or subtracted from the re-action at one support was also added or subtracted, in a contrary direction, to the re-action at the other support.

We will now show that this is but a particular statement of a general principle, which is, that, instead of the direction of these additional amounts being necessarily horizontal, they are parallel to the line joining the points of support.

In Fig. 9, for simplicity's sake, the load is taken only on the rafters: (II) is the equilibrium polygon from which the point Z on the closing line LG (II) is found. The strains in the members of the truss are found as shown by LA, AB, BC, KB, etc. Sup-

pose, however, a line Z^2Z^3 be drawn through Z, parallel to xy (I), then any point on this line Z^2Z^3 may be taken to represent Z, and the polygon of strains for that point will close. In the diagram there are three sets of strains shown, — one for the point Z, to which the letters A, B, C, etc., belong; another for Z^2, to which the letters A^2, B^2, C^2, etc., belong; and a third point Z^3, to which the letters A^3, B^3, C^3, etc., belong.

FIGURE 10.

It has been remarked, under the heading of Fig. 6, that, when a truss is loaded on both rafters and tie-beam, the re-actions at the supports which are obtained are not necessarily parallel. If it is

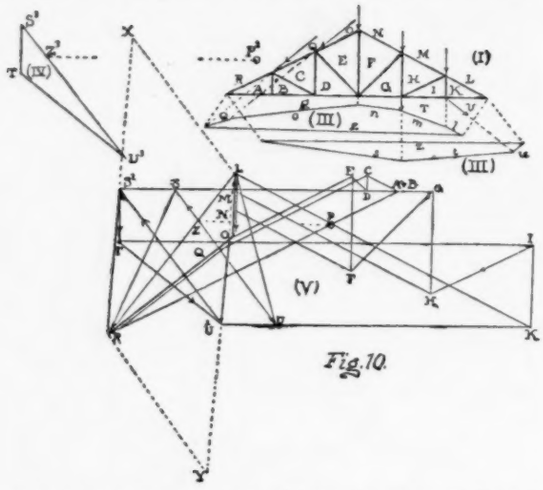


Fig. 10.

desirable to make them so, — and it often, if not generally, is, — this figure describes the method of doing so.

Diagram (II) is the equilibrium polygon for the forces on the rafters; (III) the equilibrium polygon for the forces on the tie-beam; (IV) the polygon of forces along the tie-beam; and the double line in (V) the polygon of forces along the rafters.

The points Z in (V). and Z^3 in (IV), are found as usual. Suppose the closing line S^3U^3 in (IV) is placed so that the point Z^3 is superimposed on Z in (V), then the line SU corresponds and answers for S^3U^3; the re-actions being RS and UL, which are evidently not parallel to each other. Now, if lines S^2G and U^2K be drawn through the points S and U, parallel to the line joining the supports of the truss, which in this case coincides with the tie-beam, then if any point be assumed on either of these two parallel lines, and from it a line parallel to SU be drawn until it meets

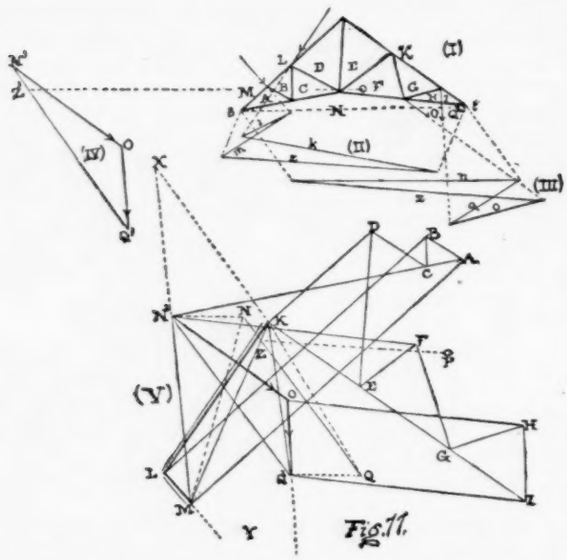


Fig. 11.

the other line, this line may be taken as the closing line of the forces shown in (IV), those forces laid off from it, and the strain diagram completed. The problem now is to find such a point as will cause the re-actions at the supports to be parallel. To find this, lay off the line LX equal and parallel to SU; then draw the line RX; from the point S^2, where this line crosses S^2G, draw S^2U^2 parallel to SU, until it meets U^2K in U^2. then S^2U^2 will be the closing line sought for, and the re-actions RS^2 and U^2L will be parallel.

If the line RY be laid off equal and parallel to SU, and a line drawn from Y to L, then the line YL will be found to cross the line U^2K at the point U^2, thus checking the work.

The complete polygon of forces corresponding to (IV) can now be drawn on S^2U^2, and the strain diagram completed.

FIGURE 11

Is similar to Fig. 10, except that the tie-beam does not coincide with the line *st* joining the points of support. This does not affect the construction, though the lines N^2N and QQ^2, both drawn parallel to st, do not coincide with the lines of the strain diagram, as in the former case.

THE ILLUSTRATIONS.

ST. JOHN'S CHURCH, DUBUQUE, IO. MR. HENRY M. CONGDON, ARCHITECT.

This building is now approaching completion. It is built of native rock, of a light cream-color, relieved by finish of a harder stone not far different in color. The ground floor seats about 600. The site sloping towards the river gives a large Sunday-school room in the basement.

RESIDENCE OF W. F. TUCKER, ESQ., CHICAGO, ILL. MR. J. M. VAN OSDEL, ARCHITECT.

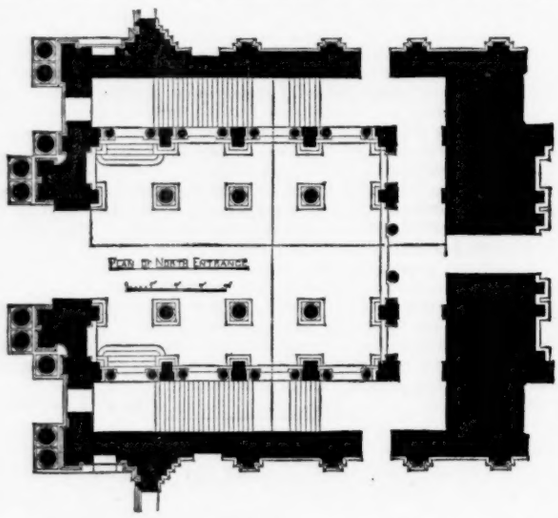
This house, which cost about $45,000, is faced on all sides with Philadelphia brick. The belts, lintels, skewbacks, etc., are of Lemont sandstone. The interior is finished in hard wood.

RESIDENCE OF EDWARD ENGLE, ESQ., CHICAGO, ILL. MESSRS. BURNHAM AND ROOT, ARCHITECTS.

This house, which cost about $15,000, is of Lemont limestone relieved with bands, *voussoirs*, etc., of Columbia stone.

DETAIL OF THE NORTHERN ENTRANCE OF THE NEW CITY HALL, PHILADELPHIA, PENN. MR. J. McARTHUR, JUN., ARCHITECT.

The elevation is made on the line of longitudinal, section, through the northern entrance, and shows the screen behind which are the staircases to the Chambers of Councils. The columns

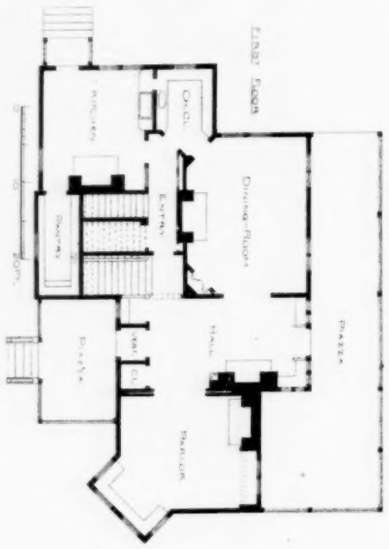


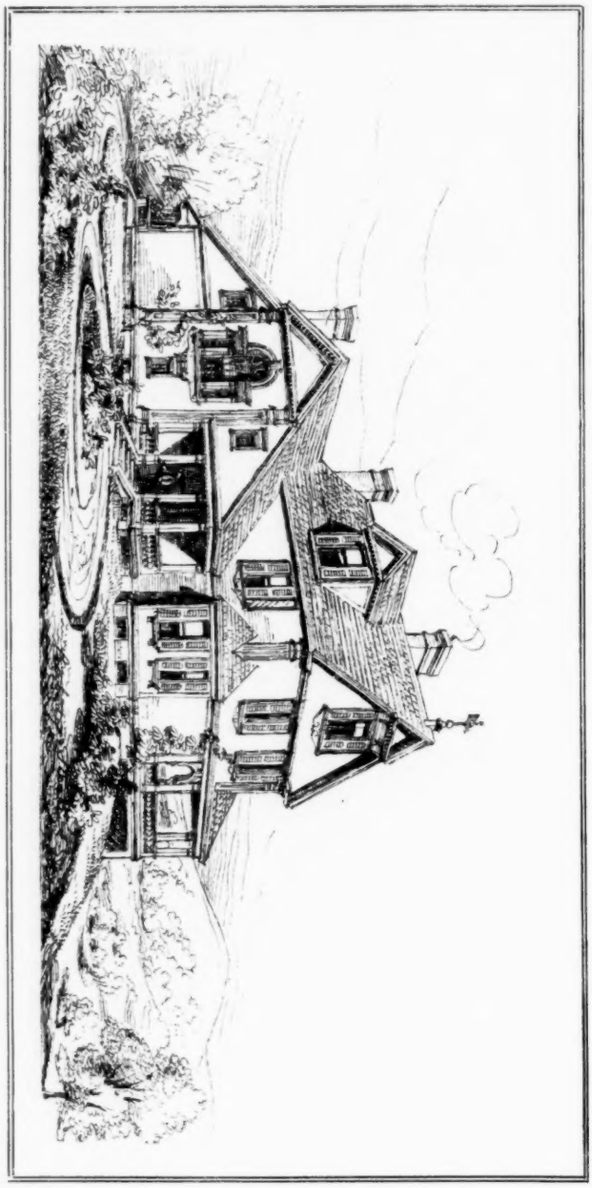
and pilasters, with their pedestals, are of red and blue granite polished; and the walls of the screen, together with all the entablatures, are of Ohio sandstone.

HOUSE AT BRUSH HILL, NEAR BOSTON. MESSRS. PEABODY AND STEARNS, ARCHITECTS.

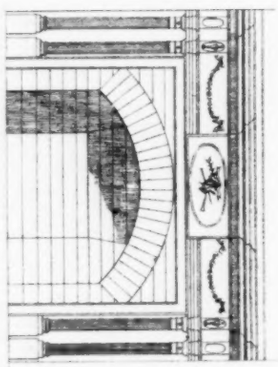
The hall of this house is lined to the ceiling with a wainscot of painted pine, with raised panels. The cupboards, mantels, and staircases are also designed after the style of colonial work.

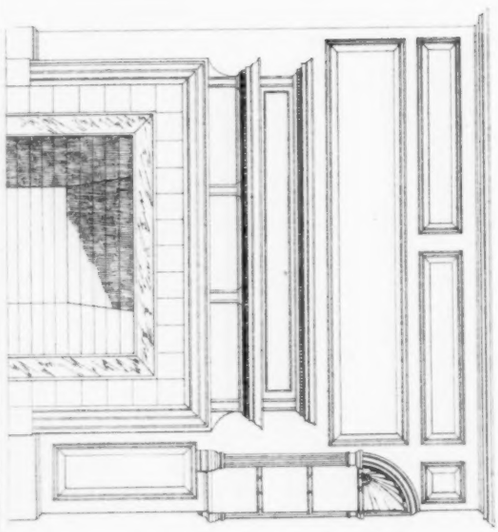
Roofers' Tricks. — Keeper Dugan, of the Jefferson Market Prison, New York, found the rooms on the two upper tiers flooded with water, Feb. 9. It was then discovered that throughout the entire surface of the roof the slates had not been properly lapped, and that consequently the snow had entered the loft, accumulating in large quantities. Complaints of the condition of the prison had been made to the Commissioner of Public Works from time to time, but had received no attention.

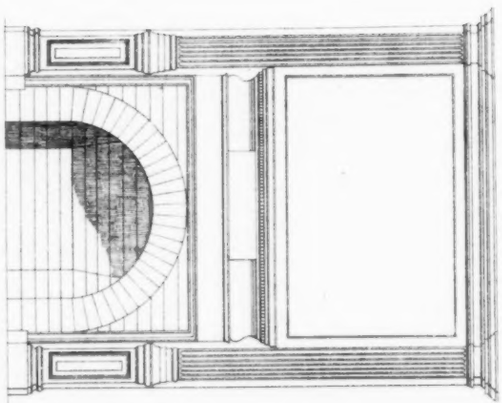


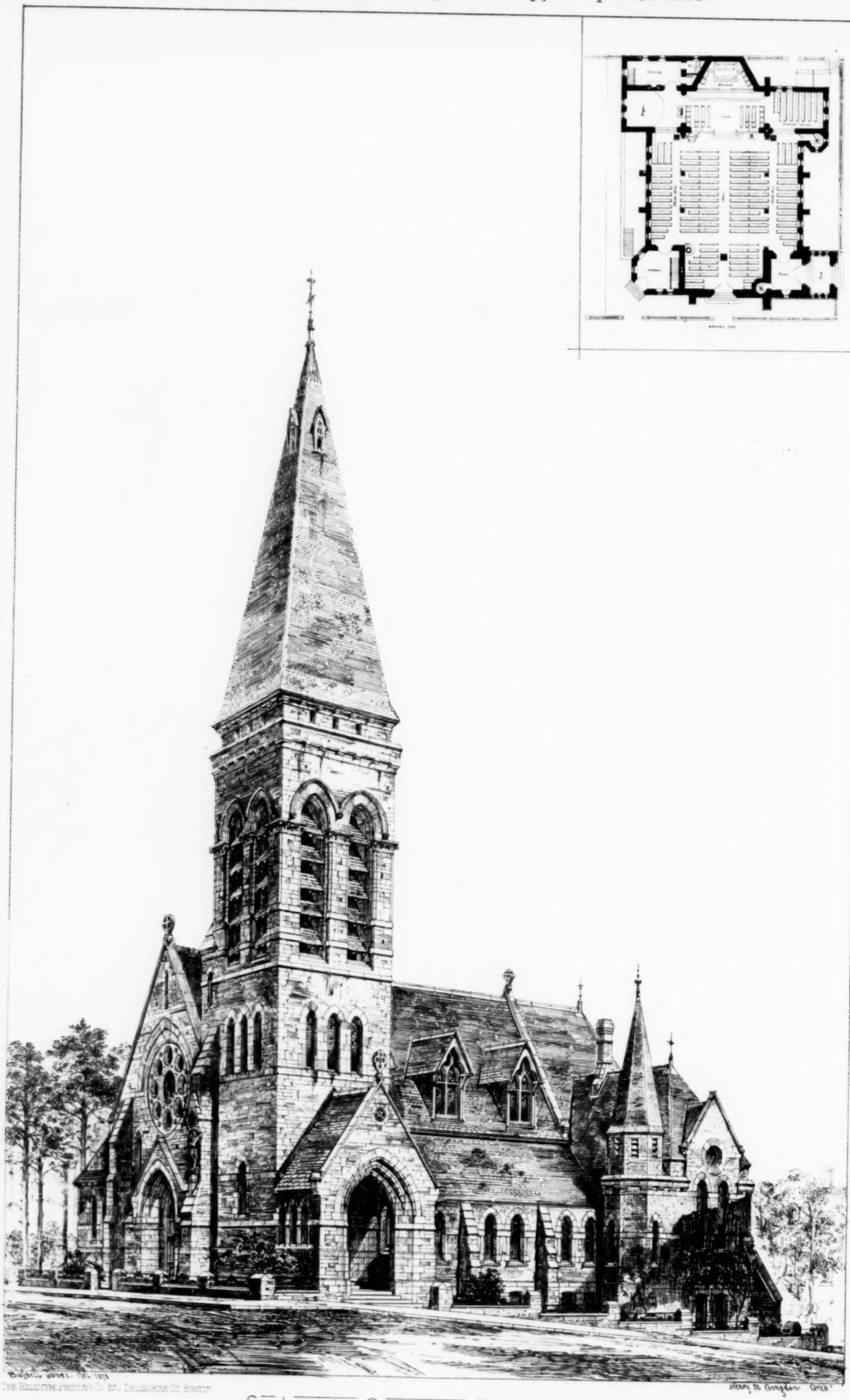


HOUSE ON BRUSH HILL, MASS.
PEABODY & STEARNS, ARCHTS.

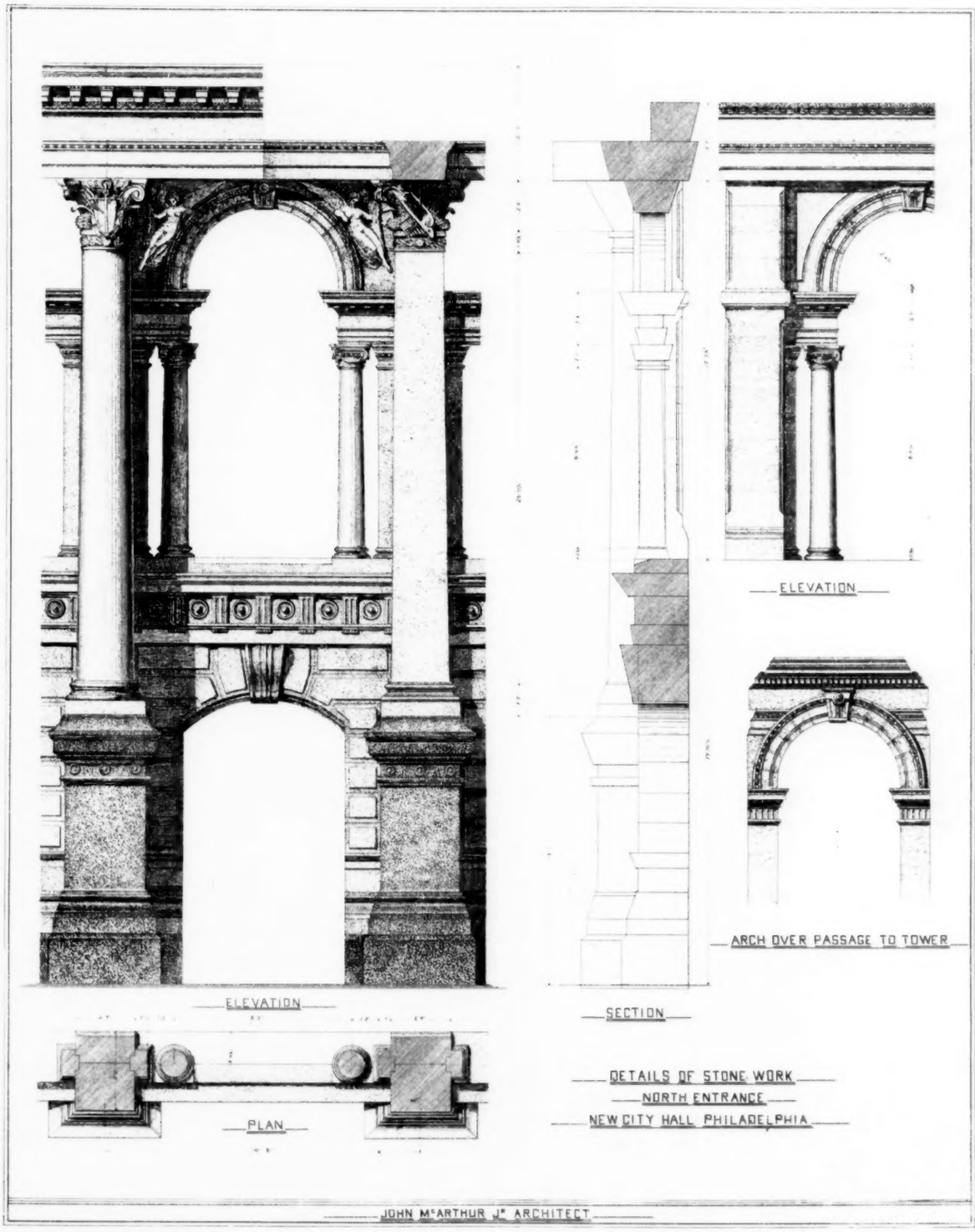








— ST JOHN'S CHURCH, DUBUQUE, IA. —



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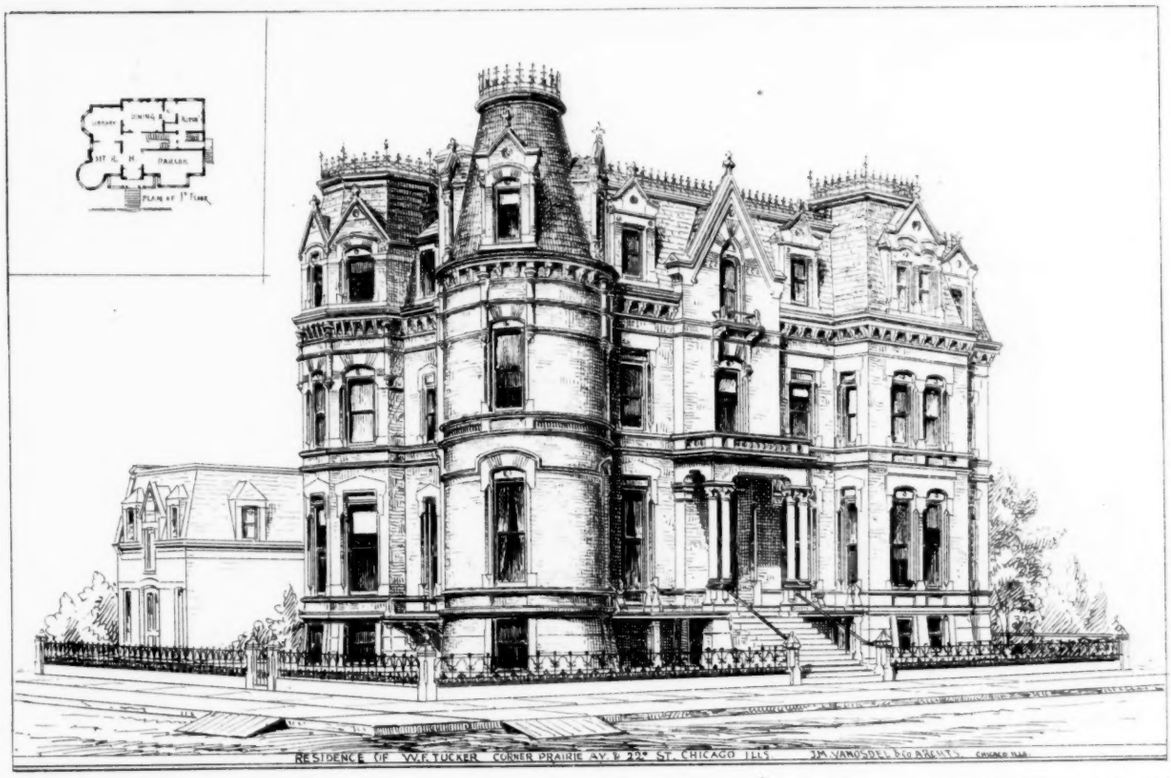

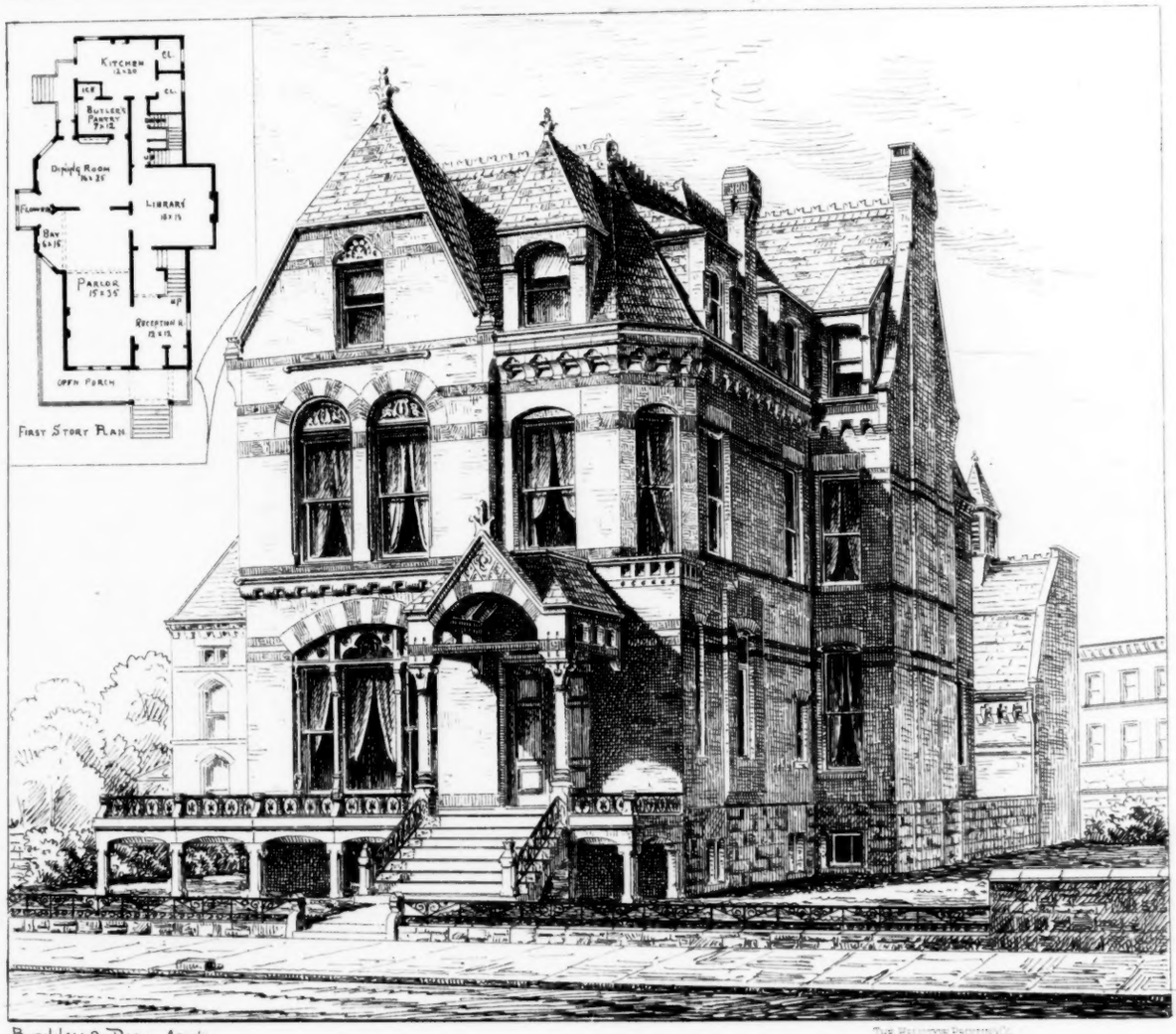

BURNHAM & ROOT ARCHTS

RESIDENCE OF EDWARD ENGLE ESQ

BOOK NOTICE.[1]

THIS is a book, of a kind of which there are many, that aims to strike midway between a complete treatise and a manual of rules and formulæ, — a thing which we need not say it is very difficult to do successfully. It takes up the whole subject of heating and ventilating buildings, — with what succinctness, necessary in a 12mo volume of eighty odd pages, the reader may judge. There is a chapter on general principles of ventilation by exhaust and supply, radiation direct and indirect, and currents of air; one on the vitiation of air and the supply of fresh air, its flow in ducts and the means of moving it; on the production and transmission of heat; on heating by water and steam, with size of pipes, circulation, grates and boilers; on the humidity of air, and tension of vapor. The book gives a number of tables and a great many formulæ for practical use; but chiefly of a technical kind, taken apparently from various sources, and more or less from Peclet, correctly given, as far as we have had time to examine them, except for some typographical errors which seem to show want of care in proof-reading. These are strung together by discussions which are necessarily very brief and comprehensive, — too much so to be always clear, — and which are liable to the objection that always waits on such efforts, that they are unnecessary to those who understand the subject, and to those who do not, they give rise to more questions than they answer. The examples given and solved are of practical application, and with the formulæ ought to be of service to those who have similar problems to deal with, and are not afraid of the necessary figures.

AMERICAN INSTITUTE OF ARCHITECTS.

BOSTON CHAPTER.

THERE having been no quorum at the regular monthly meeting on the 1st of February, by reason of the severe storm, a special meeting was held at the Institute of Technology, on the evening of Friday, Feb. 8; Mr. John H. Sturgis, Vice-President, in the chair.

After a discussion raised by the Committee on Elections regarding the powers of that committee, Mr. Van Brunt proceeded to read a paper on "The Growth of the Conscientious Spirit in the Arts of Decoration."

The object of this paper was to prove that the accumulation, classification, and analysis of precedents in art, for which the last twenty-five years had been especially remarkable, had imposed upon the artist certain duties and responsibilities hitherto unknown; that a self-conscious element had been introduced into modern design by the necessity of making choice among various styles; that this necessity implied, on the part of the artist, self-justification, self-denial, analysis, and, in general, conscientiousness. The function of the older architects was confined to the consistent development of a certain set of forms. Their business was to assist in the growth of a style; in this work their individuality was lost. The old architecture was rather a growth than a creation: the new architecture must be rather a creation than a growth. Hence modern monuments are permeated with an intense personality. The responsibilities of the modern architect are not satisfied by skill, ingenuity, invention, and the other qualities which sufficed for our ancestors: he needs also the learning and spirit of research implied by knowledge of precedent; he needs also the spirit of analysis and discussion necessary to enable him to make proper and judicious use of such precedent.

These statements were illustrated by contrasting with our own methods of design those of the Greeks and Romans, the mediæval artists and the Japanese, and by drawing attention to the fact that from the nature of the case, but few names of architects are preserved to us from ancient times, and these names are shadowy and uncertain.

He concluded by saying that our present conditions of life must give to art in all its forms certain distinctive characteristics. These conditions involve the establishment of principles, and not forms, as standards of excellent work; they make forms the language, and not the end, of design; and they inculcate the enlargement and enrichment of this language by the study of nature and of all antecedent arts, to the end that we may express our thoughts in art as we would in literature, with an elegance, precision, and completeness, commensurate with our larger opportunities and our greater resources. Modern architecture has hitherto concerned itself mainly with the parts of speech, and given us exercises in grammar; now we are prepared to give to art its true function, — to instruct as well as to delight, to appeal to the intellect and heart as well as to the taste, to have larger scope and fuller meaning in all its expressions.

Mr. Ware then made a few remarks substantially in agreement with the views expressed in the paper. He said that the conditions of success are undoubtedly different now from those heretofore existing. This difference consists mainly in the fact that the greater freedom must beget the greater responsibility; hence follows that moral element in design, which, as the paper stated, must needs confer upon modern work its essential characteristics.

Mr. Cummings expressed some doubts whether the conditions of art are so different now from those of earlier times. He instanced especially the architects of the Florentine palaces, in the time of the greatest activity of Italian art, who, notwithstanding the knowledge of conflicting precedent which they must have possessed, pursued their chosen style, without being diverted by their knowledge. This would seem to imply the possession of moral convictions.

Mr. Ware replied that in this respect they did not differ from the architects of a later time, — even so late as the first half of the present century. The Florentine builders could not have been blinder to the mediæval work around them than the moderns have been, until lately, as regards certain phases of precedent art; they could not have despised their Gothic precedents more than the disciples of Ruskin have despised Jones, Gibbs, Hawksmoor, Chambers, and the other architects of the English Renaissance. But the point of contrast between the conditions of art now and formerly is that a more scientific and exact knowledge of the development and significance of all the styles and of their relations with humanity, the more complete and thorough analysis and classification of them, have disarmed our prejudices, and placed us in a judicial attitude regarding them, calling for a more moral and intellectual treatment of design, establishing principles instead of forms.

Mr. Sturgis, the Vice-President, agreed with Mr. Ware that the greater openness of mind in modern times was making us much more catholic in regard to style, and that the new external conditions of life, combined with our insatiable curiosity and thirst for knowledge, were creating among architects a very marked intellectual peculiarity in their work.

Mr. Earle drew attention to the phenomenon regarding style now witnessed in England, where forms of the Early English Renaissance, which until lately were denounced as barbarous, are now rehabilitated in new work. He asked if this does not indicate a want of the conscientious spirit.

Mr. Ware considered that the revival of the Queen Anne and Jacobean styles, so called, is a natural recoil or revolt of the artistic mind from the undue control exercised over it by Pugin and Ruskin and their followers in the interest of the mediæval revival. It seems to be a matter of feeling and impulse justified by the occasion, indicative of a greater catholicity of spirit, and not inconsistent with the moral instincts of the new culture.

After some further conversation, in which Mr. Martin, Mr. Thayer, and Mr. Van Brunt took part, the vote of thanks to Mr. Van Brunt, proposed by Mr. Earle, was passed.

Mr. Ware then called the attention of the meeting to a proposition of Mr. J. T. Clarke, a junior member of the Boston Chapter, to go abroad to prosecute some original researches in the antiquities of Greece, and with a view to enlisting the sympathies of the Chapter, he called upon Mr. Clarke for a detailed statement of his scheme.

Mr. Clarke gave a general statement of the proposed field of his researches in Attica, Delos, Mitylene, Olympia, Phygalia, and Patras, where there are remains still unexplored; he also proposed to visit Corfu, which promised to yield a rich return to careful study.

After some further discussion of the subject, on motion of Mr. Ware it was voted to refer this question to the committee appointed at the last meeting to consider the disposal of certain funds in the hands of the Treasurer, with instructions to report at the next meeting. The meeting then adjourned.

AMERICAN ARCHITECTURE FROM A FRENCH STANDPOINT. — II.

[See vol. II., p. 408.]

Nos. 578, 581, *et seq.* We meet here with a name known in Paris, — Mr. Hunt, who, it is said, studied under M. Lefuel. He displays some schemes for the embellishment of Central Park in New York. These different designs, illustrated here by sepia-drawings, were not carried out. They include complete perspective views and some separate designs, a pedestal, and an equestrian statue. Unfortunately, we look in vain for any general plan, so that it is rather difficult to tell at first sight where such and such drawings belong. We much prefer the same artist's design for the Lenox Library (594 and 596). This is a "project," as we understand it in Europe, with plans, sections, elevations, and a perspective view. Two large rectangular halls are connected by a wide vestibule; in front is a court; and at the rear are apartments between the two staircases, which lead to the upper stories. Such is the plan very simply and pleasingly arranged. The halls contain high galleries, which are reached by winding staircases, concealed within projections, which likewise enclose the hot-air and ventilating flues. The principal elevation shows the court with the two projecting wings. The bays of the first story are built up to half their height; above is a high story embodying the principal

[1] A Manual of Heating and Ventilation, in their Practical Application, for the Use of Engineers and Architects; embracing a Series of Tables and Formulas for Dimensions of Heating, Flow and Return Pipes, for Steam and Water Boilers, Flues, etc. By F. Schumann, C.E., United States Treasury Department, Corresponding Member of the American Institute of Architects, Author of "Formulas and Tables for Architects and Engineers." New York: D. Van Nostrand, publisher, 23 Murray and 27 Warren Streets. 1877.

feature, — three wide arches supported by columns; and above this, forming an attic, is a third story. Each wing is crowned by a pediment with a bust. The design is simple and striking.

Mr. Hunt also exhibits the photograph of a cast-iron store-front. It is Moorish in style, and not unpleasing in aspect. I mention once more, by the same artist, a drawing for the New York *Tribune* building. This is one of those whimsical constructions now the mode in New York, and which, it is to be feared, will have but too much success in the United States. What I am about to say may seem like a jest; but builders here vie in overtopping each other. When I shall have told you that the compound of brick and stone in question includes nine stories, that it is flanked by a tower which has thirteen, and that above this is a very high steep roof, you will admit the justice of my statement.[1] The monument is not pleasing: red bricks intersected by lines of black form a kind of textile design, which is pierced by a multitude of windows. Mr. Hunt was a member of the American jury in the architectural section, and was consequently out of competition.

Mr. Fernbach (600 *et seq*) seems to me one of the architects of most mark represented at the exhibition. His drawings are very well and carefully made; and his buildings seem to be perfectly adapted to their purposes, which is a very rare thing here. Next to a synagogue built on Lexington Avenue, New York, the motive of whose façade is very simple, he displays a building for an insurance company at Philadelphia. This is certainly one of the most happily conceived buildings in the city. An effective and well-studied view of a balcony and a perspective view of the staircase accompany a perspective drawing of the façade. Mr. Fernbach also shows two other structures built at New York: a drawing for a German bank, good in style, but not equal to the Philadelphia building, and a photograph of a German newspaper office [the *Staats-Zeitung*]. The general aspect of these buildings is severe. Mr. Fernbach received a medal.

Mr. Post (608 *et seq.*) also fills a large space in the catalogue; and his display, without offering the studious qualities of the preceding, is not wanting in interest. His chief production is the building for the Western Union Telegraph Company at New York. This brick colossus, completed scarcely two and a half years ago, is one of the most important monuments of the city. The lower division includes the ground floor and the story above. The principal door, flanked by two marble columns on each side, is crowned by a balcony, at the corners of which stand two bronze statues. The main body includes at first but four stories, above which is an enormous cornice with a balcony. At this height we are but half way up the building. From the balcony another structure rises. A high story serves as a base for immense roofs containing three additional stories. Finally, crowning the whole, comes a tower with a clock, and above this an octagonal roof surmounted by a platform, and carrying a flagstaff. The general effect is heavy, and far from elegant; but we feel that this colossus might well shelter a whole world. It is, in fact, one of those industrial barracks which replace in this country, perhaps advantageously in the general embellishment of a city, the military barracks of our own country. Mr. Post exhibits in addition the *Evening Post* building, which is also of the barrack species; and a perspective view of a hospital.

Under Nos. 553 to 564 is a series of photographs of churches of only secondary interest. The author, Mr. Richard M. Upjohn of New York, who received a medal, also exhibits under No. 566, a drawing for the State House at Hartford. We find in this last building a strange medley of styles and of schools. Turrets resting on very short columns, which are themselves placed over classic Corinthian columns, a dome with a Gothic lantern, and the like, give to the building an air which recalls the drawings of Gustave Doré. Steep roofs and peaked dormers produce a chaos. Mr. Upjohn has a large practice; and in my opinion, the sanction of his example may, I venture to say, have a mischievous influence upon young New York architects.

From 623 to 629 are to be found, perhaps, the most curious drawings of the exhibition, and which may serve as specimens [Why? — *Eds. Am. Architect*] of American architecture. Notwithstanding the good intentions of the critic, it is impossible not to declare these drawings bad as regards both rendering and composition. They yet give, I regret to say, the true note of the present architecture of the country. The construction is of wood and zinc; and in the whole composition there is neither method, plan, nor consistency. The windows are placed hap-hazard; the roofs are tumbled together fantastically; here a turret, there a projecting gallery; here a part recessed, there another brought forward; all this in the most purposeless fashion. It is the most complete disorder. The chief of these drawings is a design for a hotel at Santa Barbara, Cal. Imagine an immense barrack of five stories. Upon the sidewalk in front stand wooden posts reaching to the third story, and carrying a wooden roof forming a veranda, which puts the whole third story in shadow. At the four angles are four pavilions of two additional stories, making seven, with roofs of two stories more, making nine. Cover the whole with steep roofs, sprinkle here and there flagstaffs with waving pennons, and you will have an idea of the general effect. If I dwell at length on this design, it is because it seems to have met with some approval.

Under Nos. 636 to 642 come a series of churches, the most successful of which are Mr. Potter's. The arrangements are greatly at fault. No. 638 is especially distinguished for a craving after complications, fantastic clusters of roofs and the like.

The library of Messrs. Potter and Robertson is more simple. If we except the singular arrangement of the roofs, the effect is agreeable. One feels in Mr. Potter's designs an attempt to deviate from the customary paths, and an effort after originality.

Mr. LeBrun exhibits (678) the New York Masonic Temple. This building which cost, it is said, five million dollars, is yet very simply arranged, and is not without a certain grandeur of style. The proportions are judiciously studied; no excessively steep roofs, no pretentious endeavors, no whimseys; the whole is praiseworthy, and indicates a serious and practical spirit. The building, to tell the truth, has rather the air of a palace than of a temple. For that matter, the American Free Masons form a rich and powerful body, and can afford palaces. The Masonic Hall in Philadelphia, for example, which is of granite, cost four million dollars.

Messrs. Gambrill and Richardson are artists who in their remarkable pen-and-ink drawings (681 *et seq.*) seek rather a picturesque rendering than serious architectural qualities. Nevertheless their display is well worth attention. There is great originality in the churches and court-houses which they show us. Notwithstanding many turrets and steep roofs, it is felt that their designs are thoroughly studied.

Mr. Pohl (Nos. 704 *et seq.*) exhibits a scheme for the Universal Exhibition. The building, which consists of seven parallel galleries lighted from the top, is wanting in simplicity of detail. In appearance it is heavy, and would have missed to a very great degree the lightness and elegance of the main building as actually built. Mr. Pohl is a German, and studied at Berlin.

Mr. Fairfax (711 *et seq.*) exhibits a scheme which secured him a reward on the occasion of the competition for the exhibition buildings. His design is remarkable; and that it was not accepted is probably because the committee shrank from too great an expense. The drawings are on too small a scale to enable one to properly judge of the details.

Nos. 721 to 751. Messrs. Schwarzmann and Kafka display side by side a collection of drawings, among which are the Memorial Hall and Horticultural Hall of the Philadelphia Exhibition. Mr. Kafka, a pupil of the Munich school, and who shares its merits and failings, had already appeared at Vienna in 1873. He exhibits here a design for a *casino*, which was awarded a prize there. Some villas in the German style and interior decorations for houses complete this display, which is one of the best. Messrs. Schwarzmann and Kafka built most of the principal buildings upon the grounds of the Philadelphia Exhibition. These structures are in general rather simply arranged; but they would have contributed something of monotony to the general effect, had there not been a certain number of other buildings to vigorously interpose, and break this uniformity of ornamentation. These gentlemen received a medal.

I will finish by mentioning the exhibition by the United States Government in its special building, of drawings of the different public buildings of Washington. In general, these monuments are known, except, indeed, the new building for the War Department, an immense palace placed next the White House in an admirable situation. It is embellished with colonnades; and, seen from the Potomac, ought to offer a rather imposing appearance. It is nevertheless open to the reproach of a lack of originality in detail; the different stories are too much alike. As to the interior disposition, which is said to be very good, the absence of a plan naturally prevented me from judging. — M. C. Pictou, in the *Revue Générale de l'Architecture.*

[1] It is well to recall here that ground for building-purposes in New York costs vastly more than in Paris or London; that is to say, probably more than in any city of the world. To the many stories which our correspondent mentions, might be added the stories of cellars. We know at New York a restaurant in the second story of a cellar going down, the kitchen, etc., being below in the third. — *Ed. Revue Général de l'Architecture.*

CORRESPONDENCE.

MORE ABOUT THE DOME. — THE NEW SINGER BUILDING. — DRY-ROT.

Chicago.

Since my last was written some remarkable developments have come to light, relating to the way in which our Court House *half* dome has been contracted for. On the 30th of July last the Board of County Commissioners ordered the architect to contract with P. J. Sexton to build "so much of the dome foundation as was necessary to enclose the building." It will be remembered that the building was well under way and the basement nearly completed at that time. But there was a gap where it had been contemplated to erect the dome, and nothing could be seen but the heads of piles which had been driven during the previous winter. The architect executed the contract by simply writing a letter to the contractor, directing him to go on with the work. The letter, which has now been published, fixed the rates at which the various kinds of work were to be paid for; and among them agreed

to pay eighty cents per cubic foot for dimension stone masonry. The following sentence was also inserted: "All openings to be measured solid." The letter was indorsed by all the members of the late building committee.

When the foundation proper had been completed, it appears that the architect ordered the contractor to stop work, and so informed the board. It now comes out that the order was stolen or suppressed. The architect refused to certify any more bills; but the board ordered the contractor to go on. He did so; and the architect continued to send in certificates, and the board to pay them, until now nearly $50,000 has been paid. In fact, the work was only recently stopped, as I have said before. The architect now certifies that $25,000 more is due; and the building committee have recommended that it be paid. But the board has recommitted the report; and the committee have just concluded that the money is not due. Hence warfare between all the interested parties.

It is now a question for legal heads to determine, as to what amount of work was contemplated in the original order or contract. It will be important to know if a building can be enclosed by completing the foundations for only a part of it. If a gap in one wall only is meant to be "enclosed," is it essential that the enclosing process should go on as long as the wall does, or up to the top of the building? and if a wall is thus to be enclosed, or a whole building, can it be done by constructing "foundations"? Here is a field for architecturo-legal inquiry never before equalled. The question also comes up as to whether the contractor received his instructions from the committee or the board. If from the former, the contract or order was unlawful, for it is the law that all contracts must be made by authority of the board.

The new building to be erected by the Singer Manufacturing Company on the north-east corner of State and Washington Streets, on the site of Field and Leiter's retail store, which was partly burned, is intended to be a veritably fire-proof business-structure. Had it been only a question of repairing damages caused by fire, there would have been no special object in erecting a new one, as the fifth story and roof only were destroyed. But when an examination was made after the fire, it was discovered that not only the heavy double girders, but nearly all the floor timbers, were rotten to the verge of giving way under their own weight. They were broken in many places by falling objects during the fire, so that it became necessary to prop many of the floors to make it safe for persons to go about. It seems to have been providential that the building took fire. This fact, coupled with evident errors of construction committed during the erection of the building, left no alternative but to rebuild the interior at least. In view also of defects in the foundations of the exterior walls, which gave considerable alarm during their erection, the company concluded to rebuild the whole structure. And in consonance with the custom pursued by this corporation for twenty years (broken only in the instance in question), it determined to erect a fire-proof building. In carrying out this scheme, the architect in charge, Mr. James Van Dyke, who has come from New York for the purpose, has determined to avail himself of the results of recent investigation, and avoid the faults so generally incident to so-called fire-proof building. The task is not an easy one to fulfil; for the question of combustible contents is more serious than combustible building. It is to be a retail store, and may eventually become a wholesale warehouse. Iron beams, girders, and columns will be used throughout; but they with all other constructive ironwork will be fire-proofed by non-conducting materials. Elevators will also be protected from the danger of communicating fire. In the old building there were neither self-acting traps nor enclosed shafts, and three open elevators allowed burning embers to fall from the roof to the basement, causing considerable destruction by fire among the package goods there stored. The underwriters' report on this fire, just presented, reiterates the oft-repeated assertion that "elevators must be provided with automatic doors."

The details of interior arrangement are not yet fully determined, and may not be until a tenant is found. With regard to the exterior, the architect contemplates replacing the first story ironwork, and the stonework of the second, third, and fourth stories. That of the fifth story was so badly burned that most of it will have to be recut. A sixth story will be added, showing a mansard roof on the exterior, but protected inside and out from the effects of fire.

It is decided that Field and Leiter will not re-occupy the building, as they have rented five double stores on Wabash Avenue in the immediate neighborhood. It may be of interest to note, with reference to the prevalence of dry-rot in a building only five years old, that the internal construction of the old building was of iron columns and double girders; that is, the girders consisted of two beams 12 x 14 inches in dimension, placed one on the other, and bolted together. The floor-joists, 4 x 14 inches in size, were let into the upper girder, cut sloping, and rested on the lower girder. This system of floor construction in wide stores has been extensively practised in this city, and has failed in many instances through the prevalence of dry-rot. Already several stores have been found to be in a dangerous condition, and have been reconstructed in consequence. The decay seems to commence between the two girders. Many have been found in this condition. It is greatest at the ends bearing on iron plates, and rapidly spreads through their entire length. It is communicated to the ends of the joists where they are inserted in the girders. The superintendent of buildings has several of the ends of joists from the Singer building which are of the consistency of cork, — genuine examples of dry-rot. It is not found that the beams decay where they are built in walls and in contact with lime mortar. The extent of decay in timber has doubtless been aggravated by the extensive use of green timber during the days of hurried building. Altogether it is a strong argument in favor of the use of iron, which is now cheaper than ever before, and within the reach of many who could not have employed it a few years ago. The prospect of its extensive use in the future, coupled with the recent discovery of its weakness as a fire-resister, points with greater force than ever to the importance of adopting safe methods of constructing fire-resisting ceilings under the beams.

P. S. — Since writing the above, the following lucid opinion on the dome contract has been given by the county attorney: —

The question presented is, Is there any valid contract between the county and P. J. Sexton for the building of the foundation of the county's portion of the Court-House dome?

I find the following resolution in the proceedings of the board, of date July 30, 1877: —

"*Resolved*, That the contractor, P. J. Sexton, be, and he is hereby, instructed to build as much of the foundation of the dome, under the supervision of the architect, as is necessary to enclose the building, subject to the architect's valuation of the same."

In my opinion, the above resolution is binding on the county, provided Sexton did the work directed by the architect, necessary to enclose the building, in a good and workmanlike manner. The consideration to be paid is fixed by the valuation of the architect. Of course, if it should appear that the valuation fixed by the architect is so high as to be exorbitant, and to amount to fraud, then the Board have the right to fix the compensation at what the work is reasonably worth.

The memoranda shown me amount to nothing, except so far as they supplement and are within the provision of the resolution of the Board. The whole matter can be considered without reference to them.

Respectfully, M. R. M. WALLACE, *County Attorney*.

The county attorney has further explained to a reporter, that he has passed simply on the validity of Sexton's contract for the building of the "foundation" of the dome, and nothing more. Whether the contract covered all the work done, was not submitted to him. It seems also that the greater part of the last claim of the contractor is for cut-stone work used in the superstructure under orders of the building-committee.

MAY A CONTRACTOR CLAIM PAYMENT FOR VOLUNTEER ESTIMATES?

HARTFORD, CONN.

AN important case has just been decided in Hartford, before the city court, Judge Sumner on the bench. The case attracts attention because of the precedent which the decision is likely to establish.

A suit was brought against Trinity College by a stone-mason in the city, for so-called services rendered Mr. Kimball, the superintending architect of the new buildings, for estimates upon a portion of the intended work. In the fall of 1874, on the return of the architect from London to this country with plans and detail-drawings, it was found necessary, before accurate estimates were called in, to have approximate figures; and informal invitations were issued to several contractors and builders in the city, with the understanding that when final tenders for the work were called for, they should be invited to compete. The first estimates were rejected by the building committee, early in the following year, when upon examination it was found that to carry out the whole design would involve greater expense than had been supposed. Many important changes and modifications became necessary, as only a portion of the work could be built; and upon the cost of various parts of the work included in the modifications the plaintiff, at his own solicitation, was called on to offer estimates. Estimates of a similar character for stonework were also submitted by non-residents who volunteered their services. Early in April, 1875, a meeting of the college trustees was held, and an appropriation for building made, it being then decided what blocks should be erected. Up to this time and in the interim between the rejection of the first approximate estimates and the meeting of the trustees, it was thought that portions of the dining-hall and chapel would be built; and for estimating on those plans, and for time as above mentioned, the plaintiff brought a suit for the recovery of a bill presented. Plans for the buildings which it was decided to erect were finished and prepared for estimates by the middle of June, at which time invitations were sent out, not only to local contractors and builders, but to parties in New York and elsewhere, and all tenders were called in and opened on the 5th of July; the printed specifications stating that estimates would also be received for the dining-hall, and expressly announcing that the building committee would reserve the right "to reject any or all bids." The contract for light stone (upon which the plaintiff made figures) was awarded to parties out of town.

Failing to receive at the hands of the corporation "justice," so called, the mason, Brabazon by name, had recourse to law, the suit being instituted in December, 1877, and but recently decided. The

claim against the college was for the exorbitant sum of $1,500. This, the plaintiff explained to the court, was but a portion of what was actually due him, which he asserted to be $4,500, or in other words about 2¼ per cent on the cost of the proposed work. The absurdity of the statement is apparent on its face; and if the validity of such a claim were fully established, estimating would at once become a popular and lucrative employment. During the trial some interesting developments were made. As an offset to the statement of the plaintiff regarding the time spent upon estimates for the architect, the diary of the latter was produced in court, and from it was read the daily list of visitors at the office, by means of which the time of the figuring mason was computed. The diary showed that during the months of January, February, and March the plaintiff made twenty calls, half of which were devoted to the work of preparing estimates. Among the witnesses were many prominent local builders and contractors, whose testimony regarding remuneration for estimates showed that it was not customary to make charge for this class of work. The defence was grounded principally on the fact that the plaintiff was not employed by the architect, that his services were volunteered, and that he did not take out accurate bills of quantities, but gave approximate estimates. In three days time other parties completed more accurate estimates than did the plaintiff in the three months in which he was making up his figures. In many instances the plaintiff was asked for figures on different parts of the work, because he was on hand, and time could be saved. Had the architect presumed that charges were to be made for estimates, a building surveyor, whose special duties are the preparation of exact bills of quantities, could have been employed at an established rate per day. The plaintiff made the accusation that his estimate had been used to make terms with other parties, — which was denied, and would have been a gross violation of the etiquette governing competitions. The decision rendered was in favor of the plaintiff, a weighty consideration being that the time and labor of one party had been given another party without compensation therefor, and that the plaintiff was in poor circumstances, while the corporation was wealthy (which, by the by, is a mistaken idea); and decision was made by the judge which awarded the plaintiff the sum of $200 in payment for his services.

By this decision a custom long established has been set aside; and if claims like that in the case above are always to be allowed, it is desirable that it should be known, and an additional item of expense will have to be considered. CHETWOOD.

BOOKS RECEIVED.

Ancient Mycenæ. Discoveries on the sites of Mycenæ and Tiryns, by Dr. Henry Schliemann. Published by Scribner, Armstrong, & Co., New York, 1878.

A Manual of Engineering Specifications and Contracts. By Professor Lewis M. Haupt. Published by J. M. Steddart & Co., Philadelphia, 1878.

The Art of House-Painting. By John Stevens. Published by John Wiley & Sons, New York, 1877. Price $.75.

Cyprus: its Ancient Cities, Tombs, and Temples. A Narrative of Researches and Excavations during Ten Years' Residence in that Island. By Gen. Louis Palma di Cesnola, Member of the Royal Academy of Sciences, Turin; Honorary Member of the Royal Society of Literature, London. With maps and four hundred illustrations, etc. New York: Harper & Brothers, 1878.

Art Decoration applied to Furniture. By Harriet Prescott Spofford. Illustrated. New York: Harper & Brothers, 1878.

NOTES AND CLIPPINGS.

FALL OF A BUILDING. — A small brick building at the corner of Dwight and Delevan Streets, Brooklyn, belonging to the Cutting estate, which has been used for factory purposes, fell at one o'clock, A.M., Feb. 8, in a heap of ruins. The foundation is believed to have been undermined by rats, which are very plentiful about the premises.

BRIDGE ACCIDENT. — About seven o'clock, A.M., Feb. 10, one of the arches of the bridge over the Schuylkill River, at South Street, Philadelphia, fell, carrying with it in rapid succession nine other arches, and completely wrecking 300 feet of the bridge. The portion which gave way rested upon piles in the marsh on the western bank of the river, and its piling had been gradually sinking. A large number of workmen were engaged in shoring up the defective arch at the time the accident occurred, but all escaped uninjured. The bridge was built of iron, and cost originally $770,000. The loss by the accident will be about $100,000.

THE NAVAL MONUMENT. — The monument erected by officers and sailors, in commemoration of their comrades who fell during the war, has lately been finished at Washington. It stands on one of the best sites, near the western entrance to the Capitol Park. It is said to be more classic in treatment than any other monument in the city. Crowning the monument is a figure of Grief mourning for the fallen, and supported by History, who offers consolation by pointing to the record of their deeds. At the base in front, is a group of three figures, Victory holding aloft a laurel wreath and oak branch, and flanked by Mars and Neptune. In a corresponding position at the rear, is a figure of Peace, surrounded by emblems of peace and industry. Mr. Franklin Simmons was the sculptor.

THE NEW YORK STATE HOUSE. — The new Capitol Commissioners of New York, under Assembly resolution of the 11th ult., submit the following estimate of the cost of completing the new Capitol, including dome, laying out of grounds, etc.

Cost of building including dome: —

Granite		$1,429,557
Sandstone		1,103,088
Plumbing and gasfitting		55,445
Tiling of roofs		59,350
Iron-works		208,680
Carpenter-work		250,851
Brickwork		233,292
Plastering		102,500
Tiling floor		133,500
Marble		19,425
Heating		83,000
Elevators		120,000
Terrace: —		
Granite	$238,496	
Sandstone	379,829	
Brickwork	154,472	
Tiling	56,300	
Carpenter-work	20,840	
		849,937
Furniture		400,000
Taking down buildings and laying out grounds		150,000
Total		$5,198,625

The expenditure thus far has been $8,276,615.36, making a grand total when completed of $13,475,230.36. The commissioners say that both branches of the legislature and the executive may be placed in the new Capitol by Jan. 1, 1879, by the expenditure of $800,000. $300,000 has already been appropriated for the immediate commencement of the work.

AN ILLUMINATED CROSS. — St. Bernard's spire, Cohoes, N.Y., is to have a cross nine by five feet, made of 1,500 glass prisms. In the interior of the cross are to be numerous gas-jets, which will be lighted by the agency of an electric battery.

MINIATURE WATER-WORKS. — Blue Island is a suburb of Chicago of about a thousand population. To towns of similar magnitude, the following account of the water-works may be of interest: The works consist of a well, sunk at a cost of $300; a frost-proof stone tower, 50 feet high, costing $1,650; a tank weighing 10 tons, 18 feet high, 24 feet in diameter, and holding 58,600 gallons; and a windmill, 20 feet in diameter, having the power to lift 15 gallons per minute 90 feet high. The water has a pressure of 35 pounds to the square inch, and the hydrants are attached to a 6-inch stand-pipe connected with the tank at the bottom. The hydrants are supplied with 2-inch hose in such a manner that in case of fire the whole pressure can be turned on one hydrant in a few seconds. It is proposed that the water-mains shall extend from the town east on Vermont Street to Western Avenue, thence north and south. The Blue Islanders are very proud of this miniature water-works. — *Engineering News.*

A DECISION REGARDING SEWERS. — In the Circuit Court of Paterson, N.J., Judge Dixon has lately decided a question of considerable interest to municipalities. Mrs. Asahel sued the City of Paterson for damages caused by the flooding of her property during heavy rains, in consequence, as alleged, of the insufficient capacity of the street sewer to carry off the surface water. Mr. Williams, city counsel, asked for a non-suit, which Judge Dixon granted, on these grounds: The law authorized the city authorities to build sewers, and did not specify the size or capacity: those matters were left to the judgment of the authorities, who might make the sewers six inches or six feet in diameter; and so long as they saw that they were built in a good and workmanlike manner, according to their directions, the city could not be held responsible in damages to any person. Moreover, no one was responsible for damages resulting merely from surface water. This disposes of a large number of cases which were to have been brought against the city for damages on account of the failure of the sewers to carry off surface water.

BERLIN A SEAPORT. — In Berlin a scheme has been proposed for making the German capital a seaport. It is suggested that Berlin shall be connected, by means of a series of deep canals, with the Baltic and German oceans; the canals to be constructed to the mouth of the Oder in one case, and to the mouth of the Elbe in the other. It is said that only a few locks will be needed to regulate the influx of insignificant tributaries, and that the scheme is likely to pay a handsome return for the investment from the start.

A PANIC IN A FRENCH CIRCUS. — At Calais, France, during a performance at a circus, on Feb. 3, there was a false alarm of fire, which caused a great panic. Ten persons were suffocated or trampled to death. Several others were hurt.

TO KEEP NAILS FROM RUSTING. — The following treatment is said to keep nails from rusting. Heat a quantity of them on a shovel, and throw them, while quite hot, into a vessel of coarse oil or melted grease. The nails should not be so hot that the grease will be made to smoke freely. Cut nails prepared in this manner are improved in every respect. They are rendered tougher, and they will outlast any kind of wood, even though buried in the ground; while unprepared nails are completely destroyed by rust in a very short time. Probably melted paraffine would be still better than ordinary grease, as it forms a very effectual coating, penetrating the pores and preventing the access of air or moisture.

SELF-SUSTAINING MOTION. — A German has invented a clock in which the winding machinery is operated by the alternate expansion and contraction of glycerine or other suitable liquid, which act on a piston, motion in either direction serving to wind up the weight.