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Pittsburgh, Pa.

Columbia, S. C., Dec. 15, 1893.

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FRANK NIERNSEE, Architect.

New York City, Dec. 4, 1891.

Having always given your paper my best support, I shall continue to do so.

H. D. HOOKER, Architect.

Worcester, Mass., Dec. 26, 1893.

The Worcester County Mechanics' Association has taken the Regular edition from the commencement of its publication. I believe it is all you claim for it — "the oldest" and "the best" of architectural journals.

W. A. SMITH, Treasurer.

Brooklyn, N. Y., Dec. 16, 1893.

My principal enjoyment is found in your illustrations representing foreign examples of the various periods of architecture, furniture and decorative art. So long as they are well kept up, I shall be glad to continue my subscription.

G. H. JACKSON, Camille-et-Lens.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

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APRIL 25, 1896.



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A MASS-MEETING, called to secure the preservation of an architectural monument and largely attended by members of all social classes, would be an interesting event in any country, while to have such an event transpire in America is of more than ordinary significance, as it bears testimony to the advance of civilization and the growth of popular interest in the gentle arts. Faneuil Hall was crowded on Tuesday with enthusiastic men, and the galleries filled with applauding women, who wished to join in public protest against the proposed wanton destruction of the "Bulfinch front." From every point-of-view it seems impossible to believe that the serious, dignified and emphatic rebuke thus administered to the promoters of the bill now pending before the Legislature should not be effective. The Boston Society of Architects has for three years waged successful war in behalf of the old building, but at length met with a repulse, and the people at large have now come to their support, and are disposed to test the question whether popular government means action in accordance with the expressed wish of the people at large, or whether it means the yielding to the perverse obstinacy of a few men temporarily in public office. In this struggle between the people and the State-house Commissioners, backed by their organ the *Boston Transcript*, American principles of civic government are once more put on trial.

EVEN an American architectural journal ought to take some notice of the death of M. Emile Boeswillwald, the last survivor of the group which Viollet-le-Duc and Lassus first made conspicuous in French art. To all who interest themselves in the mediæval art of France, the name of Boeswillwald has been for many years familiar; no one, perhaps, ever carried out so many successful restorations of buildings of the Middle Ages, and to no one does the Commission of Historical Monuments owe so much of its influence. Boeswillwald was an Alsatian, born in Strasburg in 1815. His father was a well-to-do baker, and the young Emile, who showed early an inclination for the arts of construction, was able to pursue his career without much difficulty. At that time, and among the bourgeois families, the first step toward acquiring a knowledge of construction was to learn stone-cutting, and Emile was accordingly apprenticed to a contracting mason, under whose instructions he cut stone, laid out temples,

and chiselled mouldings to his heart's content. At the end of his apprenticeship, he had gained the rank of "compagnon," entitling him to travel for a year, and study his trade in foreign parts. Being in a position to do so, he extended his tour to suit his own taste; and, after a year at Munich, where King Louis was building his architectural marvels, travelled through his own country of Alsace, measuring and drawing the country churches, for which he had a special affection, and finally reached Paris, where he joined the atelier Labrouste, then the centre of the movement for the emancipation of architecture from academic formulas. Klotz and Lassus had preceded him there, and under their guidance, encouraged by the sympathy of a group of able and enthusiastic youths, Boeswillwald, who had resources in the way of practical knowledge of the handling of stone which none of them possessed, soon became a leader in the little coterie, and an efficient support to Labrouste himself, who, in his theories of the evolution of architecture, gained many suggestions from the young stone-cutter. Like many others of the pupils of Labrouste, who was looked on with aversion by the devotees of official art, Boeswillwald was led to find employment in the restoration of the ancient churches, the structure of which he understood far more thoroughly than the architects of the official school, and, in connection with Viollet-le-Duc and Lassus, and afterwards with Duban, assisted in the restorations of the Cathedral of Notre Dame, at Paris, the Cathedral of Luçon, and of the Sainte Chapelle at Paris. In 1849, he was made architect to the dioceses of Luçon, Bayonne, Soissons and Orleans, and afterward to that of Chartres. In this capacity he carried out a great number of important works of restoration, and designed also many new buildings, — a house at Madrid, among others. His successful restorations, particularly, and the beautiful drawings with which he explained them, with his writings on the subject of mediæval art, brought him great reputation. He was Honorary Member of the Royal Institute of British Architects, and of the Imperial Academy of Fine-Arts of Vienna, and Commander of the Legion of Honor.

THE New York Chapter of the American Institute of Architects has placed itself on record in favor of the restriction of the height of buildings in that city, by a resolution approving the pending Pavey law. A committee of the Chapter has also been directed to prepare a circular on the subject, addressed to the public. This circular will, apparently, be the most important contribution to the discussion that has yet been made, except, perhaps, the famous address of Mr. Post to the Architectural League, and the public will watch for its appearance with much interest.

PROFESSOR J. B. JOHNSON, of St. Louis, calls attention, in the *Engineering News*, to the peculiar use made, in the newer editions of Carnegie's Handbook, of a function there called the Moment of Resistance, and expressed by $\frac{I}{n}$, I being the moment of inertia, and n the distance from the neutral axis to the extreme fibre. It is hardly necessary to say that nearly all architects and engineers have been accustomed to regard the moment of resistance in a beam as a quantity equal and opposite to the bending-moment, and expressed in the same units, usually inch-pounds; and, as $\frac{I}{n}$ expresses nothing but the moment of inertia, concentrated, so to speak, at the distance of one inch from the neutral axis, it is obvious that, to obtain from it a moment of resistance capable of being compared with the bending-moment, it is necessary to multiply it by the stress on the extreme fibre. This will give the moment of resistance in inch-pounds, and make the expression, instead of $\frac{I}{n}$, read $\frac{fI}{n}$, which is the usual expression for the moment of resistance, f being the stress per square inch on the outer fibres. In the case of steel beams, f is usually taken at sixteen thousand pounds, and the values for wrought-iron, and for timber of different sorts, are given in the text-books, and in some places fixed by law. While a reasonably well-educated architect or engineer would at once supply the factor required to calculate the moment of resistance, which he must balance against the bending-moment, Professor Johnson thinks,

with reason, that if the abbreviated expression in the Carnegie book, from which, it is true, the real moment of resistance can be readily obtained, is itself called by the name hitherto applied to the product obtained by multiplying it by twelve or sixteen thousand, there will be confusion in the minds of those who seldom have occasion to use formulas; and, in cases where building laws specifically provide that the moment of resistance shall be taken at $\frac{I}{n}$ multiplied by ten, twelve, or sixteen thousand, according to circumstances, it will be perplexing, to say the least, to the average builder to find in his Carnegie Handbook a table of moments sixteen thousand times less than those required by law; while, if he attempts to inquire into the matter, he is likely to be still more puzzled in trying to reconcile the Carnegie moment of resistance, which is given in square inches, with the moment called for by the law, which is expressed in inch-pounds. Professor Johnson suggests that, in future editions of the Handbook, the function expressed by $\frac{I}{n}$ should be called the "Moment of Resisting Area," and this name, which exactly accords with the true meaning of the expression, seems an excellent one.

MR. DANIEL C. FRENCH has been selected by the Municipal Art Society, of New York, to design and execute the memorial to the late Richard M. Hunt, which is to be erected in or near the Central Park. Just what form the memorial will take is uncertain, and Mr. French, who will be assisted by some architect of reputation, is to be left free to make his own suggestions. No one, at this day, need to be informed in regard to Mr. French's reputation as a sculptor, and it will be particularly interesting to architects to see what he will make out of his subject.

AN ingenious novelty is advertised in the German papers, which should find application here. The idea of the invention is to facilitate the making of perspective sketches, and to this end, sheets of paper are furnished, ruled at regular intervals, with lines, which, for horizontal features, converge to two vanishing-points, and, for verticals, are spaced at distances correctly decreasing. The vanishing-points are taken at suitable distances from the corner line, and diagonals are shown in correct perspective, while perspective lines are drawn in the horizontal plan. In order to lay out a perspective sketch with one of these papers, it is only necessary to lay a piece of tracing-paper over it, and count from the corner line the number of vertical lines corresponding, at the scale chosen, to the length of each of the two fronts to be shown, spacing off the openings in the same way, and inserting the horizontal features, such as cornices, window heads and sills, string-courses and so on. Of course, a sketch so made would not always give the best treatment of the design, but the ruled-papers would afford a ready means for studying perspective effect while the design was under consideration. Several varieties are published, some having the height divided into six parts, which, of course, may stand for stories, or metres, or feet, as the case may be, and some showing eight divisions; and, of the latter, there are two sorts, one having a large difference between the distances of the vanishing-points from the corner line, and the other a comparatively small difference; and each sort is made in pairs, one of each pair being the reverse of the other. Papers for interior perspective with two vanishing-points are also made, in several varieties. At the risk of being accused of advertising goods in these columns, we will say that the ruled-papers, which are known as *Perspectiv-Schemata* (System F. Gottlob, Architekt), are made and sold by H. Müncheberg, Alt-Moabit, 104, 105, Berlin, N. W. The smaller sheets, Nos. 1 and 2, for exteriors, and 7, 8 and 9, for interiors, which measure about twenty by twenty-eight inches, cost, in Berlin, one and one-half marks, or about thirty-six cents, each. The larger ones, Nos. 3, 4, 5 and 6, for exteriors only, measure twenty-eight by thirty-nine inches, and cost two and one-half marks, or sixty cents. Pasteboard rolls, for transmission through the mails, add three or five cents, according to the size; and explanatory circulars cost three cents.

A VERY interesting artistic movement has been initiated in Belgium, and is described by Mr. Charles Lucas in *La Construction Moderne*. It is well known that Belgium is the most religious country in Europe. The Flemish character, apparently, has a strongly developed spiritual side, which

the priests, who are, as a class, active, intelligent and well-educated men, guide with great discretion. Lately, inspired, perhaps, by a similar movement which has been for some years going on in France, the Belgian clergy have undertaken to revive what they call "Christian Art"; that is, art devoted to religious purposes. As long ago as 1867, the pupils of a certain primary school, directed by a clerical brotherhood, were called upon to decorate some banners, to be carried before the Host in the religious processions of which the devout Belgians are so fond. While the work was going on, it occurred to the good brothers that it might be well to get the young painters together two or three times a week, to teach them the elements of drawing and design. Some pieces of ornament and other objects were found to serve as copies, and to these were added drawings of saints and angels, studied from the mediæval ecclesiastical sculpture of the country, and Brother Marès began to teach, studying, at the same time, a plan for systematizing the instruction, and making it as efficient as possible. The course proved very popular, and other instructors were appointed, and the curriculum extended. Architecture, particularly of the ecclesiastical kind, was taken up, the course comprising, apparently in equal parts, "archæology, statics and liturgy."

WITH true charity, the good Brothers in charge of the work, not content with teaching through the week, arranged Sunday courses, so that workmen might attend them. The number of pupils increased rapidly, until six hundred were enrolled, and, this being as many as the space available for the school could accommodate, no more were admitted. All this took place in Ghent, which is not only a clerical, but, to a considerable extent, an artistic stronghold. When the affair had reached this stage, it seemed best to separate the artistic instruction from that of the school in which it was originally given, and the School of St. Luke was accordingly incorporated, and gives regular courses of theoretical and practical training in artistic pursuits. At first sight, a school of drawing and sculpture, founded on models derived from the mediæval sculpture of Northern Europe, would not seem a very promising affair; but the directors have certainly made up by their own energy for the rather arid basis of their system of design, and the pupils are not only taught to model and paint and build, but are required to practise what they know; and in the shops of the contractors for ecclesiastical buildings are to be seen many of the pupils of St. Luke's School, carving stone or wood, designing altar decorations, or painting altar-pieces, or the pictures of the Stations of the Cross which, on the Continent, frequently adorn the naves of churches. Such an effort as this cannot be without some result; and, as the foundation of the School of St. Luke at Ghent has been followed by the establishment of similar schools at Brussels, Tournai, Liège, Bruges, Courtrai and Lille, the movement is already a serious one. Whether it will lead to a great artistic development in the Low Countries is not so certain. Consecrated as the mediæval art is by association and, to those who thoroughly comprehend it, by expression, it seems incredible that a great school of art could now be founded on it. The little girl who did not want to go to heaven if she had to wear feathers like a hen expressed very well the impression which mediæval saints and angels make on most of us; and the good brothers are likely to be disappointed in the sanctifying power of art based on such models. It is true that the great Pre-Raphaelites,—the real ones, not the imitation—had only such models to study; but they recurred to nature for expression, at least; and if the directors of the schools of St. Luke wish to move the hearts of the community, through the work of their pupils, to increased spirituality, they will do well to allow their classes to study the manifestation of saintly qualities in persons of the present day, as well as in the bizarre figures of the fourteenth-century cathedrals.

THE Thirtieth Annual Convention of the American Institute of Architects will open at Nashville, Tennessee, on Tuesday, October 20, continuing three days. This year, an important feature of the Convention is to be a general discussion on a subject proposed by the Committee on Education, viz., "The Influence of Iron and Steel Construction, and of Plate-Glass, on the Development of Modern Style." A certain number of members of the Institute will be requested to prepare papers on the subject, to introduce the discussion, which is sure to be of great interest.



PUBLIC MONUMENTS.—A FIELD FOR NEW SUBJECTS.—THE CEMETERIES.—METAIRIE.—AUDUBON PARK PLACE.

WHERE stands upon a low pedestal in the centre of Lafayette Square, in front of the City-hall, a life-size marble statue of Benjamin Franklin, which is suggestive of a garden ornament rather than of a public monument. Why should we expect to find a statue of Franklin in New Orleans, and why should it be found in Lafayette Square? New Orleans was not a participant in the glories of that period of our history in which Franklin was an heroic figure. If the city's interest in Lafayette was so deep that it could give his name to an important public square, why has it not erected a statue to Lafayette?

There is some appropriateness in the equestrian statue of Andrew Jackson in Jackson Square, though it is said that some of the residents of the French quarter persist in believing it a statue of "Stonewall" Jackson, and some of the sporting element look upon it as a failure in an effort to portray the form and features of Jackson the pugilist. The statue of Henry Clay still retains its position in Canal Street, despite much discussion about its removal. Yet, Clay's interest in the city was that of an occasional visitor in ante-bellum times.

General Robert E. Lee's statue occupies a commanding position on the top of a tall Classic column in Lee Circle. There is an equestrian statue of Albert Sidney Johnston over the tomb belonging to the Society of the Army of the Tennessee, in Metairie Cemetery; and there are busts of four Confederate Generals upon a Soldiers' Monument in Greenwood Cemetery. New Orleans had unquestioned interests in the Confederacy, and these were appropriate heroes for the city to commemorate.

In Margaret Square, a small triangular garden at the intersection of Prytania and Camp Streets, there is a marble group upon a low pedestal bearing the simple inscription, "Margaret." The group represents a woman sitting, with one arm around the shoulders of a little girl. The monument commemorates the benefactions of a plain Irish woman who expended a large amount of money, made in a bakery, in caring for poor orphans. The work is too realistic a representation of its principal subject to be either graceful or picturesque, and marble is unsuitable as a material for statuary exposed to the weather. This is one of the comparatively rare instances in the world of a public statue of a woman other than one of royal birth.

These complete the list of public statues in the City of New Orleans. No criticism of them as examples of the sculptor's art is here intended, though it might be doubted if any one would think of putting upon the pedestal of any of them the inscription that appears on the statue of Carlos IV, in the City of Mexico, "This statue is preserved solely as a work of art." But these are mentioned for the purpose of suggesting a direction in which those interested in the improvement and adornment of the city can exert themselves to good advantage. It may be too late to remove some of the statues now in existence, to places where they would be seen to better advantage, or which would seem more appropriate. But it is none too early for public-spirited citizens to consider the selection of more appropriate subjects for future monumental representation in the public places of New Orleans.

After a fall of ten inches of snow late in February, 1895 (an incident wholly without precedent in the history of New Orleans), a young man of the city with more than ordinary artistic skill, modelled in snow, in one of the parks, an heroic figure of Washington. Some one, commenting upon this, suggested that as New Orleans was very badly supplied with public monuments and possessed nothing commemorating the Father of his Country, "the snow statue ought to be reproduced in white marble and erected both to honor George Washington and also to preserve the memory of the great snow-fall of 1895." The suggestion is ludicrous. The country of which Washington was in his lifetime the father, did not include Louisiana and New Orleans, and the connection between the first President of the Republic, of which Louisiana is now a part, and a snowstorm nearly a century after his death, would require constant explanation. But the fact that the city is so poorly supplied with monumental statuary is deserving of attention, and a rich field of subjects for the improvement of the public statuary appears to have been overlooked. Let some public-spirited citizen of New Orleans read the history of Louisiana prior to its purchase by the United States, and he will have no difficulty in selecting subjects for public statues more appropriate than Washington's for New Orleans to possess. Why should the city be any longer without such monu-

mental adornment? The picturesque dress of the heroes of the pre-American period would alone, it would seem, inspire a sculptor to produce a work of art distinct from anything else in an American city.

The cemeteries of New Orleans present a subject deserving far more extended treatment than can be given here. As there is water but two or three feet below the surface of the ground everywhere in the city and its vicinity, earth burial should not be resorted to at all here. It is, however, in many cases; and a clergyman once told me, that when he had occasion to officiate at a grave, he always felt in doubt as to whether he should say, "we therefore commit his body to the earth," or "to the deep," as the coffin certainly found a watery reception. The same clergyman declared his preference for entombment from a ritualistic point-of-view, there being far more dignity in the burial-service as read at the entrance to a tomb, than in the same service read over a hole in the ground.

In some of the cemeteries, lot-owners build copings around their lots to the height of a foot or two, and fill-in with earth, thus securing an additional foot or two of depth for their graves; but the cemeteries of New Orleans for the most part provide tombs. Those cemeteries in the thickly-settled portions of the city are rarely used of late years and have fallen into a disgraceful state of neglect. Strangers would carry away a very erroneous impression of the city and its people should they stumble upon one of these neglected cemeteries in the course of their wanderings. But on their way from the city to West End—the lakeside pleasure resort—sight-seers will pass a group of cemeteries, some of which have won high praise from observing travellers. Their location is at the head of Canal Street, midway between the river and the lake. Residences are spreading out in that direction and will soon reach this part of the city supposed to be reserved for the dead. Odd Fellows' Rest, St. Patrick's cemeteries Nos. 1 and 2, Jewish and Lutheran cemeteries, a Fireman's cemetery and Greenwood are of the group; and separated from Greenwood by a canal, upon one side of which runs a railway, and on the other a carriage road, lies Metairie cemetery, the most beautiful of them all. Without the advantage of natural variations of surface, as in cemeteries of other cities, its claims to beauty rest upon the effective landscape-gardening expended upon it, and the magnificence of its tombs. In the latter respect the cemetery is constantly improving, as new tombs are multiplying rapidly. The newer tombs are being erected by the wealthier families of the city, and as considerable money is being expended upon them, a field is here being opened up to architects such as exists in no other city. Thus far the efforts to step outside of conventional forms and design something original have resulted in bizarre effects. One tomb, for example, is conspicuous among its Gothic neighbors by its Mooresque style, while another is Egyptian.

Probably one of the most attractive spots in Metairie is a wrought-iron frame, presenting the outlines of an exquisitely proportioned Gothic chapel with flying-buttresses and clerestory. Ivy and "Confederate" jessamine have been trained upon this, and the whole is now a leafy bower, both summer and winter. A plain slab of polished granite beneath is simply inscribed to tell whose tomb it is.

The tomb in this cemetery belonging to the Society of the Army of the Tennessee, mentioned above, held for over a year the body of Jefferson Davis. It still holds the remains of Gen. P. T. Beauregard.

The site of Metairie cemetery was once a race-track, the property of the Metairie Racing Club. Charles T. Howard was disappointed that his application for membership in this club was not successful. He thereupon determined to turn the race-track into a graveyard, and New Orleans is decidedly the gainer by the manner in which he carried out his threat. The cemetery is often called the "Howard." The Howard tomb itself is a notable one, though surpassed in grandeur by more recent structures. It was once surmounted by a statue of "Silence," which has since been placed within the tomb.

When Audubon Park Place was laid out and improved, a new era in the treatment of residence property was inaugurated in this city. It is admirably located to test the advantages of this system, being opposite Audubon Park and adjoining the grounds of Tulane University. It has a handsome gateway, and a finely-kept roadway passes through it in graceful curves. As yet, Audubon Park Place is the only example here of this system of improving residence property so well known to other cities, but its example is sure to be followed elsewhere in the neighborhood, to the great benefit of that locality.

FRENCH AND DUTCH PAINTERS.

SCENE: the Grafton Gallery, London. *Dramatis Personæ*: two young women, presumably well educated and apparently cultured. Enter the ladies, descending the steps into the octagon room, the walls of which are adorned with a fine collection of the works of that most pathetic of painters—Josef Israels.

First Lady. "Ah, yes. Here are the Corots."

Second Lady. "Why, one could see dozens of such pictures on the Academy walls!"

Yes, here are the Corots, thirty-three of them; but in the next room. Can it be possible that nowadays a well-dressed woman can be so ignorant of the style of this most unique of painters as not to be aware that he was a landscapist? One would think that the

Barbizonians had been discussed, admired, talked of, and written about sufficiently to penetrate even the dullest mind! But, alas! to many, poor Millet, as well as Corot, Daubigny and Diaz, are as unknown as the man in the iron mask, or the Whitechapel murderer.

How Corot and Daubigny loved the neighborhood of Paris! To those who know the out-of-the-way parts of the Bois du Boulogne, it is not a little interesting to recognize in "Angling in Autumn"—an exquisite piece of work, beaming with a soft gray light—a nook of the Bois, facing Suresnes. One knows each tree-trunk, almost each blade of grass, although years have passed by since Corot painted. A very beautiful work is "The Moat," a quaint piece of wall, by a drawbridge, reflected in the still water.

Millet is only represented by some chalk sketches; but what consummate art it is! A few strokes of black chalk, and a touch here and there of white or color, and the thing is done. The water-color "Angelus" is here and, like the oil-picture, less interesting than many another. Like human beings, some pictures get a reputation beyond their merit, and some are left out in the cold. The pathos of the "Angelus" is obvious; that of the "Shepherdess" is more obscure, but none the less present; indeed, Millet seemed, like Israels, to see the pathetic side of life ever present in the peasants and laborers with whom he lived.

To many people, "L'Amour Vainqueur" will be as great a revelation as the figure-subjects of Diaz, and oddly enough, both men imparted a richness of coloring (something akin to Etty's) to their figure-subjects, which many of their landscapes do not possess. The "Justice," "Charity," and "Venus and Cupid," by Diaz, are rich with the sumptuous coloring of Titian. But they are mere sketches, as if the painter hurried over them in order to return to his heart's desire—landscape.

The art of Israels is essentially written in a minor key, but the harmonies are perfect. "Old and worn-out" expresses the key-note of most of his work. In one, a mother is dying, in another the old father is being carried away to his last resting-place. Even such subjects as the "Sempstress" are sad and tell of the difficulties of the poor. How well we know the old woman by the white-muslin-blind window! She is saddened by life's troubles, but she plods on and pursues her avocation, cutting out the calico near the light, for her eyes are dim. One can see by her expression that courage is one of her virtues, and trust in Providence her strength; and so she struggles on and does her duty, setting an example to all those young girls who are sewing at the other end of the table. Note, also, the sympathy between animate and inanimate nature in Israels's work: the men and women have had a hard struggle to live, and so has that plant on the window-sill, where it can get but a scant amount of sunshine. Even the colors employed harmonize with the subjects, and grays and browns are the prevailing tones. In a word, the art of Israels may be summed up as illustrating the poetry and pathos of poverty.

The art of Jacob Maris is of a totally different quality. In color as rich as Corot, and in drawing as sure, the pictures of Maris are to those of the Frenchman as prose to poetry—but what prose! A few strokes of the brush, vigorous and full of knowledge, some splendidly rich coloring laid-on apparently without much attention to form, and "Amsterdam" appears full of minute detail, if you trouble yourself to walk away a couple of yards.

Notice should be taken of Alfred Stevens's girl gazing at an ugly Oriental lion—dubbed "The Present"; for herein lies all the painter's subtle treatment of color, mostly pinks and grays which form the principal tones of the gown, and are repeated in the face.

Anton Mauve was another poetic proseman. His little "Ploughing" is exquisite in treatment—the old blue-bloused peasant-farmer guiding his plough; the old, but still vigorous, horse; the gray sky just tinged with pink, and the dull brown earth. This is all, and commonplace in the extreme; but what refinement, what subtlety and supreme knowledge! "The Paddock Gate" is a mere nothing, but is signed "Atelier A. Mauve"; and what better studio could be found for a *paysagiste* than this shady field with its fence and grazing cattle? Very clever is the "Morning Ride at Scheveningen"—two men and a woman on horseback, crossing the sands on a pale sunny day. Beyond are some bathing-machines, and still farther, the dull green sea and the dull gray sky—the whole picture diametrically opposed to the sunlit "Barn-yard," which hangs next to it.

Troyon is not so well represented, although his "Sheep, on Downs" is a fine work; and all Parisians of all nations must welcome the "Montmartre," which represents the "Moulin de la Galette" and its neighboring windmill, when the Martyr's Hill was a countrified suburb. Students, ignorant of Rousseau, will probably fail to appreciate him from these specimens of his art; but Daubigny shines forth in all his strength. How exquisite the tender twilight of "On the Oise: Anglers,"—just that scenery of the neighborhood of Paris that foreigners know so little about, unless they be art students—Enghien, Melun, Sèvres, Puteaux, Charenton, Nogent and Joinville-le-Pont. It matters little which of these places he painted, for he infused into all his work the purest sentiment, the most refined tones. His pictures are not as popular as Corot's, he is not nearly so well known, or so much studied, but they are as poetic and less conventional. Corot had a preconceived idea of what he intended to do; and whether he painted "Dreamland," "Arcadia," or a simple "Ferry," his effects are of much the same character. Now and then, as in the "Port of Dunkerque," he

dropped out of his peculiar style; but this is rare. On the other hand, Daubigny was a searcher and an unconventionalist. As Nature appeared, grave or gay, sunny or dull, so he painted her. There is no monotony, no mannerism; his trees are various—poplars, elms, pollard willows—what not. And so, too, his buildings, his boats, his people, are all, as in Nature, unconventional and various; but however commonplace in subject, the whole is suffused with poetry, and becomes an idyl of refinement treated in the most masterly fashion.

If the Fortunys now at the New Gallery could only have been at the Grafton Gallery, we should now have one of the richest shows of French art which has been seen in London for a long time. Fortuny was to all intents and purposes a French painter; French in teaching, and habits, and sentiment, as well as in the power of masterly treatment of the subtle; but Spain claims him by birth, and so he figures in company with his great compatriot, Velasquez—and holds his own manfully.

S. BEALE.

FAILURE OF BUILDINGS.¹—I.

THE

failure of buildings is one of the things to avoid (or, rather, to avert) if it be possible. It will, however, from time to time take place, though if sufficient pains are taken it is often possible to guard against it, and therefore it is quite worth our while to turn our attention to the subject of failures, so that we may know what they are caused by, and may try our best to remove the causes. To prevent misconception I will at once say that the limits of time will not permit me to say anything about an allied, but yet different subject—the treatment of a failing building. To-night we can only consider why buildings fail, and, to some extent, how they fail; and if we can succeed in doing so thoroughly, I hope that the means to take in order to prevent failure will, at least under some circumstances, become obvious.

Without further preliminary I will at once, if you please, turn to the causes of the failure of buildings. They are no doubt various, but may be reduced to four groups, of which the first and the second will chiefly claim our attention to-night.

Failures are due to:

1. Bad Foundations.
2. Bad Construction.
3. Bad Treatment.
4. Natural Decay.

1. *Bad Foundations* are more often the cause of the failure of ordinary buildings than anything else, and they are not infrequently the cause of the failures which, from time to time, occur even in buildings erected at great expense and very elaborately.

Many people do not know what a bad foundation is, and do not take pains to learn, and I am afraid that more people do not care.

The foundation is the part which is quite hidden away; it may very often be neglected and no one be at the time the wiser. Its duties are discharged in the dark and unseen, and accordingly, like many of the most valuable and useful individuals whom the world possesses and overlooks, the foundation is, as a rule, undervalued even by persons connected with building; for example, in the small property so largely built round London nothing beyond the minimum required by the Building Act is ever put in, however defective the site. The builder who spends an extra half-rod of brickwork on making his "weekly property" (too often weakly, with a different spelling) secure, knows that he will not get any more money on mortgage or any more rent, and he generally manages to part with his interest in the property before the inevitable cracks, settlements and bulges begin to show themselves.

Were there no Building Act to require a certain spread of the footings and a certain minimum of concrete, the failures of small houses from this cause would be much more numerous and serious than they actually are.

Failure of foundations sometimes occurs from changes in the neighboring soil, such, for example, as draining off the water; nay, even from the influence of the weather. London foundations are to a large extent on clay, and this notoriously treacherous material is apt to move even under the change of the seasons, much more when otherwise interfered with. I, myself, lived for years in a house on a clay foundation, in which there was a crack that used regularly to open every summer, owing to the clay shrinking as it dried, and to close again when winter came and the diminution of warmth and increase of wet caused the clay to soak and expand.

The defect in this case was that the foundation was too near the surface, so that the changes which the seasons bring easily affected the material.

The case of a large house built in one of the suburbs may serve as an illustration of bad foundations on a great scale. I was sent for to look at it, in a great hurry, and found one corner going over, the wall seamed with bad cracks and ready to fall. The first thing, of course, was to put up strong shoring to prevent its going worse, and then I dug down to the base of the wall. It was not far in the ground, and it had been started in a trench that had just reached the clay, without any concrete or any footings. There were thus two radical defects—the foundation had not been taken deep

¹ A lecture, by Prof. Roger Smith, delivered in Carpenters' Hall, March, 1896.

enough to reach a very solid bottom, and the weight had not been spread over a sufficiently wide area to diminish the pressure on the clay. I found the clay at this point soft; it had been made so by the leak of a badly constructed water-drain, and the foot of the wall was sinking into it. The corner was needed. We excavated till we got below the soft clay, and put in a good mass of Portland-cement concrete and underpinned the wall, and made good the drain, and so made that portion of the building safe. In the course of a few years I had to repeat this treatment either two or three times, in order to secure other portions of the external walls of the same building. I need not say that this process was very expensive, and that there had been great risk of a serious accident.

Another case of failure of foundations will illustrate the changes that come by the operation of time. Lofty London premises used, and still used, as a newspaper printing-office were found to be seamed with wide cracks from top to bottom, most of them originating near the junction of two external walls, the front wall and one of the side walls. There could be no doubt that the mischief sprang up there, and on shoring and opening the ground we found that the building had been well founded according to the condition of things at the time of its erection, perhaps half a century back. The ground had been soft and unreliable, and on a site not far from the north bank of the Thames, so rows of piles had been driven in, and timbers forming a platform under the footings had been secured to them; but with time and change, such as the erection of neighboring buildings, the soil had dried and consolidated, and had settled down and left the corner of a four or five-story building practically in the air, so much so that I was able to thrust my arm—holding a five-foot rod—into the space between the under side of the footings and the timber on which they ought to have rested. Very strong needling and shoring enabled me to keep up this corner of a heavy building throbbing with the vibration of a steam-engine and many printing-machines, and loaded with that extremely heavy burden, the type of a printing-office on the top floor. It was possible to put in a deep, wide and solid foundation, the cracked brickwork was made good, and the old building is in use at the present day and likely to last.

In the neighborhood of the river Thames, where much of the soil was more or less peaty, these subsidences of foundations from time to time occur. In one well-known case, where, unfortunately, a calamitous accident occurred, now perhaps half a century ago, a friend who inspected the wall shortly before it fell actually saw the light of a lamp between the foundations and the lowest course, a length of sixty feet of wall unsupported by any foundation and kept up by the aid of adjoining walls bonded to it. This wall suddenly failed, as was to have been expected, and came down with fatal result.

Modern improvements in the way of draining are responsible for many accidents to buildings. When a deep trench is cut in clay and a line of drain-tiles is deposited at the bottom, however soundly it is filled-in and rammed, the continuity of the solid clay is cut, moisture begins to trickle in and generally finds a means of travelling along by the side of the drain-pipes, or of the concrete in which they are embedded, and if there be a length of porous soil anywhere, something like an underground drainage is set up, and the water being drawn off from the clay, the latter shrinks and sinks, and the buildings drop.

A case of this occurred within my own observation not very long ago. A public building exceptionally well built, and with foundations which might almost be said to have been needlessly deep and wide, but which were made so because the subsoil was not trustworthy, and also because the building is likely to be raised hereafter, was standing apparently perfectly sound. In the thoroughfare adjoining, and within about twenty feet of the end of this building, a sewer, something like twenty feet deep, was put in by the local Board, and within twelve months cracks began to appear in that part of the building which was nearest the line of sewer. They were soon found to be spreading, and on opening the ground everything was found apparently sound and in good condition, only that it was possible to insert the blade of a knife, or a saw, or any other flat thin metal object between the concrete and the lowest course of footings at various points. The clay had been drained of part of its water by this very deep sewer, and had consequently shrunk and carried the concrete with it, and the brickwork was following the concrete.

The foundations of this building have been underpinned at great expense, and I hope that the evil is stopped, but it is a specimen of the risks that occur as a consequence of any changes in the condition of clay.

I remember another case, where a heavy building in course of erection suddenly developed a small settlement, and we were able to trace the cause of it to a large rush of water which came down a cutting in consequence of a thunderstorm, and some of which had been able to soak into the ground at the part affected. The ground round the building was promptly paved (a good precaution, by-the-by) and the settlement has never reappeared.

A more serious case of settlement leading to an accident, owing to the drawing off of water from the clay foundations of some carcasses in course of erection, came under my notice some years ago. Providentially the accident, which was a most formidable one, occurred on a Saturday afternoon, or loss of life must have ensued. The buildings in question were part of a row of good-sized dwellings, houses and shops in course of erection on a site in a suburb of Lon-

don which sloped a good deal. The road to which the houses fronted followed the slope, and the builder began at the highest point and worked downwards, putting in good concrete foundations under his main and party-walls. It will be understood that the ground-floor of each house was a little below that of its neighbor, but from front to back there was little or no fall. All was going on briskly when, without warning of any sort, the lowest house collapsed entirely, bringing a great part of the second and a considerable part of the third house with it. The remaining houses higher up the hill stood. On examining the ruins, which I did a few hours after the fall, I found that the whole mass of concrete under the lowest party-wall (for it had been intended to continue the row of buildings still farther), the whole mass, I say, had slid downhill a yard or more and had ploughed up the surface-soil before it and had broken in two. Of course, the wall resting on it came down, and the next party-wall followed, and the wonder was that such a shock did not bring more ruins down. The surface over which the party-wall had slid looked wet and felt greasy, as if it were a seam in the clay made slippery by being kept wet; and this was in fact the case, and it was the sliding of part of the clay upon the remainder which had carried the concrete and everything else with it. But why had it slid? Eventually, and after a good deal of inquiry, it appeared that the ground being moist, the builder had thought that he could collect water by sinking a pit in the lowest part of his ground, and had done so and obtained a copious supply of water in this pit, and had inserted an overflow from it into a drain near, so that there might be (and probably was) a constant stream of water flowing into this pit and out of it without its being perceived. This going on for weeks, or, indeed, months, appeared to have set up something like an underground water-course in the actual clay of the subsoil. This water-course must have passed directly under the concrete and finally rendered it possible for one part of the clay to slip on the other, and so led to the whole mischief.

One more example of what an underground passage of water can do to clay, you will, I dare say, permit me to describe, as it was instructive, though, luckily, it was not the foundation of a building.

A client of mine had a house fronting on a very steep road which climbed up a great clay bank in a London suburb. There was a long kitchen-garden behind this house, and the rear part of this garden was occupied by a grass-plot. Four or five similar gardens occupied the land higher up the hill, and all had grass at the rear, and there can be no doubt that in wet weather some considerable proportion of the rainfall passed over this grass, though, naturally, a good deal sank in.

Immediately below my friend's garden a good deal of earth had been cut away to form a stable-yard, and the garden itself was partly held up by a well-constructed retaining-wall, which, in fact, formed the boundary between the sunk stable-yard, which I have mentioned, and the garden. This state of things lasted for years; but one unlucky day the tenant of my friend's house thought it would be nice to form an additional bed of flowers or vegetables, and removed the turf from a strip of land just inside the hedge separating his back garden from the next higher up. Wet weather followed, till at last a tremendous slip of the clay took place, and about eighty tons of it were precipitated over the retaining-wall into the stable-yard below, damaging the wall to some extent, and carrying fruit-trees, cultivation, and everything else with it. An inspection showed that the clay was intersected by seams, and that the surface of the seams was wet and greasy, and that the mass of clay that fell had slid along one of these seams over what remained untouched, and the conclusion was at last forced upon me that the occasion of the whole thing was the formation of a bed of vegetable mould, already described, where there had been grass before. The rain trickling over the grass higher up the hill when it came to this porous rough surface was arrested, found absorbent soil below it, and penetrated downwards and into the clay; and the water, travelling through seams in the mass of clay to a much greater extent than ever before, had lubricated a sloping bed or seam, and on this the clay had slid.

Had the house stood on that part of the property, instead of fortunately being in front of it, there can be no doubt that it would have gone down just as apple-trees and turf, and clay and garden-mould did, in one ruinous heap.

An accident happened about a quarter of a century back at Somerset House which may be described as mainly due to defective construction, though actually occasioned by a failure of foundations. In front of the main building of Somerset House there is a terrace now fronting the Embankment, but which when erected arose from the river. Either the formation of the Embankment and deep sewer, or that of the Metropolitan Railway, or both, so far affected the foundations of the front wall of this terrace that it began to lean forwards, and suddenly the superstructure of the eastern part of the terrace, the part occupied by King's College, gave way with a crash. Happily, this occurred at an hour when no one was about, so there was no loss of life. No inquest was held, and not a great deal of public attention was drawn to it, but the ruin, which I saw and examined, was frightful, and the loss of life might easily have been disastrous. The superstructure which fell was carried by cast-iron girders, of which one end rested on the terrace wall and the other end was built into and carried by the wall of the higher building behind, and consisted of brick arches thrown from girder to girder, and of earth and paving resting on the arches. There were defects

in the design of the girders which, perhaps, contributed to their breaking, and the treacherous nature of cast-iron, a material so brittle that when it fails, it snaps asunder, had to do with the suddenness of the catastrophe, but the actual defect which threw a strain on these beams that they could not stand was apparently a trifling peculiarity of construction. The lower flange of the main girder widened out at each end to form a seating, and a large stone template was provided to receive it. Projecting downwards from the under face or bed of the girder was a short but stout dowel, or lug, and in each of the stone templates a corresponding sinking had been made, apparently with some idea that the girder so secured would serve to tie-in the terrace wall to the main structure. This the girders really did only too effectually. The terrace wall was very massive, and the stone templates firmly connected to the adjoining masonry of such wall, consequently when the failure of the foundations caused the terrace wall to fall outwards, a tremendous longitudinal strain was exerted by the masonry upon the girder, and this eventually became too much for the beam, on which it was most severe, to bear. It snapped, and after it the rest gave way. Had these beams simply rested on the stone templates so as to allow them to slip under, there is fair ground to suppose that the fall would not have occurred.

If the failure of foundations is the most common cause of the failure of buildings, next to it in importance and frequency stands bad construction. A building to be sound ought to be of good materials, good workmanship and good design, and a defect in either of the three requisites may lead to disaster. Circumstances have brought under my notice one or two failures due to bad construction on a large scale, which are so public and notorious that no harm can be done by describing them, and the more so as the reputation of no living architect or engineer will be injured, and as, indeed, the authorship of some part at least of the designs which failed is not generally known.

My earliest personal experience of the failure of a building occurred when I was, so to speak, an architectural infant not one year old; but it was sufficient to produce a strong impression, and I have little doubt that this lecture to-night, even after so long an interval as forty years and more, is one of the results. Of that failure I propose to give some particulars.

The Southeastern Railway, in the year 1850, had in use their goods station in the direction of Walworth known as Bricklayers' Arms Station, and a very large space, measuring some acres, was roofed-over by a series of sheds of small span, of which so large a part of the framing was of cast iron that it was described at the time as a cast-iron roof. The structure rested on a whole forest of cast-iron columns near together, and in some way (it was said in consequence of a truck getting off a turn-table) a single column received a sharp blow and broke. It fell and dragged with it the truss and the adjacent part of the roof resting upon it; the fall of that truss overthrew the adjoining column, and so the ruin went on falling like a house of cards. A series of crashes was heard, and a blinding column of dust arose, and when it was possible to see once more, two-thirds of what had been a vast and busy railway-goods shed a few minutes ago was one mass of broken slates and smashed glass, with every here and there a fractured column or a disjointed roof-truss poking out, and, unhappily, one poor fellow, who was buried under the ruins, dead, and others were much hurt. I had the opportunity of seeing the miserable spectacle presented by this station after the fall of the roof, and it left a profound impression of destruction and desolation.

It is clear that a great deal of reliance had been placed by the builders of this shed on cast-iron, a reliance that was not justified by the result. Cast-iron was almost the only form in which the metal was then employed in buildings, and this failure was one of several which helped to discredit cast-iron for structural purposes. It had, however, another effect, and one, if not two, other failures of roofs may be said to have indirectly grown out of it. Engineers saw that it was infinitely desirable on structural grounds, as well as for the sake of appearance, to get rid of all intermediate columns and to cover their great railway-stations by wide roofs of great span. The Southeastern Railway Company were at the time preparing to rearrange their London Bridge terminus, and this accident led them to decide that there should be no intermediate columns in the new station, which meant that a width of 92 feet must be spanned by one truss. This was at that time rather a formidable undertaking, for the wide iron roofs with which we are now familiar were not then in use, and it was decided that the new roof should be a timber one. A timber queen-post roof with tie-beams was designed for the purpose, and was erected, and I am bound to admit that it is still standing; but the part of the station which it covers is little used by the public, so few of you may have seen it. If you do, you will find that it is, in fact, a failure, for it is now propped up by timber joists under each tie-beam, and a roof intended to do without intermediate supports, but to which they have since required to be added, is a failure for the purpose which it was intended to serve, though by dint of props it has been prevented from failing in the sense of falling to the ground. I was employed to measure a truss of this roof and to draw it out, and we can, therefore, search on my drawing for the causes of the failure of this structure, which, though extremely plain, is rather a clever-looking piece of framing. The defects are: (1) that the pitch is flat; (2) that the trusses are too wide apart; (3) that the flat centre is liable to catch a crushing weight of snow;

(4) that the timbers are of insufficient scantling; and (5) that the material, fir, is too soft for the joints to resist the enormous strain upon them. The following particulars may be worth giving you:

The clear span between the walls was 92 feet, and the principals were no less than 21 feet apart from centre to centre. The truss (a queen-post truss) was 9 inches thick, if I may be allowed such a phrase. That is to say, the principals and collar were 12" x 9", the tie-beam was 15" x 9", and the braces were 9" x 9". There was one scarf on the tie-beam, at the centre, but even so this beam required timbers of about 53 feet long in order to allow for the scarf and the portion on the walls. The pitch or angle of inclination with the horizon was only 21 degrees, which is less than the traditional quarter-pitch (or 22½ degrees), usually believed to be the flattest at which slates ought to lie. The principals were of timbers about 31 feet long, and the collars 29 feet. Of course, the very flat pitch reduces the area of the slated portion and enables timbers of manageable length to be used for the principals, but it increases the stress upon the principal rafter very seriously. One-third of the whole width of the span is appropriated to the level part between the queen-posts. The queen-posts themselves are iron bolts passing through cast-iron queen-heads, which receive all the timbers coming together at this point of the truss. There are three intermediate rods, so that the whole space is divided into six equal spaces, filled by diagonal braces. There are no iron shoes at the foot of the principal rafters; they simply notch on to the tie-beams and are secured by two wrought-iron straps.

Were every dimension of this roof, except the scantlings of the timbers, reduced to two-thirds of the present figures and the timbers retained as they are, this truss for a 60-feet span might have been pointed to as an elegant and probably a successful piece of framing, but as matters stand, it was inadequate to the work it had been intended to do.

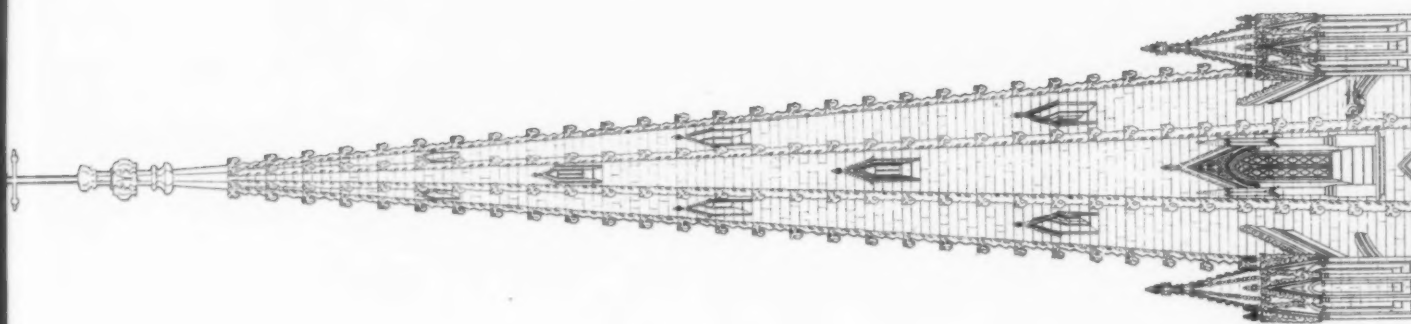
The Great Northern Railway was at this time coming into London, and its terminus was to have roofs with large unsupported spans and constructed of timber. How far what had occurred at Bricklayers' Arms and at London Bridge led to these decisions I have no means of knowing, but the King's Cross terminus was built either at the same time or within a year of the London Bridge roof, and it was understood at the time that the one had influenced the other. The Great Northern terminus, however, was to be far more bold and far more ornate. The design contemplated two roofs, each of 75-feet span, entirely without tie-beams, but with a semicircular built-up timber rib. The semicircle had been employed with success in the transept roof of the first Crystal Palace, completed early in 1851, and this probably had to do with the selection of the arched rib as the chief feature of the design. The station was completed, and the fine, bold, yet simple, aspect of the roofs is, I have no doubt, known to you all; but it was a cause of infinite chagrin to every one concerned to find that as soon as they were completed the ribs began to spread. It was necessary to shore-up the side walls of the shed at once on that side where the trusses were not buttressed by the station buildings, and as years went on, the trusses dropped in the centre and went from bad to worse till eventually they were, at very great cost, replaced one by one by wrought-iron ones, so that the roof as you see it to-day is of different material though the same in shape. It may be worth while to inquire for a moment why this failure occurred.

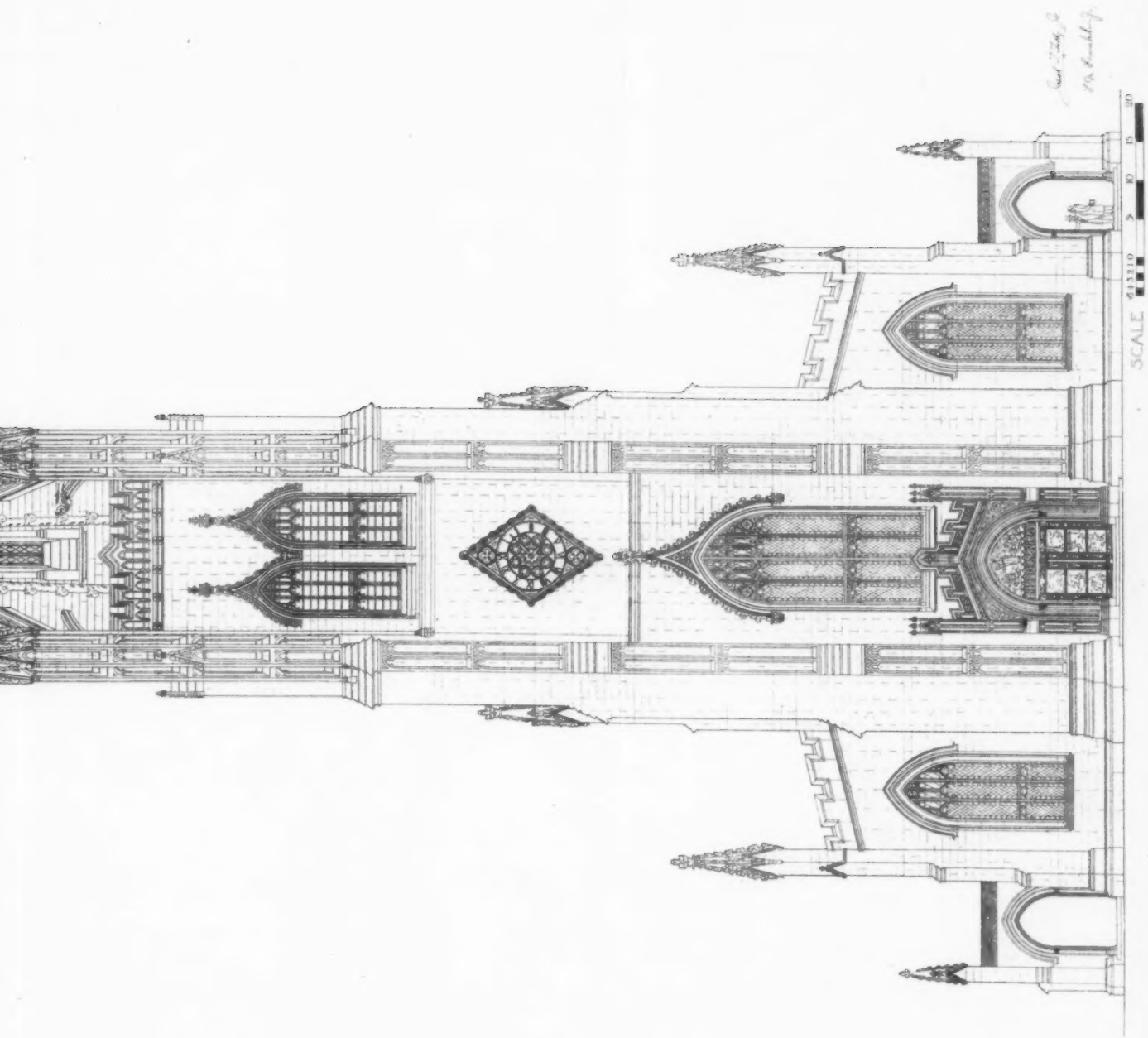
Though this rib has an arched form, it is in no sense a true arch like that of a bridge of masonry. It is only a bent beam, and its retaining its shape under a load depends upon its stiffness. If you overload an arch of masonry, it will break. If you overload a beam of timber, it will bend and lose its shape. The designer of this station-roof chose a well-known form of rib, which is said to have been first employed by Colonel Emy, a French engineer, and which is constructed by bending planks to the curve, laying them one over another (of course, breaking joint) and bolting them together. It does not need a great deal of sagacity to see that this kind of rib is not extremely rigid, and that if at all free to move when combined with other timbers into a truss, it will be very apt to lose its shape if loaded to any extent. This rib consisted, in the King's Cross roof, of 1½-inch boards, sixteen in number, so that its depth would be about 24 inches by, I presume, 11 wide.

But why had the Crystal Palace transept roof not failed? It was, no doubt, less heavily weighted, but its dimensions were very similar to those of the King's Cross roof; the span was either 72 or 74 feet, the distance of the ribs apart was 24 feet. But the great difference was that the Crystal Palace rib was built up of timbers put edge-ways. It was 17½ inches deep and the main part of it consisted of four thicknesses of timber bolted together and cut to the curve. A bent timber and an iron plate at the soffit and the same at the back of the rib completed a structure more stiff by far than the one at King's Cross, and one which, as a matter of fact, did stand while the King's Cross one did fail.

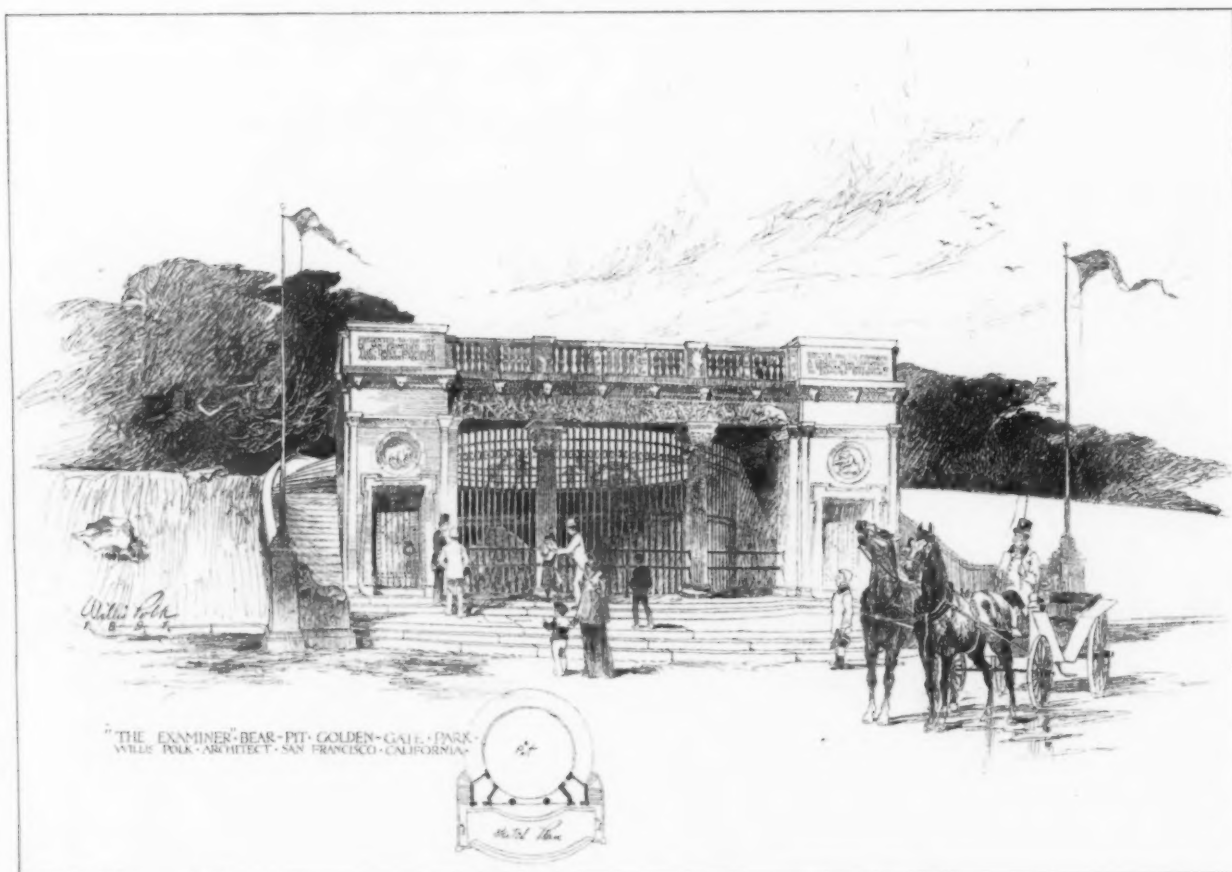
It is worth while to remind you that the same sort of rib well combined with other timbers made up the extremely simple, cheap, and effective roof of that successful temporary building at South Kensington originally built for the Fisheries Exhibition, and which subsequently sheltered the Healthieries, Colonies and all that series.

Failure of walls where not occasioned by a defect in foundations, only their being of insufficient mass is mostly due when it occurs to building them of two different sorts of material, one for the heart and the other for the face. At the present day this is frequently

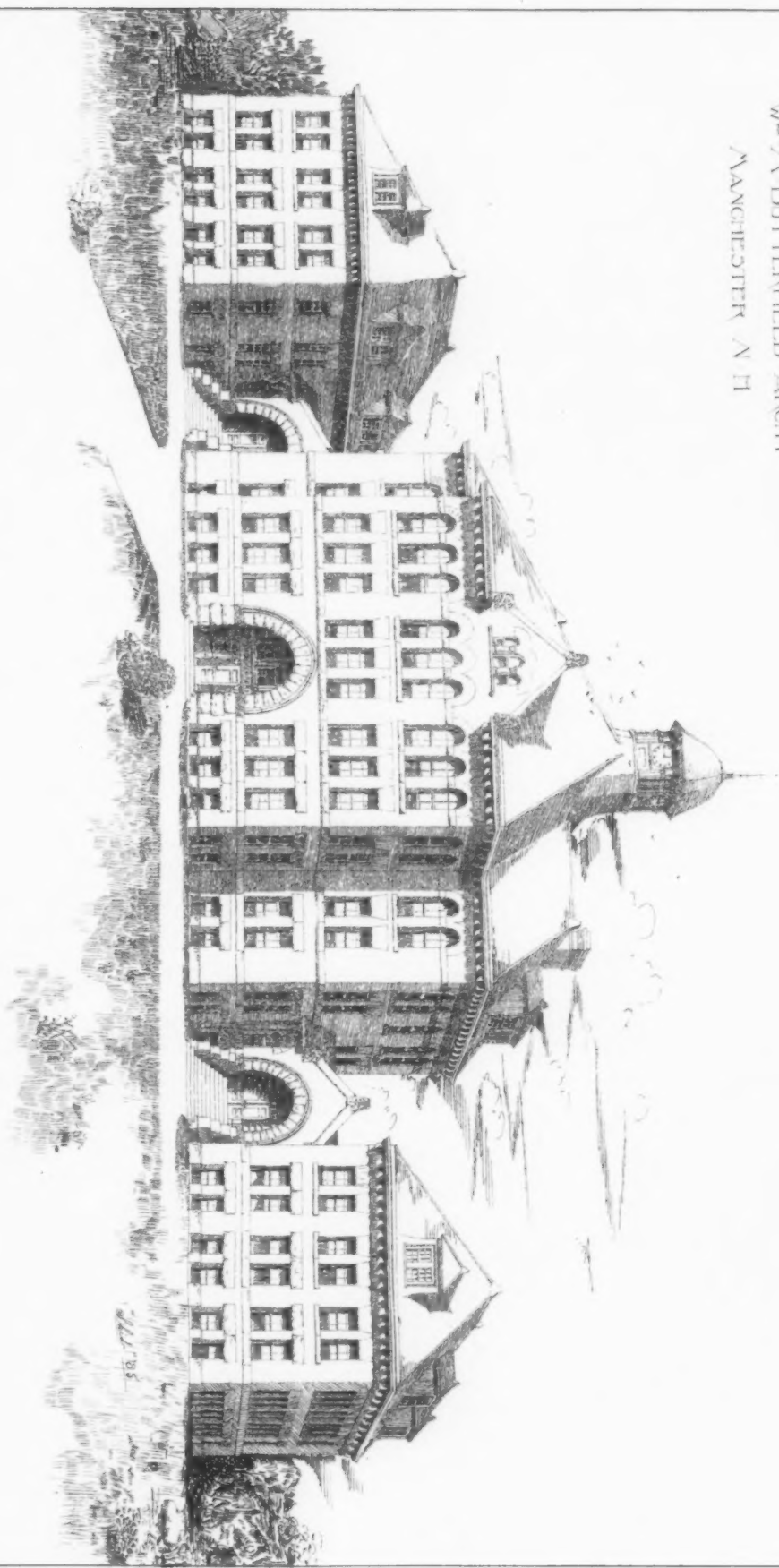


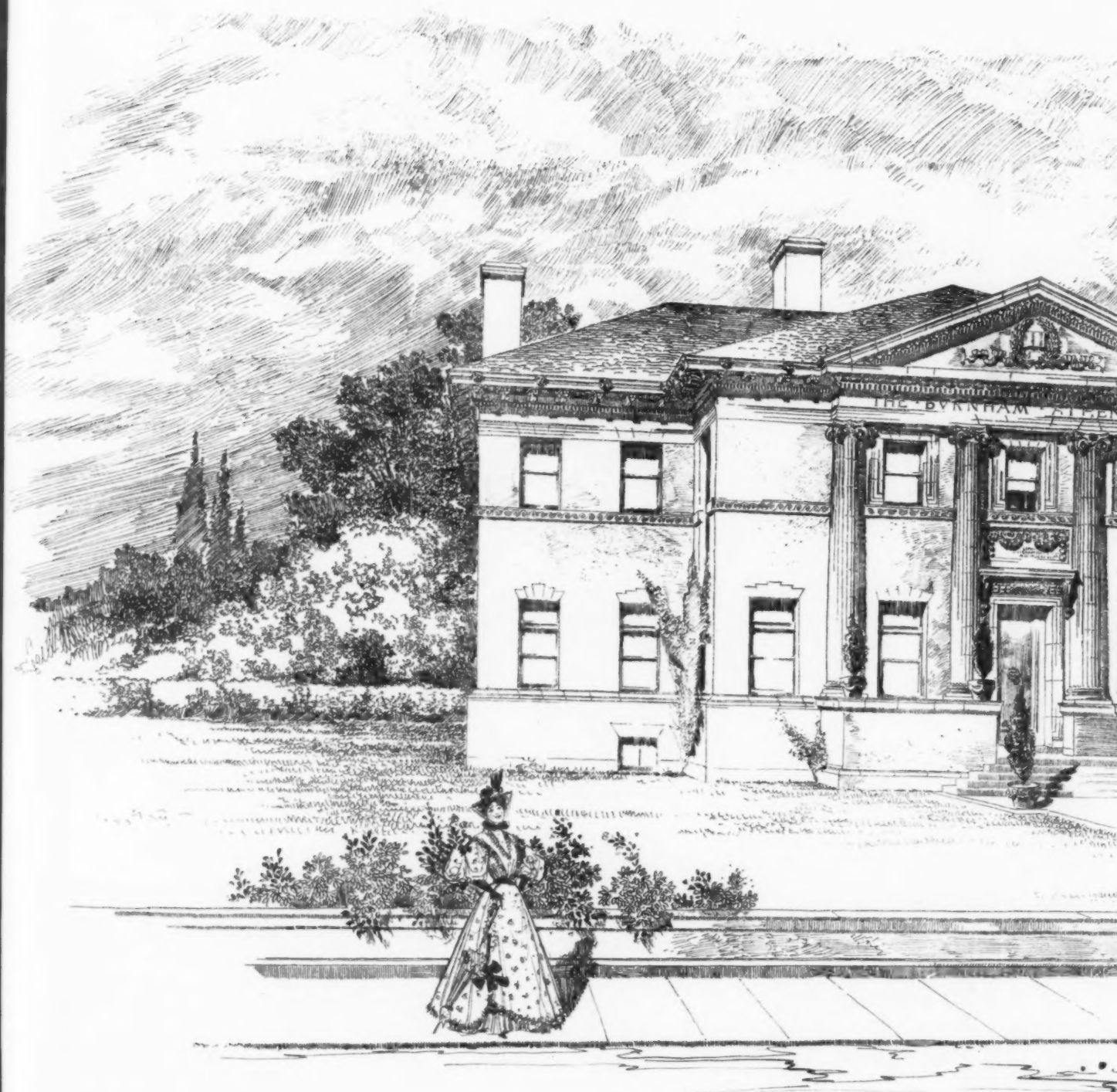


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done, and with safety, in buildings that are faced with stone on a heart of brickwork, for the bricks in such walls are now customarily set in cement, and the cement is rigid and practically incompressible; but before cement came into use, or where it is not employed, unequal settlement may be looked for in a wall so constructed.

A familiar illustration of this occurs in a great many of the front walls of common London houses, where the bond is Flemish, and the thickness brick-and-a-half. Those who understand the bond of brickwork know that this sort of wall cannot, at the best, be built without a considerable proportion of bats or false headers, but that it is quite possible to build with the outer half-brick thickness not bonded at all, or only occasionally bonded to the inner one-brick thickness. When better bricks are used for the face than for the rest of the wall, there is accordingly some temptation for the sake of economizing a little in facing bricks to build in this manner. The nine-inch inside work accordingly bears all the weight, and the outside is stuck to it by mortar and possibly an occasional header, but in no other way. I have seen very formidable-looking failures occasioned by this defect. The outer skin of one house that I was sent to inspect in great haste had bulged away from the back, forming a kind of blister, perhaps 10 feet across, and cracked and broken, occasioning fortunately, however, so much alarm that immediate measures were taken to secure it. The same sort of defect has occurred every now and then in masonry walls where the heart of the wall is frequently more compressible than the face. This defect sometimes exists in old work, especially in Norman masonry, where the face is usually of beautifully-squared solid-looking stone, but the backing (the walls being extremely thick) of rough, poor material. The central tower of Peterborough Cathedral, which has had to be taken down to prevent its falling, was so constructed, and the central tower of Chichester Cathedral did fall solely from this reason. In each of these cases the heart of the walls was very inferior to the face, and when it settled, the stones of the facing were left to do the entire duty which the wall was supposed to discharge, and proved after the lapse of years—nay, of centuries—unequal to the burden.

(To be continued.)



T-SQUARE CLUB OF PHILADELPHIA.

THE last meeting before the summer recess was held on the 15th of this month. The interest caused by the election of officers, the regular competition, and the changes in the Constitution were shown by the number present.

The competition was "A Memorial Archway," commemorating Stephen Girard's public bequests, ostensibly, to be erected by those who have benefited by his benevolence. There were only five drawings submitted, but as each showed marked effort and a great expenditure of time, these were considered a satisfactory showing.

The design of Lloyd Titus received First Mention. It was criticised on two points: First, the doors to the retiring-rooms were much too large, and injured the entire façade; secondly, his approaches and general plan were much cramped; otherwise the design was well studied and the rendering the best submitted.

The Second-Mention design, by R. C. Heath, was well designed in parts, the rendering being well applied. But for a gable, which would have improved the design to have left off, and excepting the unfortunate way in which the guard-room and retiring-rooms were attached to the arch proper, his design would have secured first place.

The Third-Mention design, by A. B. Lacey, was entirely too conservative, showing a lack of imagination. Some points in the plan, however, which involved the setting of the structure, its approaches, etc., were much praised.

The other competitors were Alfred Pancoast and John Koester.

The change in the Constitution consisted in the insertion of two clauses in Article III, exempting the secretary and treasurer from all dues during their terms of office.

The letter received from the Park Commissioners, thanking the Club for their resolution upholding the decision of the Board of Experts in the Fairmount Park Art Museum Competition, was read.

Prof. W. P. Laird, of the University of Pennsylvania, spoke to the Club of the endeavors of Mr. James M. Beck to secure for the city the properties to the northwest of the Public Buildings for a Plaza, because of the rapidity with which high buildings are erected, and consequently, because of the future impossibility of securing the same ground at a reasonable figure.

The Club, by motion, decided that the President should appoint a special committee to draught a resolution endorsing Mr. Beck's work, and thus give the Club's endorsement and aid in securing this improvement. The special committee's report was prepared and sent to Mr. J. M. Beck.

The result of the election of officers for the year beginning in October next was as follows: *President*, D. K. Boyd; *Vice-President*, F. M. Day; *Secretary*, C. E. Oelschalger; *Treasurer*, H. H. Burrell. *Executive Committee*: Walter Cope, Albert Kelsey and E. V. Seeler.

House Committee: Adin B. Lacey, Louis C. Hickman and F. M. Mann.

The first *American Architect* Competition drawings were hung and voted upon. It was much regretted by the members that the Club had been unable to have a representative.

Meeting adjourned at 11 o'clock.

During the summer recess the competition for re-designing some local architectural monstrosity will take place.

[ADIN B. LACEY, *Secretary*.]



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

THE NAVE, LOOKING WEST: TRINITY CHURCH, NEW YORK, N. Y.
RICHARD UPJOHN, ARCHITECT.

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

ON May 6, 1839, it was determined to repair Trinity Church, the second fabric erected on the same site, and Richard Upjohn was appointed "draughtsman and superintendent of repairs." Investigation showed it would be impolitic to spend money in repairing the old building and it was accordingly torn down, having had an existence of fifty-one years. Mr. Upjohn's design for the present building was prepared and accepted without delay, and the work of laying the foundation of the present building began on October 17, 1839—a case of expeditiousness very remarkable in those days. The corner-stone was laid June 3, 1841, in the northeast buttress of the tower, and on May 25, 1846, the building was consecrated with impressive ceremonial. It is noteworthy that in the procession the architect, his assistants and the master-workmen were given the third place in the order of march.

All of the masonry and most of the other work was performed by day's labor and yet the entire cost of the building, including clock and organ, was only \$358,629.94.

The main building-material was brownstone from the quarries at Little Falls, N. J.

SIDE ELEVATION: TRINITY CHURCH, NEW YORK, N. Y. MEASURED AND DRAWN BY MR. G. T. MORSE.

[Issued with the International and Imperial Editions only.]

DURING the last summer's vacation a squad of students in the Architectural Department of Columbia College were assigned the task of making measured drawings of this interesting building and the results of their industry are here put on record.

TRANSVERSE SECTION, LOOKING EAST: TRINITY CHURCH, NEW YORK, N. Y. MEASURED AND DRAWN BY MR. EDW. I. SHIRE.

[Issued with the International and Imperial Editions only.]

TRANSVERSE SECTION, LOOKING WEST: TRINITY CHURCH, NEW YORK, N. Y. MEASURED AND DRAWN BY MR. W. G. TACHAU.

[Issued with the International and Imperial Editions only.]

PLAN OF CEILING VAULTING: TRINITY CHURCH, NEW YORK, N. Y. MEASURED AND DRAWN BY MR. H. ROSENDOHN.

[Issued with the International and Imperial Editions only.]

PLAN: TRINITY CHURCH, NEW YORK, N. Y. MEASURED AND DRAWN BY MESSRS. L. GOTTESCHALL, H. STERN, D. MACGREGGOR, AND W. O. RAYMOND.

[Issued with the International and Imperial Editions only.]

EAST FRONT AND SPIRE: TRINITY CHURCH, NEW YORK, N. Y. MEASURED AND DRAWN BY MESSRS. J. T. TUBBY, JR. AND L. M. FRANKLIN, JR.

PEMBROKE ACADEMY, PEMBROKE, N. H. MR. W. M. BUTTERFIELD, ARCHITECT, MANCHESTER, N. H.

THE EXAMINER BEAR-PIT, GOLDEN PARK, SAN FRANCISCO, CAL. MR. WILLIS POLK, ARCHITECT, SAN FRANCISCO, CAL.

STUDY FOR A MAUSOLEUM. MR. WILLIS POLK, ARCHITECT, SAN FRANCISCO, CAL.

THE BURNHAM ATHENÆUM, CHAMPAIGN, ILL. MR. J. A. SCHWEINFURTH, ARCHITECT, BOSTON, MASS.

This public library is now being built at a cost of \$35,000, the gift of A. D. Burnham, Esq., of Champaign. The first floor contains a stairway hall, a small reception or private reading room, the delivery-room, main reading-room, reference-room, librarian's room, book-stack room (present capacity, 50,000 to 60,000 books), and the usual toilet arrangements. A peculiarity of the arrangement is that the librarian standing at the desk can control all of the

rooms. The second floor contains various committee-rooms, trustees' room, ante-room and a large hall, to be used for the art collection and for meetings, etc.; this will seat from 400 to 500 people. The building is constructed on the "slow-burning" plan, the stack-room being especially well protected by tinned doors, etc., heated and ventilated by indirect steam. The exterior is built of light cream-colored bricks and terra-cotta of about the same tone, and the roof covered with light-green slates.

[The following named illustrations may be found by reference to our advertising pages.]

ACCESSORIES OF LANDSCAPE ARCHITECTURE, NO. XI: THE CASCADE DU CHÂTEAU, NICE, FRANCE.

ACCESSORIES OF LANDSCAPE ARCHITECTURE, NO. XII: THE GROTTO, AVENUE MASSÉNA, NICE, FRANCE.

SGRAFFITO DECORATION, NO. 21 VIA TOMACELLI, ROME. — SGRAFFITO DECORATION, NO. 14 VIA S. SABINA, ROME.

DOORWAYS OF MAYENCE CATHEDRAL.

[Additional Illustrations in the International Edition.]

BISHOP HOBART'S MONUMENT, TRINITY CHURCH, NEW YORK, N. Y. BALL HUGHES, SCULPTOR.

[Gelatine Print.]

THIS monument is placed in one of the vestries at the west end of the church where it is not generally seen.

ASTOR MEMORIAL DOOR, EAST PORCH: TRINITY CHURCH, NEW YORK, N. Y. MR. KARL BITTER, SCULPTOR.

[Gelatine Print.]

ILLUSTRATIONS of the other Astor Memorial doors, by J. Massey Rhind and C. H. Niehaus, were published in the *American Architect* for August 12, 1893.

YORKSHIRE COLLEGE, LEEDS, ENG. MR. ALFRED WATERHOUSE, R. A., ARCHITECT.

DESIGN FOR NEW COUNTY BUILDINGS, DURHAM, ENG. MESSRS. ESSEX, NICOL & GOODMAN, ARCHITECTS.



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

A CORRECTION.

NEW YORK, April 20, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I write to call your attention to an error in your issue of April 18th.

In the copy of the letter to Mr. Fox, which you print, I find appended to my name certain titles, none of which are properly attributed to me, and which I did not place under my signature.

Regretting the error, I am yours,

HENRY RUTGERS MARSHALL.



BALTIMORE, MD.—The Walters Art Gallery will be open to the public on all Wednesdays and Saturdays in April.

BOSTON, MASS.—Paintings recently purchased; the Martin Brimmer and R. Hall McCormick Pictures; Japanese Paintings; Etchings by Seymour Haden: at the Museum of Fine Arts.

Paintings by New England Artists: at the Jordan Art Gallery, 450 Washington St., until June 1.

Fifty-fourth Exhibition, Water-colors, Pastels, Works in Black-and-White, and Sculpture: at the Boston Art Club, April 10 to May 2.

Eighth Annual Exhibition of Photographs: at the Boston Camera Club, 50 Bromfield St., April 8 to 25.

Old English Pictures: at Williams and Everett's Gallery, 190 Boylston St.

CHICAGO, ILL.—Eighth Annual Exhibition of American Water-colors: at the Art Institute, opened April 16.

Annual Exhibition of Chicago Society of Artists: at the Art Institute, April 7 to 26.

NEW YORK, N. Y.—Twenty-ninth Semi-annual Exhibition, including Loan Exhibition of Early American Paintings, Old English Paintings, and the Cullum Collection of Classic Sculptures: at the Metropolitan Museum of Art.

Seventy-first Annual Exhibition of the National Academy of Design: March 30 to May 16.

Eighteenth Annual Exhibition of the Society of American Artists: at the Fine-Arts Building, 215 West 57th St., March 27 to May 2.

Troyon's "La Vallée de la Touques": at the Durand-Ruel Galleries, 389 Fifth Ave., until April 30.

SPRINGFIELD, MASS.—Paintings by E. C. Leavitt: at James D. Gill's Gallery, April 13 to 25.

WASHINGTON, D. C.—The Art Gallery of Thomas E. Waggaman will be open to the public on Thursdays during April.



A GREAT MOSAIC.—The British Vice-Consul in Venice in his last report says that mosaics still continue in great demand there. The Venice and Murano Company executed last year a splendid mosaic for a palace now in course of construction in Vienna. It measures a thousand square feet, and is copied from cartoons by the painter Edward Weith. It represents the five parts of the world. Europe stands in the centre of the frieze, represented by the symbolic figures of its various nations, having on one side the emblems of industry and trade, and at the top the emblem of the flying genius of light. On the right are the figures of Asia, India, China and Japan, with their rajahs, mandarins and the allegorical chrysanthemum. Next follows Africa, with camel drivers, palm trees and other African symbols; on the left, America and Australia, with natives on horseback and on foot, foliage and other emblems. All this variety of types, from the fair Circassian down to the negro, and the display of costumes from the most decorative to the simplest, have enabled the painter to arrange twenty-four figures with great delicacy of color and in an artistic manner. Over these figures, which rest on an ornamental base, a blue sky reflects all around its light so as to unite all the tints of the mosaic, and to give the whole a harmony of effect which is said to be most delightful to the eye. The same company is executing another important mosaic for the apse of the Guards' Chapel at the Wellington Barracks, in London, from cartoons painted by Messrs. Clayton & Bell. — *London Times*.

THE TAPPER.—I give the story as it was told to me, and it was told me for a fact. A man fell from a housetop in the City of Aberdeen, and was brought into a hospital with broken bones. He was asked what was his trade, and replied that he was a tapper. No one had ever heard of such a thing before; the officials were filled with curiosity; they besought an explanation. It appeared that when a party of slaters were engaged upon a roof they would now and then be taken with a fancy for the public house. Now a seamstress, for example, might slip away from her work, and no one be the wiser, but if these fellows adjourned, the tapping of the mallets would cease, and thus the neighborhood be advertised of their defection. Hence the career of the tapper. He has to do the tapping and keep up an industrious bustle on the housetop during the absence of the slaters. When he taps for only one or two the thing is child's play, but when he has to represent a whole troop it is then that he earns his money in the sweat of his brow. Then must he bound from spot to spot, reduplicate, triplicate, sextuplicate his single personality, and swell and hasten his blows, until he produces a perfect illusion for the ear, and you would swear that a crowd of emulous masons were continuing merrily to roof the house. It must be a strange sight from an upper window. — *From Stevenson's "The Amateur Emigrant."*

ARCHBISHOP LIEMAR'S TOMB IN BREMEN CATHEDRAL.—Nearly eight hundred years ago Archbishop Liemar was laid to rest in the Cathedral at Bremen. His grave has just been discovered with an inscription, which, besides giving the date of his death, shows that he rebuilt the Cathedral in 1088, a fact that had been a matter of doubt hitherto. Of the body nothing remained, but when the coffin was opened the clothes in which he had been buried, including his shoes, were still intact. On exposure to the air, however, they crumbled away into dust. — *Exchange*.

THE CHATEAU D'AMBOISE.—The Duc d'Aumale intends to proceed at once with the work necessary for the preparation of the Château d'Amboise to serve as a military asylum. His plans include the restoration of the Salle des Etats and the structure of Louis XIII, as well as all the other architectural features of the building. It is estimated that the cost will amount to \$300,000, in addition to the large sums expended by the late Comte de Paris. — *Philadelphia Telegraph*.