

THE ARCHITECTURAL RECORD

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C. W. SWEET, Publisher R. W. REINHOLD, Business Mgr.
 H. W. DESMOND, Editor H. D. CROLY, Associate Editor

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FIG. 1. THE WILLIAMSBURGH BRIDGE.
Before the Building of the Stiffening Truss.

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New York Bridges

The bridges of New York have a bad name for good looks. Compared with the bridges over the Seine, compared with the bridges over the Thames, even, it must be owned that the bridges over the estuary which we call the East "River" and the other estuary which we call the Harlem, deserve æsthetic disparagement. There is less artistic sensibility and less artistic training shown in them than in the like works in Paris or London. Even in the British capital, inartistic as it is, the appearance of the necessarily conspicuous crossings of the Thames is and always has been recognized as of public interest, and from Old London Bridge, meaning the existing bridge of Rennie, down to the Tower Bridge, the design of them as fit matter for public discussion. Curious to think of, the design of the Blackfriars Bridge attracted so much attention in the London of 1759, that the learned Samuel Johnson took a hand in the discussion, the competitors being reduced to three, of whom two proposed semi-circular arches, and the third elliptical. It was against this last that Johnson wrote. Doubtless it was personal friendship for one of the other architects which induced him to take up his pen, and probably he had been coached. All the same, he shows a real grasp of the mechanical principles involved, and his three letters on the subject are still worth reading. That he should have written upon it at all is a sign that Lon-

don, in 1759, took such things more seriously than New York takes them in 1905.

Upon the whole, the bridges of New York have a worse name than they deserve. According to the proverb, we should not speak ill of them at all, since no one of them has ever failed in carrying safely over the passengers who have entrusted themselves to it, although the greatest and most conspicuous of them has for years been loaded far beyond the computations of its constructors. After twenty years, the existing East River Bridge remains one of the structural lions of New York. As to its artistic merit we are all pretty much agreed that the metallic structure, with the sweep of the cables stooping to the camber of the roadway is worthy of its conspicuousness and its magnitude, and that the towers of masonry are failures, being clumsy, inorganic and inexpressive.

Of the second bridge, which has lately attained its completion, one has to say that, whatever scientific advance it may show upon the pioneer, it shows a distinct artistic retrogression. It is not between the towers that it shows this, or indeed can show it, since a catenary cannot "hang wrong" and there is no instance of a suspension bridge that makes an effect of ugliness between the supports. Even here, however, the designer has done his worst to make his bridge look ugly by the hugeness and in-

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sistence of the stiffening truss, which seems less like an ancillary construction than a rival construction. Outside of what had to be right in the Williamsburgh Bridge, however, it may be said that everything is wrong. It may be a question whether solid towers of masonry or skeleton towers of metal are the more eligible for the holders of the cables. Although, as we see in the old East River Bridge, the former may fail of their effect by being left mere brute masses without any modelling to express their special function of cable-holders, they must at least be massive. On the other hand, the skeletonized towers of metal may be made to give a literally "articulate" and a detailed expression to this function, while in outline and in what may still be called mass, they may become very graceful as well as most impressive objects. One's taste must be refined, it seems to me, even to emasculation, who is afflicted by the Tour Eiffel. And the same effect that is produced by the Eiffel is promised by Mr. Lindenthal's design for the North River Bridge, and on a scale not so much reduced, the height of his twin towers at either end being of over six hundred feet against the thousand of the Parisian skyscraper. But this effect was entirely foregone by the designer of the Williamsburgh Bridge who seems to have done pretty much everything that in him lay to nullify, or at least to minimize even the inherent and necessary effects of his mechanical dispositions.

It is the intellectual and professional habit of the engineer to view his problem as purely one of mechanics and not at all as one of æsthetics, to regard a bridge, as one of the leaders of the profession put it, as merely "a tool of traffic," and to supply the tool that is least costly both in money and in trouble to its designer. This way of looking at things is really forced upon the engineer, and it would be both futile and unjust to libel him for it. His principal employers, the railroads, would think him a fool if he took more trouble about the designs of his railroad bridges than was necessary to ensure their sta-

bility, and a lunatic if he proposed to them to spend more money on a bridge than the irreducible minimum of its practical requirements demanded, by way of improving its appearance. Hence such insults to nature and travesties upon art as the cantilever that spans the Niagara or the other cantilever that spans the Hudson. And yet the very Gradgrinds who take this view of one class of structures do not apply it with regard to any other. They require that their stations shall have a palatial aspect in large cities, and a picturesque aspect in rural regions, an aspect in either case congruous with their surroundings, and they are willing to spend their stockholders' money to this end, and expect their architects to take all the trouble that may be necessary to produce the required result, for which trouble also they are willing to pay. Yet the other class of structure, the bridges, have, upon the average, quite as great an effect upon the aspects of the surrounding nature or art as the stations, and in some instances a great deal more. No station upon the line of the road which crossed Niagara by means of the cantilever, nor of that which spanned the Hudson by a like contrivance, was anything like so conspicuous and dominant a feature in the landscape, of none was it so important that it should be congruous and presentable, as was the case with either of these gaunt attenuations standing stark against the sky. Evidently the application of so widely different standards to the two classes of structures has no foundation in fact or reason. The nature of things does not furnish any excuse for assigning the design of a station to a designer who is only an artist and the design of a bridge to a designer who is only a scientist. It is true that the demand for architectural stations is comparatively recent, and by no means universally recognized even yet. Pretty much all the stations twenty or thirty years of age were designed by the engineers of the several roads with no more thought of their appearance than was then or is now given to the designing of the bridges.

It is gratifying to see that this particular phase of barbarism is passing. The right of a railroad to disfigure by its erections the landscape through which it passes is still unimpeached. But there is a growing feeling that there are passages of natural scenery which are not thus to be insulted. To take advantage of a famous work of nature by advertising to take tourists to it, and then to insult it by an infamous work of art is a kind of "self-devouring absurdity" of which it is to be hoped, and even partly to be expected, that we have seen the last. Such a work is the cantilever across Niagara, of which we may take it, from

almost directly as it does, is subjected to the fiercest kind of critical light. It is the highest possible praise that can be given to it as a work of art, but it is only just praise, to say that it bears that envisagement, and that so long as the work of man's hands must be seen in connection with the miracle of nature, no work of man's hands could jar less upon the spirit of the scene.

And, indeed, the bridges across the Harlem are by no means so black as they are painted. The ordinary spectator derives his notion of them from those that he sees in crossing on the bridge of the New York Central. Per-



FIG. 2. THE NEW YORK CENTRAL BRIDGE.

Harlem River and Park Ave., New York City.

W. J. Wilgus, Chief Engineer.

the later crossings of the gorge that the projectors have had the grace to become ashamed. In sooth, it is a grewsome object, fit to be compared only with the other grewsome monstrosity of the same construction that crosses the Hudson at Poughkeepsie. It is cheering to be told, on professional authority, that these works represent a passing and now past phase even of engineering; that in that view they are not sound, and are not even cheap, excepting only in first cost. The later crossings of Niagara, the "spandril braced arch" of 520 feet span which carries a railroad and the hinged arch of the record span of 840 feet which carries a highway, are neither of them unsuitable even to their unique situation. The latter especially, confronting the cataract

haps he may count himself lucky that among those he sees is not that he is traversing. Certainly the railroad bridge is not a thing of beauty, nor does it bear any evidence that the looks of it were at all a matter of consideration with its designer. It is frankly, one may say brutally, a "tool of transportation." But there is in its grim utilitarianism no hint of pretentiousness or of vulgarity. It is only when a designer without æsthetic sensibility or training sets out to secure æsthetic results, to decorate the undecorative, and to bestow comeliness upon his uncomely parts that he becomes offensive; at least it is then that he becomes most offensive. Nobody would think of looking twice at the railroad bridge for pleasure, or for any other purpose than to note the scientific adapt-

ation of means to ends; but if he does happen to look at it, there is no reason why he should be afflicted. In fact, it might appear that the engineer had read his Ruskin, and applied that paradoxical passage setting forth what an ugly necessity a railroad is and what an æsthetic crime it is to attempt to relieve its necessary ugliness. But the bridges the traveler sees in the

ciently awkward relations with the central feature if it were symmetrized by being repeated on the other, whereas it is in fact counterparted by the plate girder of the roadway. One says, with confidence, that the arrangement would be intolerable to a designer of any æsthetic sensibility, and that such a designer would find some way of circumventing its awkwardness. The Madison Avenue



FIG. 3. THE BRIDGE AT MADISON AVE.

Harlem River, New York City.

A. P. Boller, Engineer.

crossing are the Madison Avenue on one side, which is not the best of the bridges, and the Third Avenue on the other, which is pretty certainly the worst, unless that bad eminence be disputed by the Willis Avenue Bridge, further down. The latter derives an adventitious ugliness from the fact that the curved draw span is flanked, on one side, by a bow-string girder, which would be in suffi-

bridge, on the other side of the railroad bridge, is by no means in the same class with this unfortunate work. Its questionable peculiarity is that the draw span is straight sided, whereas all the other bridges of the Harlem show a curved outline. Even to the layman, vaguely aware of the enormous leverage exerted upon the arms when the draw swings free and is sustained only at the



FIG. 4. THE THIRD AVE. BRIDGE.

Harlem River, New York City.

The late Thomas Curtis Clarke, Engineer.

centre, the arrangement seems rude and inchoate, and the layman is interested and reassured when the expert explains to him his instinctive repugnance to the arrangement by telling him that it is only when the moving load is disregarded in the design that the rectilinear triangle is the right expression of the structure, and that when this load is taken into consideration the curved outline results. All the same, the Madison Avenue Bridge, though the least successful of the four with which its author has spanned the Harlem, is by no means a repulsive object, and in the detail it is evident that the æsthetic questions quite ignored by the author of the Third Avenue Bridge have received careful and intelligent consideration.

But to see the bridges of the Harlem from the railroad is the worst way of

seeing them. The best way, and the most favorable, is to see them from the river itself, passing underneath them. This experience the present writer has lately enjoyed, beginning with the East River Bridge, passing, the actual Williamsburgh, the site of the projected Manhattan, the piers of the projected and begun Blackwell's Island, the Willis Avenue, the Second Avenue, the Third Avenue, the Park Avenue (the New York Central Railroad Bridge), the Madison Avenue, the piers of the projected Lenox Avenue, the "Central" as often called the Jerome Avenue and by the older-fashioned the Macomb's Dam Bridge, the bridge of the Northern Railway, "High Bridge," as we still call the aqueduct over the Harlem, the great twin arches of the Washington, finally the bridge of the Thirtieth street branch



FIG. 5. THE WILLIS AVE. BRIDGE.

Harlem River, New York City.

The late Thomas Curtis Clarke, Engineer.



FIG. 6. THE PROPOSED HENDRIK HUDSON MEMORIAL BRIDGE.

Spuyten Duyvil Creek.

A. P. Boller, Chief Engineer.

of the New York Central and the bridge over the Harlem ship canal, both at Spuyten Duyvil.

This is a very considerable list, as compared with those that span the Thames or the Seine. The four that span the East River, and the Washington are, of course, far more important as examples of modern engineering than anything the English or the French capital has to show, being by their extent in the first rank of bridge constructions. Even those that span the lesser estuary are of greater span, and so more difficult and costlier than the corresponding Old World examples. And it is to be hoped there is to be added to them, as the one avowedly and intendedly monumental bridge of New York, of which the monumental character is taken account of in the design, that bridge for which Mr. Boller has already prepared a most interesting and suggestive sketch, the bridge spanning Spuyten Duyvil Creek, defining the boundary of Manhattan and emphasizing its insularity. There could be no more appropriate way of celebrating the tercentenary of the discovery of "Hudson's River" in 1609, than by the opening of this work. A study of the sketch will evince how worthily, in its main outlines and masses, which is to say in its essentials, the design fits both its romantic and storied site and its commemorative purpose. In these respects it would be hard to name a famous monument of antiquity that surpasses this example of the utmost modernity,

dealing as it does, with spans and spaces quite beyond the science of antiquity or the scope of masonry. Yet the central skeleton of steel takes its place between arcades that might rival those of Segovia or Nismes or any of the most famous of those Roman works whose "flight of arches through the silent night" excites the wonder of the moderns. Upon the whole it seems fair to say that the engineering vindicates itself, even artistically, at the expense of the architecture. Whether the designer has done well to adopt the Roman triumphal arch, instead of some construction less trite and more suited to the romantic character of the gorge, is one of the questions which he may be moved to consider more maturely before his work comes to be built. Meanwhile it is to be said even for his triumphal arches that they do admirably and completely fulfil their purpose of giving "load" and emphasis to his abutments and thus a visible assurance of sufficiency to his construction. There will at least be a general agreement that the conception of the Hendrik Hudson Memorial Bridge is noble and adequate and well deserving of execution.

There are at least three viaducts in Manhattan that deserve to be considered along with the bridges—four, including the aqueduct, the "High Bridge," still so-called, that continues to deserve the world-wide celebrity it achieved at the time of its completion, sixty odd years ago, when it was the one public work we had to show that could hold its own in

a European competition. The other three are Manhattan Valley Viaduct, which carries the Riverside Drive over the dry depression at 125th Street, the single arch of masonry and metal that carries the same drive over the like depression at 96th Street, and the single steel arch that carries the Interborough, suddenly emerging from a subway into an elevated structure, across 125th Street. These three share the distinction from the work of 1840 that whereas there is nothing in High Bridge to date it within two thousand years, nothing in material or disposition that was not known and employed by the Romans, they are all unmistakable examples of the most modern engineering. With regard to one of them, the arch at 96th Street, it appears questionable whether it might not advantageously have been built of the old material and in the old forms. The very moderate span is per-

fectly and easily within the scope of an arch of masonry. The construction is so largely masonic, that the little interpolation of a skeleton of metal has the air of an economical makeshift, thus sacrificing the effect of a homogeneous construction, pretty clearly to be preferred when it can be attained within reasonable limits of cost, especially for a work which consists of a single feature, and certainly gaining nothing, architecturally speaking, by the addition of another system. It may be explained to the questioner that it was a question of the comparative costliness of foundations for the two systems. It is unfortunate that this explanation cannot be made by the work itself.

The Manhattan Valley Viaduct is a far more extensive and ambitious work. Certainly in its completed form, it looks much better than was promised by the original drawings, which nevertheless,



FIG. 7. "HIGH" BRIDGE OVER THE HARLEM RIVER.

Date 1842.

may have been followed. From inland or from the river, it is an impressive work. But from either view it is plain that it might have been much more impressive. The effect of a long arcade on such a scale as this is unfailing. But clearly it is necessary to its utmost effectiveness that the members of which it is made up should be uniform. Every opening of different size and shape interrupts and dislocates the series and to that extent weakens the effect of a succession the effectiveness of which increases in a geometrical ratio by repetition. Hence the effect of the intercalation in a series of equal and similar arches, of a single arch of greater span and lower springing and different proportions altogether though of the same material is most unfortunate. It does not seem to have been enforced. Granting that the wider

arch is necessary to span the street which runs underneath, there is no evident reason why this wider span should not have been made the unit of the series, and the others conformed to it, to the great gain in architectural effect, and apparently to the simplification of the construction also. There is a distinct and apparently an unnecessary awkwardness in the manner in which the ironwork impinges against the masonry abutment at the north end, an absence or a helplessness of design in omitting to take account of the change of direction in the roadway at this point, and to indicate it by appropriate device. One finds the solid web of the arches on the front also anomalous in a construction elsewhere skeletonized. These things detract rather seriously from the effect which the viaduct might have had if they had been obviated. But the actual



FIG. 8. THE MANHATTAN VALLEY VIADUCT.

New York City.

F. Stuart Williamson, Engineer.



FIG. 9. VIADUCT OF THE INTERBOROUGH RAILWAY AT 125TH ST.

New York City.

Wm. Barclay Parsons, Chief Engineer.

effect is nevertheless very good, the accessories of masonry and the fittings of metal, though entirely commonplace, are entirely inoffensive, and the viaduct, architecturally, a creditable public work.

The single steel arch by which the Interborough is carried over 125th Street differs from the other two viaducts in that it is strictly an example of engineering, in which architectural conventions are not recognized at all, and that, one is inclined to say, it is all the better architecturally on that account. It is an evidence of the truth that it is, primarily, upon the selection of a construction that the success of an engineering work depends. The arch being chosen, and being a form apprehensible, even to the unskilled, the rest follows almost of course. Follows, at least, as to the arch itself, for there is a certain awkwardness in the manner in which the superincumbent track and station are carried, an awkwardness that it seems might have been avoided by making the supports of the superstructure normal to the curve of the arch instead of vertical, and reserving the uprights for the support of the light construction above the tracks.

One feature of the treatment is noteworthy as constituting, among other things, a criticism upon the treatment of the same feature in the Washington Bridge, and that is the narrowing of the heel of the arch almost to the diameter of the pin, before it expands again into the casting which joins the arch to the skewback. In the Washington bridge, it will be remembered a sacrifice has been made to conventional architecture of the form which the arch would naturally assume at this point. The breadth of the truss which constitutes the arch is continued even to the skewback, by building out on each side of the pin a mechanically unmeaning frame for the mere purpose of continuing it. In the light of the newer example the older seems to be in this respect a mistake; for surely there is far more force of expression in leaving the structural lines undisguised to tell their own story, than by surrounding them with the suggestion of a construction which does not in fact exist. The case is not altered by the likelihood that the exposure of the construction was not made at all with reference to the architectural appearance of the work, but upon the strictly

engineering principle of avoiding a waste of material, while the superfluous material which disguises the facts of construction in the other case was evidently added in accordance with a theory of architectural appearance. Visitors to the Chicago Fair will remember how the narrowing almost to a point of the great steel arches which sustained the huge roof of the Liberal Arts Building promoted the sense of reality by which that structure "queered" the sham of conventional architecture in staff with which it was associated and impressed upon the observer, whether or not he was able to follow the demonstration in detail, that the construction in metal was

comes the handmaid of what may be called, from the absence of any artistic personality from it, a machine made project of engineering. The arrangement here illustrated is doubtless preferable where the engineering problem involves so little of novelty or experiment as a suspension bridge of these modest and well precedented dimensions, if the architect be the right one. In this case there is no doubt about that, the architect being the late F. C. Withers, whose origination and control of the design are plain, and the result is by no means the least interesting of his many interesting, well-studied and picturesque works. Comparing this example of



FIG. 10. SUSPENSION BRIDGE, TRINITY CEMETERY.

Broadway and 155th St., New York City.

Frederick Clarke Withers, Architect.

"the thing itself," whereas the construction in quasi-masonry was merely a theatrical representation of a construction.

It would not be fair to leave the mention of these lesser viaducts without adding to the list that of the suspension bridge which reunites the two halves of Trinity Cemetery at 155th Street, separated by the prolongation through it of the line of Broadway under the name of the Boulevard Lafayette, and by its picturesqueness quite justifies the separation as well as the reunion. It is not by any means a tour de force in the engineering way, which is possibly to its æsthetic advantage, and it is quite obviously a work in which the engineer has been invoked as a subordinate to the architect, instead of the commoner converse arrangement whereby architecture be-

"architect's engineering" with most examples of "engineer's architecture," one cannot help finding that it has much the better of the comparison.

But these things, interesting as they are, are not very much to the purpose, when the purpose is to inquire how the structures which are unmistakable examples of modern engineering, on a scale large enough to make them conspicuous, may be so designed as to make them worthy of association with works of nature and with works of architectural art. It is with regard to the big bridges alone, the bridges across the Harlem and still more across the East River, with their spans approaching the "records" of their several kinds of construction, that this question urgently and insistently arises. The wide

range of artistic merit, from the intolerable to the highly attractive, among these structures presumably of equal scientific competency, or at least all scientifically competent, indicates plainly enough the existence of a personal equation in a sensibility and a training quite apart from the professional preparation of an engineer. Taking the two New York Central bridges, that at Fourth Avenue and that at Spuyten Duyvil, as examples of normal engineering, of which the author never gave a thought to the expression of what he was doing, we find on one side the positive ugliness, the "superfluity of naughtiness," of the bridges at Willis Avenue

and thrown upon the arms that reach out from the central pivot to hold it, and these in turn are distinguished in treatment from the central structure. The design is here an expression of the mechanical facts. But, in the clearness and force of the expression it seems to me to yield to the less complicated and pretentious bridge of the Northern Railway just above it, in which the design is a graphical exposition, made with the neatness, clearness, conciseness and grace that entitle us to apply the term "beautiful" to a geometrical demonstration, and gaining force from the very absence of ornamental accessories, and the reduction of the demonstration to its



FIG. 11. BRIDGE OVER THE HARLEM RIVER AT SECOND AVE.

New York City.

Theodore Cooper, Engineer.

J. J. R. Cross, Engineer of Masonry.

and Third Avenue, on the other the positive grace and attractiveness of the bridges at Second Avenue, at Seventh Avenue, at Eighth Avenue and the Ship Canal bridge. Of these the Central Bridge at Seventh Avenue is the most pretentious and costly, is plainly that in which the most extensive sacrifice to the Graces has been made, and it cannot be said that they have been made in vain. The architectural accessories, the shelter towers and the like are as carefully and successfully designed as the architectural essentials, the piers pierced by arches which carry the approaches, or, when it is at rest, take the ends of the swinging central span, while the substructure and the superstructure alike of this central span are so designed as to tell their story of the enormous weight detachable from its terminal supports

simplest expression. It has an Euclidian "beauty." And the same may be said in equal measure of the bridge at Second Avenue, in which not the smallest superfluity has been added to the essentials, but in which these have been completely expressed. The general form of the swing-span is nearly identical with that we have just been considering, while an additional element of expressiveness has been introduced by the innovation of removing the "operating room" from the basal pivot in which it is commonly concealed and establishing it aloft as an eyrie. To the spectator from the river, this bridge gains much in effect from the very lucky choice of material for the abutments, as well as from their admirable design, the material being a dark and mottled granite which weathers into

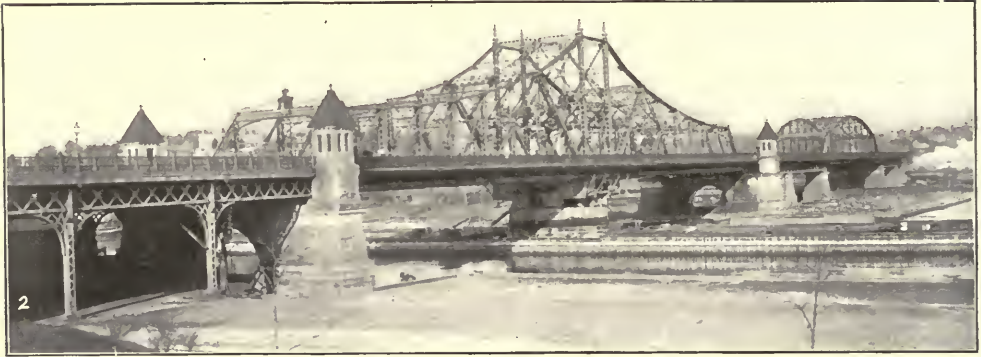


FIG. 12. THE CENTRAL BRIDGE.

7th Ave. and 155th St., New York City.

A. P. Boller, Engineer.

great picturesqueness. If these two bridges be, as it seems to me they must be allowed to be, artistically the most successful and satisfactory of all the crossings of the Harlem, it is worth inquiring what they have in common. One finds that what they have in common is their austerity, the rigid rejection of the unessential which assists the spectator's comprehension of their clear and forcible expression of the essential. If this again be true, the truth of it shows how idle is the attempt to beautify an essentially ugly construction by invoking an artist after the scientist has ruined it

artistically, by getting an architect to add some architectural "features" to the work of the engineer. The observation of Polonius that "'beautified' is a vile phrase" applies with particular force to bridge building.

From this examination it appears that of the draw bridges already completed across the Harlem with swinging draw spans and of which the swinging draw span offers the chief artistic difficulty, if two are bad enough to be awful warnings, two are good enough to be models in their kind, while nobody will deny that, of the remainder, the Cen-



FIG. 13. ROADWAY OF THE CENTRAL BRIDGE.

7th Ave. and 155th St., New York City.

A. P. Boller, Chief Engineer.

tral Bridge and the bridge over the Ship Canal are highly creditable works, in an artistic as well as in a scientific sense, the two built by the New York Central for its own purposes being artistically neither here nor there. Neither is there any question of the attractiveness of the two great bridges in which there was no swinging span to be taken into the account, the Washington and the old High Bridge. Upon the whole the showing is one of which no New Yorker has any reason to be ashamed. Considering the anarchical condition

ings, this is no doubt accurate. But one must protest against an acquiescence in it as a permanent division. To draw a hard and fast line between scientific construction and artistic construction, is to hand over the future to builders by hypothesis inartistic, or else to invoke the artistic constructor, necessarily too late, to see what can be done with a design which is already, from his point of view, irretrievable, and which, from its own point of view, he fails to understand and consequently is powerless to express. According to that fa-

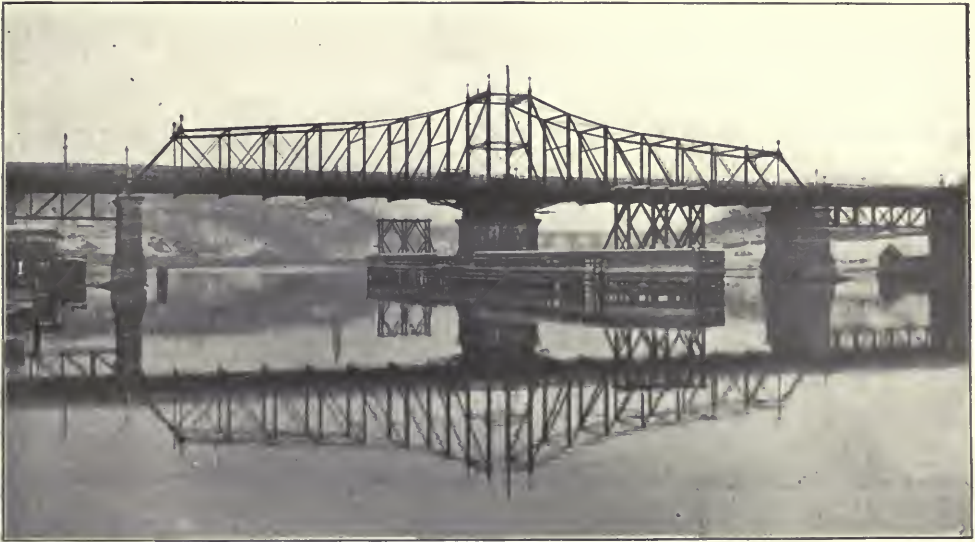


FIG. 14. BRIDGE OF NORTHERN RAILWAY.

Eighth Ave. and the Harlem River, New York City.

A. P. Boller, Engineer.

of the relations of the two professions which have to do with building, the want of provision for the scientific training of architects or for the artistic training of engineers, it is a much better showing than we had any right to expect.

Mr. Russell Sturgis lays it down that "whatever is traditional in form or structure," "comes within the architect's province," whereas "all that is so new or so complex as to require careful scientific examination based upon mathematics is the province of the engineer." As a classification of the actual apportionment of the design of build-

ing, this is no doubt accurate. But one must protest against an acquiescence in it as a permanent division. To draw a hard and fast line between scientific construction and artistic construction, is to hand over the future to builders by hypothesis inartistic, or else to invoke the artistic constructor, necessarily too late, to see what can be done with a design which is already, from his point of view, irretrievable, and which, from its own point of view, he fails to understand and consequently is powerless to express. According to that fa-

mous confession of the western legislator, "it is impossible for a man to give expression to an idea of which he is not possessed of." The way out of this impasse seems to be a requirement, as Mr. Sandier puts it in a recent paper, that "the architect shall become an engineer," or that the engineer shall become an architect, which would come to the same thing. Evidently we cannot go on under the assumption that the largest and most conspicuous structures we erect shall be the least artistic, and that building shall be divided between men who have no training in scientific knowledge

of construction and men who have no training in æsthetic sensibility as to its results.

It happens that, with respect to the two most important bridges then or now under construction in New York, Mr. Lindenthal, upon his appointment in 1901, as Commissioner of Bridges, found a way out of the difficulty and opened a path full of promise for the future of

the "first concoction" of a structural design that its success or failure is involved, he began at the beginning, and from the beginning his engineers and his architect really co-operated, really worked together. It is simple justice to say that he was especially fortunate in his architect. Mr. Hornbostel had not only a more thorough grounding in technical engineering than falls to the



FIG. 15. SHIP CANAL BRIDGE OVER THE HARLEM RIVER.

Spuyten Duyvil, New York City.

A. P. Boller, Engineer.

artistic engineering. Mr. Lindenthal's own work as an engineer had put him distinctly among the engineers who believe in the artistic as well as the scientific future of their art, and who are laboring to make that future present. For quite the first time in this country on such a scale, and as the chief constructor of a great city, he invoked the co-operation of the artistic with the scientific constructor. Recognizing that it is in

lot of most architects. What is even more to the purpose, he was able to take what may be called the engineering view of architectural problems, or vice versa, as you choose. What this ability is, and how enormously valuable it is, nay, how essential to a progressive architecture, one may readily see by referring to the most striking historical example of such an architecture. In an engineering sense, Gothic architecture

was the development of vaulted construction in masonry. In an artistic sense it was the expression of that development. And so closely and inextricably were the two things connected that they seem to be identical, that you cannot put your finger on any single step of the transition from Romanesque to full Gothic, and say by way of contradistinction, "This is science" or "This is

It seems, at least, to be an unreasonable pessimism to abandon all hope of him, and to acquiesce as in a natural and permanent arrangement in the present unnatural and transient arrangement under which the most conspicuous works of men's hand shall continue to be done by men whose training is exclusively scientific, shall continue to be done, as a German visitor found that



FIG. 16. WASHINGTON BRIDGE FROM THE SOUTH.

New York City.

R. H. Hutton, Constructing Engineer.

art." Why should there not be an artist-engineer of the future who works in metal, and whose work may rival that of the artist-engineer of the past who wrought in masonry? When he arrives it may not be extravagant to apply to him the majestic language of Milton: "He shall bring together every joint and member and shall mould them into an immortal feature of loveliness and perfection."

American public works are now universally done "without reference to art." Especially is such a concession unreasonable in the presence of an object lesson that artistic training may be invoked with advantage and success to enhance the expressiveness and thus the impressiveness of erections in metal of the most modern construction and on the greatest scale. And such a demonstration has clearly been furnished in the co-

operation of the artistic and the scientific constructor under Mr. Lindenthal's administration of the Department of Bridges here in New York. The results of that co-operation were hailed as an advance by our whole artistic world.

The Blackwell's Island and the Manhattan were the two great bridges that Mr. Lindenthal found authorized and planned for; the former as a triplet of

(a name quite undistinguishing, which might advantageously be changed for the Wallabout) was entirely uncommitted as to its superstructure, remaining, as in fact it does yet, entirely on paper. The improvements practicable in the revision of the design for the Blackwell's Island Bridge were some refinement of the general forms of the cantilever, of which the two outside spans



FIG. 17. WASHINGTON BRIDGE FROM THE MANHATTAN SIDE.

New York City.

R. H. Hutton, Constructing Engineer.

cantilevers, but without the suspended spans which have thus far proved so architecturally intractable, the ends of the brackets simply meeting, and with two intermediate supports upon the island from which the bridge takes its name; the latter as a suspension bridge of the same type as that of its elder neighbors. The Blackwell's Island Bridge had been committed by the beginning of one of its terminal piers; the Manhattan

now take the shape of the universally admired curves of the Pont Mirabeau, of a more expressive and intelligibly "articulate" design of the piers and towers, and especially of the clarifying by simplification of the cross section. The difference between the unrevised and the revised design here is as crucial an instance, though not so conspicuous in the drawings or in a distant and general view as in the case of the Manhat-

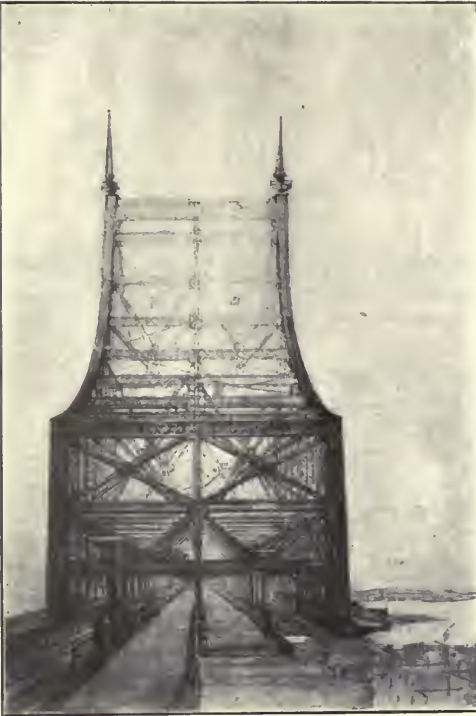


FIG. 18. ENTRANCE TO BLACKWELL'S ISLAND BRIDGE.

The Original Design.

tan, of the difference between the arrangement of a construction with reference to nothing but its mechanical stability and sufficiency, and the arrangement of it with reference to expression, with reference to making it tell its own story as clearly, as forcibly, as eloquently as may be. The attainment of this is the attainment of artistic engineering. We are bound to assume that the original cross section of the Blackwell's Island Bridge was mechanically sufficient. But we have only to look at it to see, from an architectural point of view, what a helpless and hopeless muddle of makeshifts it is. Evidently the thought of an expressive or a dignified arrangement had never so much entered the mind of its designer. The most that academic architecture could do to it was to cloak and dissemble its chaotic ugliness by a mass of "features" which would have been nothing to the purpose. It needed

scientific as well as artistic training to take it apart and put it together again in such wise as to meet architectural as well as mechanical requirements. And this is precisely what has been done by the redesigner who combined the scientific and the artistic points of view. Darkness is at his coming light; confusion order in his path. There could not be a more impressive object lesson than a comparison of these two perspectives affords of the difference between the merely mechanical and the architectural solutions of any engineering problem. And look at the illustrations taken from the models of the terminal piers of the Blackwell's Island and the Manhattan. How entirely remote they are, excepting the substructure of pier and arch in masonry, to which the former was already committed by actual construction, from any forms of historical arch-

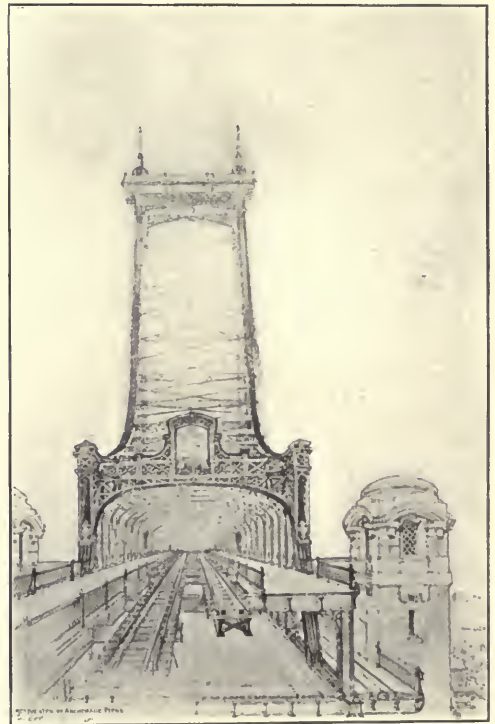


FIG. 19. REVISED DESIGN FOR ENTRANCE TO BLACKWELL'S ISLAND BRIDGE.

Gustav Lindenthal, Engineer.

Henry F. Hornbostel, Architect.



FIG. 20. PIER AND TOWER OF THE BLACKWELL'S ISLAND BRIDGE.

Gustav Lindenthal, Engineer.

Henry F. Hornbostel, Architect.

itecture, and yet with what clearness and with what force they tell their several stories! It is the highest and also the rarest result of a training in the forms of historical architecture that the student shall attain through it the power of invention, or rather of assisting at the evolution, of new forms, which have nothing superficially in common with those which have been his academic models and yet which have in common with them the possession of unmistakable "style." This high and rare triumph, in these two designs, Mr. Hornbostel and his engineering collaborators have

clearly achieved, and in achieving them have given fair promise of a "zukunfts-baukunst." The only drawback one notes to complete expression in the pier of the Blackwell's Island Bridge is in the masonry pier, and that, as has been said, was predetermined. And it seems that the one serious defect of expression in the piers of the Manhattan comes from the same cause. In the eye bar chain, the chain being firmly attached to the top of the pier, the necessary "play," which in the wire cable is secured by the free movement of the cable over its saddle, is attained by the movement of the pier itself, which is pivoted at the bot-

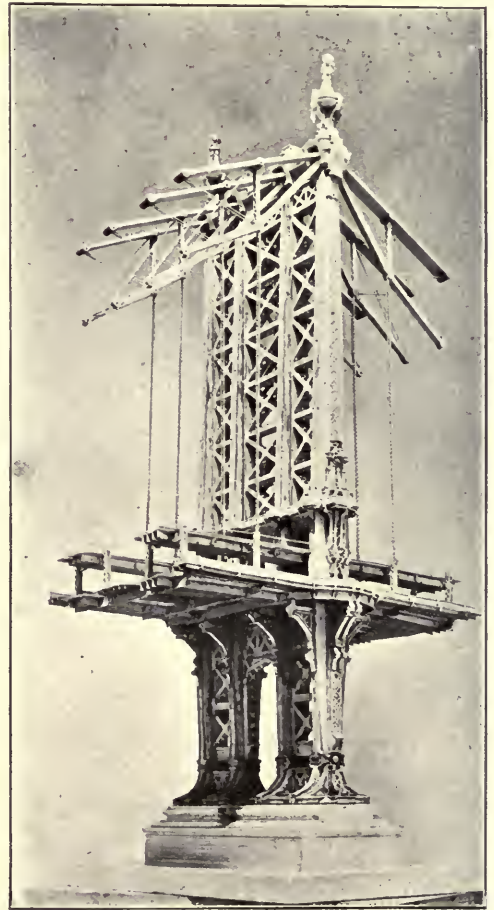


FIG. 21. PIER AND TOWER OF PROPOSED MANHATTAN BRIDGE.

Gustav Lindenthal, Engineer.

Henry F. Hornbostel, Architect.

tom. Certainly this arrangement is not expressed in the actual form of the pier of the Manhattan, which spreads at the bottom and is visibly and strongly attached to its masonry support. As a matter of fact, it seems, the pivotal point at which the movement is permitted and allowed for is the joint marked by a collar, below which the foot of the pier begins to spread. Evidently there is here a failure to expound and express in the forms the actual construction of a column pivoted and movable. But that is a detail in a construction which is so clearly a great advance upon anything that had before been done, at least upon this side of the Atlantic, in the architectural design of a great modern bridge.

Upon its production it was hailed as such an advance by the whole architectural profession and by our whole art world, especially including the Municipal Art Commission. One does not yet understand how the public expectation of seeing it established in execution has been baffled. The engineering innovation which was questioned and questionable was evidently inextricably connected with the unquestionable architectural improvement. For it was nothing less than the abolition of the stiffening truss necessary to secure the rigidity of a suspension structure suspended from wire cables, a stiffening truss which, as we see in the old Brooklyn Bridge, as we see still more in the Williamsburgh Bridge, and as we should most of all have seen in the execution of the original design for the Manhattan, cannot be prevented from asserting itself as in effect an independent and rival construction. The enormous architectural advantage of the eye bar chain which Mr. Lindenthal proposed to substitute was that by reason of the points of attachment which formed an integral part of the chain it enabled the stiffening truss to be incorporated in the suspensory structure, doing away altogether with the independently trussed roadway, and hanging from the suspenders a clear and unobstructed bridge-floor. So bold an innovation necessarily induced question and invited investigation, and Mayor Low appointed a commission of the most eminent engineers and disinter-



FIG 22. PROPOSED MANHATTAN BRIDGE.
Gustav Lindenthal, Engineer.

Henry F. Hornbostel, Architect.

ested engineers who could be found to make the investigation. Their report was conclusively in favor of the practicability and sufficiency of the proposed construction, and was satisfactory to the municipal authorities, the experts of the Board of Aldermen alone excepted, who continued to "hold up" the appropriations for the bridge upon the ground, at least upon the ostensible and ridiculous ground, that they were still unsatisfied that the eye bar chain might advantageously supersede the wire cable! But, as soon as Mr. Lindenthal went out of office, the new authorities of the Bridge Department proceeded to revert to the superseded construction, quite ignoring both the proceedings of their predecessors and the report of the experts, and

not pretending to a particle of expert authority beyond their own. The occasion seemed eminently one for inquiry upon the part of the Municipal Art Commission, which seemed to be entitled to have cause shown to it why a design which it had approved with enthusiasm should be rejected over its head. Mr. Lindenthal supplied it with a ground of action in making a specific series of objections to the design substituted for its own, and offering to prove his points to an expert commission. The Municipal Art Society has never in its history attempted to render a more important civic service than it tried to render by forcing upon the attention of the public and of the Art Commission the reason there was to apprehend that the city was not getting the best bridge possible for its mon-

ey. It seems that here was an excellent opportunity, perhaps the best opportunity it had ever had, for the Art Commission to render a considerable public service, in the direct line of its own powers and duties, by calling for such an expert commission. "Instead of which" the Commission, without asking any questions, and with one honorable exception, meekly approved the design substituted for that which it had already so heartily approved, and balked the project of making the most noteworthy advance this country had witnessed in the direction of artistic engineering. Thereby it seems to have laid itself open to the bitter comment which Charles O'Connor made upon the Bar Association, what time that body refused to investigate charges against him—"I thought you amounted to something."

Montgomery Schuyler.



The Residence of Mr. Samuel Cabot

Winslow & Bigelow, Architects

In any characteristic American house of to-day, the observer can usually discern the effect of two different tendencies—the tendency which induces the intelligent architect to adhere to certain authentic types of domestic design, and the tendency which induces him to modify the type in order to meet local and personal conditions, or to produce novel and individual effects. In some instances one of the tendencies gets the better of the other. The house may adhere so closely to an authentic type that it loses all individual and local propriety, or the architect may sacrifice everything to his desire to be original, and may thereby lose the deeper charm which people of taste derive from the sight of mature and well-behaved architectural forms. In other cases the two tendencies are both present, but are far from being harmoniously combined. But in all the really successful houses erected from plans by intelligent and well-trained architects, the two tendencies are not only both present, but they are merged in a certain integrity of effect.

Such integrity of effect has unquestionably been obtained by Messrs. Winslow and Bigelow, in the house which they have designed at Canton, Mass., for Mr. Samuel Cabot. It would, indeed, be difficult to name anyone authentic type of domestic architecture from which Mr. Cabot's house has been derived. It conforms in general to the style of an Italian villa, yet it is not at all Italian in the effect which it makes. Some of the detail is in a way Colonial, yet no one would call it a Colonial house. In fact, one may as well abandon any attempt to apply a definite historical name to its architecture. Yet in spite of this fact, it none the less arouses certain pleasant and palpable, if vague, historical associations. It is not in the least either miscellaneous, or curious, or out-

landish in appearance. The architect has merely dealt with the conditions which confronted him, in a frank, sincere and simple way, and he has consequently designed a building which is historically suggestive without being merely imitative, and which is individual without being arbitrary.

The immediate surrounding of the house are rough and uncultivated, and are over grown, for the most part, with pines and hemlocks. The grounds are consequently treated in a manner which is for the most part informal, but which none the less, does not ignore certain sources of formal effect. The house is approached by a curved driveway. All architectural features have been excluded from the garden, which is enclosed by an evergreen hedge, and the masonry is rigorously and not very happily rusticated. On the other hand, the terrace has the advantage of certain straight lines and the garden of certain axes in relation to the house. The general effect of the combination, apart from the rusticated masonry, is or will be very happy; but of course the illustrations given herewith do not afford the reader much idea of the way in which the surroundings of the house will ultimately look. A good deal of necessary planting remains to be done, or has obtained a wholly insufficient growth, and after the lapse of several years the effect will be entirely different. The curious and significant thing about the relation of the house to the landscape is the way in which this simple regular building, which is distinctly classic in feeling, harmonizes with the rough landscape—and this in spite of the fact that some of the immediate steps between the building and its surroundings have not been very carefully graded.

The design of the building itself presents an unusual combination of effective lines, excellent proportions, inter-



THE HOUSE OF MR. SAMUEL CABOT.
The Front and the West End.

Canton, Mass.

Photo by T. E. Marr. Winslow & Bigelow, Architects.



ENTRANCE TO THE HOUSE OF MR. SAMUEL CABOT.

Canton, Mass.

Winslow & Bigelow, Architects.

Photo by T. E. Marr.



THE GARDEN OF THE HOUSE OF MR. SAMUEL CABOT.
Photo by T. E. Marr.

Canton, Mass.

Winslow & Bigelow, Architects.



THE SOUTH FRONT OF THE HOUSE OF MR. SAMUEL CABOT.

Canton, Mass.

Photo by T. E. Marr. Winslow & Bigelow, Architects.



THE HALL OF THE HOUSE OF MR. SAMUEL CABOT.

Canton, Mass.

Photo by T. E. Marr. Winslow & Bigelow, Architects.



DINING-ROOM AND LIBRARY OF THE HOUSE OF MR. SAMUEL CABOT.
Canton, Mass. Photo by T. E. Marr. Winslow & Bigelow, Architects.



THE LIVING-ROOM IN THE HOUSE OF MR. SAMUEL CABOT.
Canton, Mass. Winslow & Bigelow, Architects.

esting openings, and telling projections with other dispositions, in which the completeness of the design has evidently been sacrificed to the exigencies of the plan. It frequently requires courage for an architect, who possesses as much taste, as does the architect of this house, to arrange some of his openings and masses in a way that impairs the perfectly satisfactory appearance of his façade, but when such sacrifices are demanded by the comfort of the residents of the house, he is as a rule justified in making them. A house is primarily a place in which to live. The convenience of its inhabitants should be the first consideration of the architect, and inasmuch as it is generally necessary in this world to sacrifice one good thing in order to obtain another, a well-lighted and thoroughly comfortable interior generally means an exterior whose appearance betrays certain irregularities. In the case of Mr. Cabot's house, for instance, the appearance of the façades, particularly the one giving on the terrace, is injured by the number and character of the openings. The large double window, opening from the hall of the second floor, in particular is almost a scar upon that front of the building. Yet one can readily understand what a convenience and comfort such a window would be, and one would hesitate to say that the architect was not justified in giving it the size, character and position he did. Throughout the whole building the openings have been arranged for the convenience of its inhabitants, and without very much regard to the attractive spacing of the façades. In the same way the three-story service extension, while very convenient in arrangement and charming in some of its details, has been added on to the main house without very much regard for the integrity of the composition. Yet in spite of these deductions the whole effect of the exterior is not only charming and personal, but it is, on the whole, architecturally interesting and sound. The proportions and masses are in general admirable, the detail simple in design, and most discreetly used, while such subordinate but important members

as the entrance porch are managed in a way which is individual and which brings out both their importance and their necessary subordination. The problem of obtaining a satisfactory entrance to a house of this size has seldom been managed better than it is in the case of Mr. Samuel Cabot's residence.

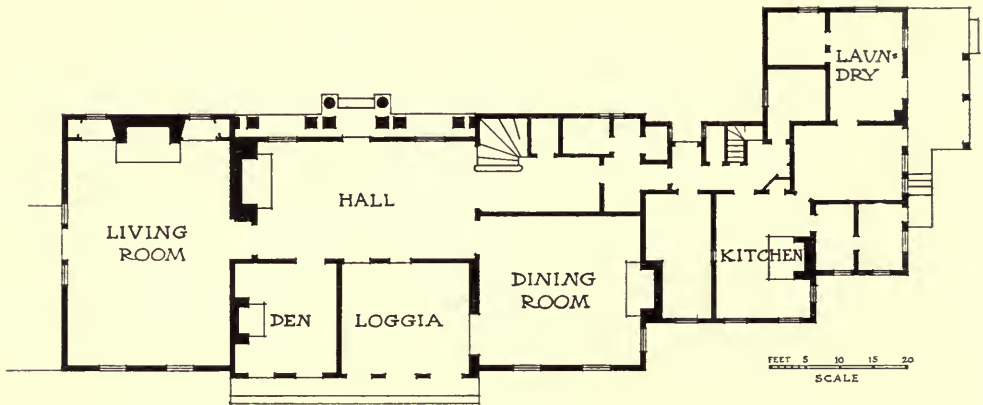
The plan of the house is peculiar, because it makes no provision for a piazza; but something equally good, if not better, is arranged, viz., a completely enclosed loggia. The entrance on the north side of the building gives upon a large hall, as wide as the recess in the façade, and by walking straight through the hall one reaches the paved and domed loggia, which obtains sunlight and air from five large arched window-doors opening to the south. The arrangement is obviously one which is better adapted to the winter than to the summer; but when a house is occupied all the year around some such combination of both winter and summer conveniences is desirable.

The design of the interior is characterized by simplicity and good taste, and the residents of the house have loyally co-operated with the architect in selecting the furniture and hangings of the building. The entrance hallway is spacious, and is paneled to the ceiling in dark wood. The stairway has not been very well managed, as a matter of appearance; but what so rare as a thoroughly good stairway in a house which cannot cost more than a certain amount? The living-room is a still more attractive apartment. The framework is provided by a low dado, running completely around the room, by flat pilasters, which enclose the windows, the doors, and the mantelpiece, and a plain but effective cornice. The wall spaces enclosed by this framework are treated in solid, flat colors. Nothing could be simpler than this design, and yet how sweet, precise and pleasant the effect is. The dining-room is as simply treated as the living room, but with some differences in detail. The floor is paved with red tiles instead of being laid in oak, the ceiling is domed, and there is no paneling. Similar flat pilas-

ters are, however, used to frame in the wall spaces, the scale of which is reduced by mouldings parallel to the lines of the outer frame. The wall surfaces are again painted a solid color. The domed ceiling, the tiled floor, and the severe treatment of the walls give novelty to the appearance of the room, without adding any impropriety to its effect.

It arouses Italian suggestions, which are not, however, in the least incongruous with the Colonial furniture. Altogether, the interior as well as the exterior will add to the reputation already achieved by Messrs Winslow & Bigelow of ranking very high among the American designers of effective, appropriate, and comfortable houses.

A. C. David.



PLAN OF CABOT HOUSE.

A Tuxedo House

The Residence of Mr. T. Harleston Deacon

Tuxedo will, in the course of time, become a place of peculiar interest to the historian of American domestic architecture. It was founded as a place of residence for rich people during the warm weather, at a time when the different types of the contemporary American residence were beginning to be established; and during the last twenty years examples have been built of almost every popular phase of design, and almost all the leading architects of New York and its vicinity are represented. Thus a chronological exhibit of the dwellings erected at Tuxedo since the last years of the eighties would portray very well, not only the changing ideals of American architecture during these years, but also the changing economic and social conditions which have contributed to make those houses what they are. Of course there would be some limitations to this exhibit. There was no room for the distinctively "palatial" residence, or for the large country estate, in a community like that of Tuxedo. It is only the smaller house, surrounded by a comparatively few acres of land, that one finds represented; but these smaller houses were generally designed by good architects, and sufficient money was spent upon them to afford certain architectural opportunities. Consequently, nearly every house which the place contains has a certain significance, and towards the end of the period this significance tends to increase rather than diminish. The first houses were generally frame cottages, intended only for occasional use, and for the most part constructed somewhat unsubstantially and designed without any great care. Now, however, the houses are occupied for longer periods; they are constructed of more substantial materials, and are intended frequently for winter as well as for summer use. The result is, that whenever a newcomer buys an old house in Tuxedo he generally finds it

necessary to make extensive alterations. The period of reconstruction has begun, and there is a new Tuxedo as well as an old.

The house of Mr. T. Harleston Deacon, illustrated herewith, emphatically belongs to the new Tuxedo. It was completed only last spring. It is substantially constructed of concrete, and is a fully equipped residence, intended for habitation during a large part of the year. Like the other houses in Tuxedo, it conforms to the type rather of the large and handsome suburban residence than that of the country estate. It is surrounded by enough land to detach it entirely from its neighbors, but the area of this land is not large enough to afford an opportunity for any thorough landscape treatment. It is situated like so many Tuxedo houses, on the side of a hill, on which a number of fine deciduous trees are growing. The approach to the house from the road curves down the hill, and the slope of the actual site of the house is so sharp that the cellar, which on the front is sunk in the ground, is on the back enclosed by a high masonry wall. The only way whereby a terrace on the level of the main floor of the house could be obtained in the rear was by extending the foundation wall until it surrounded as much space as was necessary for the cellar. One of our illustrations shows the view of rock, river and wooded hillside, which is obtained from this terrace, and which is very beautiful and picturesque.

It was natural that on such a site Mr. Deacon should have wished to place a picturesque house, and a house of this kind he has obtained from his architect, Mr. Wilson Eyre. The lines of this house, with its gables and its high-pitched roof, are for the most part Elizabethan; but the effect is very different, owing to the different character of the material and construction. The exposed timbers in an Elizabethan house



THE HOUSE OF MR. T. HARLESTON DEACON.

Tuxedo, N. Y.

Photo by A. Patzig.

Wilson Eyre, Architect.



REAR OF THE HOUSE OF MR. T. HARLESTON DEACON.

Tuxedo, N. Y.

Photo by A. Patzig.

Wilson Eyre, Architect.



VIEW FROM THE HOUSE OF MR. T. HARLESTON DEACON.

Tuxedo, N. Y.

Photo by A. Patzig.

Wilson Eyre, Architect.



DEN IN THE HOUSE OF MR. T. HARLESTON DEACON.

Tuxedo, N. Y.

Photo by A. Patzlg.

Wilson Eyre, Architect.



HALL IN THE HOUSE OF MR. T. HARLESTON DEACON.
Photo by A. Patzig.

Tuxedo, N. Y.

Wilson Eyre, Architect.



HALL IN THE HOUSE OF MR. T. HARLESTON DEACON.

Photo by A. Patzig.

Tuxedo, N. Y.

Wilson Eyre, Architect.



LIVING-ROOM IN THE HOUSE OF MR. T. HARLESTON DEACON.

Photo by A. Patzig.

Wilson Eyre, Architect.

Tuxedo, N. Y.



DINING-ROOM AND LIVING-ROOM IN THE HOUSE OF
MR. T. HARLESTON DEACON.

Tuxedo, N. Y.

Photo by A. Patzig.

Wilson Eyre, Architect.

give the architect certain lines and projections on the face of the building, which enables him to make its effect light and graceful; but such an effect can hardly be obtained from a solid concrete wall pierced only by the absolutely necessary openings and without any projections on the front except the overhang of the roof, and one bay window. A house of this kind must be vigorously rather than daintily picturesque. The rough walls give the impression of great solidity and strength, and this impression, while, owing to the character of the construction, it is not reinforced by deep reveals in the openings, is carried out in the massive terminal chimneys, and the emphasizing of the openings by the blackening of the window frames. The architect has accepted with the utmost frankness the character of the selected construction, and has divested his building of adventitious or applied ornament. Indeed, as one stands down in the driveway on a level with the house, it suggests vaguely houses which we have seen on English village streets. Of course the suggestion does not persist when the house is seen from below or from above; but from certain points of view this mixture of plainness, solidity, picturesqueness and informality arouse one's recollections of English village houses. This attempt of Mr. Eyre's to carry the best qualities of concrete construction into his design is worth the careful attention of other architects.

The design of the interior of the house suggests the same period as the design of the exterior. The woodwork is all of it dark, and while a certain amount of Renaissance detail is used, the effects sought are similar to those of Jacobean rooms. The entrance hall, for instance, is enriched with a Jacobean ceiling, and with an elaborately carved mantelpiece and stair-rail, and both the stained glass window and the furniture arouse kindred associations with the

older English houses. The wall covering also, while it is not expressly Jacobean, is assuredly Jacobean in spirit, because, after the manner of such things, it does its very best to attract attention. In the living-room the ceiling is also Jacobean, the two windows on either side of the mantelpiece are filled with stained glass, and the carving of the woodwork around the mantelpiece is still more elaborately wrought, but the effect is rendered less complete by the modern upholstered furniture, the draperies and the knickknacks.

Whether one prefers a series of Jacobean interiors to a series of rooms decorated, according to the current fashion, in one or more of the French, Italian or English Renaissance styles is, of course, chiefly a matter of taste. It would assuredly be a bad thing for the American architect entirely to throw away the rich materials which he can gather from the Jacobean storehouse, and it has not proved to be beyond the skill of several American designers of interiors, notably Mr. Stanford White, to use without any impropriety some Jacobean detail and furniture in Renaissance rooms. But the Jacobean room has a manifest danger, whether we like it or not—the danger, viz., that the incidents and the features of the design will overpower the total effect. Jacobean details are unquestionably insubordinate, and frequently claim more attention than the economy of a thorough design can properly grant. Barring the dining room, the details of the rooms in Mr. Deacon's house have this tendency to be insubordinate, so that, in spite of their careful planning, and the many valuable properties they contain, their effect is not all that they might be. They constitute, nevertheless, an extremely interesting set of interiors, which may teach any one who examines them closely an instructive lesson in what to do and in what not to do in arranging and decorating a series of rooms.

The City Hall at Copenhagen

HISTORY.

In the year 1892, the city council of Copenhagen, the capital of Denmark, began the erection of a new city hall, the sixth in order, the older ones having been outgrown or burned down. This capital has grown of late rapidly, something after the manner of our American cities, and the requirements called for a big structure. If not the largest building ever undertaken in that little country, none other comparable with it has for many years been carried through. A competition for the selection of an architect was inaugurated, only Danish architects participating. The best were selected for a final competition, the first being preliminary. The result was the choice of Martin Nyrop as architect, his plans having found favor.

The work was carried along without haste, with an eye single to the best results. The foundation was expensive and slow work. The superstructure followed and the tower framing was completed in 1898, six years after the corner stone was laid. But they are accustomed to slow building over there. In 1901 some of the offices were occupied. In the beginning of the year 1903 the city council held its first session within the new walls. It is now practically complete. The Hall of State is receiving the finishing touches and in the upper part of one stairway the plasterer is preparing for the "al fresco" mural painting. Everything else is in the most perfect running order.

There is, however, one department not even begun and perhaps it never will be. In nearly all German cities it is customary to have a café restaurant in the basement story of the city hall—the so-called "Rath-haus-keller." Such a one has been planned by the architect, with a separate, very convenient, but yet inconspicuous entrance near the main door. In the last minute the city council considered it beneath its dignity

to engage in business or to sublet a portion of the new structure for such purposes. The rooms are unfinished and unused, a big sacrifice for their pride, for these "kellers" pay well.

EXTERIOR.

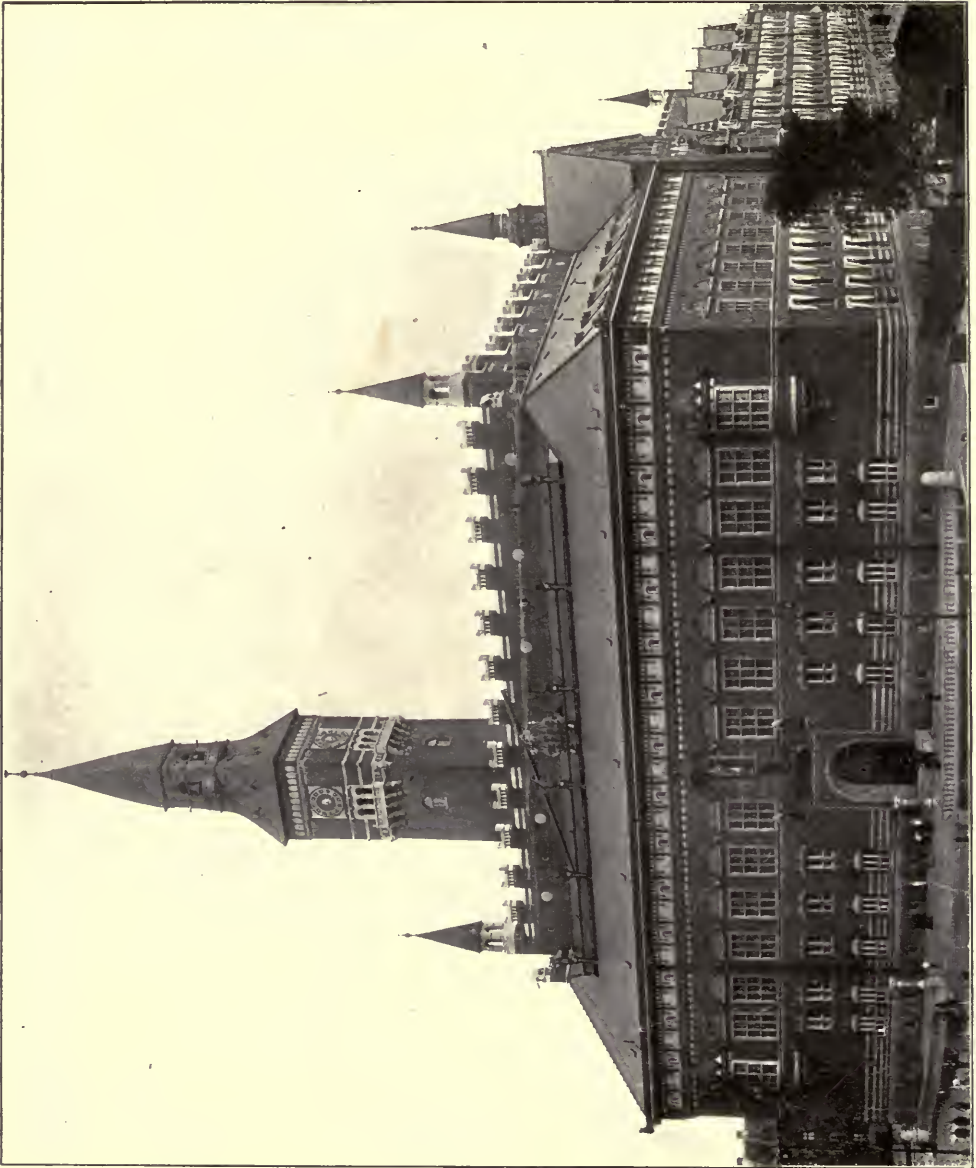
The hall lies in a busy part of the city near the central railway station and these two buildings constitute the neighborhood an important radial point, though not in the geographical center. In shape it is oblong and very nearly 226 feet by 408. It is free on all sides. The long axis lies nearly in a southeasterly direction. On the east, south and west sides are fine broad streets. On the other side of the street to the west lies a park.

To the north is a large square, like nearly all other older European open places, those dating from the days preceding the engineer's checker-board regulation of cities. The shape of this piazza is quite irregular and long in the direction of the main axis of the hall.

The building is of brick with granite base and chalkstone trimmings. The most notable feature is the division into two parts. On the east the high tower marks this division, placed directly opposite a street, on the long side and not on the square. On the west, corresponding to the tower, is a gable with a turret, the so-called pigeon tower. These two parts are officially known as the front and the rear.

Standing in front the eye is caught by the row of large windows in the third story ending with a vigorous bay near each corner. Back of these windows is the Hall of State. The roof lines are bold, and to bring them out still more the corridor walls are carried through the roof, many feet high, and broken up into large crenellations.

The frieze of the cornice is white with very little modeling, of chalkstone and brick. It is punctuated with small windows, which light the large attic. The wall line finishes with a large copper



Martin Nyrop, Architect.

THE CITY HALL OF COPENHAGEN.

gutter, touched up with gold. The roof is of slate.

Directly over the imposing arch of the entrance is a large gilt figure of Bishop Absalon, the founder of the city. On each side and lower down are shield bearers. In front the pavement is hollowed out in a semi-octagonal shape with the diameter toward the building and sloping down to this. It was a bold thing to do to compel people coming from the front to go down this incline

and texture to the surface. There is a middle line of windows, the largest placed near the top. But the finish of the tower is not Italian, only a northern mind would have conceived of it. The architect has cleverly avoided weakening the base of the tower with an entrance. This, which is really a large driveway, is placed on the side and there is one similar on the west.

The rear is in every way plain and is also lower. It has an additional story,



"ON THE WEST SIDE IS THE PARK OF TIVOLI."

The City Hall of Copenhagen.

Martin Nyrop, Architect.

and then climb the stairs in order to get to the building. But the results justify this means of breaking up the square and no one minds the inconvenience.

The immense and high tower, 330 feet, with a decided taper to the shaft, is the dominating feature. It is strongly reminiscent of Siena and North Italy in feeling, even to the extent of the "cannon holes" in the brickwork—bricks omitted, partly to assist in building of future scaffolds, partly to give life

owing to the slope of the ground. Along the west side the City Fathers have stolen a part of the wide boulevard and fenced it in. Of this they have made a little park, which adds materially to the attractiveness though the trees have as yet hardly begun to show. The boulevard is so wide that even after taking away enough for this garden spot there is sufficient room for the traffic.

The immediate surroundings of the



THE ARCH OF THE ENTRANCE.

The City Hall of Copenhagen.

Martin Nyrop, Architect.



"THE PUNCTUATION MARKS OF
WHITE STONE."

hall are fairly good. On the west side is the park of Tivoli. To the front are hotels and on the side business structures. There are no other public structures near by. The selection of site is very happy as the building counts from so many directions. Quite naturally by contrast the mind reverts to that other newly completed and also highly personal structure, the Roman Catholic Cathedral of London. This could not have been placed more unhappily. Narrow streets and high buildings surround it on all sides—not a single point of view. And the immense expense renders it practically hopeless that a way will ever be cut through the narrow block in front and out to the wide and busy Victoria street.

PLAN AND EXTERIOR.

The division into two parts is also quite evident in the interior. In the front, which is far richer, are the show rooms and rooms for the higher officials. These are grouped around a covered

court. The ordinary offices in the rear enclose a grass covered court. The division between the two contains the kernel of the structure, the council chamber. It is thus well surrounded and the members in meeting feel the protection of seclusion for their gatherings.

The entrance vestibule, though not very large, is, however, attractive in its simple lines. It is granite, chalkstone and brick. The tympanum directly in front of the visitor is filled with a highly conventionalized group, a council gathering in the old time, under a tree. Below are the former city guilds, each with its emblem. Just above the council there is a telling inscription, sarcastic in only too many instances—A city is what its people make it, or more literally, Like city, like people.

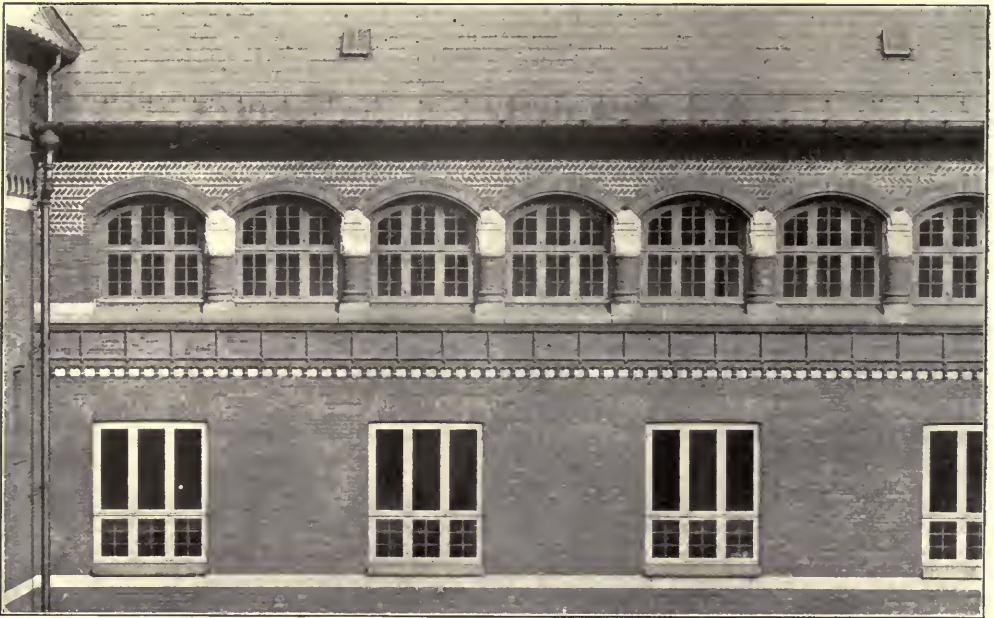
The "pièce de resistance" of the entire structure, that which is seen by 99 per cent. of all comers, is the glass covered court directly beyond the vestibule. A



"THE ARCHITECT HAS DRAWN FREELY
FROM THE ZOOLOGY OF THE NORTH."

brighter, pleasanter, more inviting court would be difficult to imagine. Directly in front is the wall of the dividing wing, containing the council chamber, its five large windows clearly indicating its character. On the three other sides are passages in three stories, connecting the various rooms. In the first story is a wall with few openings. In the second there are more openings and a balcony runs all around. In the third is a colonnade light and graceful. The color treatment is white stone in the

There is no "grande escalier," but there are two fine stairways, one in the tower and one in the corresponding west gable. Both lead directly to the council chamber. The one to the west is the richer and leads to the special entrance for the president and the four mavors. It is called the President's stairway. Directly at the head of the stairs is a fine wall painting in faience, representing the daughters of Aegir, the seagod of the Scandinavian myth. In the cloistered ceiling above are seagulls



"THERE IS EVIDENCE OF LOVING CARE IN ALL THE DETAILS."

The City Hall of Copenhagen.

Martin Nyrop, Architect.

first story, alternating bands of chalk-stone and very light red brick in the second. Darker brick above, and the woodwork of the glass ceiling kept in a dark tone. Back of the colonnade the walls are plastered white.

The architect called my attention to the entire absence of paint or pigment in this splendid room. He wanted the materials to tell their own story. The lettering under the colonnade is of slightly variegated brown terra-cotta, set in plaster. Each inscription commemorates some event in the history of the city. It is very decorative.

and the walls below are decorated with conventionalized fishnets and trees, subjects suggested by the character of the painting. The stairway in the main tower is for the councilmen. The wall decoration at the top are "al fresco," ancient views of the city and of one of the earlier city halls. In the ceiling are verses chanted by the old-time town criers at various watches of the night.

On each side of the council chamber is a cloak room and an ante-room with balconies to the two courts. There is also a small buffet for midnight lunches. The council chamber is dark on account



DETAIL OF ONE OF THE ENTRANCES FROM THE COURT.

The City Hall of Copenhagen.

Martin Nyrop, Architect.

of the dark glass, but this does not matter as it is only used evenings. The ceiling is heavily beamed, and close up under it, so as not at all to obtrude on the members in session, is a visitor's gallery on three sides. In each corner toward the court are loggias for honored guests, and between is a retiring alcove with a bay.

There is a slightly raised platform for the president, the four mayors and some other functionaries, with a canopy over the president's chair. The desks are not individual but tables forming four-quarter circles. Along the end walls are seats with high panel work, for the use of members when they wish to consult each other during long speech.

Eight large chandeliers light the room in such a way as to keep the upper part rather obscured. The press has the first row in the gallery at one end.

Below the council chamber is a large room for a civic museum, as yet hardly begun. Still lower on a level with the floor of the covered court are the city archives, lighted from the south through large windows from the open court.

The large Hall of State, extending nearly the entire front of the building, is receiving the finishing touches. It is a fine room with dark beamed ceiling, touched up somewhat with color. At each end is a visitor's gallery, with stairs direct from the corridor. The floor is of American yellow pine, laid in herringbone pattern. It is in short wide pieces, but flat sawed. Some day there will be trouble, just when it is least wanted, when a grand ball is going on.

At one end a door opens into a suite of three rooms for the library. At the other is a session chamber for the magistrates, or the heads of departments.

The City of Denmark is blessed with four mayors. One corresponds to the treasurer and he and one other mayor and the president have rooms in the front. The other mayors, the city architect, engineer and scores of other officers are arranged in the rear.

These rear offices are finished plain with a minimum of wood. The south end is wider than the two sides and here

are rooms also on the open court. These offices are connected with a gallery running all around a narrow court. Above is a glass roof to light this court.

MATERIALS.

When remarking to the architect that they build so much with brick in Denmark, he answered, "Yes, but you will notice our bricks are hand made, not from a machine," and he made a series of identical motions. It was hardly necessary to call attention to it. No pressed bricks could give that pleasing texture to the walls. The use of such bricks would quite effectually deaden the entire structure.

The other materials are also mostly of Danish production. The granite of the base and for the steps is from the Island of Bornholm. The chalkstone that gives so much variety and life has already been mentioned. There is a great deal of burned and glazed clay faience in the decoration, also of Danish manufacture. The floors are of marble or of mosaic in all halls and corridors.

The roof is of slate in cement. The sheet metal is copper. The woodwork is mostly oak with the doors in the more important rooms of mahogany. In some departments, as in the treasury, they have used our own pitch pine which, true to its nature, is already becoming grimy.

Throughout there is used solid substantial material and the workmanship is of the best. But when one gets up into the attic and sees the lumber piles in the roof construction, one's surprise is great. Why in these modern days of steel use such inflammable materials and invite disaster? But it is no easy matter to get out of old ruts and they are now so accustomed to wood in the roof, they seem to think of no other way.

ORNAMENTATION AND EMBLEMS.

The architect in a country with heraldry and a long history, has advantages: ideas for decoration are inevitably suggested.

Nyrop has made good use of these opportunities and yet in this treatment,



DETAIL IN THE COURT.

The City Hall of Copenhagen.

Martin Nyrop, Architect.



THE COURT.

The City Hall of Copenhagen.

Martin Nyrop, Architect.

the symbolism, is never obtrusive. A motive that is constantly recurring is taken from the coat-of-arms of Copenhagen, three towers. Among other places it is seen at the corners of the copper gutter, too far away to be distinguished and yet they are good accent marks.

In the main vestibule the long row of figures representing the various old-time guilds each with its own device is certainly fine. In the same way quaint old seals are also made to serve deco-



DETAIL OF THE COURT.

rative purposes. And there is the crown, in this case not the royal one, but the so-called civic crown. It is used over the bay windows in the open court and in the chandeliers of the council chamber, and in several other places.

Then there is the long history of the country and the city. Directly over the entrance is placed most appropriately a large gilt figure of the founder of the city, the vigorous Bishop Absalon. Two shield bearers a little lower down, complete this effective framing of the doorway. The historic inscription in the covered court, and the "al fresco" paint-

ings of former city halls, and historic views of the city, have already been mentioned. Lastly there is the rich lore Scandinavian mythology, which has also furnished subjects.

The architect has drawn freely from the zoology of the North. Perhaps the best of conventionalizations are those of the snakes in the vestibules, the walrus heads of the rear doorway and the conspicuous and fine bears on top of the crenellated wall of the front. Dogs, cats, mice, crows and seagulls, all fall gracefully into the decorative scheme, each in its place.

Nor have the builders hesitated to use portraiture in stone. The heads at the bottom of the spandrels of the colonnade in the covered court are highly conventionalized likenesses of those city fathers, who undertook the construction of this building. The architect himself is used as a model and also his wife.

Another effective scheme of decoration is suggested by the very processes of erecting the structure. Flat newel posts are placed three or four on each run of the stairway in the large tower. On the side toward the well hole are carved splendid figures of all manner of workmen. There is the roofer and the bricklayer, the carpenter and plasterer, all busily at work. Further down are the laborers, the men coming up with bricks and mortar, timber, slates and what not. Last of all, bringing up the rear, comes the clerk-of-works, also a piece of portraiture. It is a clever and effective way of decorating the stairs.

Perhaps the most prominent decoration is the free use of brick in endless geometric patterns and the punctuation marks of white stone. These brick patterns are strongly reminiscent of Northern Italy and the mind reverts quite readily to S. Stefano at Bologna. In fact it is said the Danish architects hardly go beyond North Italy in their years of travel and study. Clever fellows! Well do they know that their own country, so eminently a brick country, has more to learn from Lombardy than from Tuscany.

The symbolism that is employed is really part of the scheme of decoration.



"A FINE WALL-PAINTING IN FAIENGE, REPRESENTING THE
DAUGHTERS OF AEGIR."

The City Hall of Copenhagen.

Martin Nyrop, Architect

The six large figures along the cresting of the roof in front (see photograph from the model room) are all old-time town criers, variously equipped. They and the large tower clock, which chimes every quarter of an hour, have taken the place of the real watchers. These are ever on duty. The rooster weather-vane on top of the tower, is another symbol of watchfulness.

The rear, which is, owing to the character of the offices it contains, distinctly more modern, has under a canopy on each corner a "blue coat" and a fire-laddy in everyday uniform. Then there is the small door on the east, leading to the department for the infirm poor. Over it are carved in the granite a hen stretching out protecting wings to her chicks. And lastly the dove is seen over many windows in the upper stories and especially the dormers perched on a projecting beam, quite content with her home. No doubt this was done, in order to suggest that a city hall is after all domestic; it is the civic home. In fact it may be said that the architect has succeeded remarkably in giving a homely feeling to the structure. It is far from a collection of mere show rooms and front parlors. It is a building pre-eminently for every day use, and in no way repellent because of cold and distant grandiosity. And yet it is dignified—the dignity of known worth, having no need of ostentation.

PRACTICAL AND MECHANICAL.

The building is heated by four Babcock & Wilcox boilers, placed in a separate model-equipped structure, connected by a concrete tunnel under the streets. The heating is mostly indirect, using several fans. The air to some of the rooms is filtered through long rows of zizag cloth filters, and then moistened with steam, escaping through automatically refilling tanks. In another part, where there was no room for filters, the air is merely washed by a fine spray. The heat regulation is not automatic, except in one department, using a Danish thermostat. It seems quite different from the American system, for there is no compressed air.

In connection with the ventilation one should note the crenellation of the brick wall breaking through the roof. These are really foul air vents, and it would be interesting to know which suggested the other, the vent duct or the crenellation.

The snow on the large skylights is melted by steam heat as soon as it falls to prevent trouble.

It will give some conception of the size of the building to be told that sixty women are employed every day to clean the 485 rooms that are now in use. For there are some unfinished portions to allow for future expansion, as for instance the large space over the Hall of State, now merely a garret. In order that the janitors may not forget the door mats the architect has arranged recesses in the floor. And in this way they are not sliding about nor tripping the unwary.

Time is kept by an exceedingly fine chronometer, in the information room of the first story, connected electrically with the dials in the tower. These dials are in diameter the same as the front door opening. Unusually well tuned chimes peal forth at every quarter. At the first quarter one little melody. At the second two, and so on. At six and twelve o'clock quite a little tune is played.

COST.

We Americans are rather prone to reduce things to a dollar basis in order to get at a comparison. It is not always the better part of discretion to do so. This practical and immense structure, a thing of beauty and a joy for centuries to come, cost the ridiculous sum of 5,817,500 crowns or hardly more than one and a half million dollars. Just think of it. And there we have our own city hall of P——! but spare us. We'll never do it again. And we do not even have the excuse of shielding ourselves with the higher cost of building at home for the difference is really very slight. Labor is to be sure lower, but materials are higher and progress slower, so one thing equalizes very nearly the other. But it is of brick, say some.

Well, if we could always save money and get as fine results as this, let us by all means use brick and discard stone. Unfortunately we cannot, as anyone can easily determine for himself by spending a few hours on the trolley cars of Antwerpen. For even the Dutch have failed to make those endless rows of houses with cornice lines all of the same height, anything but intolerably dull. One would have to go to the New York brown stone front to find streets more sterile and soul wearying.

COLLABORATING ARTISTS.

It is quite evident that the final success of a structure such as this is to a great extent dependent on the character of the many collaborators. These seem all to have been Danish which ought not to surprise us. Copenhagen is an artist center. For though very nearly the smallest of countries, the capital of Denmark has what is claimed to be the largest collection of French sculpture outside of France. Besides the celebrated collection of the great modern Thorvaldsen, there are numerous other art collections and museums.

It might not be amiss to mention some of the artists who have linked their names to the structure, only less prominently than the architect himself. The figure of the founder-bishop is by Prof. Bissen. And the town criers on the roof by Prof. Aarslef. The reader may have noticed that much of the best work in Europe is done by Professors. The European Universities have a way of attaching great names to their faculties. In return the holder gets a salary and delivers some lectures, but the greater part of the time remains his own.

The policeman and the fireman, the walrus of the rear door and the snakes together with most of the minor sculptural decorations are by Bundgaard.

The very decorative tympanum of the vestibule with the guilds below is by Frau Slott-Moeller. There was a competition for this and, curiously enough, first and second prizes were captured by women. "The men began coming in third place," the architect remarked.

The faience picture of the splay in the archway of the door, in the covered court, is made up of seagulls skimming over the water filled with fish, or fighting over their prey. In the corresponding doorway to the east are crows flying over a landscape. Both are by Hansen-Rejstrup. The large painting of the Daughters of Aegir, also in faience, is by Froelich. The bear in the fountain by the court and the genuine "al fresco" paintings are by Skovgaard. The panel over the door in the library, representing the architect and his superintendent on the roof of the building discussing some instructions for the mason foreman, is painted by Kroeyer.

The so-called frescoes of the windows and stairs, conventionalized flowers, leaves, etc., in few colors are by Moeller-Jensen. There are other paintings by Ring, Hammershoej and Carl Jensen, so the list is extensive. Apparently all have worked understandingly with the architect to produce one large harmonious whole.

STYLE.

If you should ask the architect what style he had adopted for his structure, he would probably say he did not know. And this is no discredit to either architect or building. Yet the question is justified for the building has style, style in that broad sense that an orator has style or a writer or an actor, a style imparted by the author to every part be it even "minute and unseen." It may be quite a fanciful idea but one likes to think that its designer gave to this one building all his time, all his thought, all his ideas. One likes to imagine that he prepared himself for this one work, not by a large indiscriminate practice, trittering himself away on all manner of commercial problems, but rather by a long preliminary training in select works, executed patiently and without haste. Meanwhile his mind was filling with thoughts and ideas for the opportunity of his life. Then it seems he spent all, gave of himself with a free hand and concentrated every energy on this one object. It may be fanciful, probably is, but the writer has been able



THE TOWN-CRIERS OF COPENHAGEN.



A COUNCIL CHAMBER.

The City Hall of Copenhagen.

Martin Nyrop, Architect.

to find no other work of importance from Nyrop's hand. And the fact is that the erection of this structure coincides with the best years of a man's active life. Herr Nyrop had just turned forty when the question of a city hall was seriously discussed. A year or two later he captured the prize in a competition. The building is now receiving its final touches in the Hall of State, and the architect is not yet sixty. It is quite enough glory for one man. There is something of the flavor of old time, the days before machinery. There is evident a loving care for all details, nothing slurred over, nothing slipshod, nothing "scablonenhaft" as the Germans say.

But to one man this city hall must be a disappointment—on paper. That is the average, self-assertive and all-knowing committee man, appointed to procure a new city hall, court-house or library for his community. Its big fault to him is the lack of columns. And competing architects know this. It is not such a big trick to string a lot of columns along a front, most any draftsman can do it. And then too, most important of all, many architects can make a committee believe that it costs no more—practically no more. Nor does it cost any more, as far as the drafting expenses of the office are concerned. As a money maker, a brain saver and a job catcher, the column and the pediment have outdistanced every other device known to a designer. One must feel positively thankful that there is not a column on the façade anywhere. The column is used in one place in the covered court, and there, most naturally, to make the upper part structurally lighter and more graceful.

But there are many other reminiscences of historic architecture, of the

author's years of study and travel. In the mosaic are delightful reminders of the elegant simplicity and effectiveness of the pavements of Pompei. The tower and the scooping out of the pavement in front hark back to Siena. The architect no doubt filled his sketch book with brick details in Bologna. The motives of the wall decorations are suggested by paintings on the plaster walls and ceilings of German and Danish churches. The treatment over the long row of large windows in the front recalls old manor houses, so-called "herregaardar," a local Danish element. So also is much of the brickwork local in its flavor. In the ceiling of the treasury old coins of the realm are used to show the purpose of the room.

It might be fair to expect a critical and analytical study of this prominent structure. But I shall not attempt this. It can be done far better by some one trained, some one more cold-blooded, with a steady hand to guide the dissecting knife. Nor would I, if I could, care to spoil the pleasure of two short winter days spent in Copenhagen, the greater part of the time in this fascinating building.

It is quite possible that no one would pick Herr Nyrop in a group, as the architect, if it were not for that roll of drawings under his arm, or perhaps still better by the earnest seriousness of his eye, that goes so well with his product. For he is thoroughly devoid of posing and swagger. But he is unmistakably a kindly and "gemytlich" Dane—a quiet, pleasant, gray-haired man with silver brimmed spectacles on his nose, in stature and weight perhaps below the medium, but in productiveness and as a gentleman the peer of the best.

Olof Z. Cervin.



DOOR OF A PRIVATE CHAPEL, IN WESTCHESTER.

A Private Chapel in Westchester

Among the private chapels in New York and its neighborhood, it is doubtful if there is one more complete in its appointments than that of the Holy Child at —....., in the County of Westchester. This chapel is in a country house, recently built by a gentleman of large means, from the plans of Messrs. Little & O'Connor. While the dwelling itself is Spanish Renaissance in character, much in the style of the

decorate and furnish. Before he proceeded with the work he asked himself these questions: First, what style of architecture should be employed? Second, what spiritual thought should dominate the religious motive? Third, what furnishings are necessary for a private chapel?

The first question was answered by the style of the house: Renaissance; but Italian was used instead of Spanish,



A PRIVATE CHAPEL IN WESTCHESTER.

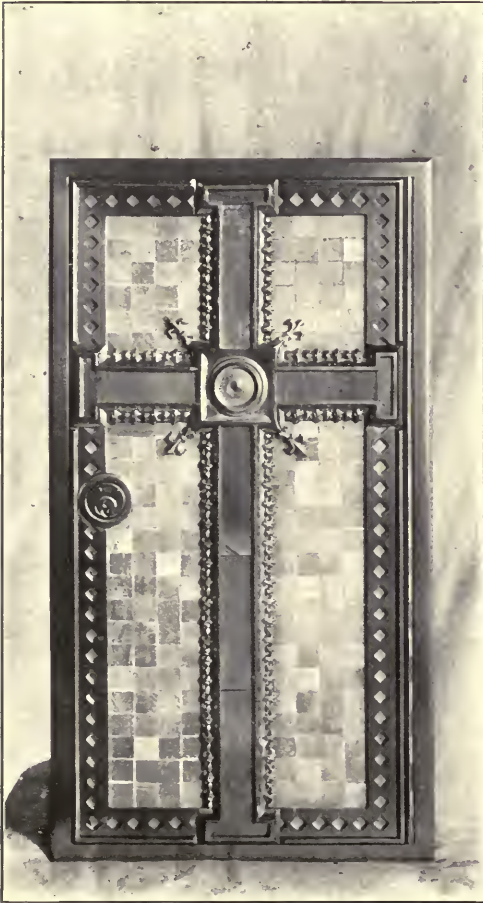
Franciscan Missions of California, the architectural lines of the interior of the chapel are Italian. It is situated at the very top of the house, and is almost a building by itself, but it is concealed from view by the parapets of the main structure, except its roof of red tiles, which forms the crown of the dwelling.

The chapel, originally a bare room 30 feet long by 24 feet wide, was placed in the hands of the writer to construct,

because it is simpler in decorative detail, more dignified in line and color. The second question was easily answered, for it is self-evident that a chapel in a private house should emphasize the beauty and holiness of Christian family life, the innocence of childhood, the watchfulness of fatherly and motherly love. The third question called for a greater study, because a private chapel can be simply an oratory

—a room set apart for family prayers, or it can be this and more, namely, a place where the Eucharistic Sacrifice can be offered; or it can be all of this, and at the same time so equipped that public services of every kind can be celebrated within its walls: in other words, a Church in miniature. This last form was chosen for the Chapel of the Holy Child.

The architectural composition of the chapel was carefully worked out, good Florentine examples closely followed, and great attention given to harmony of line and ornament. The ceiling is left open, conforming to the contour of the pitched roof. The oak ridge-beam, rafters and ties are all in plain view, but highly finished in a dark tone of



THE TABERNACLE DOOR.



THE HOLY WATER STOOP.

color, while the intervening spaces or coffer are plastered, textured and metallized with a rich deep yellow gold. The whole room is wainscoted to the height of the window stool, broken by pilasters reaching from the floor to the underside of a well developed cornice, enriched with simple mouldings and carvings, all in quartered oak of the same tone and finish as the ceiling-timbers, except the carved capital of the pilasters, which are gilded. Both the side walls are broken by three windows and one door-opening; the spaces above the wainscot, and between these openings and the pilasters, are plastered and covered with a textile of a peculiar dark green color; and the end walls are treated in a similar manner. The floor is made in very light quartered oak, marquetryed in one tone, and polished like a mirror.

The general color scheme of dark waxed oak, light polished floor, golden coffers and green wall surfaces was chosen in order to form a background that would enhance the preciousness of

the gold and silver, the paintings and mosaics of the altar, and the colored glass of the windows.

The altar, standing on a predella of three steps, was developed from a single motive: The beautiful wall tabernacle of Mino da Fiesole in the Santa Croce at Florence. An exact full size copy of this masterpiece was obtained and used as the actual Tabernacle, and the other parts of the altar. The mensa, the retable and reredos, were composed from its various members, and heavily gilded with deep yellow gold, relieved with greenish gold and silver. The spaces in the reredos, on either side of the Tabernacle, are filled with careful copies of a portion of Bennozzo Gozzoli's celebrated picture of Paradise, in the Palazzo Ricardi at Florence: Angel's in prayer and adoration amid a garden of roses. The Tabernacle door is made from an original design, and executed in metal overlaid with gold, and inlaid with iridescent glass mosaic; this same combination of metal and mosaic is employed in the crucifix, flower vases and canonical candlesticks.

The entrance to the chapel is at the opposite end of the room from the altar, and is composed of a carved and fluted oak trim, carrying on escutcheon bearing the dedicatory inscription: *Deiparæ Immaculatæ*, and provided with a double leaved carved door, a work of the early Eighteenth Century, which was obtained from an abandoned church in the State of Chihuahua, Mexico, a fine example of the handicraft of the native converts of the Franciscan missionaries.

The subjects portrayed in the windows were selected from the Child life of Christ, in illustration of the doctrine of the incarnation in its bearing on Divine, conjugal, parental and filial love, in its relationship to a perfect family life. The themes depicted are the Annunciation, the Nativity, the Adoration, the Presentation, the Disputation, and the Home at Nazareth. They are worked out in American mosaic glass: "Innumerable of stained and splendid dyes,

As are the tiger-moth's deep-damask'd wings."

The Chapel is illuminated by the means of electric lights on each pilaster there is a carved wooden console, finished in antique gold, carrying three electrical candles, the corabe representing a cherubim. The prie-dieux are of oak, with carvings in gold; and all the



THE ALTAR CANDLESTICK.

Other accessories, such as the altar furniture, holy-water-stoop, laces, vestments, are in keeping with the ensemble of the chapel. The accompanying illustrations give a fair idea of the archi-

tectural lines and decoration of the chapel, as far as they may be shown in black and white, where so much depends upon color in unison with architectural expression.

Caryl Coleman.



THE ALTAR OF THE PRIVATE CHAPEL.

NOTES & COMMENTS

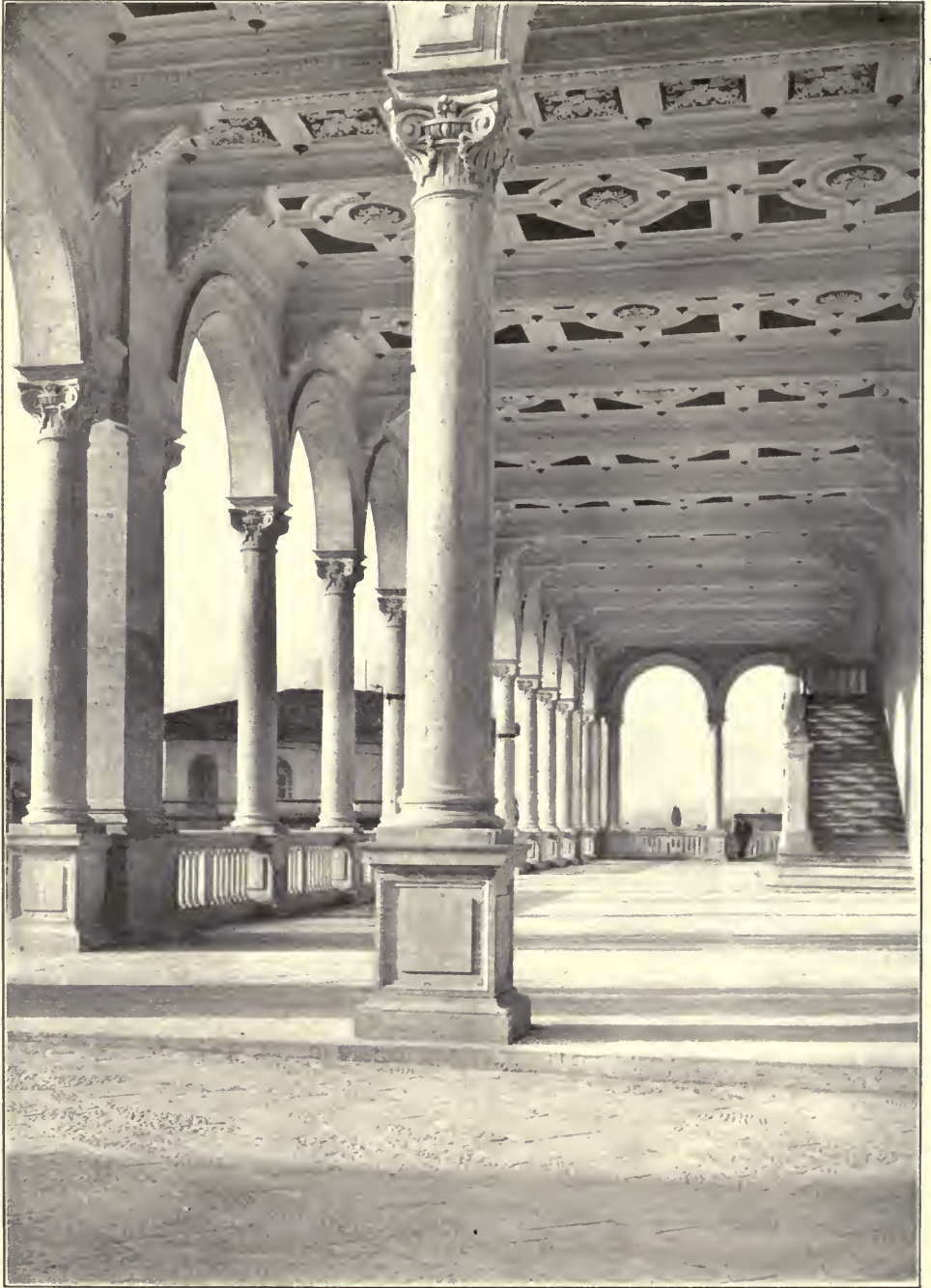
SIENA CHAMBER OF COMMERCE

Mr. John Safford Fiske sends from Italy the photographs, which we reproduce, of a new building in Siena. The utilitarian idea, the purpose, of the building does not readily combine with the idea of

Siena in the mind of anyone who knows the place well; but in that hill town as well as in the larger cities of Tuscany, modern commercial prosperity is spreading, and they have what seems an anomaly in such a community, a Camera di Commercio. The material, at least of the arcade, and the window casings, is a pale gray stone, and the relief sculptures of the band above the arches are emphasized by a red background, though this with the interspersed armorial shields, appears to be the only color effect which is sought in the exterior design. Speaking now only of the exterior design, there are two things which seem worthy of special mention. The first is the entire fitness of such a revival of Italian fifteenth century architecture for the purpose of an ancient Tuscan town. Such a building would not be much in harmony with our New York streets; nor would it be any more suitable in the streets of Norwich or Farmington in Connecticut, to name only two picturesque and attractive towns of true New England type. Again, it is hard to imagine a town of the active West in which this building would not be rather preposterous. For, note the spaciousness of the plan—a Loggia filling the whole ground story and only one story of enclosed rooms above. The one hundred and fifty feet of length, and the thirty feet or thereabout of width are given up frankly to purposes which a small building of no pretensions would answer as well, except as the community is invited to enjoy it as a place of resort—as a summer house. There is that moderate cost of building which excites the envy of Americans who study the customs of continental Europe. The equivalent in cost of this building in Norwich or Farmington would be a frame building covered with shingles because if we measure it by the price of wheat, the work of the stone mason is cheaper in Italy than we can imagine, and

then the arcade and the square covered flat-faced mass of the building repeat, after a few centuries, forms perfectly familiar to the citizens of Siena; the style is in their very blood. In mass and in detail the building is something that all Sieneese would recognize as it arose. And this familiarity with the subject is seen in the evident freedom with which this modern Italian designer treats the accepted forms—venerable traditions of his ancestry, in art.

It is a matter of great regret that the florid parapet or gutter-member—that piece of rich scroll-work which rises above the cyma recta, should have disappeared in the picture. The background has been wiped or painted or in some way the verity of the sky-line has been lost altogether. Still a little of the parapet can be seen above the short face of the building at the extreme left of the picture. Disregarding that, it will be seen that the crowning effect of the wall is an entablature made up of a cornice supported on modillions, and below that a rounded moulding and a dentil course with no more frieze nor architrave below this again than the ornamental band decorated by a fret in low relief, which seems rather to make part of the wall than of the entablature. So the pilasters which form the corners of the building are frankly stated to be piers and are built up of rusticated blocks, although their capitals seem to make pilasters of them, and this form is repeated in both stories of the façade. In the arcade below its continuous character is emphasized by the returning of the archivolt at every fresh abutment, so that mouldings do not spring directly from the capitals of the columns, but are returned upon themselves, serving as mere decorations of a solid stone archivolt which is sufficient to itself and accepts the mouldings as mere ornament. All of this is characteristic of the fifteenth century designer, nor need it excite any surprise; but it is just because this design shows sympathy with the radical departure, with the independent spirit of the Risorgimento and that it is not tied by the formulae established at a later time, that it is to be welcomed here. That "Classic" which is a "soft



THE SIENA CHAMBER OF COMMERCE.

snap" is not the classic of this kind. No one will find that his draughtsmen are ready to turn out such details as these, because they are not to be found all ready-made. You must go to photographs for these, and photographs require study.

The second picture is a view taken within the open arcade, and surprises one rather by the width of the portico. One sees, in looking at this, that the hall above must be capacious, and that this great Loggia is a delightful place of resort when twilight falls—for the late afternoon sun shines full into it. It is a place of resort for mornings and evenings, and not for the heat of the day.

R. S.

THE WHITTEMORE BUILDING AGAIN

In the June number of these Notes and Comments there was criticised the Whittemore Building in Chicago; and a letter from the architects, which I am glad to receive and to acknowledge—which, indeed.

I had asked for—states that there is no steel concealed in the brick piers. "The building is an honest brick wall all around except, of course, the cast-iron columns in the first story front." This is interesting because it shows that the architects have been willing to trust their brick-work. We do get first-rate brick-work in our cities, when a little pains are taken; and undoubtedly it is safe and sufficient building in the present instance, these high and slender brick piers, steadied as they might be, very easily.

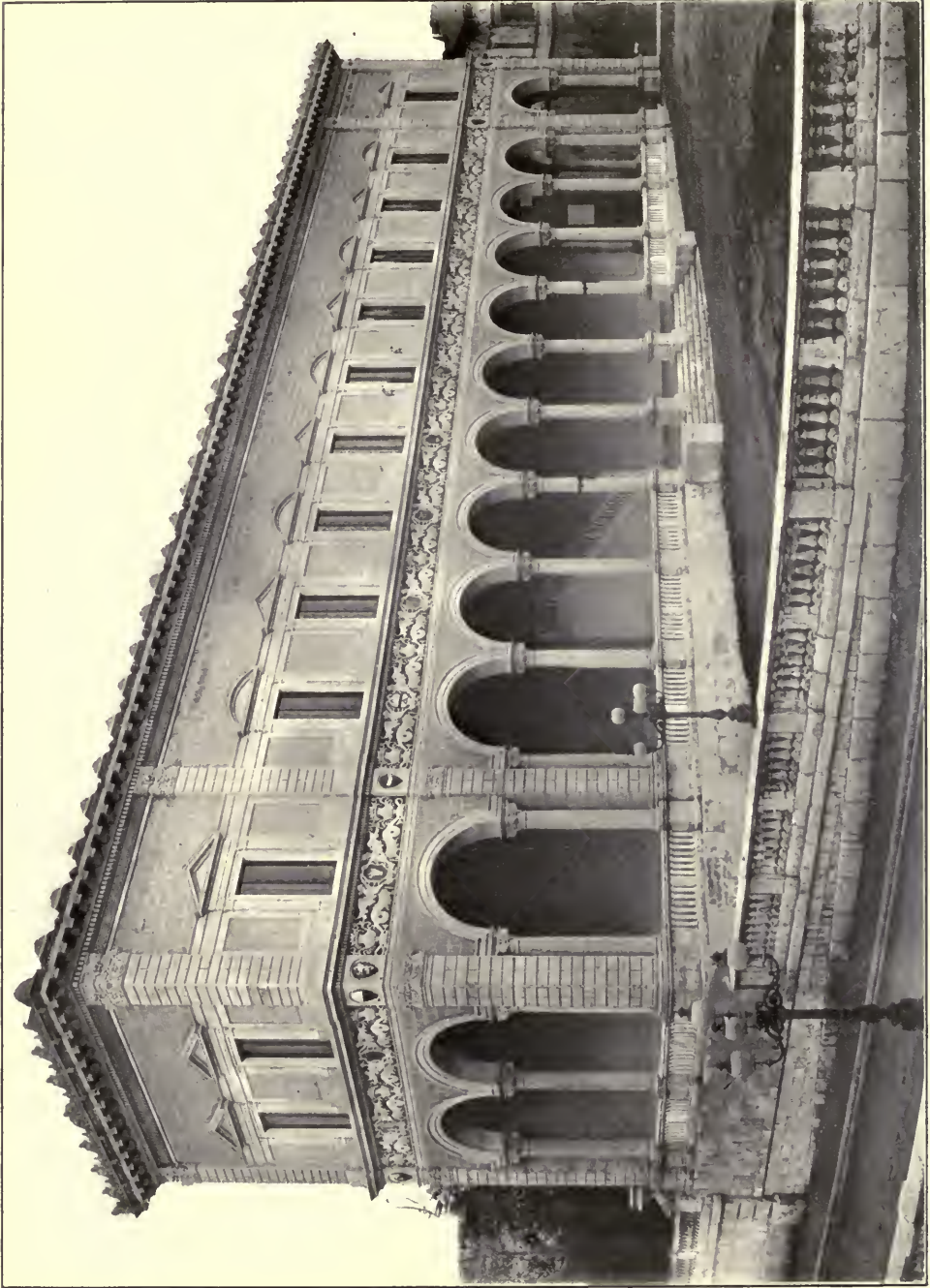
Now it is clear that if the note in the June number had been a critical account of the building, it would have been absurdly inadequate. In fact, no such critical account would be possible to a writer looking at the front only. And therefore it is just as well to state here that the front only is described and commented on in that note. All that could be seen in the unsatisfactory photograph was the general lay-out of the front; probably that is all that a first-rate print could have shown; and accordingly all that was said was to one end only—to comment upon the forlorn way in which a presumably good structural front was left without artistic treatment. My very hasty assumption that there was steel in the piers merely serves to show (once more! as if it were needed!) that you mustn't take anything for granted. The fact that the piers are brick alone does not modify at all the general opinion that a passerby might form of the front as a piece of architectural design.

"But the front ought not to be criticised by itself." Messrs. Dean & Dean do not say

that: those words are put into the mouth of my reader, in order that it may be said, in answer, that street fronts may be treated alone, very often. The ordinary city house in which I am dictating this paper—what has its front to do with the structure? The floors and roof are carried on the side-walls, all the front has to do is to present window openings and door openings in convenient relations with the top of the flooring, in each story, and to stand up and stand plumb. Such a front may or may not be the medium of careful designing in the arrangement and proportioning of openings and solids, the use of mouldings, the use of sculpture—what not?—but it may properly be treated as a flat wall. So much only in reply to the very courteous letter of Messrs. Dean & Dean, and to its suggestions that the whole structure of the building ought to have been studied before any critical remarks were made.

There remains to be urged this consideration, that if you don't see many things relatively bad as well as others relatively good, your criticism is naught. All are agreed that there is no modern style; all are agreed that the fine art of architecture can hardly be called into being in connection with our business structures and our hotels—that is to say with the most prominent buildings of our cities. Every architect who has built a great hospital, a library, a clubhouse, knows, and many a one will say, that the burden he has had to carry was too much for him—that he could not have his desire of a carefully thought out design.

Here are two ways out of the Slough of Despond in which we wallow—the close copying of European monuments of old time, and the putting up of frankly non-architectural things, which may lead to something architectural, by and by. Call those two methods A and B—is there a third way, C? Each one of us thinks so, at some time, he tries it, it seems not to lead to the promised land. Eidlitz built the American Exchange Bank—the Continental Bank, 1856-1858; Wight built the Academy of Design, 1865; R. W. Gibson, modifying a scheme originated by the late Mr. Stent, built the Church Missions House at Fourth avenue and East 22d street; McKim, Mead & White built Madison Square Garden with its arcades, and the colonnade of entrance of the Metropolitan Club; Sullivan built the Guaranty Building (now the Prudential) in Buffalo; Wm. A. Potter built Alexander Hall at Princeton: these are buildings of all sorts except houses and churches (which we are not considering now), and each of them is original in a high sense. The man sat down to his work, thought out his



THE SIENA CHAMBER OF COMMERCE.

plan, allowed the exterior and the details within and without to take shape in his mind, designed as freely, built as well—as he could; and so not one of these buildings can be classified as of any bygone style. If any other such building comes into being, the editor of the *Architectural Record* will call it up to account for itself! But none such are heard of. In this absence of original architectural buildings, I have ventured, of late, into the field of factory buildings, warehouse buildings, storage buildings—structures built away from the stately thoroughfares and in humble guise, chiefly of brick; and it is surprising what fine things have been discovered. The *Record* for January and February, 1904, and several numbers of the present year, 1905, may be cited. Those are buildings in which a designer may be allowed to be original—may allow himself to be original; for he has no overmastering types in his books of reference—and he sees the impossibility of using as types photos of buildings, in foreign parts. This search has been, is and will be a delightful excitation. And when the Whittemore Building became known to me through a photograph of its façade, I added that one to my list; but, as was said above, the defects and shortcomings need to be taken up, in their turn, and the defect there seemed (and seems) to me a lack of artistic thought given to what might have been fine.

R. S.

STREET DECORATION

The street decorations with which the municipality of Paris welcomed the King of Spain, on his visit in the first week of June, were of a sort somewhat novel, but withal so practical and effective, that they ought to have suggestion for American cities on gala occasions in summer. At intervals of thirty metres along the principal streets there were placed huge vases filled with begonias in red and yellow, these being the Spanish colors, and alternately with these were masts painted in red and yellow and surmounted by shields bearing the royal arms. To enhance the floral effect obtained by the vases, prizes were offered for the best decorated windows, and it is said that the principal greenhouses of France, Italy, Belgium and Holland were called upon for plants, the latter country sending hundreds of thousands of late flowering red and yellow tulips. The electric illuminations also carried out the Spanish colors, and the whole work of decoration was done—as usual in Paris—

under the direction of prominent artists. The feature most novel and interesting was the use of the big vases of growing plants—a device suitably formal and royal in its suggestion to be very appropriate in location and purpose. For a week's display, during which the King was to traverse a large amount of ground, they were much better than ropes of flowers or than one or two staff arches would have been.

PRIVATE HOUSES AS PUBLIC GIFTS

An interesting item that has lately been drifting homelessly through the papers, report that Charles M. Schwab destines the home which he is building on Riverside Drive for a public museum, when he can no longer dwell there. The item seems not to have been contradicted, and it is interesting in its reminder that hardly a splendid private house has been bequeathed to the American people. There is a new idea for our philanthropy! With the increased appearance of very elaborate, costly and beautiful houses filled with artistic treasures, which are not allowed to stock it like a museum, but which are severally fitted to their immediate surroundings—so that they become a part of its essential furniture—or, as in the case of a chimneypiece or stairway, of the house itself—the problem of what to do with it when the owner has gone is bound to be more and more pressing. Adequately to maintain such a home makes very heavy demands not only on the purse but on the love of art—a demand that not many heirs can satisfy. There may, also, be no heirs; while to separate the house and its treasures, willing the latter to a public museum, is to rob them of their setting and so to destroy a good part of their value. If we have not had this kind of philanthropy before, it is because we have only lately, with the rise of vast fortunes, commenced to build this sort of houses. In Europe many a private palace has become by such means public property; and to name over the most famous museums is to recite the names of families and homes—as Pitti, Uffizzi, Luxembourg, and Chantilly. That in the possibility of such a future for his work, the architect must find vastly increased incentive and inspiration, scarcely needs a saying; nor need one explain that the citizen who leaves to the public the product of his artistic taste and judgment in collection and arrangement leaves much more of his personality than he who bequeaths to it only stocks and bonds.



Frost & Granger, Architects.

THE TOWN HALL.

Lake Forest, Ill.

**LAKE
FOREST
TOWN
HALL**

Lake Forest is a town in Illinois, twenty-five miles or so north of Chicago, close upon the lake, and a most attractive village of the sort that is built to order in a flat country. The interesting Town Hall and Fire-house shown in our illustration will be far more interesting now that the leaves are on the trees, but it was wise to photograph the building before May-time had come. For a brand new structure, complete representation of the bare facts—for the five-year old building the picturesqueness caused by surroundings and the pretty shadows of foliage upon its white walls.

These white walls in their contrast with the reddish gray walls of brick, form the significance of the design. Smoothness contrasting with the broken surface of rough brick laid up in the ordinary simple fashion, whiteness contrasting with the mottled and varied color below, which color is again modified by a few simple patterns in the masonry itself, and again the inevitable controlling of the walls with all their play of color and character by the large and simple roof—those are the principles of this design, and they are principles worth insisting on. In some cases this insistence may be thought, in the case before us, a little unreasonable. Thus, the breaking of the three-centered arches of the entrance porch by the stone blocks is unfortunate; for what is as pretty as the three-centered curve seen in perspective, repeated, as it would have been, by the projection of the different rings of the arch, each beyond the last? The contrast of the white is not to be objected to; if some patriotic citizen of Lake Forest were to go by night with a chisel and cut the mouldings made by the brick offsets through the stone so as to keep the curves of the arch continuous—it would seem as if the objection made above would disappear at once. Why, indeed, should that detail, identified with a most forlorn old style, with the worst of the late neo-classic styles—why should that have crept into this simple and reasonable design?

Again, one is conscious of a certain impropriety in the use of the same plastered surfaces in the wood-built dormer window as in the walls; for it can hardly be supposed that in this case the plaster should be laid upon brickwork. Our American timber framing is not carried so far. It is hardly to be supposed that the dormer window is really framed, solid, filled in with brick nogging and then plastered. In like manner the top-most band of white in the tower, the frieze that comes just below the overhanging eaves

of the little spire—that is evidently timber construction, too, and the plaster there must be put on lath of some sort.

Now, all this is a matter of feeling; and it is a thing which must be insisted on in every instance, the fact that it is a matter of feeling and that an extreme refinement of feeling would keep a designer from the anomaly of using a lath-and-plaster surface and a brick-plastered surface side by side as if they were alike in dignity and significance. In other words, the very fact that the designer's walls were to be in white plaster contrasting with red brick, would seem to bid him call for a different surface from either when it should come to the filling in or the covering up of a timber construction. It is easy to use a third tone or tint or hue—it is easy to work up one surface or another with embossed patterns and with scratching, with sgraffito work, in fact. A harmony of three colors is easier to work out than one of two; a harmony of four is far more amusing and more effective than one of three, and the case seemed to call for just that introduction of the third element in places where there was no longer a solid masonry wall to start from.

This is a most attractive design; the proportions are graceful without losing that picturesque energy which so small a public building seems to require. I wish we could see in the picture the door of the fire-house proper, the porte-cochère through which the fire engine is run in and out. That would of necessity make an interesting feature in the wall where it occurs.

R. S.

**STUDEBAKER
BUILDING**

The Studebaker Building in Kansas City is another interesting brick building. for in this the general mass is more attractive than even the larger details. If anyone should wish to argue the question of relative effect of the corbelled cornice coming directly against the sky and the same member with an attic rising above it, let him compare the wall cornice in this case as it runs along the main façade, with so much of it as belts the square tower. That is really an effective tower; it would have a more mediaeval and more fortress-like effect if it rose still higher clear above the roof, but it is as high as is needed for the water-head or the machinery of the elevator, or both. The square tower which has just arisen in New York, connected somehow with the armory of a militia regiment and dominating



THE STUDEBAKER BUILDING.

Kansas City, Mo.

Root & Siemens, Architects.

Fourth avenue from 34th street southward, is certainly more effective from a distance; but then it is built for effect alone and can have no utility under any circumstances. The tower of San Gimignano has not, as yet, suggested any repetition in modern times of that peculiar effect, yet perhaps it may come. A certain number of tall, square, brick towers needed economically for factory and warehouse buildings, might well be arranged in an attractive group, if a few architects, building in crowded manufacturing quarters, should agree to join forces.

R. S.

**THE
PASSING
OF A
PIONEER**

Even in this hurrying country, it causes some surprise to read reports that "a historic building, seventeen years old," should have to give way before the march of progress. And the phrase loses none of its remarkableness by the fact that the building's historical significance is due to no momentous or interesting events that have taken place within its walls, during their short life, but to their marking of a step in the ancient and usually slow moving history of architecture. The structure referred to is that known as the Tower Building, on lower Broadway, New York City, planned by Bradford L. Gilbert, and claimed to be the first example of steel skeleton construction. It is significant that the seven stories of steel frame, then erected so experimentally, are to give place now to a twenty-story building. A suggestion has been made that it ought to have been kept as much as the pioneer locomotive or steamboat; and it is a pity that the big new skyscraper could not be constructed around the little cloud scraper, protecting it and showing it off by contrast.

**A DEGREE
FOR
RODIN**

The bestowal upon Auguste Rodin of an honorary degree by the University of Jena, is an event well deserving of comment. Here is a sculptor made a "Doctor," and he is a French sculptor who is thus honored by a German university. "Exceptional" is hardly the term to apply to an act that is unparalleled. If not the most important, it is perhaps the most striking, recognition that has been given to Rodin's talent. The truth

is, Rodin's impressionism is highly esteemed in Germany. In fact, one would perhaps be safe in saying that approval of him is more general—not necessarily more vigorous—in England and in Germany than it is in France. At home he still has severe critics who find him barbaric and crude. At Düsseldorf last year there was an exhibition of his work that is said to have been the most comprehensive yet made; Berlin and Dresden have also had exhibitions, and the Royal Gallery in Berlin has acquired two or three examples of him. But there is a deal of interest in Germany just now in developing national sculpture, and at the time of the Schiller centennial, when the award to Rodin was made, France and Germany were watching one another with much political suspicion. It is inspiring to find art appreciation thus rising superior to politics.

**YELLOW
PINE FOR
INTERIOR
FINISH**

There are few recent developments in the art of American building of more interest than the use of greater varieties of wood for the interior finish of handsome rooms. The greatly increased cost of certain kinds of wood, both hard and soft, has stimulated architects to try other kinds which have been less used in the past; and excellent results have in this way been obtained from elm, butternut and yellow pine. Yellow pine in particular has recently been increasing in favor as a wood which can be successfully used for the highest class of interior finish. It has always been one of the most popular of American hard woods for flooring and other purposes; but it has been shown in a number of different instances that it can be stained so that it puts up an appearance very similar to that of Flemish oak. The grain of the wood is usually exceedingly good and needs only to be properly treated in order to bring out its admirable qualities. Visitors to the St Louis Fair may remember a cottage in the Forestry Building, erected exclusively of yellow pine, which was a conclusive exhibit of the possibilities of that wood for both the trim and furniture of a handsome apartment. That exhibit has already had the effect of stimulating architects to use yellow pine in an increased variety of ways, and this use will be extended as fast as people learn how much can be accomplished to diversify the effect of the wood by proper staining.

**WILSON
EYRE**

Mr. Wilson Eyre, whose photograph we print herewith, needs no introduction to the readers of the Architectural Record. He is one of the half dozen American architects who have made for themselves a national reputation, chiefly because of their designs for dwellings, and of these none is more individual than is Mr. Eyre. While his work

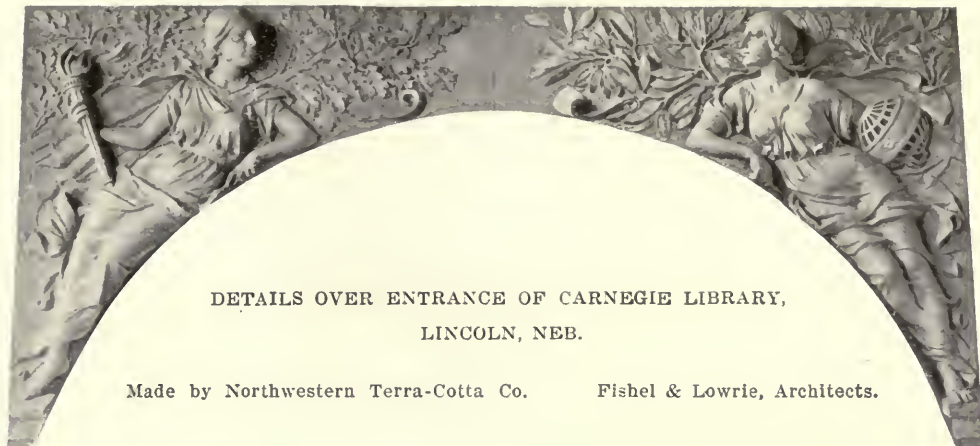
impression of being completely visualized, of being really seen while in the process of being designed, whereas the work of many very clever American architects, particularly when they hail from the Beaux Arts, give rather the impression merely of clever draughtsmanship, and when to this advantage of a genuinely projective imagination is added the further advantage of thorough technical training, it can be inferred how high are Mr. Eyre's qualifications as a designer. The



MR. WILSON EYRE.

has been by no means limited to private dwellings, it is as an architect of houses and gardens that he is best known. His designs exhibit an interesting mixture of traditional and original, of formal and informal elements. His imagination is steeped in some of the best traditions of domestic architecture; but it remains, nevertheless, personal and vigorous. His buildings always give the

writer has had the pleasure of actually seeing only five or six of Mr. Eyre's houses; but of those he has seen, in the flesh instead of in reproduction, a house and garden at Greenwich, Conn., will linger long in his memory as the satisfactory treatment of the late colonial three-story dwelling it has been his good fortune to run across.



DETAILS OVER ENTRANCE OF CARNEGIE LIBRARY,
LINCOLN, NEB.

Made by Northwestern Terra-Cotta Co.

Fishel & Lowrie, Architects.

The Advantages of Terra Cotta

No. II.

In its July number the Architectural Record published the first of a series of articles, in which it was proposed to give some account of the increasing use of terra-cotta in this country, and its advantages and qualities, compared to those of other materials. It was pointed out in this first article of the series that the employment of terra-cotta in large quantities in American building was practically contemporaneous with the specifically modern movement in American architecture; and that it was prominent architects, still living, who have been chiefly responsible for its introduction, for its varied application, and for its increasing popularity. There can be no doubt that since 1880 its use has grown more rapidly than that of any other important building material; and this fact suggested the inference that there was a close and vital connection between the best qualities of terra-cotta as a material and the peculiar needs of contemporary American building and architecture. In the present number of the series, we propose to inquire whether and how far such a connection can be established.

Before, however, entering upon any discussion of the merits of terra-cotta a short explanation is necessary of the point of view from which this discussion is undertaken. It will be necessary to make it comparative, and to show that in certain respects and for certain purposes terra-cotta is preferable to stone; but it must not be supposed that we are foolish enough to claim that the comparison is all in favor of terra-cotta, or that for certain purposes the use of appropriate kinds of stone is not to be preferred. Stone has obvious advantages in the construction and ornamentation of a building, with which brick and terra-cotta cannot pretend to compete, and it is absolutely essential to the proper use of terra-cotta in this country that the strong and weak points of the two classes of materials should be clearly understood. Such an understanding would be extremely beneficial both to the terra-cotta and the stone industries, because the two materials are at bottom supplementary, rather than competitive. Terra-cotta is not a substitute for stone. Under certain conditions and for certain architec-

tural effect terra-cotta should be used. Under other conditions and for other architectural effects, stone of one kind or another should be used. The trouble is that many architects and many more laymen do not fully understand what

Nor is this all. The comparative use of the two materials is confused by the fact that terra-cotta is cheaper and more flexible material than stone, and that consequently it is often used as a substitute for stone, not because the ar-



OFFICE BUILDING FOR THE MUTUAL LIFE INSURANCE CO.,
CAPE TOWN, SOUTH AFRICA.

Terra-Cotta made by Perth Amboy Terra-Cotta Co.

Clinton & Russell, Architects.

the comparative merits of the two materials are; and consequently they frequently use stone, when terra-cotta would have better served their purpose, or they use terra-cotta when a more appropriate effect could have been obtained with stone.

chitect wants to use terra-cotta, but because he cannot afford to use stone. Under such circumstances, he usually compromises by specifying a kind of terra-cotta which is made to look as much as possible like stone; and the manufacturer of terra-cotta is required

to produce a "sham" material in which the substantial and characteristic merits of each material is sacrificed for the sake of putting up a false appearance. The terra-cotta makers naturally dislike to manufacture a material for which they obtain no credit, and which has no advantage save its cheapness;

just because it is being used more appropriately. As a substitute for stone, and consequently as the competitor of the many compositions which are now being placed on the market, it has no future at all; but as an independent material, which for certain uses, both æsthetic and practical, has undisputable



DETAIL FROM GERMAN BANK, BALTIMORE, MD.

Made by Conkling-Armstrong Terra-Cotta Co.

Baldwin & Pennington, Architects.

and for years they have protested against the merely imitative use of terra-cotta. Their protests have had some effect. Terra-cotta is now being used more intelligently and more appropriately, as well as more largely, than ever before; and what is still more important, it is being used more largely,

and peculiar merits, it has a future, which is only limited by the future of American fireproof construction.

We have already referred to the fact that terra-cotta is frequently specified instead of stone merely, and only, because it is cheaper, but this matter of the comparative economy of terra-cotta

deserves further consideration. Its comparative cheapness, while it is one great source of the popularity of terra-cotta, is also the principal cause of its abuse as a building material, so that it cannot be called an unqualified advantage. It leads to the manufacture of very inferior grades of the material for

and when consequently a comparatively stiff price is charged for it. Terra-cotta, which has been properly put together and burnt, is more durable than most stones; but such a quality of terra-cotta, while it is economical, is not necessarily cheap. It may cost what seems to be a large sum; but in that case it



CENTRAL SAVING FUNDS & TRUST CO.

Fourth and Market Streets, Philadelphia, Pa.

William Copeland Furber, Architect.

White matt glaze terra-cotta supplied by Excelsior Terra-Cotta Co.

the ornamental adornment of cheap buildings; and it has had the disadvantage of associating terra-cotta in the minds of certain people with various cheap types of construction and habitation. As a matter of fact terra-cotta, while it can be cheapened like any other manufactured article, is only really economical when it is very well made,

will be worth the sum it costs. The question of its expense as compared to stone is one into which we do not need to go in detail. It all depends upon many varying considerations, such as the amount and character of the material required, the location of the nearest available quarries, and the extent to which the material must be ornamented.

The question which the architect should as a rule seriously ask is not whether terra-cotta is cheaper than stone, but whether it will be possible for him to obtain in any other material an equally satisfactory service and effect for a similarly economical price.

The characteristic advantages of terra-cotta depend upon two fundamental facts: The fact, in the first place, that it is capable of being moulded before it is hardened, and the fact that, in the second place, it is hardened by a process of burning and firing. The first fact is

ment can be cut in stone, but only at a very considerable cost. The moulder of terra-cotta can work with comparative rapidity, and a mould when it is once finished can be used, if desired, for many duplicates of the same ornamental detail or motive. The process is made still more economical owing to the fact that in modern American building much of the ornament is stereotyped in character and that the manufacturers can consequently keep large numbers of standard forms in stock and can thus turn out detail of this kind at



DETAIL SHOWING TORUS, COLUMNS, PILASTERS, FACIA AND FRIEZE OF TERRA-COTTA. BUILDING NORTH-WEST CORNER OF FIFTH AVENUE AND THIRTY-SECOND STREET, NEW YORK CITY.

Made by New York Architectural Terra-Cotta Co.

responsible for its flexible adaptation to architectural ornamental forms, while the second fact is responsible for its durability and for its high value as an ornamental, or something more than an ornamental adjunct to a system of fireproof construction.

The fact that terra-cotta is in a soft and pliable condition, before it is burnt, and that consequently it can be moulded into a desired shape at a comparatively small expense, is the chief source of its availability for purpose of architectural ornament. The same sort of orna-

short notice and at less than the ordinary expense. If, on the other hand, an architect either prefers to design his own detail, or uses forms, which are not stereotyped, the process of making terra-cotta is equally well adapted to his needs. It affords him the opportunity of examining the full-sized reproduction of the figure or the ornament he proposes to use while the clay is still in a pliable condition, and he can in this way assure himself that his detail is properly designed and vigorously and correctly modelled. It need not be

finally burnt and hardened until he is absolutely and finally satisfied with his own work and that of the modeller.

In the earlier stages of the use of terra-cotta in this country, it was the foregoing advantage which chiefly appealed both to the architect and the

effect were not desirable and in such cases terra-cotta had a field of use which was absolutely its own. Its flexibility and economy for ornamental purpose remains one of the main sources of its popularity, but with the development of the art of building in this country, and particularly the art of fireproof construction, it was soon found that terra-cotta had various other advantages, both æsthetic and practical, which enormously enlarged its special field of service. Other characteristics, such as its durability, its lightness, and its fire-resisting power, began still more to commend it to builders, and curiously enough, it began also to be discovered that it was as a rule artistically most effective when it served most excellently the foregoing practical needs. It was in buildings, that is, the ornament and structure of which needed to be particularly light, durable and unflammable that the texture, the color and the form of terra-cotta ornament or surface covering proved to be most useful to the architect.

That terra-cotta is, when properly made, more durable, lighter and less easily damaged by fire than stone does not need any elaborate proof. Its consistency and its hollowness necessarily make it light. For convenience of burning, it must be made hollow and only moderately thick, and a given bulk, consequently, weighs very much less than a similar bulk of stone. A block of granite, for instance, containing one cubic foot, weighs about 168 lbs., a block of sandstone somewhere between 100 and 170 lbs., and a block of limestone about 144 lbs. A solid block of terra-cotta of the same size would weigh about 120 lbs., while the hollow terra-cotta cube, such as is ordinarily used, does not weigh more than 70 lbs. As to its durability and indestructibility, that again is a direct result of its process of manufacture. The heat, through which a well-made block of terra-cotta is passed, is so much higher than the heat to which a building is likely to be exposed, that the material is well prepared to withstand any further vicissi-



WETZEL BUILDING, EAST 44TH STREET,
NEW YORK.

Terra Cotta by The South Amboy Terra Cotta
Co.

builder. It afforded them a method of ornamenting a building by means of solid form and without going to the expense of stone carving. Stone carving was generally preferred, because it was possible in this way to obtain greater accuracy of line and a more precise and subtle effect; but in a great many cases accuracy of line and precision of

tudes of that kind. In fact a degree of heat, which would disintegrate stone or fuse iron, merely has the effect of rejuvenating terra-cotta, and the fire-test through which it is passed and whereby it is hardened, makes it similarly impervious to the wear and tear of worldly use. As is well known the remnants which have come down to us of the arts of remote antiquity consist for the most part of objects made of burnt clay. As Sir Charles Lyell says in his "Antiquity of Man:" "Granite disinte-

ing of ordinary masonry construction. The old masonry house cannot economically rise above a certain moderate height, and in a building of moderate height the mere weight of the masonry is an important source of architectural effect. It is no wonder, consequently, that the architects of such buildings have used stone wherever stone was economically available. But in the case of a building, the weight of which is carried on a steel frame, walls and partitions composed of light and



DETAIL BY NEW JERSEY TERRA-COTTA CO.

grates and crumbles into particles of mica, quartz and felspar; marble soon moulders into dust of carbonate of lime, but hard, well-burnt clay endures forever in the ancient landmarks of mankind."

A light, durable, unflamable material was rendered, of course, peculiarly necessary by the characteristically American system of fireproof construction. A building, the walls of which are carried upon a towering steel structure, has very different needs from a build-

peculiarly unflamable materials are desirable, both for the sake of economy and for the sake of appearance. The lighter the walls, the lighter the cage which has to carry them. These walls are only curtains, or screens, and like all curtains and screens should be comparatively slight, rather than heavy, both in appearance and reality. Many architects continue to build them of stone; but the tendency to use brick and terra-cotta for the purpose is on the increase, and is to be commended

from every point of view. The demands of this form of construction and of its appropriate decoration, are at present better satisfied by terra-cotta than by any other material.

The consequence is that, as we pointed out recently, the tallest and best de-

like on a part of the building near the street level. But above in such sky-scrapers as the Wanamaker Store, the Building of the International Banking Co., The Times and Railway Exchange Buildings, the whole superficial effect of the structure is obtained from a



PRODUCE EXCHANGE BANK, NEW YORK, N. Y.
Terra Cotta by Standard Terra Cotta Co. Ernest Flagg, Architect.

signed sky-scrapers recently erected both in New York and Chicago have been encased in terra-cotta. Generally stone is used for the few lower stories, because architects like the effect of a heavier looking base, and because these lower stories afford them an opportunity to place the stone carving which they

terra-cotta coating. Moreover, this terra-cotta is being used to the very best advantage. A few years ago in many of the large office buildings it was customary to crown the structure with terra-cotta ornament on a large scale, but no matter how well designed or how well made this ornament was

it was placed too far from the street to be effective. Now the tendency is to make the terra-cotta effective chiefly by means of a consistent and pleasant color tone. There is little attempt to give any depth to the surface of the building by heavy ornament. The dec-

capable of much further extension—particularly when architects become more accustomed to the use of glazed and colored terra-cotta. Certain attempts have already been made to enliven the upper part of sky-scrapers with bright colors, among which may



ENTRANCE TO CHICKERING HALL, BOSTON, MASS.

Terra-cotta furnished by Atlantic Terra-Cotta Co.

Peabody & Stearns, Architects.

oration is kept frankly superficial, and is obtained, if not simply from color, mass and salient line, then from the arrangement of the terra-cotta blocks into some kind of pattern. This method of decorating a sky-scraper, which has the merits of being at once economical, effective and appropriate, is

be mentioned the Broadway-Chambers and Beaver Street Buildings, and particularly the building of the Washington Times; and it is to be expected that the next few years will witness still further developments in this novel and remunerative field.

Herbert Croly.

"SWEET'S" "The Book of the Catalogue"

A Department Devoted to Items of Interest Regarding
"Sweet's Indexed Catalogue of Building Construction"

"Sweet's Index" is now on the press, and will be distributed this Fall

The first volume will contain approximately a thousand pages, and will place in the hands of the architectural profession, builders, and others for the first time a substantial encyclopaedia of the chief building products now upon the market. In a certain sense, it will put the entire building material market under the thumb and the eye of the architect. Suppose, for instance, the architect desires information regarding Safety Treads, or a particular make of Safety Tread, (say, the product of the Universal Safety Tread Co.) by turning to the Cross-Index of "Sweet's" and looking under the letter "S" at the item "Safety Tread," or under the letter "U" at the entry "Universal Safety Tread Co.," he will be directed to the particular pages whereon he will find in a condensed, definite form the information he desires. The product of each firm represented in "Sweet's Index" is described under the following general scheme of headings:

1. Products.
2. Facilities for manufacturing.
3. Territory covered by manufacturing.
4. Adaptability of products.
5. Instructions as to orders.
6. Facts in regard to installation.
7. General information regarding products.
8. Price-list and tables.
9. Form of specification recommended.

All the above accompanied by diagrams and illustrations exhibiting trade-marks, special styles, etc., etc.

It will be seen that the purpose of "Sweet's Index" is to furnish the architect with a succinct, logical book of catalogues, a work which he may use in precisely the same way that he uses a dictionary, or an encyclopaedia. Instead of having to hunt for and through a loose promiscuous catalogue written as though the architect were a man of leisure, and with time to read sixteen, thirty-two or sixty-four pages of reading matter, whenever he needs any particular item of information, by means of "Sweet's Index" the architect will be able to turn to one volume, to a given

page, and to a specific paragraph for whatever he may be seeking.

The advance sheets of "Sweet's Index" have been submitted to a number of our leading architects for advice and criticism. The opinion is practically unanimous that "the new method" of making and presenting trade information will in a short time completely replace the old lumbering catalogue, which is as much out of date as the stage-coach. One architect writes that "the whole catalogue is a queer product of routine, and, perhaps one should add, the personal vanity of the firm that prepares it. Indeed, these old catalogues seem to be gotten up mostly from the point of view of the firms that issue them, and rarely with a view of what the architect or builder really want. In other words, like all our unpopular literature, they are not manufactured for the particular audience to which they are addressed. One would think that in preparing a catalogue the first question the writer of it would ask himself is—What information does the reader of this catalogue need? In what shape should it be presented to him? As I am writing, I have before me a catalogue of one of our leading electrical firms. It contains a great deal of valuable information, and possibly a hundred different articles are referred to which are described and illustrated. Nevertheless, it is not provided with any form of an Index, and, as a consequence, each time I desire to turn to it for any information, I must perforce go through the entire book, or at least some of the pages, until, by accident, I find the precise thing I am looking for. This is not a common-sense arrangement. It kills any possibility of "reference," and reduces the pamphlet to a mass of reading matter which, even in its arrangement, is devoid of any clew to aid the would-be investigator."

The "reading matter" scheme of a catalogue is clearly wrong. A catalogue should be an instrument for "reference." No architect has time to "read" a catalogue. A catalogue is needed solely for

PENNSYLVANIA LINES

WEST OF PITTSBURGH.

NORTH WEST SYSTEM

GENERAL OFFICE. UNION STATION.

PITTSBURGH, PA. Sept. 11th, 1905.

Architectural Record, (Index Dep't)
No. 14-16 Vesey Street,
New York City.

Gentlemen:

I understand that you have had prepared for distribution, a Scientific Catalogue Book System, and I would be greatly obliged to you, if you will advise me of the terms under which distribution of these Catalogue Book systems are made.

It is a problem that is giving us considerable worry at the present time, as catalogues come to us in all sizes and shapes and are very hard to take care of, or to file, so that they can be referred to later.

Thanking you in advance for this courtesy, I remain,

Yours truly,

R. Drumble
Chief Engineer M.^s of W.

DYS-R

"reference," and the reference idea is the dominant idea in the compilation of "Sweet's Index." What are the leading types of concrete piles? How far is each adaptable to this or that purpose? What is the Unit system of concrete beams? What is Novus glass, and what is its range of application? What are the particular advantages of the screens manufactured by the E. T. Burrowes Co., or the weather-strips made by the Roebuck Weather Strip & Wire Screen Co.? What are the characteristics of the Acetylene Generator manufactured by the Sunlight Gas Machine Co., or Stanley Hinges, or the apparatus of the Powers Regulator Co., or the Johnson Temperature Regulating Co., Bommer Bros. Spring Hinges, or the Hose apparatus of the Cliff & Guibert Co.? It is almost impossible to obtain this information without an immense amount of trouble from the "promiscuous catalogue," but with "Sweet's Index" the answers can be obtained immediately. Similarly with all other facts regarding the products manufactured by the hundreds of firms who, with others, will be represented in "Sweet's Index"

It has been said that if it were possible for a school-boy to write school books, they would be the best in the world, because the school-boy would know the tight places and the scholastic difficulties of the subject. The technical equipment of the schoolmaster usually carries the subject way over the heads of those in the class-room. Similarly in making catalogues. The man who knows most about the products of a particular firm often describes those products very poorly for a third person who does not possess any special knowledge of the article described. It is almost impossible for him not to take a great deal for granted. He knows possibly every detail of the manufacture of the goods he is writing about, and, despite himself, assumes that the reader possesses at least some of this special information. He knows so well what "R 32" is, that his remarks about it often assume the very information which the outsider is most in need of. He will not take the trouble to really "get down" to the subject. If some firms would analyze their catalogues with an intelligent outsider, they would be surprised to learn how much their special trade literature does *not* contain which, nevertheless, it ought to contain, if it is to serve the purposes for which it is intended.

Nor is the matter handled with much greater clearness when turned over to the professional "Ad" writer or catalogue

maker, for here, too, the ideas that govern are technical,—though of a different kind. The reader's necessities are again overlooked, for they are not satisfied by "clever trade writing" and by the mere excellences of typographical arrangement. The printer, too, confuses the result when he controls it, for his ambition is more often to set type for the admiration of other printers than for the plain purposes of the reader. The convolutions and involutions of type-setting, as exemplified in certain catalogues, constitute some of the wonders of the "old method" of catalogue making. A common instance of the printers' evil is the use of tint inks on tinted papers. The result, no doubt, looks artistic. It makes an excellent impression when glanced at, but it taxes the eyesight and makes the most uncomfortable reading imaginable. Similar mistakes are made in selecting the size of type. Some catalogues are manufactured as though they were intended to serve for the severest ocular test, and as though no architect ever lived beyond the age of thirty, or was ever afflicted with any of the imperfections that assail the ordinary vision. True, in small type one may say more on a given page, but the purpose of the catalogue is not merely to contain information, but to impart it.

In this way the "old catalogue" is beset with evils. It is too much of a product of routine and technical aloofness. It is not "built for reference," and it does not get down to the simple, but by no means easy task of plainly answering the questions that the outsider is likely to ask about any given article. It reminds one somewhat of certain railroad time-tables. They contain all the information, no doubt, but that doesn't help the traveler who is not experienced in the ways and makes of railroad time-tables. As a result, the big trunk lines find it necessary to establish Bureaus of Information to explain to the public what their time-tables mean! And yet, a little real thought given to the current time-table would make it a very much more expressive sign-post to the traveling public and would even save the company itself no little expense. The governing idea seems to be that time-tables have been made in that way since the year one; therefore, it is a good thing to stick to the old way. They are devised by railroad men for railroad men, who assume that the public possesses almost as much knowledge as a train despatcher. And so the game goes on! It is so much easier to merely do a thing than to think about the way of doing it adequately.