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FIG. 1. THE OLD EAST RIVER BRIDGE (1883).

John A. Roebling, Engineer.

## Our Four Big Bridges

One of the reflections which force themselves upon the New Yorker who has occasion to investigate for himself, and in an amateur way, the way of the lover of beauty and fitness, the two biggest and costliest of the bridges at present under construction by this municipality of Greater New York, is a discouraging reflection. How grievous is the injustice that is done us by our press.

In the matter of public works the press seems to be interested only in the incidental scandals which may arise out of them. All, or almost all, columns are joyously opened to scandals about bridges, as about other costly and important public works. If they turn out to be, or are even plausibly alleged to be, inadequately designed, that is well. If they can plausibly be alleged to be "gigantic jobs," that is immensely better.

But if they are simply uncommonly and creditably well done, so as to be among the glories of the city and the country, you will be long in finding out that uninteresting fact from the ordinary newspapers. One who has of his own motion investigated the construction of the newer bridges across the East River, for example, feels himself to have a grievance when he finds a wealth of interest in them, and a just source of local pride, of which his newspaper had given hint no hint whatever. Not only has it not told him "the half." It has had nothing at all to say about the matter. Perhaps he ought not repine at having so nearly a virgin field, and ought to be grateful even for his grievance. But what a social symptom the grievance nevertheless is!

In truth, one who visits the Blackwell's Island and the Manhattan Bridges finds great

matter for wonder and admiration at the enormous artistic advance they show upon the older bridges across the East River. This is very especially the case with the present writer, who may be pardoned for recalling that he made, a quarter of a century ago, a critical examination of the then new and now old East River Bridge, for Harper's Weekly, in which the results published, were so far as he knew or knows the first attempt that was made in this country at an aesthetic consideration of an important engineering work. It was an endeavor to test an engineering construction by architectural principles to judge it, as Ruskin has it, "by those larger laws in the sense and scope of which all men are builders,

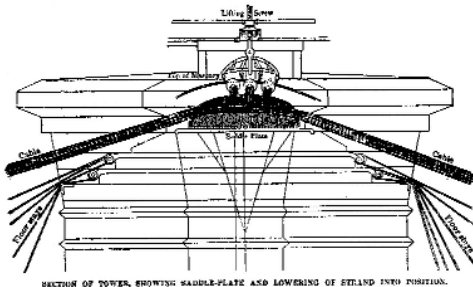


Fig. 2. Old East River Bridge—Section of Tower, Showing Saddle.

whom every hour sees laying the stubble or the stone." Specifically, what one demands in such a work is "the adaptation of form to function," or, in other words, the following out of the indications inherent in the mechanical dispositions and devices, instead of the imposition upon these of ideal, or of conventional forms. In this mode of procedure, as an eminent American architect has described it, you do not so much design your edifice as you "watch it grow." And, in the old East River Bridge, it is interesting and instructive to note that the successes are all won by letting the structure "do itself," so to speak, the failures all incurred by forcing it to do something else. (Fig. 1.) Even to-day, much as with our present lights it might have been still further lightened and skeletonized, there is no finer thing in its kind to be seen than the gossamer structure of the metal, the airy fabric that swings between the towers.

The spider's touch, how exquisitely fine!  
Feels in each thread and lives along the line.

The stiffening truss itself of the roadway asserts itself as a stiffening truss without asserting itself unduly. And nothing could be happier than the relation between the "camber" of the roadway, with the enormous radius of its slowly climbing curve, and the swifter swoop of the catenary curve of the suspensory structure. These things, it is plain, are simply submissions to the dictates of mechanical laws and of the actual conditions of the erection, the requirement in the interest of navigation of a minimum height above the river at the centre, the requirement in the interest of accessibility and accommodation of the situation of the terminals. The resultant relation is artistically perfect. The height of the towers, again, is fixed by the length of the span and the imposed necessity of keeping the bottom of the catenary at a fixed height above the river; the bulk of the towers, given the necessary massiveness of their masonry, by the load they have to sustain and the necessity of maintaining them against any wind that can blow. These things, again, are as perfectly satisfactory to the eye as we must assume that they are responsive to the mechanical requirements. But in the detail of them we cannot help seeing that caprice has been allowed to play its part; that, the form is by no means "inevitable;" is, in fact, contradictory of the function. The function of the towers, for example, is merely that of cable-holders. Nobody would ever guess it to look at them. The curve of the cables continues over the saddles, which are shaped accordingly, and it is a necessary condition of the operation that the cables should move freely in the saddles, thus providing for expansion and contraction under stress of the weather, allowing the "play," which the late Abram S. Hewitt, in his admirable address at the inauguration of the great work, pointed out was so essential to the working of so huge a structure of expansive and contractile metal. Quite manifestly the cable-holders should have been so modelled as to express this function, modelled in their

turn into "saddle-backed" roofs. In fact, they are so modelled, in deference to antique monuments which had nothing whatever to do with the case, as quite to conceal this primary function as though it were something to be ashamed of, instead of something to be exhibited and emphasized. The half catenary seems to be imbedded in the tower on each side, and there to cease and determine, instead of being a necessary link in a continuous and mobile chain. One more or less vaguely feels, in the presence of the actual work, how "irrelevant, incompetent and impertinent" to the purpose of the structure is this actual tower, with its flat top, of which the flatness is emphasized by the projecting conventional cornice copied from monumental structures of far different conditions and purposes. But one perceives it in a clear and even in a ludicrous light when he examines the section (Fig. 2) in which the course of the cables is shown, and the form of the enveloping structure, which has nothing whatever to do with the case. The new architecture of spun metal discredits and shames the outworn and out-of-place survivals of the older architecture in massive masonry. One is a "graphic linear demonstration" of the mechanical facts of the case, the other a crude approximation to an expression of them where it is not a senseless departure from them.

The anchorages of the old bridge share the defects of the towers. The savage who essays a suspension bridge across a gulch in the Andes



Fig. 3. Old East River Bridge—A Street Crossing.

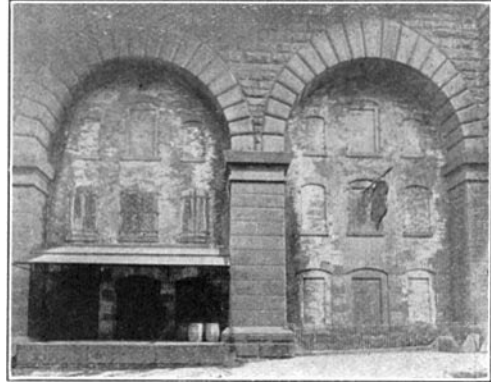


Fig. 4. Old East River Bridge Warehouses in Manhattan Approach.

must drive down stakes or heap up stones or tie his grass-woven cable to a tree to hold it in place while his crazy structure is swinging. To hold the cable-end firmly is equally the function of the anchorage of that wonder of mechanical refinement, the modern suspension bridge in metal. But there is no mechanical refinement about the design of these anchorages. They are simply huge cubes of masonry into which the cable disappears, not by which it is visibly clutched and held. Most spectators of the Brooklyn Bridge probably fail to distinguish the anchorage, which is an integral part of the structure, from the approaches of which the purpose is simply to give access to it. In these approaches, and in these alone, of the old bridge, architectural counsel was invoked by the designer, although unhappily the design of the sheds at either end was confided to the untutored and unassisted engineer, with grievous results, the most grievous of which is, perhaps, that the great structure itself is rendered quite invisible from either end, and that you have to go out upon the river or scale a skyscraper to get a look at it. Upon the whole, the approaches vindicate the taking of architectural counsel. But there is one detail of them which in its results is more than a detail, and that is the employment, in all the arches of the approach, of the form called "Florentine," that is, circular within and pointed without, and hence deepest at the crown and shallowest at the haunches. As



Fig. 5. The Williamsburg Bridge; Department of Bridges, Engineers.

was remarked in the study to which reference has been made, this disposition is "the reverse of that which would have been dictated by mechanical considerations alone," and whoever discards mechanical considerations in a great work of utility like this assumes a grave responsibility. It is true that the form enhances the perspective effect and the apparent length of a diminishing arcade, such as the arcade of the approach is, looking landward, or from the larger to the smaller arches. But it correspondingly shortens the apparent length and diminishes the perspective effect of the enlarging arcade in the view toward the river, which is the more important view. All this, however, does not prevent the Manhattan approach to the old bridge from being tremendously impressive. The great openings that span the streets (Fig. 3) have the advantage of giving, what one finds so rarely in our rectangular town, random and accidental and picturesque points of view, and some sense of wonder and expectation and mystery, as of

an arch wherethrough  
Gleams that untraveled world.

And one does not in the least regret, contrariwise one welcomes, the effect of the humble brick fronts, of red and yellow, which have been put in as filling to the intermediate arches to utilize them as practical warehouses and

places of storage. (Fig. 4.) The manner in which these interpolated fronts have weathered and mildewed, within only a quarter of a century, makes them as grateful objects as a hunter after the picturesque can find in the street architecture of New York, gives New York, indeed, so far as their effect goes, that air of an "Eternal City" which it hardly anywhere else conveys, excepting in the rough and smoke-stained masonry and brickwork of the old Harlem Tunnel, which such a spectator regrets to see being supplanted by frameworks of metal. The one lamentable addition to the approaches of the bridge since its erection is the slim metallic supports of the widened roadway, which are not only perfectly unimpressive and unattractive in themselves, but which tend to vulgarize and destroy the effect of the massive masonry before which they are placed, and without any real utilitarian excuse, since it is quite plain that the widened roadway could equally have been carried upon projecting brackets as upon vertical stilts, and would in that case have even enhanced the effect which it now disfigures. But, when all is said against it that can fairly be said, it will remain true that the old bridge is a great cred-

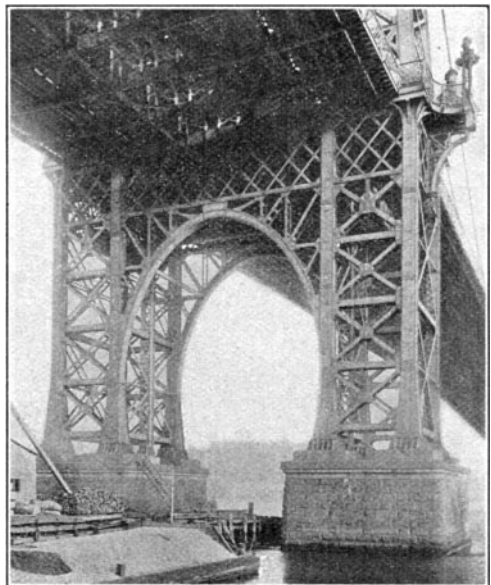


Fig. 6. The Williamsburg Bridge—Base of Tower.



FIG. 7. APPROACH TO WILLIAMSBURG BRIDGE.

it to its builders, a valuable artistic possession of the city which it serves with a service so far transcending the expectations of its projectors.

The Williamsburg Bridge, not far from midway, in point of time, between the old East River Bridge and these two later, of which one is hardly finished and the other in an early stage of its construction, doubtless shows a scientific advance upon its predecessor, so active and fruitful in the history of engineering was the decade or more that intervened between the completion of Roebling's work and the beginning of this. But by common consent there was no corresponding artistic advance. Quite the contrary. (Fig. 5.) In fact, the ugliness of the Williamsburg has been the means of an increased appreciation of the beauty of the East River. One does not imagine what stream the later could suitably span, unless, indeed, modern progress should supersede Charon's ferry by a bridge for the traffic of the Styx, in which case passengers outward bound might perhaps feel that their conveyance was appropriate to their destination. In spite of the

proverbial prohibition against speaking ill of the bridge which has carried you safely over, the Williamsburg, as a work of art, has no friends. The most conspicuous of the differences between the two is that the towers are in the older of masonry and in the later of metal. Presumably the difference was primarily economical. One can hardly imagine an engineer preferring a tower of attenuated metal to one of massive stonework if he were free to choose. And, indeed, it might well be wished that some architect worthy of the work had had the opportunity to show what grandly monumental objects stone towers as huge as those of the old bridge might be made by modelling them with reference to their functions, and not at all with reference to inapplicable precedents, antique or mediaeval. But, even if one admits that masonry is the more eligible material, one is not forced to admit that nothing much better can be done with metal than was done with it in the towers of the Williamsburg. The Tour Eiffel already stood to show what grace and inspiration could be

imparted to a metallic tower by the right designer. And Mr. Lindenthal's unexecuted project for a suspension bridge across the North River was also extant (was it not?), reproducing with great effectiveness, and on a scale not so very much smaller, the continuous concave outward curve from summit to base of the Parisian monument in metal. The chief ungainliness of the towers of the Williamsburg bridge is imparted by the abrupt change of direction

become the elements of impressiveness, as opposed to the massiveness and solidity of aspect proper to masonry. Another deviation of line entails almost as disastrous artistic results as the change of direction in the outline of the towers. Instead of the continuous slope of the East River Bridge from approach to centre and down again, it is here only the roadway between the towers which shows a curve, abruptly changed to a straight line out-

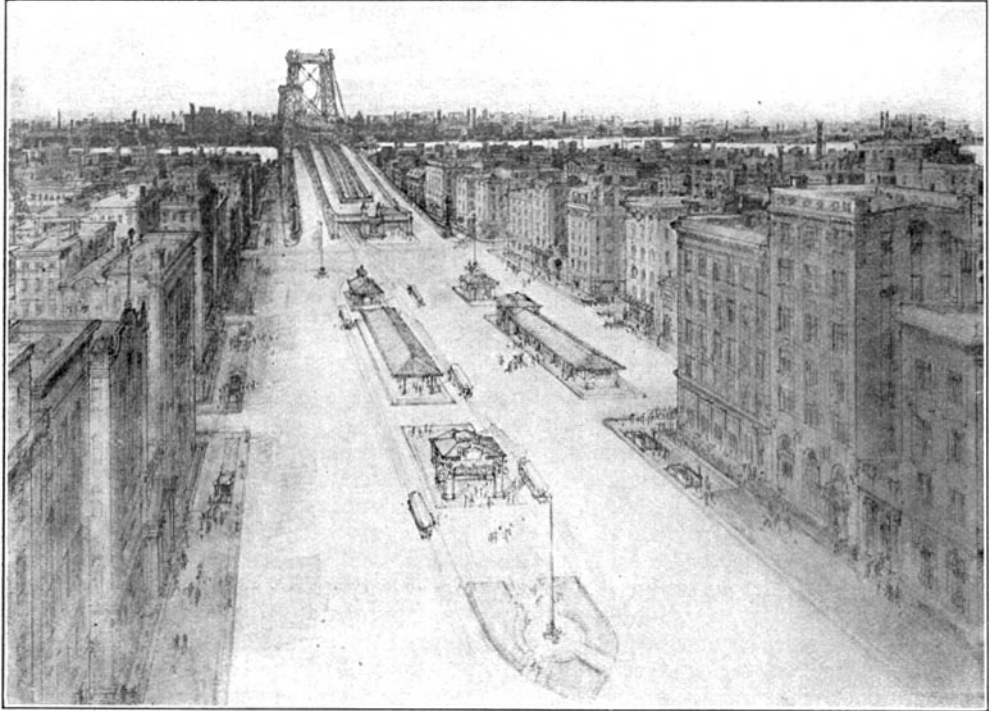


FIG. 8. PROPOSED MANHATTAN PLAZA, WILLIAMSBURG BRIDGE.

Palmer & Hornbostel, Architects.

of their bounding lines, from a very pronounced "batter" above the roadway to a very nearly vertical line beneath it, an unhappy change that gives the towers an uncouth and bandy-legged aspect which no cleverness of detail could redeem. The most effective aspect of these towers is the view from underneath (Fig. 6), where this deviation of line is not noticeable, and where the towers, with the arch between them, form a really impressive example of the skeletonized architecture of metal, in which attenuation and articulation

side them. And a third deviation of the same kind puts it quite out of the question that the structure can ever compete as a thing of beauty with the older bridge. This is again an abrupt change of line, the substitution of the straight backstay for the half catenary as the connection of the cables with their anchorages. Scientifically accurate and competent it may be, but it is architecturally most injurious. An eminent engineer to whom I was deploring it observed that I probably did not understand the real motive of the substitu-

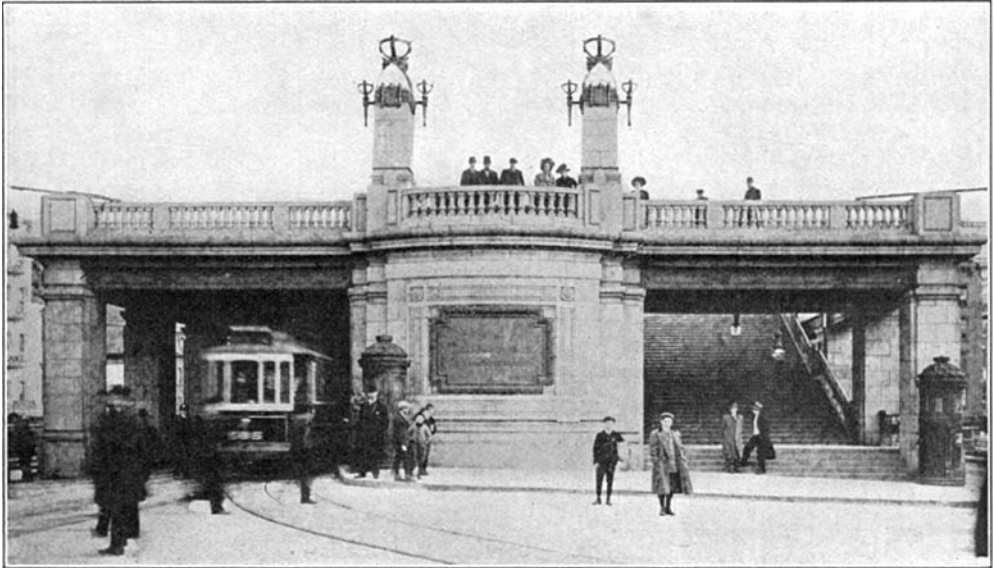


FIG. 9. ENTRANCE TO WILLIAMSBURG BRIDGE.

Palmer &amp; Hornbostel, Architects.

tion—"It saves a heap of computations." Which is all very well; but a man who is not willing to take trouble about the appearance of his work must not call himself an artist. These three unnecessary and unexplained solutions of continuity would of themselves be fatal to the artistic success of the work which they disfigure. But there is still another drawback almost equally injurious, and in this case injurious to the aspect of the suspensory structure itself, of the bridge between the towers which in almost all suspension bridges cannot help being attractive. That is the enormous depth and the insistent conspicuousness of the stiffening truss of the roadway. In the old bridge this member simply suffices to give needed emphasis to the line of the roadway, while yet it is obviously subordinate and accessory to the suspensory structure, which is "the thing." In the Williamsburg it becomes so insistent that it almost seems a question which of the constructions is auxiliary to the other, whether a huge trussed girder is only assisting a suspension bridge or is only assisted by it to the extent of a suspensory arrangement to relieve the strain at the centre. No accessories,

it is evident, could make an admirable or even a presentable work of art out of a project so bedevilled in the primary conception. To invoke an architect to improve its appearance after it is done were a futile and ungrateful requisition. As Polonius has it—"Beautified is a vile phrase." It is particularly a vile phrase in bridge-designing. Doubtless it were impossible that the approaches in metal to this bridge could have the impressiveness of the approaches in masonry which we have been admiring. But it may be noted that, though a plate-girder offers a less interesting surface than a bonded stone wall, the projection of the roadway beyond the structure of the approaches themselves is far better managed here (Fig. 7), where the projections of the roadway are carried on brackets, than in the East River Bridge, where they are supported by vertical posts from the ground. More "evidences of design" in the brackets would make the arrangement not only presentable, but attractive. One must also praise the arrangement by which the structures of the terminal are sunk so far out of sight as to preserve the endwise view which in the old bridge is

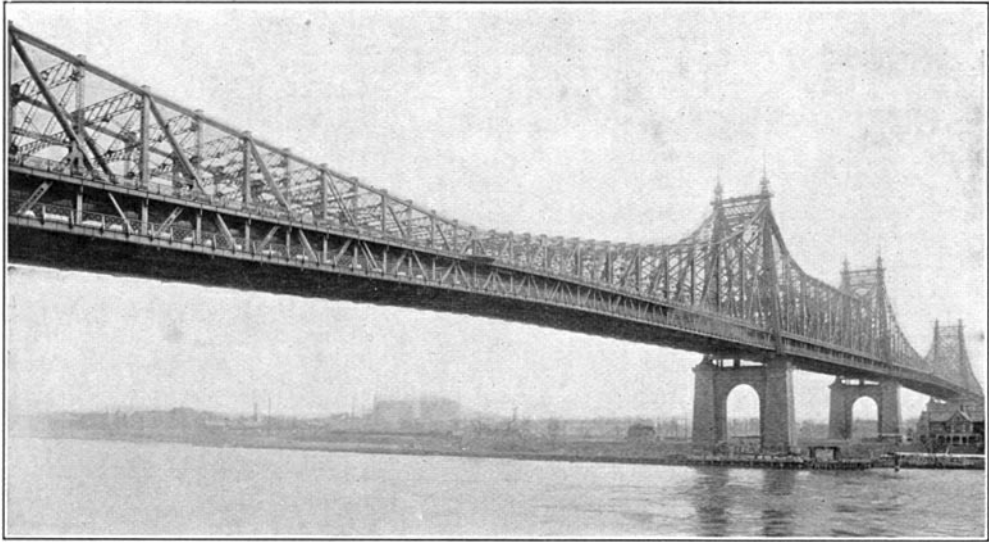


FIG. 10. QUEENSBOROUGH BRIDGE FROM MANHATTAN.

Bridge Department, Engineers.

Palmer &amp; Hornbostel, Architects.

effaced, and which would be so much more valuable there than here, if one could only see it. (Fig. 8.) Moreover, these unobtrusive structures are in themselves admirably designed and appropriately detailed. (Fig. 9.)

As monuments, the two latest bridges show as distinct an advance upon the earliest as the second shows a retrogression. And the credit for this advance cannot be withheld from Mr. Lindenthal, under whose administration of the Bridge Department the Queensborough Bridge was redesigned and virtually begun, though some progress had already been made in building the supporting piers, and Manhattan Bridge re-designed also, though the engineering changes of the revised design have again been discarded in the actual structure. Mr. Lindenthal had the conviction that the common method of bridge-building, whereby the structure is designed by an engineer, and afterward, if at all, an architect invoked to give it such form and comeliness as may still be practicable, was a radically wrong method; that the "beautification" of a great structure originally designed without reference to beauty or expression was an impossible operation, too often a hopeless attempt to retrieve the irretrievable. He held that in order to secure an artistic result in these great works,

of which the general form must remain the chief element of their impressiveness, and of which the general form proceeding from new applications and in new materials of mechanical principles, they must from the first be the subject of aesthetic as well as of scientific investigation. In a word, the artistic constructor must be associated with the scientific constructor at every step from the very outset of the design. Messrs. Palmer and Hornbostel were accordingly associated with the design of the Queensborough while Messrs. Carrère and Hastings stood in the same relation to the design of the Manhattan, with the results for which we have so much reason to be grateful.

The intervention of Blackwell's Island at the point indicated as the most suitable for the Queensborough Bridge made the construction much more economically feasible than it would have been had the whole width of the river, here some 3,700 feet from shore to shore, been unbroken by land. From the architectural point of view, the facility involved an awkwardness, since the western water span is some 200 feet longer than the eastern. But the cantilever construction has here been so applied that even this marked failure of symmetry does not afflict the observer, and most observers, one imagines,



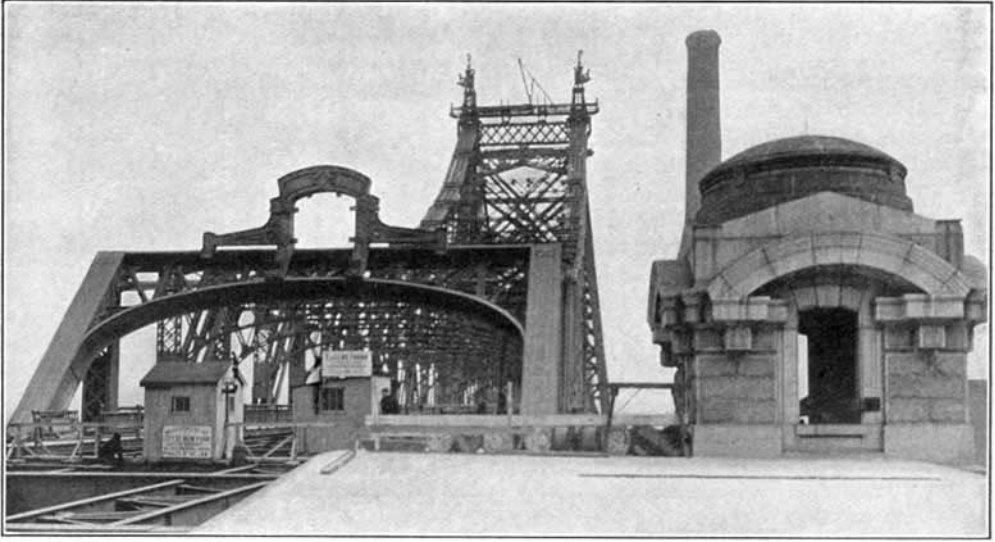


FIG. 11. MANHATTAN ENTRANCE, QUEENSBOROUGH BRIDGE.

Palmer &amp; Hornbostel, Architects.

would not be conscious of it, from any point of view they would be likely to take, unless it were pointed out to them. The curve of the river spans approximates that of the Mirabeau Bridge at Neuilly on the Seine, only here reversed from a "deck span" supported by the cantilevers to a "through span," depending from them; and the Pont Mirabeau has imposed itself as the most artistic of metallic bridges, both in its general form and in the rational and exquisite treatment of construc-

tional detail in metal. In this latter respect it is far superior to the later, more conspicuous and more familiar Pont Alexandre III. by the same authors. For, while the Alexander Bridge is very impressive by its stately and decorated roadway as one passes over it, and by the boldness and grace of its arch, of a length of radius and slightness of curvature almost or quite unprecedented, one's admiration is much diminished when he walks under it and notes such solecisms of detail as the application, at

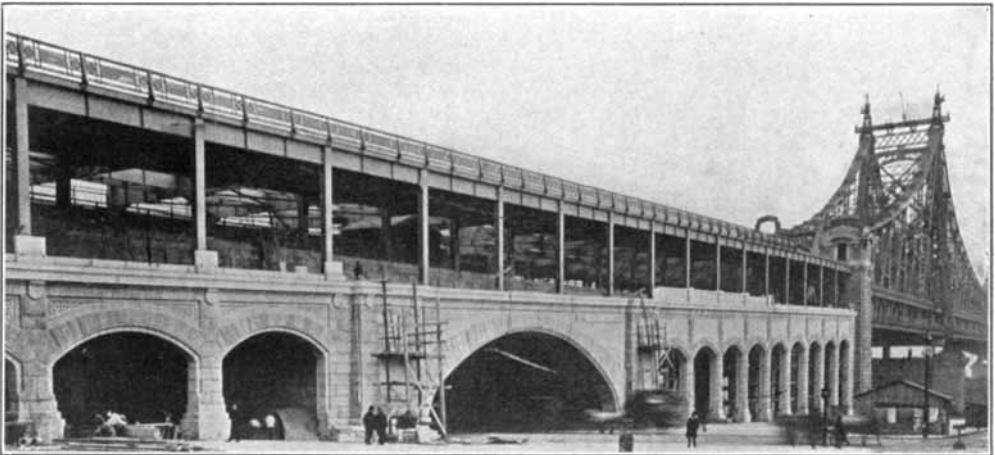
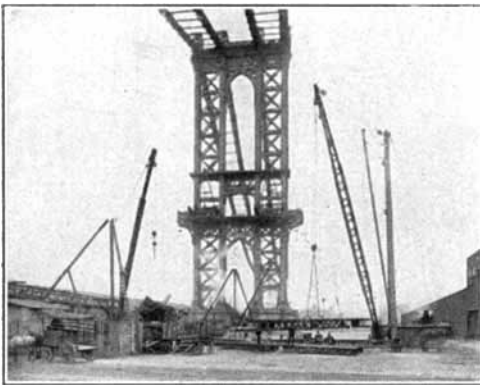


FIG. 12. MANHATTAN APPROACH, QUEENSBOROUGH BRIDGE.

Palmer &amp; Hornbostel, Architects.

intervals which must have been determined simply by the accepted proportions of a classic column, of capitals and bases in carved marble to posts of flanged and riveted metal, which are evidently continuous below the bases and above the capitals, and with the function of which the applied ornamentation in stone has evidently and even ostentatiously nothing whatever to do. Though the lines of the Queensborough are, in fact, broken instead of curved, the effect of the bridge is that of four towers with three suspended spans, and is doubtless the best example of a cantilever of anything like equal extent, for the Mirabeau is, as a piece of construction, child's play compared with this gigantic work, of which the shortest of the three spans is probably equal to the whole extent of the French example. (Fig. 10.) Surely there is no great example of the cantilever construction on this side of the ocean which equals this in effectiveness, while the most famous example on the other, Sir Benjamin Baker's Forth Bridge, is commonly adduced as an awful example of ugliness. Considering the Queensborough, one wonders if it would not have been better, in view of the conspicuousness and the artistic success of the towers, if the arches of the masonic substructure had been omitted altogether and only their stark and massive abutting piers retained to carry downward the lines of the so-called towers and prolong and emphasize the impression made by these, so that they should



**Fig. 13. Manhattan Bridge—Manhattan Tower.**  
Bridge Department, Engineers.  
Carrère & Hastings, Architects.



**Fig. 14. Side View of Manhattan Tower.**  
Bridge Department, Engineers.  
Carrère & Hastings, Architects.

in effect be continuous from base to finial, instead of being interrupted, as here in effect they are, by the turning of the arches between the masonry supports. Be that as it may, one cannot help seeing and feeling that "every joint and member" of the superstructure has been considered with reference to the expression as well as to the performance of its mechanical function, while those "features" of the construction which by their dimensions are entitled to an effect of grandeur without question convey that effect. Consider, for example, that westernmost of the four metallic towers, even from the point of view of the photograph, which is by no means the most favorable point of view. What an expression of power it conveys, of power and grace, and grace, you will remember, is analyzed by Herbert Spencer into simply the expression of ease. Certainly that is an apt enough definition when, as here, it pertains to the doing of mechanical work, such as is imposed upon these erections, of which the height from base to summit nearly equals that of the towers of the suspension bridges, and would of itself make them very notable in any but the city of skyscrapers. And consider also the simplicity and effectiveness, even in its actual and uncompleted condition, of the entrance (Fig. 11) at the extremity of the Manhattan "shore arm" of the cantilever, how much the effec-

tiveness depends upon the simplicity, and how the simplicity enables and indeed demands a massiveness in the treatment of metal akin to the massiveness of the adjoining masonry. It were to "beat the bones of the buried," to point out how this simplicity is the summary and result of a process of simplification, and what a complicated and ineffectual network of Lars it was which the associated engineer and architect of the restudy have reduced to this simple expression. Observe also that the "grade" of some three and a half per cent. is here carried in a gradual and unbroken slope, from the level of the land on either side to the central span. For architecture in the academic and conventional sense, from which the idiomatic treatment of metal is excluded, we must resort to the approaches. Even there we fail to find the academic and the conventional prevailing in the most conspicuous of the features, the arcade in masonry, interrupted only by the wider arches of the street crossing. (Fig. 12.) Instead of the conventional "Florentine arches" of the earliest East River Bridge, deepest at the crown and shallowest at the impost, the form "the reverse of that dictated by mechanical considerations alone," we find that reversed form, dictated by mechanical considerations, in which the arches are deepest at the impost and shallowest at the crown. So far as I know, this is a novelty on this scale, and "in this connection." But it is by no means on that account a caprice. It would in any case give, even to the spectator who did not stop to analyze it, that grateful sense of reality which a work of architecture must at least not contradict. In the present case it has the obvious practical advantage of giving the greatest amount of "head room" to a segment-headed arcade in a situation in which the maximum of height is a practical and an aesthetic desideratum. The filling of the spandrels of the stone arches with an incrustation of particolored tiling in relief is an effective novelty, and even more effective is the ceiling of the interiors of the bays made by the piers and arches with tile-vaulting of low pitch and shallow curves, a mode of interior finish which, if not quite a novelty with us, is by no means as trite

as it deserves to become, and which is here carried out in a particularly interesting way. One can foresee an even more useful future function for these sheltered spaces than the warehouses of the East River Bridge fulfil, or than is fulfilled in the public market, only partially sheltered from the weather, which has accrued under the projecting roadways of the approaches to the Williamsburg. In the meantime a visit to these spaces, as yet unoccupied and hardly as yet "swept and garnished" must be of the greatest interest to any mind which is open to scientific convictions or to artistic impressions.

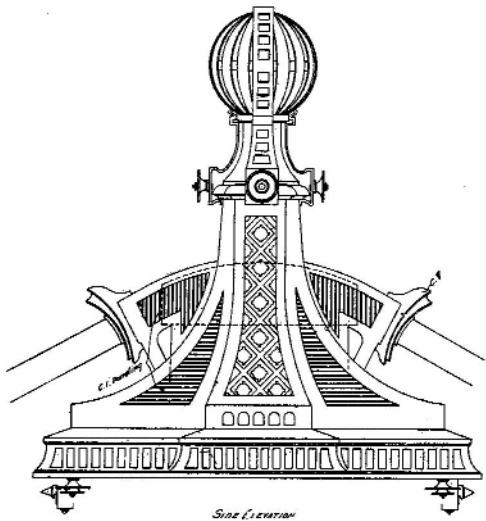


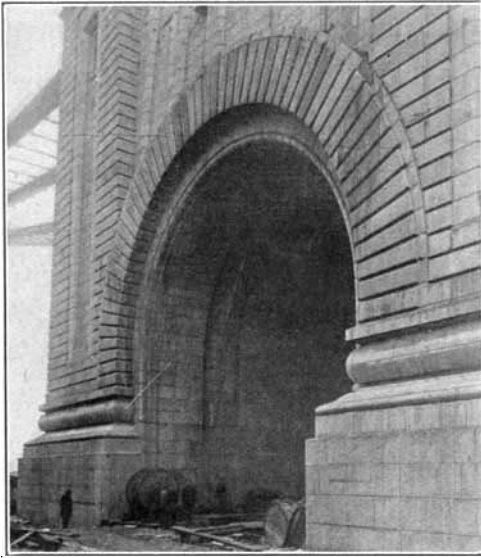
Fig. 15. Cable Holder, Manhattan Bridge.  
Carrère & Hastings, Architects.

Least of all the four bridges in a condition to be judged is, of course, the fourth: (Fig. 13.)

*Pendent opera interrupta minaeque  
Murorum ingentes, aequataque machina coelo.*

The Manhattan is absurdly and meaninglessly miscalled; it has no more to do with this island than any one of the other three. "The Wallabout" is a designation that would have local and historical significance. Most Manhattanese, one may assume, who have no occasion to cross the East River, recall the design of the Manhattan mainly in connec-

tion with the contention among the engineers to which the redesigning of it under Commissioner Lindenthal gave rise. Far be it from an incompetent layman to revive that old controversy. But it is germane to the present purpose to point out that, whether scientifically preferable or not to the discarded and now readopted design, that of Mr. Lindenthal embodied a most impressive architectural conception. That was the conception of abolishing the "stiffening truss," which, as we have seen, is apt to become an unsightly appendage to a chain bridge, by incorporating its func-



**Fig. 16. Flank of Anchorage, Manhattan Bridge.**  
Carrère & Hastings, Architects.

tions with that of the suspensory structure and leaving the roadway as a great street floor unencumbered at either side from end to end. And it is only just to acknowledge the magnanimity of the subsequent administrations of the department in recognizing the enormous architectural improvements which had been evolved, together with what they regarded as an ineligible engineering design, and in retaining these improvements, so far as the changed design admitted. This magnanimity extends to the succeeding architects who have re-studied and refined the first design for the towers instead of discarding it. It is an article of archi-

tectural faith that any construction mechanically sound is susceptible of artistic expression. It is true that even the general form and outline of the Manhattan are not yet developed. As one sees it now from the river, it does not appear, even of the great catenary curve, what it shall be, much less what the effect of it will be when its line is supplemented by that of the unbegun roadway beneath, and of the filaments which are to connect these two essential members of a suspension bridge. It is the metal work of the towers alone and the masonry of the anchorages alone that are sufficiently advanced to be judged. In these there is already abundant evidence of a more skilful and expressive and successful treatment than is to be found in any other suspension bridge anywhere. Mr. Hornbostel's design for the towers, as exhibited some years ago in a model, was universally admired. But it is clear that this has been vastly - improved in the executed work. Instead of a trellis of metal panels in each of the three compartments into which the tower is divided above the roadway, this trellis is now confined to the lateral compartments, the central being opened to the top, where it is closed by an arch, with a great gain in expression, the uprights which support each its respective cable being unmistakably specialized for that function. And there is an equal increase both in power and in refinement over the original design in the spreading substructure of the tower (Fig. 14), in which the function of every part speaks with forcible and eloquent expression, and the unity in variety of the whole is so impressive that it is impossible to regret that in these masonry was discarded for metal. It is instructive to compare the section of the summit of the towers of the East River Bridge, in which such blundering and mistaken pains were taken to ignore the actual purpose of their erection, to conceal what they were, in fact, all about, with the successful pains which have been taken in the exposition and the emphasis of the offices of the cable holders and the cable saddles shown in the outline of the tops of the towers of the Manhattan (Fig. 15).

But the masonry of the anchorages is at least

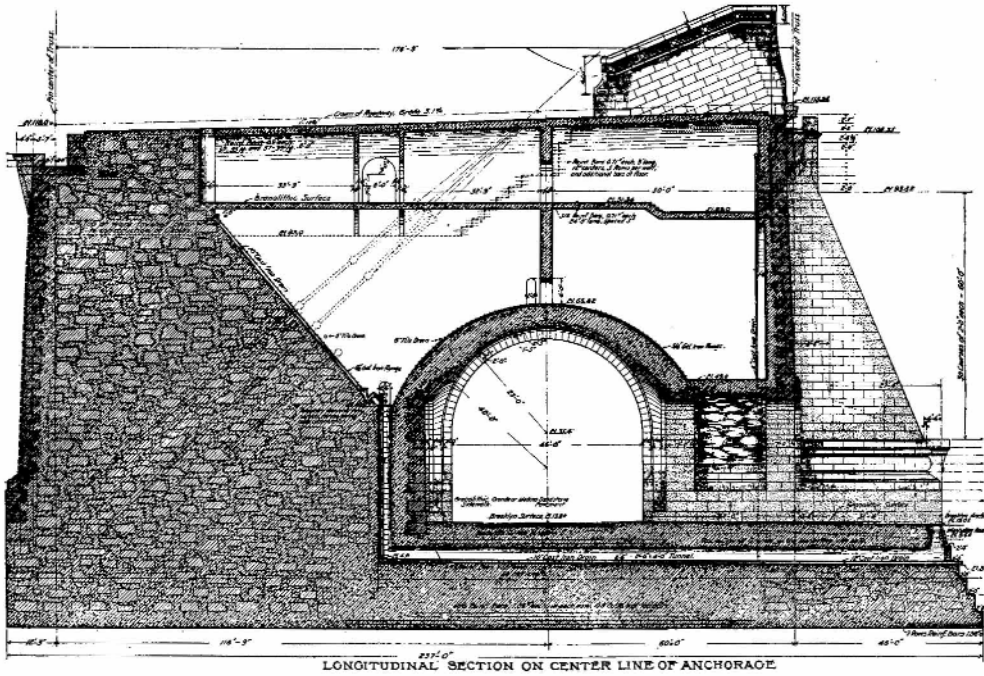


FIG. 18. SECTION OF ANCHORAGE, MANHATTAN BRIDGE.



FIG. 17. FRONT OF ANCHORAGE, MANHATTAN BRIDGE.

Carrère & Hastings, Architects.

equally admirable with the metal of the towers, and equally expressive (Figs. 16 and 17). The effect of massiveness in these anchorages is almost more than Roman. They wear, indeed, an aspect of Egyptian immobility, and immobility is the very purport of their erection. Where in the world can one see a more impressive effect of sheer power than in the ordered masses of this Manhattan anchorage, which so few of us have thus far taken the trouble to see at all? It is hard to say which is the more impressive view, that of the front, with its four great backward-raking buttresses,

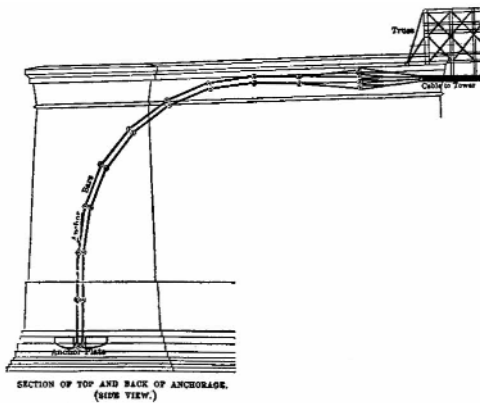


Fig. 19. Section of Anchorage, Old East River Bridge.

each corresponding to the great cable to restrain which is its office, or of the flank, in which the aperture destined for the passage of Cherry Street serves but to emphasize the solidity of its abutting masses. The four-foot torus which is the impost-moulding of the arch-and one wishes that it had been of a single instead of a double course of masonry-will give the scale of the monumental work which is given also by the human figure alongside. And what a scale!

Why man it doth bestride the narrow street,  
Like a Colossus, and we, petty men,  
Walk under its huge legs and peep about-

Egyptian mass! Egyptian immobility! "Pylons" is the only name for these huge erections, that so recall how the Egyptians "planting lasting bases, defied the crumbling touches of time and the misty vaporousness of oblivion." These anchorages give visible promise of a duration equal to that of the great temple of Ramses, or the great pyramid of Cheops. And it is as gratifying as it is exemplary to note that all this is so impressive because it is so expressive, because it is in detail, as well as in mass, a faithful and skillful following of the facts of the case. Each of the buttresses is modeled to express its special function of seizing and holding its allotted cable, which, as the section shows, it is reaching up to grasp. Even our old friend, the curved pediment, finds a meaning as the offset and dripstone of a buttress. The contrast is as vivid and as overwhelmingly in favor of the modern instance between the section of this anchorage (Fig. 18) and that of the crude and amorphous lump of the anchorage of the old East River Bridge (Fig. 19), as between the summits of their respective towers, though the process has been in one case that of attenuation and in the other that of accumulation. There seem to have been generations of earnest and artistic workers between the crudity of the earlier and the refinement of the later of two works which, in fact, less than a single generation divides. It is a great advance. The Queensborough and the Manhattan Bridges give promise of a final and triumphant refutation of the official European criticism that "public works in America are executed without reference to art."

*Montgomery Schuyler.*