

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. VI.]

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[No. 195.]

BOSTON, SEPTEMBER 20, 1879.

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

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WE noticed in our number for the first of March, of this year, the late Mr. R. G. Hatfield's article on the Old Mill at Newport, which appeared in *Scribner's* for that month. In the current number of the *Magazine of American History* is an interesting article by Mr. George C. Mason, Jr., which gives the most satisfactory account of the mill that we have seen, because it is founded, apparently, on the most careful examination. Mr. Hatfield, it may be remembered, espoused the theory that the building was a baptistery built by the Northmen of the eleventh century, collating its style and form with the records and traditions of the settlement of Finland. He enforced his argument by the examples of their early baptisteries, especially that at Asti, and conjectured that the Newport tower had been encompassed by a circular aisle with a lean-to roof, whose rafters were propped from the abaci of the round piers that project beyond the outer face of the tower's wall. Mr. Mason adopts the mill theory. He gives a minute, and, in the main, a very clear account of the building, illustrating it by careful drawings with measurements, showing the whole interior face of the wall in sections. He proves the existence of an upper floor and staircase that have commonly been overlooked, and carefully examines the windows and fireplace. Floors, windows, and a fireplace are fatal to the theory of a baptistery, unless they are later additions, and Mr. Mason's examination makes it difficult to believe that they were added. He assumes, tacitly, that with the baptistery theory the whole mediæval theory is exploded; and, indeed, it has been taken for granted on both sides that if the fireplace were original the building must be modern, on the ground that it was not customary to build fireplaces in the eleventh century, when the Danish colony flourished. On the positive side of his argument, Mr. Mason shows that the masonry and mortar of the tower are like those of houses built during the life of Governor Arnold, to whom the earliest ownership of the mill is imputed, who died in 1677; and he also shows that the governor lived in England, not far from the mill built in Leamington, from designs by Inigo Jones, which has been brought forward as the prototype of that at Newport; that he was there when it was built, and that his will proves him to have owned a farm in England when he died, so that he was undoubtedly familiar with the mill there. From these facts and indications Mr. Mason concludes that the governor is likely to have built the stone mill in imitation of the English one, — the more so since it is on record that not long before his death his wooden mill was blown down.

THERE is other collateral evidence in the paper which makes out a pretty strong case, though necessarily not a conclusive one, in favor of the mill. The connection with Leamington through Governor Arnold is one of the most persuasive factors in the argument, for it takes away the need of looking back to the Northmen at all. The questions of the date of the building are nevertheless not inseparable, so that it is not necessary to assume that if the theory of a baptistery fails, the mediæval hypothesis goes with it; nor that if the tower was built in the seventeenth century it must be a mill. In the matter of construction there are still some points which suggest questions. The setting out of the round piers beyond the wall remains a puzzle. The fireplace is remarkable. It is sunk in the wall, with square jambs, well bonded, a hearth or shelf built in at

both ends, and an arched opening; all as if it had been there from the beginning. And it has two curious flues in the thickness of the wall, leading from the corners, the fireplace between them being roofed with a flat stone. These flues are very small, only five by eight inches, one straight and rough, the other smoothly pargetted on the inside and carried sidewise as well as upwards in a lateral curve, so that its top is not over the fireplace, but considerably to the right of it, perhaps an eighth of the circumference. The flues are carried up nearly to the top of the wall, and open, not upward, but laterally, through small holes in the face of the wall (the outer face, we presume), being covered with flat stones.

THIS construction suggests some curious inquiries. How did it happen in the seventeenth century, before Count Rumford was born to narrow chimney throats, and when it had been the habit from time immemorial to build flues as large as fireplaces are now, that a fireplace was built in this strange manner, closed at the top and with a minute flue in each corner? Why was one flue crooked and the other straight, one plastered and the other plain? Why were there two flues, both built in such a difficult way? Where could the smoke have gone when a fire was made? Now there is comfort for the mediævalist in the facts that though the beginning of chimneys is commonly ascribed to the twelfth century, they were common all over Europe in the early part of that century and must have been invented some time before; and that the earliest English chimneys known, being of the date we have mentioned, are sunk in the wall, without the overhanging hood characteristic of the twelfth century, but with little or no projection, and have small flues carried up in the thickness of the wall, leading to little openings in its outer face, quite like those at Newport. We may instance some in Rochester Castle, ascribed to the year 1130, and one somewhat later in Conisborough Castle, illustrated in the fourth of our papers on the "Open Fireplace" (*American Architect*, December 7, 1878). And again, if the Newport tower, built, let us say, in the seventeenth century, was originally intended for a wind-mill, what need had it of a fireplace any more than a baptistery? In fact, if one were asked to say in what kind of building an open fireplace was most out of place he might be tempted to answer, Next to a powder-mill, a wind-mill. And this leads us to ask if it is clear, after all, that this niche with its queer little flues was a fireplace? Does Mr. Mason see proof, for instance, or does he only conjecture, that the top of the lower floor came up, as he says, to the level of the hearth, which is by his drawing four feet above the under side of his beams? Do the opening and the flues give any proof that they have been used for fires? Or, if not for this, for what possible use could they have been intended?

WE have received the first number of a new architectural journal, called the *Western Architect and Builder*. It is a quarto, which it is proposed to issue monthly, containing four pages of letter-press, and promising to furnish six lithographic plates of designs, though the present issue offers eight, at a price of fifty cents per number. The editors and publishers are Messrs. Dannmeier & Zimmermann, architects, of St. Louis. The *raison d'être* of the publication, as explained in its salutatory, is that "architecture has of late years undergone such radical changes that the old architectural publications have ceased to be of any practical value," and that "no new publication corresponding to the spirit of the age has been offered to the western public;" for although several eastern journals are circulated at the West they "are of little practical use," except for their reading matter, "because they contain no designs adapted to western requirements." To this one can only reply that the spirit of the age is a somewhat complex spirit, whose manifestations are not confined to the Mississippi Valley; but that the West certainly has a right to circulate its own manifestations. The letter-press furnished us contains, besides the description of the plates, a criticism of a work by Mr. Marcotte, another St. Louis architect, which the writer does not like, a paragraph or two of St. Louis building statistics, and a number of small items of technical interest. It also offers a short article on The Modern Style, and another on Bricks in Architecture. Both contain historical statements and conclusions which surprise us, or which we do not understand; as, for instance, that Gothic brickwork

"was always concealed, because no ornamental beauty was expected from it;" that "not until the introduction of the English Gothic were any efforts made to give brickwork ornamental importance;" that while Greek is the style of the exterior, Gothic is the style of the interior, and that it cannot be used in cabinet-making; that Gothic had maintained itself for centuries as the ecclesiastical style until English architects "undertook to adapt it to other buildings," when there arose the English Gothic, "a style that is met with all over the world." This might prepare us to believe that the current histories of architecture at least are not adapted to western requirements, and are found of little practical use there. To take the place of the styles found to be so unsuitable there has arisen, says the article, a style, "now prevalent and still nameless," which it is the purpose of the new journal to set forth. When we come to consult the illustrations we find that this style, as might indeed be expected, is simply that which, since we found it nameless, we have been tempted to call the Vernacular. The plates include plans and exteriors, with one or two scale drawings of detail, for a city house with shops under, one without shops, a small cottage, and a staircase. Criticism of the rendering of the drawings is disarmed by the avowal that they are not intended to grace the parlor, but for use in the workshop. As to the designs we shall perhaps best please the authors by expressing no opinion.

THE late building accident in East Fourteenth Street, New York, was one of the most suggestive of its kind, though happily less fatal than many. The house whose floors fell, No. 10, was rebuilding; its neighbor on one side, No. 8, had been pulled down, and the party-wall on that side taken away, while No. 12, on the other side, was undisturbed. It was decided to preserve the floors, which had been supported on a longitudinal brick partition; and while the partition was removed down to the basement they were left shored up by joists in four tiers which bore upon a dwarf wall below the basement floor. The four upper floors then were balanced midway upon these tiers of joists, one end of the beams being supported by the party-wall of No. 12, but not anchored to it, and the other left entirely free by the removal of the opposite party-wall. In dismantling the house piles of brick and lumber were laid on the outer ends of the floors in order to ballast them and guard against the danger of their being upset by sudden gusts of wind. Workmen meanwhile were busy building new foundations in the cellar and laying up a new lining against the party-wall, and it is thought that they had disturbed the bearing of the footings under the tiers of joists, which had been noticed, it is said, to settle somewhat, and had led the contracting carpenters, Messrs. McGuire & Sloane, to conclude that something would have to be done to guard against accident. But suddenly the whole gave way at once, and floors and joists with their load of bricks and rubbish tumbled together into the cellar, burying in the ruin the men who were at work below. As it happened, the men were just getting back to their work after dinner, and only four of them were caught in the fall, while the timbers, stayed somewhat at one end by the wall on which they rested, were piled against the wall in such a way that the men beneath, were not crushed to death, though all were injured, and it was some time before they could be dug out. If the fall had occurred a quarter of an hour later, when all the men were at work, it must have been shockingly fatal.

THIS is a kind of accident against which, since they come from the want of judgment of those who suffer from them, it is difficult to provide. Workmen are reckless, and not apt to take any precautions that are not ordered. The builders who employ and direct them trust habitually to slight and rather perilous constructions; and their judgment of safety in unusual contingencies is not very secure, tempted as they are, for economy's sake, to err on the side of danger. But it is the unlucky workmen, relying on the precautions of their employers, who risk their lives, and it is with their protection against unnecessary dangers that the community ought to concern itself,—a matter which gets more attention abroad than here, and about which a commission of the British Parliament has lately been busy, if we remember rightly. Workmen will be reckless forever, and to secure them against the consequences of this is impossible as well as superfluous; but something may be done to protect them against the carelessness or errors of the employers whom they trust. The obvious remedy is in making such acci-

dents so costly to those who are responsible for them, through payment of damages, or even, in flagrant cases, by severer penalties, that it will pay better to be cautious than to run risks. There is, however, one other means of meeting such dangers which is better than punishment, that is, by insisting that competent persons shall be employed to guard against them. In this case the proprietor, to save the cost of resetting his floors, required of his contractors an extra-hazardous and difficult handling of his construction. The contractors, apparently not equipped by their trade with the knowledge necessary to estimate a danger of this unusual kind, and habituated to saving their money, did the work in a very precarious way,—perhaps did not watch their workmen to see that they did no mischief. When a thing of this kind is undertaken it ought to be under the care of some one who has the eye of an engineer, unless builders are trained to more precaution than they are used to at present. The building, it is said, was under care of an architect, though we are not told whether he was superintending it. But the architect is employed in the interest of the owner, and is apt to attend only to things which affect the final result to the owner; nor would most contractors welcome interference in things which concern only their handling of their work and the workmen.

THE sudden death of Mr. W. M. Hunt takes from Boston the chief of her living painters, the one who has more influenced her art and represented her abroad with more praise than any other painter, except Allston. Mr. Hunt was not a native Bostonian, having been born in Brattleboro', Vt., in 1824. He entered Harvard College in 1840, but found himself little in sympathy with the instruction which he received there, of which he was apt to speak in after life with no great respect. Weak health and distaste for his college work led him to abandon his course unfinished, and he went to Europe. There he soon gave himself up to his natural bent as an artist, and in 1846 entered the then famous academy at Düsseldorf as a student of sculpture; but it was not long before he turned away from sculpture to painting. Nothing could well be less in accord with Mr. Hunt's mature work than the manner of painting taught by the Düsseldorf school, though connecting threads between himself and his early teachers may be found in their common revolt against academic formalism, and their devotion to the direct study of nature, side by side with a tendency to what was called the romantic in subject and treatment. From Düsseldorf he went to Paris, where his inclination was shown by his turning from the instruction of the school and putting himself, in 1848, under the teaching of Couture, himself a revolter against academic restraint, and then in the freshness of his fame as the painter of the Decadence. On Couture's work he seems to have first formed his style, and his pictures for some time showed the marks of his influence. Later he was attracted by the paintings of Millet, under whose teaching he hastened to put himself; whom he sought out before he had become conspicuous; for whose art he showed to the end of his life a warmer admiration and sympathy than for that of any other living painter, and whose effect on his own work was very marked. He returned home in 1855, or thereabouts, and establishing himself in Boston thenceforth divided his time between there and Newport, with occasional visits to New York and to Europe.

SINGLENESS of idea, clearness of impression, unity in effect, and a disregard of anything which was not essential to his main conception, are the chief characteristics of Mr. Hunt's pictures. Concentrating all his attention on what he called the picture in his subject, he was careless, or even scornful, of obvious resemblances, to a degree that made his painting unattractive to eyes that were untrained and unsympathetic; and he was equally disdainful of the display of technical dexterity. His pictures, therefore, full of the feeling of nature as he saw her, expressed with rare force and distinctness, were not likely to attract popular favor, to which, indeed, he never made the smallest concession; but they gave him a place entirely apart among the artists around him, and were prized by his fellows and eagerly sought after by purchasers who had, or would fain have, the cultivation to enjoy them. He painted a small number of figure-pieces, most of which have become known through prints or photographs. The Marguerite, which brought him great praise on his return from Europe, the Drummer Boy, the Bugle Call, are among the best known. Most of his works, however, were portraits or landscapes. Of these last, in spite of his training as a figure painter, he produced more than of any

other kind of work. He painted them with all the feeling of a poet, but with a single eye to general effects, and a neglect of detail that made them unintelligible and sometimes repellant to the ordinary observer. He produced fewer conspicuous works than might have been expected from his unusual ability; partly, perhaps, from personal reasons; partly, no doubt, because, as is declared by a brother artist, there is no temptation to paint great pictures here, for nobody wants them and there is no place for them. One brilliant opportunity, however, occurred to him but a little while before his death, and he seized upon it with his accustomed strength and ardor. When there was a question of decorating the new assembly chamber in the Capitol at Albany, Mr. Hunt was naturally the person to call upon, and for it he executed last winter the two noble mural paintings which we have before described at length. Undoubtedly the zeal and assiduity with which he devoted himself to this work robbed him of a large portion of his strength, if they were not the direct cause of his untimely death.

It is not easy to measure Mr. Hunt's influence on the practice of painting in this country, though in his own city it was unquestionably great. His qualities were essentially those of a leader, but the artists whom he found at work when he returned from Europe were a disunited body, and were not disposed to unite under a leader. His chief influence was upon the public and upon the young pupils whom he soon gathered about him. He returned when the distinguishing characteristics and methods of modern French landscape painting were fresh and were almost unknown among us. He found a community whose idea of painting was of little else than the careful representation of natural objects. He enforced by his painting, and set to work to instill into his pupils the French doctrine of "values," and the distinction between a chance collection of forms and a picture. A crowd of pupils, some of them young artists by profession, but most of them amateurs, and chiefly women, flocked about him, and spread his views and the admiration of his work throughout the community. To them he devoted much time and strength, and to them he must have sacrificed much of the creative work which he might have accomplished. He gave an entirely new direction to their efforts, compelling them to look before all things for the "picture" in the scene or objects before them, the arrangement and value of tints; to give their whole effort to the rendering of this and to sacrifice to it the delineation of detail. He was the unbending foe of purists, and "nigglers," alike of the followers of Ruskin and the advocates of South Kensington methods. Few painters have had a more devoted following, or have left a more unmistakable mark upon the community immediately around them.

NOTICE OF THE THIRD COMPETITION IN INTERIOR DECORATION.

THE subject for the third competition in interior decoration, as published in the *American Architect* of April 5, is a railing enclosing the lowest gallery of a natural history museum. The railing to be two feet and nine inches high, of brass or wrought-iron, supporting gas-fixtures.

This programme is certainly sufficiently suggestive to attract an active competition of designs; but only three were received, and in the pressure of other matters on our columns we have been compelled to defer until now our usual notice.

The drawing by *Iron* is presented in a complete and workmanlike manner, with scale elevations, detail to larger scale, and a well-rendered perspective sketch of a corner of the railing. The design is not without ingenuity in its combinations, but its agreeable effect in execution is due more to repetition than to any intrinsic excellence of line. Its elaborateness implies a great expenditure of labor without a corresponding return in effect, and much of the labor is lost in unnecessary detail. The motive of leafage is purely conventional. Inasmuch as the railing is invented for a museum of natural history, it would have been more appropriate if, in respect to leafage, natural characteristics of form and growth had been used as leading elements of composition. These remarks apply with still greater emphasis to the gas standards and brackets, which, though well drawn, are so much entangled with a wilderness of loose spirals, redundant scrolls, and capricious foliation, that even in the geometrical presentation they are difficult to understand; in perspective they are quite incomprehensible. The evident inventive power of this competitor would have been far better bestowed upon an effort to obtain an agreeable and appropriate result with fewer lines and more simple combinations, so arranged that one part of the design should not, as is the case with almost all modern chandeliers, cross and obliterate the others. The lettering on this sheet, by the bye, is entirely unworthy of the drawing.

Anxious has done more wisely in presenting his design in one plane

and in adopting a leading geometrical motive which is not difficult to comprehend at a glance. He is less ambitious to be original, and his panels being occupied with very well composed grotesques of animal forms in brass *repousse*, alternating with formal scrolls of iron-work, the design has a significance which is wanting in that of *Iron*. The application of animal grotesques to the brass-work of gas standards and brackets is unusually good, and the recognition of the nature of the material in these grotesques is ingenious and successful. The combination of brass with wrought-iron work is also noticeable as an element of the design. As a composition, however, the railing is too uniformly close, and it is wanting in subordination or contrasts of parts, so arranged as to give emphasis where it would be most effective. Thus, if the narrow upright interspaces between the large panels of the iron-work had been left quite open without any other vertical feature than the dividing stanchion, the alternation of close and open divisions thus obtained would have greatly assisted the composition.

Penn has failed in the same manner, and his design is a mere web of arbitrary and conventional forms without necessary accentuation, and with no contrasts either in the dimensions of the iron composing the bars and scrolls, or in the alternation of close and open features. The only way by which a design so conventional in its forms and so equal in its openwork could be made interesting would be by a judicious and marked variety in the depth if not in the width of the various members. But the perspective sketch, which is not drawn with a firm hand or a neat touch, does not indicate a consciousness that any such effect is to be aimed at. Like the first competitor noticed, there is no significance in the forms chosen,—that is, they would answer quite as well for a theatre, for a balcony, or for any other purpose where a grille would be required,—but unlike him, the rendering is wanting in decision and in graphical experience and knowledge. Considering the character of the iron scroll-work, which, being of wrought-iron, would be as costly as it is ineffective, the introduction of the heavy walnut hand rail is a redeeming feature. It is to be observed that the greater expense of hand-wrought work is not justifiable unless the characteristics of hand-wrought work, as contrasted with machine-made or cast work, are made the controlling feature of the composition. It would really be more in accordance with the ideas of morality which have been very properly introduced into modern design, if *Penn* had affixed the legend "cast-iron" instead of "wrought-iron" to his work. Wrought-iron work does not assume such forms as he has chosen.

A MILLIONAIRE'S CATHEDRAL CITY. I.

Few people, one trusts, except fanatical sanitarians, can have read Dr. Richardson's account of his own ideal City of Health without a shuddering reflection that it would be a doleful place to live in, and that man cannot get on with fresh air and drainage alone. The late A. T. Stewart's Hygiea has pretensions to be something more than a sanitarium. It is a suburb, a sanitarium, and a cathedral town, all made at once and all made to order. It should, therefore, have an economic and an architectural interest, in addition to its sanitary interest. I have found it to possess an interest quite unique. As a commercial undertaking there was a presumption against Garden City, which Mr. Stewart undertook to overthrow, the presumption, namely, that if the place had been eminently adapted for human habitation, it would, long before his purchase, have been inhabited. It is two hundred years since a traveller set forth that "toward the middle of the island lyeth a plain, sixteen miles long and four miles broad, upon which plain groweth very fine grass that maketh exceeding good hay." The plain and the grass have been there ever since, and moreover the plain is part of a region which would delight a railway engineer limited to a very low "first cost." There is some undulation in the country as far from the East River as Jamaica, to which point the Long Island road has run for many years, and this undulation produces a mild picturesqueness which is helped by occasional old farm-houses, unpainted and gambrel-roofed, and hurt by more frequent and more modern box-villas, staring in white paint and covered with mansards. But beyond Jamaica the country subsides into the plain, and at nineteen miles from Hunter's Garden City happens, in the same casual way in which towns occur upon the great prairies, without any visible indication of nature why they should disturb at one point rather than at another the monotonous equality of the landscape. There is a brick station and a brick "manager's office" adjoining it on one side of a square and flat and almost treeless park, traversed by rectilinear roads, and decorated by two fountains kept diligently at play. Opposite the station is a large hotel of brick, and at one side of the park a row of low-built brick shops. On the fourth side there is nothing as yet. The "cathedral" is behind us and across the railroad track, and the "city" is disposed on straight, short streets about the park. It consists, I should guess, of some sixty houses, some of brick, some of wood, but all suburban villas of the deepest dye, and apparently designed out of the Practical Builder's Assistant. In point of fact some of them are the work of the late Mr. Kellum, I believe, and some of his successor in the office of architect to the estate. What trees there are are all newly planted, and do not at all relieve the general sense of aridness and glare. Northward, but far away, there is a low fringe of deep-colored woodland, and to the south one sees the white steeples of Hempstead rising from a real grove.

The hotel, which is by Mr. Kellum, is in the most nefarious manner of that master. Its raw brick front is relieved by a veranda, shiny with white paint, and by a sheet-metal cornice of great projection, with the predestinated round pediment in the middle. The shade of the master may be disquieted to learn that the paint has peeled from off a great portion of this cornice; but it will interest architects to know that Mr. Kellum, in Garden City at least, constitutes an exception to the public disregard of professional eminence, and more successfully than his cornice defies the tooth of time. He is one of the Lares of the place, and his name is quite as familiar in men's mouths as that of the other Lar, if the other Lar was a millionaire. At least it was so in the mouth of the only Garden citizen of whom I was able to get free speech. There was nobody in the station, and the telegraph ticked away to vacancy. There was nobody in the manager's office. The clerk of the hotel is a *dame du comptoir*. Passive fortitude distinguishes the female character, and one imagines that a woman succeeded to the office only after a series of affable and gentlemanly clerks had succumbed to the terrors of solitude and the allurements of artificial stimulation. I stood at the intersection of the main streets and looked all four ways without seeing a man or a woman or a horse or a dog. The inference is perhaps fair that as a commercial enterprise Garden City does not pay. It is not easy to get specific information on this point. When one asks how many boarders there are at the hotel he finds only that there are not so many now as there have been or as there will be. One may wander over the building without seeing anybody, but I heard authentically of one actual boarder, and of another who had only lately gone away and who was soon expected back. The hotel can accommodate something like one hundred guests, and it is admirably kept. If any one desires to pursue, in a salubrious atmosphere and under the most desirable conditions of gas and water service and drainage, researches which demand absolute freedom from all distractions, I can confidently recommend it to him. The small boy who was finally visible at the manager's office asserted in an aggressive manner that there were not many houses vacant, but declined to enter into particulars. Perhaps the strongest testimony in regard to the social attractions of Garden City was the explanation of the Sabbath solitude, that "the gentlemen, they go into New York every morning, and the ladies, — well, the ladies go in too." The citizen to whom I have referred was a shopkeeper whom I contrived to wake up and bring out of the recesses of his back shop by persistent banging on his counter. Once awake, he was a candid and voluble soul. He scouted with great scorn the suggestion that as many as half the houses were occupied, or ever had been; announced that he was "praying" for his lease to expire that he might flee, and added, pathetically, "This place has had two great losses, great losses: death o' Stewart and death o' Kellum."

These losses seem to have disposed of the place as a project in real estate, and left it as a shrine to its projector — and to Mr. Kellum. The office seems to be devoted in a particular manner to the former. There is a large photograph of him to be seen there, and the walls are hung with photographs somehow connected with him: photograph of Meissonier's 1807, from the original in the collection of A. T. Stewart, Esq.; photograph of Gérôme's Gladiators, from the collection of A. T. Stewart, Esq., and so forth. Then, too, there is the façade of a church in Italian Gothic, peradventure the first suggestion for the cathedral, and I think I recall a photograph of somebody's statue of Hope, intended to decorate the crypt of that monument. Mr. Kellum has his innings of commemoration, so to speak, in the hotel. There you may see a view of the residence of A. T. Stewart, Esq., designed by J. Kellum; retail store of A. T. Stewart & Co., designed by J. Kellum; the Herald Building, Broadway, designed by J. Kellum; the New Court House, New York, designed by J. Kellum; and so forth. The last-named edifice, by the way, is represented, in water-color, as it would have been if the vandal had not laid his ruthless hand upon it, and is surmounted by an iron dome which is really in keeping with the palatial structure.

Our architectural interest, however, is not with Mr. Kellum, but with the designer of the new cathedral, who would very likely have been Mr. Kellum if he had not died before his Mæcenas. It is to condemn Mr. Harrison with praise entirely too faint to say that in that case the church would have been much worse than it is, or will be. There was no question of adapting the design to the ground, since there is no choice in this bare plateau. As there is no choice it seems odd that the cathedral orientation should not have been preserved, instead of being reversed so that the "west front" is the eastern end of the church. The situation has at least one advantage in that the founding line from end to end and from top to bottom is visible from every point of view. Even with this enhancement of its apparent magnitude, the visitor who has the notion of a cathedral in his mind is surprised to see a parish church in size, and recognizes the same inflation of the fact, and of the idea, in calling this a cathedral that there is in calling the suburban settlement a Garden City. The general composition of the church, as it is seen from a distance at which only the mass is visible, is agreeable, and the light chocolate color of the carefully chosen brown sandstone is especially agreeable to the eye. The chief defect one notes in the general view is the relative shortness of the building. The extreme length is in fact one hundred and fifty feet, but is lessened to the eye.

M.

THE ILLUSTRATIONS.

THE ACCEPTED DESIGN FOR THE UNION LEAGUE CLUB-HOUSE, NEW YORK, N. Y. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

DESIGNS FOR A GALLERY RAILING IN A NATURAL HISTORY MUSEUM.

CORRESPONDENCE.

THE GROSVENOR GALLERY. II.

LONDON, August, 1879.

IN a former notice a few words were promised about Mr. Burne-Jones's pictures, which formed one of the great attractions of this exhibition. So much has been said and written on the subject of these works that a controversy seems to have been going on all the time the gallery was open. The exhibition, however, is closed now, but the controversy is not, since it is continued by Professor Colvin in one of the monthlies. Mr. Burne-Jones's works, though unseen yet speak, or at all events their advocates for them; and so the Cambridge professor makes a very strong case in their favor. Indeed, a great many strong things have been said on both sides of the question, — it seems to be the fashion to speak strongly either in praise or blame when commenting on such works as these, — yet to our thinking, Mr. Burne-Jones was not nearly so powerfully represented this year as in the two previous years.

His pictures occupied the principal portion of one wall of the East Gallery, and in the centre of the group was his largest work, No. 166, the Annunciation. It is a large upright picture (about eight feet by three or four feet), and contains two figures, the Angel and the Virgin. The scene is laid in a small court or garden of Mary's house. She stands in the foreground beside a well, where she may have come to draw water. The upper part of the picture is occupied by the figure of the angel, who looks down upon her as he utters the memorable salutation. In the background is Mary's house, with a narrow corridor opening into the interior. The whole subject is decorative in treatment, but hard and stiff in both drawing and coloring. The face of the virgin has a most woe-begone expression, as if she has had her life nearly frightened out of her by the vision; and the angel looks more like a stiff figure from an old piece of tapestry, or as if it were carved out of wood and bronze, so hard are the draperies that clothe the figure and so bronze-looking are his wings. Below and behind the angel is a bay tree, rich in the full green tones of its coloring; while over the arched head of the opening (it cannot be called a door) into the house is a carved representation of the expulsion from Eden, thus bringing together, so to speak, the story of Paradise lost and regained. The house is also hard and wooden in its treatment; indeed in this, as in Mr. Burne-Jones's other pictures, we are reminded more of the early Italian masters than any modern school of paintings whatever.

As a representation of one of the greatest events in the history of the human race, we cannot say that this picture approaches the ideal, either in grandeur of conception or vigor of treatment, in power of drawing or beauty of color. We do not suppose Mr. Burne-Jones means us to understand it as a realistic picture of the scene enacted in the house of the humble Jewish maiden, more than eighteen hundred years ago. It is a conventional view of the subject, just in the sense that the early Italian pictures give us conventional representations of scenes from sacred history; but still it does not rise to the dignity of an Old Master, as the type of a great school of painting. In its very conventionality the life seems to have been lost out of the subject altogether, the tremendous results which were to follow this supernatural "annunciation" are nowhere foreshadowed, and the lessons intended to be taught fall as flat as a commonplace sermon.

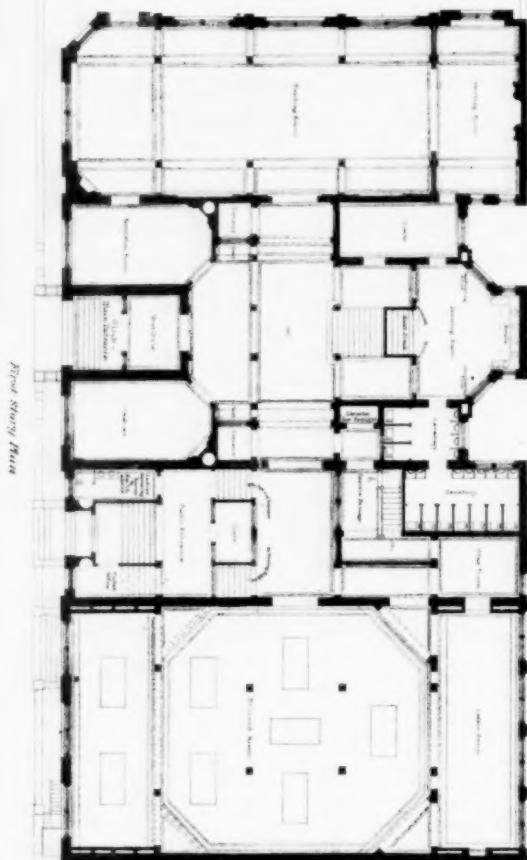
Four pictures then follow (Nos. 167 to 170), illustrating in four parts the story of Pygmalion and Galatea. They are rather unfortunately hung, inasmuch as two are placed each side of the Annunciation, which is a mistake, as it interrupts the sequence of the events.

Mr. Burne-Jones gives titles to the separate pictures in the following doggerel lines: —

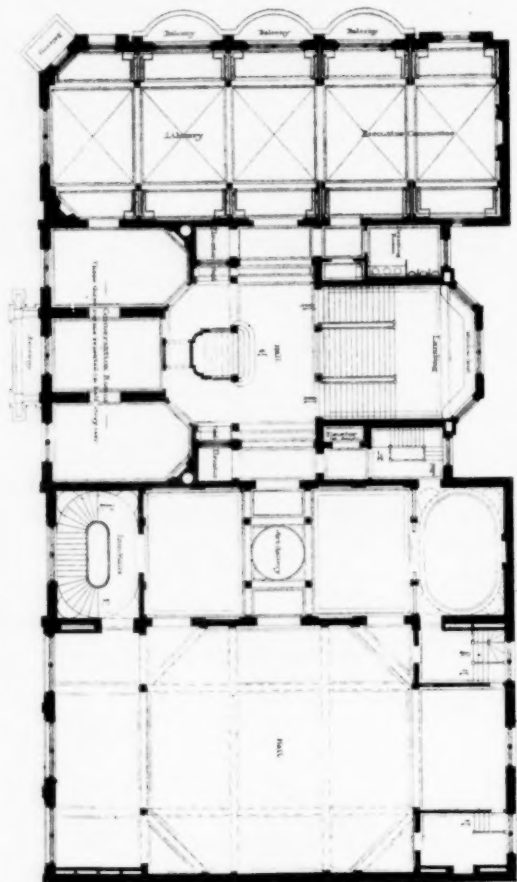
The heart desires. (No. 167.)
The hand refrains. (No. 168.)
The Godhead fires. (No. 169.)
The soul attains. (No. 170.)

Whether Mr. Jones has been inspired by the unusual notice which Cyprus has attracted lately, or not, it is impossible to say, but at all events the scene of this little story is said to have been in the land of Venus's birth. The treatment of the whole subject is again decorative almost to excess.

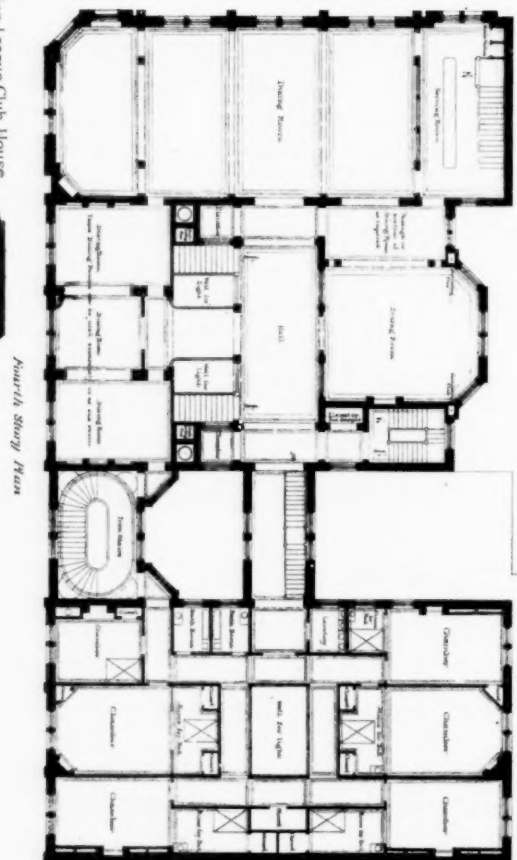
In the first picture, Pygmalion is standing before a group of the Three Graces. — *Query*, where did he get that? Perhaps he did it himself? — Be that as it may, he is evidently thinking himself capable of a much higher flight still, and pondering in his mind on the coming statue which is to make his name immortal. In the background two or three young girls (models most likely) are seen through an opening in the apartment; they serve to suggest the element of love thus early in the story. In the second picture the statue is finished, and the sculptor pauses, lest another stroke should spoil the perfection of his work, with which he is evidently in love. In the third picture, while the sculptor is probably in the Temple of Venus supplicating her aid, the Goddess of Love visits his studio and



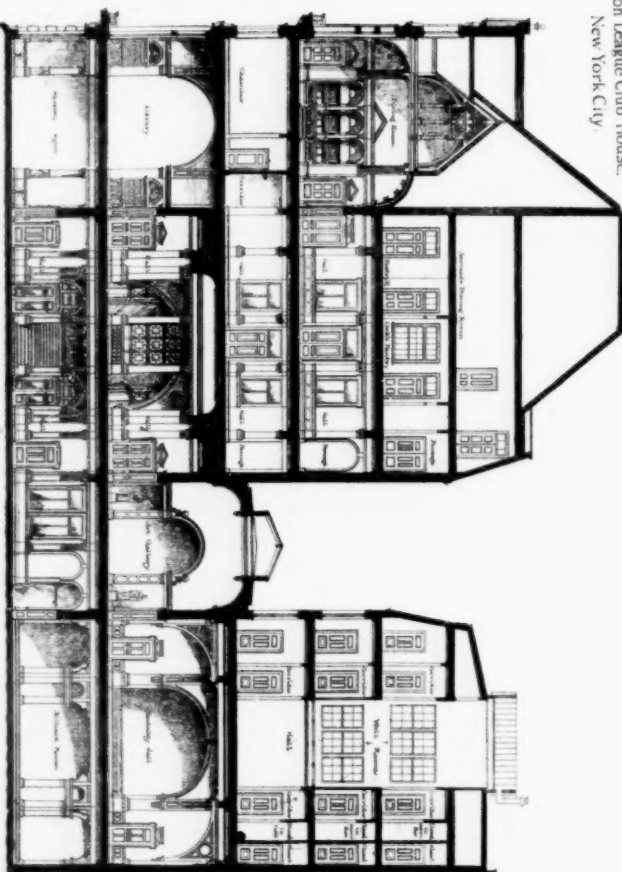
First Story Plan

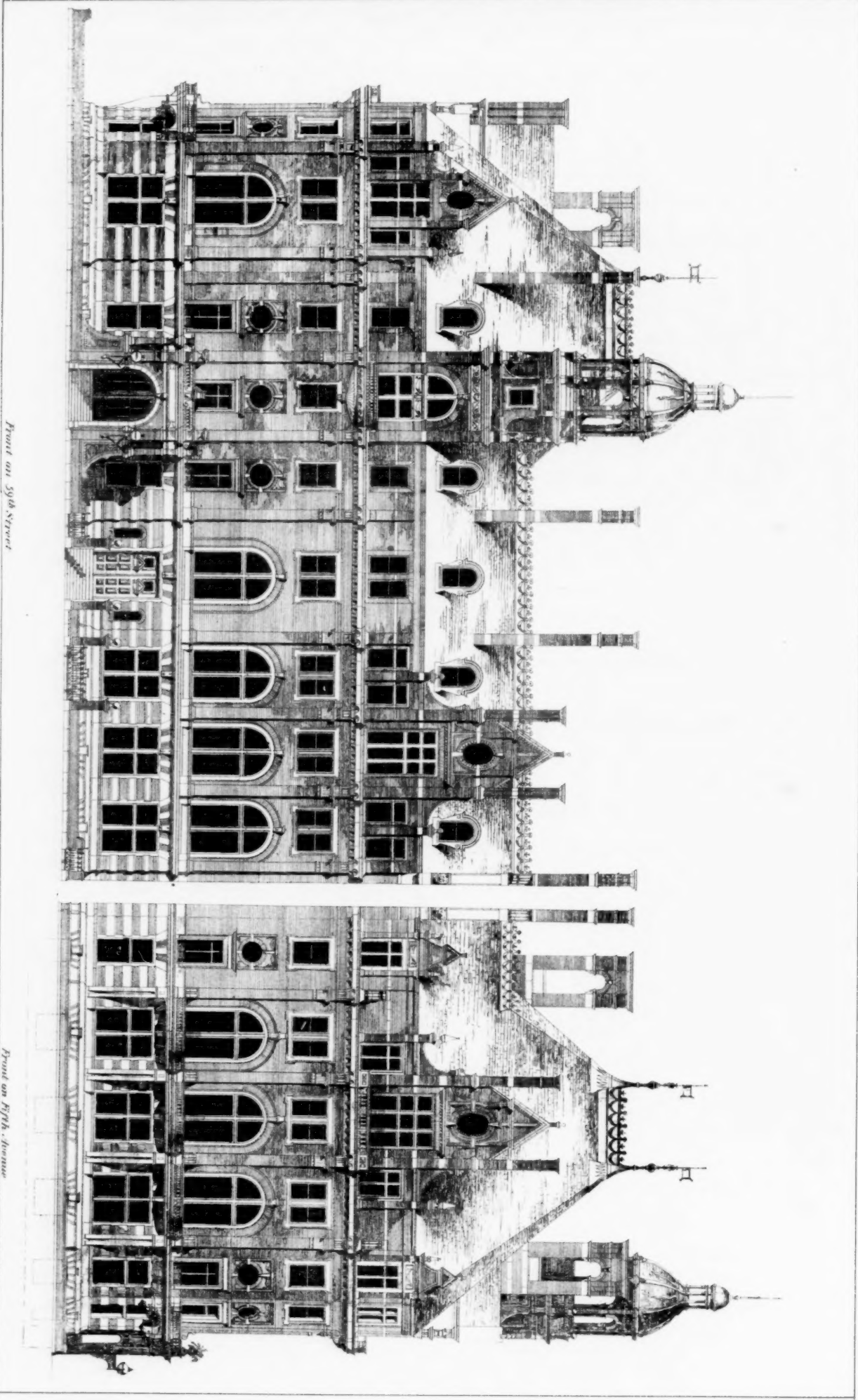


Union League Club House.
New York City.



Longitudinal Section



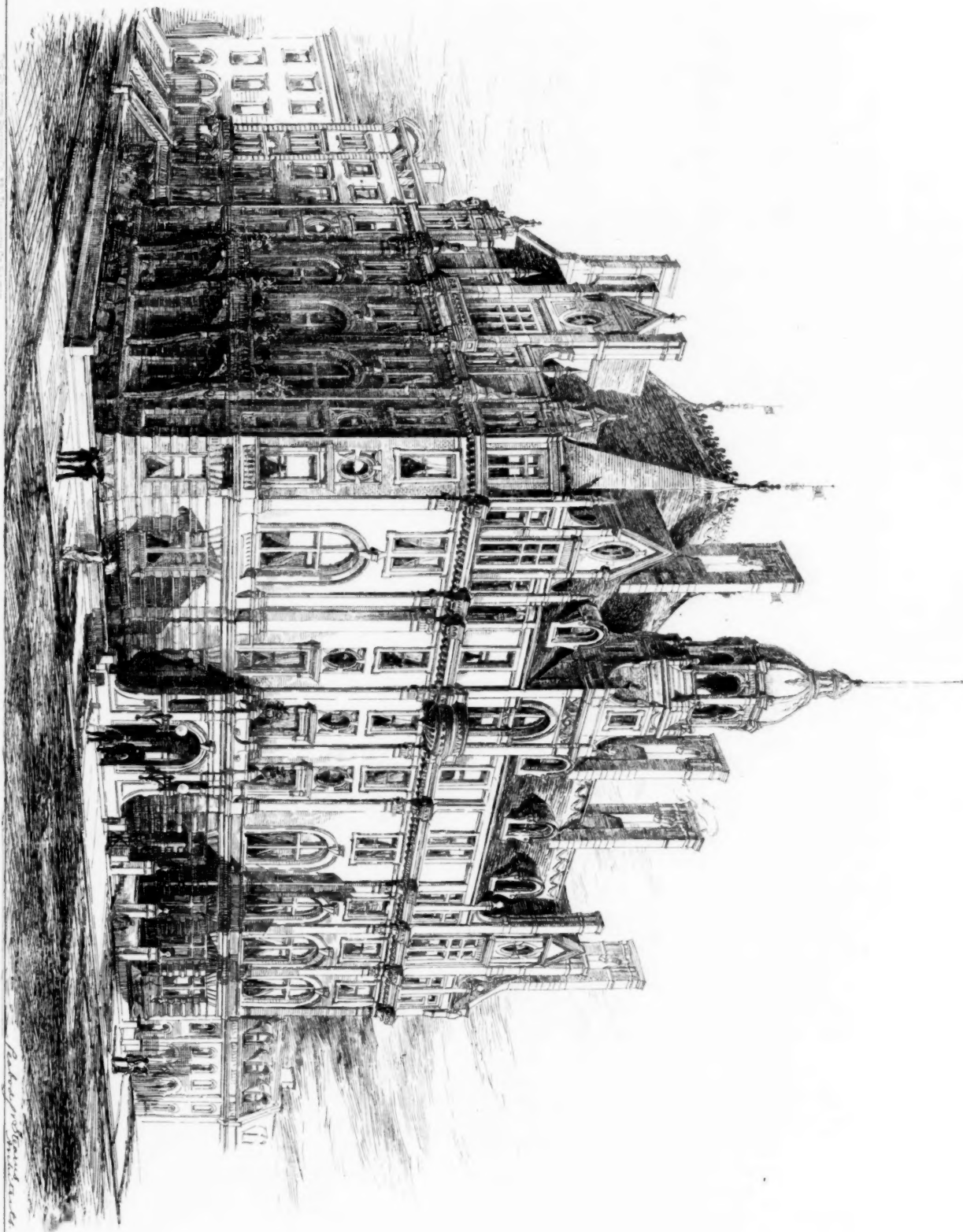


Front on 59th Street

Union League Club House
New York City

Front on Fifth Avenue

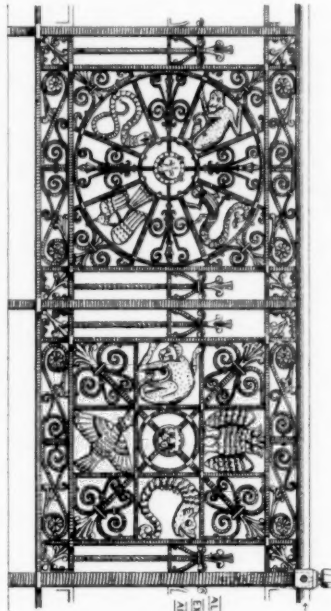
THE HOLLANDER PRINTING CO. 220 NASSAU ST. N.Y.



Union League Club House
New York City

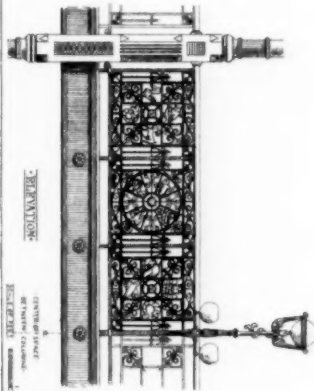
Wm. H. R. Wood

COMPETITION.
NO. III.
AMERICAN ARCHITECT
GALLERY RAILING.
FOR
NATURAL HISTORY
MUSEUM.
BY
SUBMITTED BY
ANXIOUS.



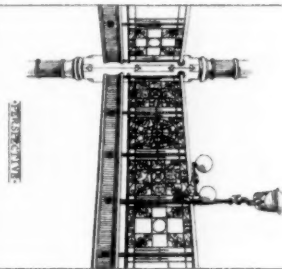
DETAILS OF RAILING.

SCALE OF FEET.



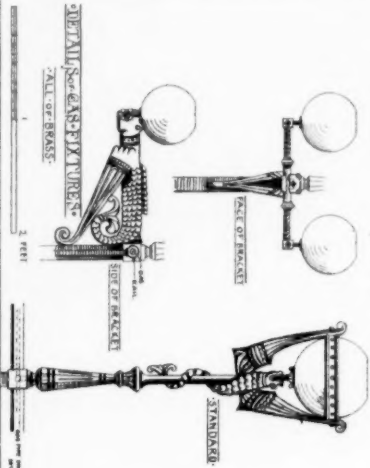
ELEVATION.

SCALE OF FEET.



ELEVATION.

SCALE OF FEET.

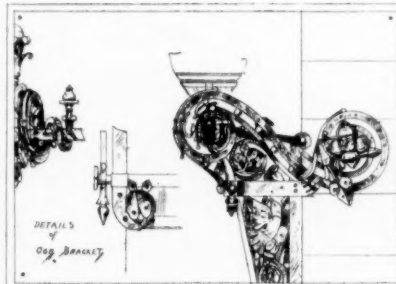


DETAILS OF RAILING.

SCALE OF FEET.

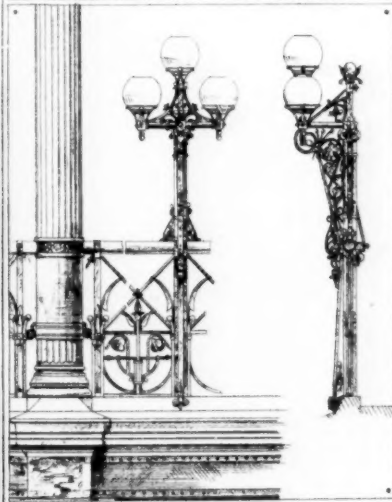
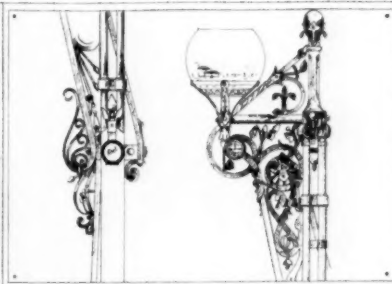
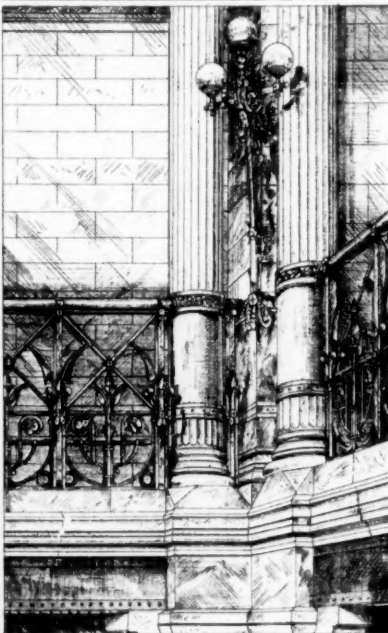
SCALE OF FEET.

ALL OF WROUGHT IRON
EXCEPT FIGURES WHICH
ARE TO BE OF BRASS.



DETAILS
OF RAILING.

Scale of Elevations
Scale of Details
AMERICAN ARCHITECT
GALLERY RAILING
AWROUGHT IRON RAILING



THE HALLOTTIE PRINTING CO. 220 DEVERSHIRE ST BOSTON

inspires the statue with life. In the fourth, Pygmalion, returning to his studio, is met by Galatea, now a beautiful woman, who welcomes him back, and thus he attains his heart's desires. It will be seen that we have here some grand opportunities for the skill of the painter; and, apart from their mannerisms, the result is that we have a series of beautiful pictures, full of subtle and delicate color and more or less charming drawing. If we once accept the decorative principle of their treatment, it is astonishing how the longer they are studied the more one likes them, — though this favorable disposition cannot blind us altogether to their faults; for instance, taken as a type of female loveliness, it can hardly be contended that Galatea, either as statue or as maid, is the most perfect that is conceivable, in form and feature; her face lacks expression again, unless it be that of inanity; even in the last scene she does not waken to the rapture of the moment; nor in the transition into life in the third picture have we any expression of the dawning of consciousness, such as we might expect from a master like Mr. Burne-Jones. True, the transition of local color from the marble to life is very skilfully treated; still it is all too conventional, and we long for that touch of nature which makes the whole world (of art included) kin. Perhaps Mr. Burne-Jones may insist that this idealistic treatment is the most appropriate; still we are not obliged to admit that this is the most correct or even the only comparison to be adopted. We venture to think that (without any comparison) an artist with the technical skill and knowledge of, say, Mr. Alma Tadema, would have produced a much more natural, and therefore more highly artistic rendering of the subject, without in the least degree destroying the classicality of the legend. We do not contend for any ultra realistic treatment, but on the other hand are not disposed to rest content with the expressionless conventionality we find in Mr. Burne-Jones's figures.

At the same time no one can deny that there is much beautiful work in these pictures. Mr. Burne-Jones is the leader of a certain school of English painting, a school, whether we like it or not, which is having an influence on the art of our country. Whether this influence is for the highest good, or whether its leader is entitled to all the extravagant eulogiums bestowed on him by enthusiastic admirers and followers, is altogether another question. There is beauty and beauty, as there is art and art, and we humbly think Mr. Burne-Jones has not set himself to follow and work out the highest ideal of either. We were forcibly impressed with this by a picture of Mr. Albert Moore's (No. 172), entitled *Topaz*, and hung beside the *Pygmalion*. The subject is two female figures standing together, clothed in the most exquisite draperies. The drawing and coloring of these figures is perfectly wonderful in its beauty. They are decorative in treatment, as all Mr. Moore's work is, but so different in effect from the four pictures just noticed, that Mr. Burne-Jones's pale-faced beauties look weaker than usual from the juxtaposition. So for the same reason, probably, Mr. Moore's figures look more powerful than is his wont; while losing none of that delicacy for which he is famous, they are thoroughly classical in feeling, more so perhaps than any other work in the rooms, notable also for that correctness of drawing we always expect from so perfect a draughtsman as Mr. Albert Moore.

In No. 288 we have a most interesting scale-drawing of a design for a ceiling, by Mr. Walter Crane, who has also sent the full-sized models for several panels therein, such as the central panel (No. 72) representing the seasons with the signs of the zodiac in a circular border, and four of the side panels with a figure in each, namely: Morning, awaking; Noontide, reaping; Evening, returning home; and Night, sleeping. The corner panels have figures of Mars, Venus, Neptune, etc., while the intermediate circles have representations of Jupiter, Saturn, Mercury, and Luna. The whole forms a classical composition very well arranged, and, judging from the full-sized panels sent, admirably drawn and modelled in low relief; these are tinted a bronze color, but we may infer from the scale-drawing that this is only temporary, and that a delicate scheme of color is to be carried over the whole ceiling. This is much more creditable art work than Mr. Crane's more ambitious flights in the way of finished pictures.

We cannot close this notice without a tribute of praise to another painter, who has entered the ranks of the sculptors. Mr. W. B. Richmond sends a powerfully modelled figure, an *Athlete* (No. 306), a life-sized statue in bronze. The athlete is engaged in running; the figure is poised on the left foot, has the right arm across the chest, and the right leg and left arm thrown behind. The action is well conveyed, the head after the Greek model, and the composition an admirable following of Sir Frederick Leighton's excellent example at the Royal Academy a couple of years ago.

Mr. Burne-Jones also favors us with examples of his skill in modelling, in the shape of four figure-subjects in bronze panels for decorations. They are in low relief and very effective, broad in treatment, and capably drawn, with all the charm of manner peculiar to the artist.

There are also several etchings by Mr. Whistler, Mr. Herkomer, and Mr. Tissot, very clever indeed, with most excellent effects in black and white, which show that some of our painters are as much at home with metal as others are with clay. Mr. Whistler's etchings have long been known; many think them far greater works of art than his pictures, and Mr. Tissot follows fast on his heels, but with this difference, his subjects are of the same class as his pictures; indeed, often replicas thereof; whereas Mr. Whistler's are more picturesque and interesting than any of his "nocturnes" and "harmonies;" instance his riverside etchings of Battersea and

Neighborhood, some of the cleverest "arrangements" in black and white he has ever made.

We have thus tried to give some idea of the leading attractions of this most interesting exhibition. Sir Coutts Lindsay deserves the grateful thanks of all lovers of art for the rich treat he annually provides for them, the warmest support and best wishes for future success and permanence of the most promising addition which has been made to the art galleries of the metropolis for years past, in the hope that whatever difference of opinion there may be regarding individual works therein exhibited, the result may prove a great and lasting contribution to the art progress of our time.

THE AQUEDUCT OF SEGOVIA.

SEGOVIA is an unmatched picture of the Middle Ages, with its domes and belfries of what are here called "Byzantine" churches, the bare and blank forbidding walls of its deserted monasteries, the battlemented towers of its noble mansions; the strange contrast between the high, open terraces of its palaces and the low, flat roofs of its mean hovels; the medley of half-finished or more than half-ruined buildings, the houses propped up here and there by beams across the way, the edifices begun with means out of proportion with the ends; gigantic plans often leading to puny, dwarfish execution; broad streets and open squares terminating in narrow lanes and blind alleys; massive iron-sheeted doors, window-bars, and loop-holes in the walls betokening the long habit and necessity of individual defence; the very knockers at the doors fit specimens for a museum, and the dust of long decay, of neglect, of hopeless sloth, of lingering death, pervading everything, and lying already too thick and heavy to allow the doomed place the chance of recovery or even of the indefinite prolongation of its agony.

Though Spain musters many of these spectral cities, — though Toledo, Cordova, Ronda, and others are, if not dead, at least living the life of other days, — there is something in Segovia, more than anywhere else in Spain, that reminds the traveller of the aspect of the decayed cities of Italy, say of the havoc and splendor of Ferrara, Ravenna, or any of those of the Emilia and Tuscany; for at Segovia few are the vestiges of the Moorish domination, and the monuments, for the most part, belong either to Roman or Gothic times, or rose in that golden age in which conquest brought Spain into incessant intercourse with Italy, and the victorious nation caught from the contact a little of the constructive genius of the vanquished people.

I could not hope to convey any distinct idea to the reader of the magnificence of the Segovia aqueduct by the statement borrowed from a very able monograph on the subject by Don Andrés Gomez de Somoarostro, to the effect that the water of the Fuenfria, running through the Rio Frio, was brought to it from the Guadarrama Mountains, over a distance of 10 or 11 miles, and that the aqueduct was made to go through several bends and turnings, to check the impetuosity of the stream, running 216 feet to the first angle, 462 feet to the second, and 937 feet to the third, where it becomes a bridge spanning the valley from bank to bank, and resting at the end on the solid rock on which stands what is left of the battlemented walls of the town. The total length of the aqueduct is thus 1,615 feet, and consists of 320 arches, which begin single and low, but rise gradually as the ground sinks, to maintain the level, and become double, one tier over another, as they vault over the gap of the valley, over the stream and the highway, all along the range that faces the traveller as he approaches to and passes under it, entering the town. The three central arches are the loftiest, and rise to a height of 102 feet. These are in the nether tier surmounted by three layers of stone somewhat in the shape of a step, intended as a cornice to mark the locality of the town-gate, and over the step in one of the pillars of the upper tier are scooped two niches, with a statue of the Virgin in the niche looking to the town, and in the other at the back a nondescript figure that priests call St. Sebastian, but in which the Segovians fancy they behold the effigy of the Satanic architect of the bridge.

No words and no picture could convey the impression wrought upon the traveller by the sight of this magic building. The whole structure is of granite, light gray as found in the quarry, but turned by age to a light pearl and purple tint, glowing like jasper in the deep blue of the semi-Alpine Castilian sky. The blocks of stone on a near inspection seem to have been laid upon one another clumsily and, as it were, at hap-hazard, some of them so daringly jutting out and hanging over as to suggest the apprehension that the whole fabric may at any time collapse and slip down to the ground like a castle of cards. Yet the bridge has been standing perhaps 2,000 years, and looks intact; and the design, seen at a proper distance, is a model of ease and elegance, relying, one would say, on mere symmetry and balance for solidity. The stones, rudely cut in large long square blocks, bear the holes of the iron clamps by which they were hoisted up to their places. They are worn smooth and almost round by time and storms, but sound at the core, and at the base of the pillars, as well as at various stages up the shafts and at the turning of the arches, there are cornices of what seems to have been black marble, but now everywhere chipped and cracked, and almost altogether fretted away.

The aqueduct is the only thing really living in poor dead Segovia; the necessity of securing a constant supply of better water than what flows between the ravines of the Erosma compelled the construction of this work when the place was a mighty city, and insured its preser-

vation as the town sank year by year to its present forlorn and dilapidated condition. The Moors, who sacked the town in 1071, pulled down thirty-five of the minor arches, but the water-course continued uninterrupted, the people contriving by wood-work to prop up the wooden trough or pipe running at the top. The dismantled arches were restored as much as was practicable in the original style in 1483, by Queen Isabella the Catholic, and the aqueduct has suffered no outrage from that time. What is more properly called the bridge—the double range of arches across the valley—escaped even the ravages of the Arab invasion.

There is something exalting and flattering to human pride in the contemplation of this edifice, which, like the Pantheon at Rome, is between fifteen and twenty centuries old, and yet not a ruin. One dreams of the works of men that have risen and fallen in the adjoining city while the aqueduct has been standing and performing the humble yet vital service for which it was intended, unmoved by the joys or woes of the population to whose most pressing wants it ministered. The ancient cathedral, begun, it is said, in the sixth century, finished in the twelfth, where councils were held and kings were crowned, used as a fortress against ruthless enemies, and so ravaged that its Holy of Holies had to be removed to the spot where the present edifice rose in 1525; the Alcazar, till 1866 a masterpiece of royal magnificence, now a mere wreck destined to moulder on the ground to the end of time; the scores of churches and convents, sanctuaries, chapels, and hermitages, crowding the streets of the town and its suburbs, some of the Lord's houses now closed from want of worshippers, some of the fraternities dwindling in numbers and thinning in flesh as if, if not the faith, at least the lavish charity of their patrons cooled and fainted; the fortress palaces, where proud nobles learned valor and courtesy, then sulked and idled, and laid aside the energies and spirits which made them the bulwark and the scourge of their meaner countrymen—all that made Segovia in the Middle Ages and unmade it in modern times—had its rise and fall, its life and death, during the long period since the aqueduct first threw the shadow of its aerial arches on the skirts of the rock on which the city stands. Mighty Castilian kings, with their hosts of iron-clad warriors; the sweet and pious and thrifty Isabella on her palfrey with her crafty Aragonese husband and her cardinal minister by her side; the popular heroes, the rebels Padilla and Juan Bravo; the sallow and gloomy Philip II., and, perhaps, Columbus and Cortez, and a host of minor notabilities, rode centuries after centuries under these arches. The record of great events—the long war against the Moors, the formation of the Spanish monarchy, the extinction of the people's liberties, the expulsion of the Jews, the revolt of the Comuneros, the decline of the national character, the repeated French invasions, and the revindication of the country's soil from the hated foreigner—all seem engraved on those slowly yet eternally crumbling stones, piled up by the constructive genius of a man who will be forever nameless. Those swarms of swallows and martins which hover on the wing in clouds about the lovely fabric, the shrieks of which are almost the only sound enlivening the air in the stillness of the summer sunset, have been there—they or their progenitors—ever since those arches were first bowed. The clay of their nests, hardened by ages, has clung to those stones since they were laid; generation after generation of these erratic birds have come back year by year from remote regions to their favorite haunts in those stones, and have found there undisturbed homes season after season.

—Correspondence of the London Times.

THE VIBRATION OF MILL BUILDINGS.

Boston, September, 1879.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir,—Assuming that a large factory, or machine-shop, is to be constructed upon the slow-burning principle, with open timbers, plank floors, deck roof, etc., there remain other points to be considered, which do not appear to have yet received sufficient attention from either the mill-engineer, the professional architect, or the builder.

In many of the existing mills, even of apparently the best construction, there is a great tendency to vibration, and in some of the mills that are high and narrow the vibration is very great. When it is considered that the lateral motion which constitutes this vibration has been imparted to the whole structure, and that it causes a pressure of every bearing in the mill, first on one side and then on the other, it will be obvious that a great deal of power must be wasted, not only to induce this motion, but also to overcome the additional friction caused by it, especially in heavy bearings.

If the common method of constructing a factory be considered, its faults may be apparent, and possibly the remedy. Assume an ordinary mill, 350 to 500 feet by 72 feet, four or five stories high, with towers to brace the centre only; throughout the greater part of the length the section showing two rows of posts and two side walls, with no brace whatever to prevent them from yielding or bending in some degree either way. There are mills within our knowledge in which a pile of water two thirds full cannot be set upon the upper floor without slopping over; others in which gas pendants will sway from side to side more than two inches. One mill was lately inspected, of unusually good construction, built of stone, with arched brick floors, four stories high, carrying very heavy machinery for working flax; on the first floor of the mill it was observed that the gas pendants

hung from the second floor had a very marked swing from side to side. We have the record of another large mill construction with iron beams, in which, before the machinery could be operated with any success, it became necessary to put wooden beams under the iron, and to lift the iron from the brick walls so that all the bearings should come upon the wood.

This vibration has been attributed chiefly to the motion of the looms, and it is now customary to place looms across the mill, and not lengthwise, and also upon a lower floor, as far as possible. In some cases one half the looms are operated at a little lower speed than the other half, in order to avoid a synchronous movement of the lathes; but there are many other causes of vibration, even in the rotary motions of other machines, and of the shafting, pulleys, and belts. Wherever there is friction there is a cause of vibration, and when it is necessary to construct a mill or work-shop above one story in height a remedy must be sought in the method of construction.

Mill construction appears to have been considered more with reference to the support of dead weight than to stiffness or absence of vibration. In point of fact, the dead weight to be sustained in a cotton or woollen mill is very little. If we take as an example a mill of 32,000 cotton spindles on No. 24 yarn, the floor space and dead weight of the machinery, omitting openers and pickers, which would, almost as a matter of course, be placed upon a concrete floor in a separate building, would be substantially as follows:—

COMPUTATION FOR A COTTON MILL OF 32,000 SPINDLES.

No. 24 Yarn.

	Pounds, about.	Total.	Stock.	Shafting.	Operatives.	Total Weight.	Floor Space.	Average Weight.
6 Lappers.	12,000	72,000	280	13,000	300	85,580	In sep. build'g.	
240 35-inch Cards.	1,000	384,000	4,800	11,320	275	400,995	} 17,836	25.30
2 Dentiers.	300	1,300	40	1,100	180	3,100		
12 R. W. Heads.	800	9,000				10,800		
21 Drawing.	2,000	42,000	850	1,250	180	44,280		5.184
33 Roving Frames.	9,000	324,000	2,000	14,500	4,000	344,500	12,328	27.52
39 Spinning Frames, 176 Spindles each.	4,000	360,000	15,340	125,000	1,820	502,160	15,984	31.42
24 Mules, 672 Sps. each.	10,000	240,000	10,000	24,000	2,800	282,800	24,132	11.69
8 Spoilers.	2,000	20,000	800	5,000	825	27,625		6.15
6 Warpers.	450	2,500	700	410	500	4,250		
2 Slashers.	4,000	5,000	2,200	480		12,280		5.760
8 Drawing-in Frames.	60	480	1,000	1,000		3,680		26.66
800 Looms.	800	640,000	128,000	140,000	16,000	924,000	36,864	25.07
		2,020,540	175,880	326,480	28,200	2,550,260	123,532	20.72
		Add for contingencies 20 per cent.					512,032	
							3,062,292	21.86

The greatest concentration of weight is immediately under the slashers, and as the floor reserved around the slashers is used to pile loaded yarn-beams upon, the weight at this point is relatively much more than the figures show.

A mill floor constructed in the usual manner would consist of beams 12 by 14 inches in one or two parts, eight feet on centres, 3-inch plank, 1½-inch top floor. The material would usually be hard pine and spruce; this would be substantially equivalent to six inches of wood of uniform thickness. Spruce weighs thirty pounds per cubic foot; Georgia pine forty-eight pounds. On these figures the floor described would be equal to 19½ pounds weight to each superficial foot of floor surface. If ¾-inch mortar were used between the floors, it would add about six pounds per square foot,—making 25½ pounds in all. The total weight of floor and load is, therefore, from fifty to sixty pounds per foot of surface in the principal departments of the mill. If the load be multiplied by eight the standard of the beams would be to bear a breaking strain of 250 pounds per foot of surface, or 50,000 pounds on each beam twenty-five feet long, supporting four feet of floor on each side of the centre,—200 square feet per beam. (An actual weight equal to this was lately found in a warehouse used for storing cheese.) The weight of the floor itself would be distributed about in the proportion of seven pounds in the beams, and 12½ pounds in the plank and boards of the floor. These figures would be varied a little, according to the kind of timber and plank used. In a mill seventy-two feet wide in the clear, with two rows of posts, the beams must each be a little more than twenty-four feet long; and it is obvious that there must be a very great proportionate weight on the centre of each beam, and therefore a tendency to sag in the middle. What that means, in respect to the adjustment of shafting and the operation of machinery, every manufacturer knows, to his cost and trouble.

How to stiffen the beams without exposing iron truss-rods, such as are commonly used, to the action of fire, as the combustion of the contents only of almost any room of a textile factory would heat truss-rods so as to make them useless, and would probably heat and destroy iron beams, would seem to be a suitable question.

The problem is how to get the strength of iron and the slow burning of a heavy wooden beam. Objections are made by some engineers to composite beams of iron and wood, and it is not desirable to reduce the substance of the wood more than one half,—that is, not to have either of the two parts of a beam much thinner or more combustible than the floor.

It is alleged that the weight upon a floor sustained by a composite or "fitch" beam will rest either on the iron or on the wood, and

cannot be brought upon both together. If your correspondents have any data upon this point, it would be interesting to the mill constructors to know them.

It has been suggested that a factory may be braced with inside rods, but it is desirable to avoid rods because of their tendency to collect lint.

The equivalent of the knees used in the construction of a ship has been suggested, but it is desirable *not* to tie the beams to the walls, so as to prevent the ends rolling out of their bearings in case they break or burn one at a time.

Buttresses would doubtless serve a good purpose, but they are somewhat objectionable if deep enough to obstruct light in the lower stories.

Our problem, therefore, is how to construct the walls, either solid or hollow; how to brace the posts; and how to construct the beams so as to give the utmost stiffness and so as to avoid vibration.

There are problems not yet solved in respect to the construction of the frames of machinery, as well as of the mills, that would, perhaps, repay scientific study with a view to avoiding vibration, — a familiar example of the unscientific use of material being the original use of stone sleepers on the Lowell Railroad.

The problem of rightly combining wood and metal in the framework of rapidly moving machinery, and wood, metal, brick, or stone in the construction of the factory, appears to offer a wide field for saving in power, friction, wear, and waste.

These points are stated as indicating some of the points that might be well considered by the student of *industrial architecture*, and every attempt at architectural effect must be absolutely subordinate to them. The only true effect that can be rightly aimed at must be that which gives expression to these considerations of safety and utility.

E. A.

SLOW-BURNING CONSTRUCTION.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Sir, — I do not think that after all there is much difference of opinion between E. A. and yourself as to the proper relation of wood and plastering. That floors and shingles laid in mortar do not decay when the mortar is kept dry is a matter of every-day experience; that they do rapidly decay when the mortar is damp is also well known.

The only requisite in such constructions is care to avoid moisture. The coating of timber with plastering on lath would, if the mortar were mixed with hair, I think, inevitably leave small interstices, the air in which would be changed by diffusion through the plaster, if dry, at any variation in temperature or condition of the atmosphere, and this may serve to oxidize the dry-rot spores, or in other ways check fermentation. If the mortar were damp, it would, however, be as impervious to air as a sheet of iron, to say nothing of the liability to set up decomposition in the timber by liquefying the albumen contained in it, so that, as before, caution is needful in applying such processes. Whether there would be any such transpiration if there were no appreciable interstices between the wood and the mortar is doubtful, but with the evidence we have, it must still be regarded as hazardous, even in our dry climate, to coat the wood closely. Why cannot some student of technology investigate the subject? The dry-rot *mycelium* can be obtained from most old buildings, or in any forest, and the behavior of a few sticks of marketable lumber, slightly inoculated, under different circumstances, would be a most useful study.

Has E. A. any definite observations on the comparative value of plaster of Paris and common lime for plastering mortar to be exposed to fire? It is commonly thought among architects that the gypsum, where the extra cost can be afforded, is much the best material. Not only is the hydrated sulphate of lime one of the slowest known conductors of heat, but it remains solid after being strongly heated and then quenched with water, while lime under such treatment slakes and crumbles. The underwriters should know best about such matters, and we shall be glad of any new light.

I think that E. A.'s account of the spreading of a certain fire between the furring strips on a party-wall will serve as a text for a protest against his depreciation of the building laws, — the work of the architects. In New York, as I presume he knows, party-walls, or interior walls of any kind, are very rarely furred, not that the architects there understand their business any better than here, but because their greater energy has there caused the enactment of a very strict building law, which by demanding twelve inches space between any wood-work and the inside of a flue has made furring on the flue walls, which are of course the party-walls, generally impracticable. That this is a great protection against fire is evident, but it is the cause also of unavoidable cracks in the plastering where any stud partition meets the plastered brick wall, on account of the settlement of the masonry; and Boston builders and owners, so far as my experience goes, always prefer the superior neatness of a room all whose walls are lathed on furrings or studs, and will probably continue to do so, so long as the insurance companies are willing to bear for them the burden of the additional risk from fire, unless public opinion can be brought to permit the passage of a building act similar to that of New York.

I have seen so many instances of the good accomplished by building laws, the support which they give to architects in their attempts at better construction, and the struggles of owners to evade them, that I should be sorry to think that E. A.'s influence would be given against them, and trust that he will interest himself to inquire more closely into their operation.

With regard to his opinion that "it can hardly be that the owners of property who are so willing to spend large sums for architectural effect should be unwilling to consider the suggestions made by architects for greater safety" I must continue to differ *toto caelo*. I am reluctant to cite examples from personal knowledge, but any architect can supply them. Perhaps a little *ad hominem* argument may put the matter in a new light, and to supply one, I will cast off my professional robes and appear in the rôle of a private citizen.

I have at present an interest in the insurance on fifteen buildings, connected with a property which is intrusted to my care. In the management of the property, my knowledge of the principles of slow-burning construction, such as it is, often shows me serious defects in the design and execution of the buildings, such as I should probably have corrected at once if they belonged to me, purely from the desire of gratifying my personal sentiment in favor of good construction. I sometimes find myself imagining what might be done to preserve them from danger of fire, and am obliged to check such thoughts with the question, "Have I a right to do such things with trust property?" As I understand it, my duty is to conduct the estate so that the capital invested shall yield a regular and permanent income, as large as may be without risking subsequent diminution from deterioration of the property. To this end I endeavor to make the buildings durable, tight, strong, and wholesome; to secure and keep good tenants by avoiding dampness or sanitary defects, to provide against loss by tempest or decay, but from loss by fire I look to the underwriters to protect me. It is needless to say that I have nothing to do with mutual companies, and the stock companies pay no attention to the details of construction in fixing their rates, so that, while I have spent without hesitation a third of the valuation of a house in making it clean, dry, wholesome, and attractive, I have not spent, and shall not spend, for security against fire one dollar beyond the insurance premiums, until I find that the income from the estate will be increased thereby, or the rate of insurance diminished. If any safe company will make it for the interest of the property to render the construction more secure against fire, I will promise that all my insurance, and all that I can influence, shall be taken in that company, and will at once invest a capital in remodelling the buildings I may have in my care proportionate to the income saved, and, if I build new, will spend a similar sum in making a slow-burning construction attractive to tenants; but until then I consider it my duty to go on in the old way, which universal custom proves to be the best adapted to the purpose I require it for. Does E. A. think I am wrong? Would not he, or any other prudent man, do the same? And if this is justifiable on the part of the owners, how can it possibly be the duty of the architects whom they employ to oppose them? I should be glad of strict building laws, which would uphold me in gratifying my sentiment for good construction, as well as my conception of the proper relation of the members of society in general to each other, but such considerations are out of the question in this case. My duty is plain: to derive the greatest permanent income from the estate, with the least amount of expenditure. If I think that exterior or interior decoration will attract tenants, so as to pay good interest on its cost, I shall have it put on, and shall employ the architect who can design it most to my mind; but the one who works in the interest of the insurance companies, instead of mine, and sacrifices what I consider beauty, convenience, or economy to safety from fire, will receive from me in my capacity as trustee little encouragement, however my professional sympathies may incline; and I am much mistaken if that is not the attitude, and reasonably so, of owners generally, and the architects must follow their wishes. If the insurance companies cannot change their course, there is but one resource, — legislative interference. That has already accomplished much, and can do much more. The architects know this, and have struggled hard, against their own interests to a great extent, to promote the enactment of building laws, while the underwriters, whose permanent interest is certainly in favor of diminishing the risk of fire by all possible means, have done little or nothing. They are rich and powerful, and it seems to me that they have a public duty to perform. Already they are openly accused of profiting by fires, and of encouraging dangerous constructions, which enable them to increase their rates on good risks, and so long as this is even partly true, the architects cannot be expected to contend alone against them. It will not be long before the public will discover that in the end it pays, not only all the losses by fire, but half as much more besides, to support the insurance officers and their clerks, and will demand a reform, by which those who build properly may secure for themselves a small portion of the great benefit which they confer upon the community at large. If the competition of insurance companies cannot effect this, strict building laws will, and whichever way is adopted, the architects will be found ready and eager to help.

C.

NOTES AND CLIPPINGS.

THE MANCHESTER SOLDIERS' MONUMENT. — We are requested by the architect of the Soldiers' Monument, at Manchester, to say that the contractors for the whole work were Messrs. Frederick & Field, of Quincy, Mass.

THE LONDON OPERA-HOUSE. — The *Pall Mall Gazette* states that the work of building the new opera-house on the Thames Embankment is to be recommenced by a stock company, based on the tontine principle, shares being held at one hundred pounds each.

A PARTY-WALL QUARREL. — Mr. James M. Glenn, a citizen of Cincinnati, O., decided the other day to tear down an ancient and time-worn building at the corner of Fifth Street and Race Street, and replace it by a more substantial and modern edifice. The work of demolition was carried on without hindrance or delay until it came to tearing down the party-wall on the south, which separated the premises of Mr. Glenn from those of Mr. Cozard. Mr. Cozard protested against having the side of his house taken away, leaving his halls and stairways exposed to the wind and rain. Mr. Glenn was sorry, but could not help it, the wall stood, according to his survey, ten inches on his ground, and must come down; Mr. Cozard, armed with a survey as good as that of Mr. Glenn, which said the wall was not on the Glenn property, and likewise armed with advice from his lawyer, declared the wall should not come down. Notwithstanding this declaration, Mr. Glenn put up his scaffolding, and his workmen with pick and shovel made a vigorous assault upon the wall, and were only prevented from carrying out their designs by the timely appearance of the Cozard party on their building, armed with double-barrelled shot-guns. Mr. Glenn being opposed to the shot-gun policy, and thinking discretion the better part of valor, called the law to his aid, and the Cozards were arrested, and while they behind the bars of a police station awaited bail, the Glenn party again assaulted the wall, which was down by the time the Cozards were liberated.

A NEW CATHOLIC CHURCH AT ROME. — A correspondent at Rome, writing on the 18th ult., says: Rather a novel sight, the laying of the foundation-stone of a new Roman Catholic church, was witnessed in Rome a few days ago. Except for the church built by Father Douglas behind S. Maria Maggiore, it must be some hundreds of years since a church foundation-stone was laid in Rome, — i. e., of the Roman faith; for many churches of other denominations have sprung up since 1870. Although Rome has already 300 churches, there is some reason for this new one, for all the churches of Rome are built in the old town — the only occupied part until the Italians came in; and so the new districts which have sprung up, especially the one beyond the railway station, Maccao, as it is called, find themselves a long way from any church. This new church is just in that district, a little way down the road leading to S. Lorenzo, and facing the railway station. The architect is Signor Vespignani, and, judging from the plan traced on the ground, it will be of the basilica shape, but decidedly small. It is to be dedicated to the "Sacred Heart," and it was at one time announced as the only church in Rome with that dedication. It was to be a huge temple, raised by subscription throughout the world. Perhaps the subscriptions fell short, though a part of the inscription above the inaugural pavilion yesterday says that it is erected "munificentia Leonis XIII. et cultorum stipe." — *Pull Mall Gazette.*

THE ALHAMBRA. — It should be put on record that the rumors concerning the probable partial destruction of the Alhambra, which we mentioned some time since, are proved to be without foundation in fact. The reports grew out of the endeavor of certain persons in Granada, who saw a chance to profit by such a job, to induce the Government to build a great retaining wall in a hollow of the Alhambra hill, which Señor Contreras, the architect in charge of the palace, and the government engineers, declared to be entirely unnecessary.

ANTWERP CATHEDRAL. — The *Paris Figaro* of late date states that the open-work about the tower of the Antwerp Cathedral is in such ruinous condition as to threaten the passers-by.

STAINING PINE. — The *Northwestern Lumberman* recommends the following manner of staining pine to represent black walnut: Put pulverized asphaltum into a bowl with about twice its bulk of turpentine and set where it is warm, shaking from time to time until dissolved; then strain and apply with either a cloth or a stiff brush. Try a little first, and if the stain be too dark, thin it with turpentine. If desirable to bring out the grain still more, give a coat of boiled oil and turpentine. When the wood is thoroughly dry, polish with a mixture of two parts shellac varnish and one part boiled oil. Apply by putting a few drops at a time on a cloth and rubbing briskly over the wood.

THE MAISON DU ROI, BRUSSELS. — The rebuilding of the Maison du Roi, or Halle au Pain, at Brussels, offers a very curious instance of architectural perversion on the part of some one. Built in the sixteenth century (1514-25), in a transitional style, part Gothic, part Renaissance, it was replaced in 1767 by a building which was admitted to be in egregiously bad taste. This eighteenth century building has been pulled down and the restorationists, say rather resurrectionists, are attempting to replace the sixteenth century building, their data being such traces of the old foundation walls as they can discover, and a painting in the museum which shows a procession passing through the Grande Place. The façade shown in this picture is said to be such that few would care to see it reproduced in stone and mortar.

A SEMPER MUSEUM. — The admirers of the late Gottfried Semper propose to found in his honor at Zurich, after the manner of the Schinkel Museum at Berlin, an architectural museum into which shall be gathered all the drawings, designs, and models of the master's work that can be obtained.

AN ERRANT HOUR-HAND. — The *Evening News and Star*, of Glasgow, tells the following story: "The other night Mr. Walter Hastings, manager of Mr. Osmond Tearle's theatrical company, and Mr. Hamilton Nimme, music-seller, were coming up Bridge Street, Ayr, about eleven o'clock, when, just under the town's spire, the first-named gentleman happened to ask what time it might be. He had scarcely uttered the words when something descending struck him with considerable force on the head. One side of his hat was completely smashed, but beyond a rather rude shock the owner sustained no personal injury. The missile, on being picked up, proved to be the hour-hand of the New Bridge Street dial of the town's clock. It looked a formidable enough weapon, being twenty-eight inches long, three broad, and was about two pounds weight, and had descended about ninety feet. The rough weather had detached it."

THE HAMATHITE INSCRIPTION. — One of the most remarkable objects of antiquity obtained from Asia since the Assyrian sculptures, says the *London Athenaeum*, is the Hamathite inscription which has just been placed in the Oriental Gallery of the British Museum. It is composed of dark basalt, about four feet high, and probably formed part of a doorway. On it are five horizontal lines of an as yet unknown character, undoubtedly resembling in some peculiarities the Egyptian, but so distantly connected with this now well-known language that as yet no approach has been made towards its decipherment. The inscription is manifestly boustrophedon, and probably reads from top to bottom. The characters are raised by sinking the field of the inscribed lines about three eighths of an inch. They consist of animals' heads, human hands, feet, birds, a figure resembling an O, trees, crooks, crocodiles (?), yokes, thrones, or carved chairs (?), and short lines or a line between two squares, these latter probably being numbers. From certain groups recurring with variants, there is probably some grammatical system underlying the arrangement of characters, which, nevertheless, partake strongly of the pictorial and ideographic element. The Rev. Dunbar I. Heath, whose labors upon the Egyptian language are well known, is assiduously studying the inscriptions, of which several are now extant. We hope he may succeed in finding the key to the mystery.

FLAXMAN'S BAS-RELIEFS. — The *Scotsman* says that the three bas-reliefs which were executed by Flaxman at the time he was admitted to the Royal Academy have been presented to the Swedenborgian church at Kensington.

ARTISTIC COPYRIGHT. — A novel question of artistic copyright has recently been decided in France. The heirs of three great painters — Paul Delaroche, Horace Vernet, and Ary Scheffer — brought a joint action against the publishing firm of Goupil to restrain the reproduction and sale of works of those masters on the ground that the extension of time granted by the law of 1854 inured only to the benefit of the representatives of the painter. The Minister of Fine Arts intervened in the suit, to watch the interests of the nation. In July, 1878, the Court of First Instance decided adversely to the plaintiffs, but this decision has been reversed on appeal. According to the judgment Messrs. Goupil have an absolute property in the original paintings; but, after the lapse of ten years from the death of the painters, the right of reproduction reverted to their heirs. It was, therefore, ordered that the defendants should pay a royalty to the plaintiffs on account of copies sold since that date, the amount to be determined by an expert. — *Exchange.*

THE MING MAUSOLEUM NEAR NANKING. — A correspondent of the *Celestial Empire* says: "Foremost among the numerous relics of antiquity in which this city is so rich, stands the mausoleum of the Emperor Hung Wu, founder of the dynasty of Ming. The place is commonly spoken of as the 'Ming Tombs' — a phrase palpably erroneous, seeing that there is but a single grave, although this is certainly large enough to include at least a dozen ordinary cemeteries. Five hundred years have rolled away since the quondam temple-servant, after heading a patriotic rebellion against the power of the Yuens, and rising to be monarch of the flowery land, was buried in this quaint, wild spot. As it lies some distance from the town, we elect to go on horseback. At the foot of the mountain is a small, regularly shaped hillock, girded by what looks like a white necklace with a clasp in front. Then we know that we stand before the emperor's tomb. Entering by a tumble-down portico, the coarse and tawdry red paint of which forms an unpleasant contrast to the solid masonry around, we find ourselves in a huge double quadrangle, strewn with ruins and overgrown with grass. Before us rises a broad, massive, and beautifully carved flight of shelving steps, on the top of which is a large stone platform, covered with the remains of monuments all in ponderous stone, signs of real splendor of material, of workmanship, and of design. A lofty screen or tablet occupies the central position, from which we descend upon the other side, and walk along the second quadrangle, until we reach the mausoleum proper. The ruins here are not abundant, but there is the same appearance of massive grandeur as in the first division. At length we come to a high temple-like building through which runs, upward, a long stone tunnel, at the other end of which we find ourselves at the foot of the hillock and almost on a level with a temple floor. Of course the temple is a ruin, like everything else, but it is the very reverse of imposing, being clumsy, flimsy, and painted a vile red. And then comes the finishing task — the ascent of the hillock behind. This pretty little elevation is surrounded by a wall — the necklace before referred to, while the red portico and temple form the locket. Our trouble is well repaid by the splendid prospect from the top, and the marvellously distinct echo which is produced by the faintest sound of the voice. We go back by way of the avenue. This is a long double line of colossal figures leading from the principal entrance of the mausoleum to two large structures, a good half-mile distant: one an enormous gate, the other a sort of funeral hall called the Hsuan Kung, or sombre palace. The first statues in the avenue are a couple of gigantic civil mandarins — grand officers of the household. Then come two couples of stalwart warriors, heavily armed, and clad in fine chain mail; after which we have a pair of carved and decorated pillars. Then begin the animals — as strange a procession as ever emerged from Noah's ark: two pairs of horses, two of dogs, two of tortoises, two of elephants, — such gigantic creatures, — two of camels, two of the mysterious *k'i-lin*, two of lions, and a great many more which I would not venture to define, being like nothing that anybody ever saw since natural history became a science."

THE SARCOPHAGUS OF THE KING OF SIDON. — A singular fact is noted in connection with the sarcophagus of Ashmenezzer, King of Sidon, now deposited at the Louvre, the inscription of which has just been deciphered. It is in effect like that of Shakespeare's tomb, uttering a curse upon whosoever should remove the monarch's bones. It further declares that such robbers shall leave no descendants, but shall be driven from their country. The Duc de Luynes bought the sarcophagus; he and his only son were killed in the Papal war of 1859. Again, Napoleon III. brought it to Paris and deposited it in the Louvre; he died and was buried in a foreign land, and his only son died at the hands of savages in a strange country. There is not a descendant left of Napoleon III. or of the Duc de Luynes. — *Exchange.*