

RE ANGLESEA BRIDGE, CORK.

DURING successive meetings of the Cork Corporation and the Cork Harbour Board in the late and preceding months, the subject of the Anglesea Bridge, and the alterations or alleged departure from the original plans for the construction of the bridge, has formed a matter of considerable discussion. Between the engineer of the Harbour Board and the designing engineer of the bridge there is much contradiction or variance in their statements, and of course, as on all such occasions, there are members of the boards who take opposite sides in their views. We cannot, of course, enter into long details of what has been said *pro* and *con*. by various speakers but from what has been written by Mr. Barry, engineer to the Harbour Board, in his report, and from the reply of Mr. Claxton Fidler, the engineer of the bridge, the reader will be afforded an insight of the matters as issue.

Mr. Barry thus reports on the deviations from the contract drawings made in the turn-table of the new bridge :—

"I do not propose to enter very minutely into the details of the alterations, or the relative merits of the two designs, as the particulars which have been furnished to me are of a very general nature. I may premise that practically the entire design of the turn-table has been modified. The depth of the roller-path, resting on the octagonal girder frame has been reduced. The form of central pin has been entirely changed. The upper tramway, which was specified to consist of a central casting, 7 ft. in diameter, and 6 segmental castings, all firmly riveted together, and forming a rigid base for the main girders of the opening portion of the bridge, is now in the altered design a compound structure, consisting of very much smaller circular and central castings, connected by radial bars (the former forming the upper tramway of the turn-table) and a series of parallel wrought-iron girders with two box girders, upon which rest the main girders of the swing-bridge. In theory, this compound structure does not possess the same amount of rigidity as the large castings of the original design, and is in that respect inferior to them. The altered design seems wanting in some respect as regards diagonal bracing. The alteration in central pin I consider rather an improvement. As I have already suggested, I am of opinion the matter is of sufficient importance to warrant the board in obtaining the best advice on the subject, and at the same time the board's liability under the Act of Parliament as to the maintenance of this portion of the bridge may be more explicitly defined. This later requirement I consider of very great importance, as at present your board have practice ally no supervision over the details of the work, and as to such portions we are bound to maintain, I think some further supervision would be very desirable.

At a meeting of the Corporation, held on March 3rd, the minutes of the Anglesea Bridge Committee were read. In the minutes was a letter from Mr. Franklin, solicitor, on behalf of Mr. Alexander Rooney, offering to leave his claims on the Corporation in connection with the Anglesea Bridge to arbitration. The minutes also contained letters that passed between the engineer and the contractor, Mr. Delany, and his sub-contractors, the Stockton Forge Company. Mr. Barry's two reports with reference to the alterations in the designs and drawings of the turntable of the bridge were read. Under receipt of these reports, the minutes stated that the committee directed that they should be forwarded to Mr. Fidler, requesting him to give, at the earliest opportunity, a detailed explanation of the alterations made, and the reasons why such serious alterations were made without the previous approval of the council or committee, and also directing that no further alterations should be made without the express sanction of the Corporation.

In reply, Mr. Fidler wrote as follows:—

In accordance with you instructions, I proceed to report in detail upon the several questions contained in the secretary's letter of the 24th inst., and will first refer to Mr. Barry's report of the 21st inst., a copy of which I have received from the secretary. In regard to the alterations in the turntable I have always been under the impression that

both Mr. Barry and the committee were fully acquainted with these alterations from the first, although the exact circumstances have passed from my mind owing to the length of time which has since elapsed. I find however, that the modified construction of the turntable, with the hydraulic machinery attached to it, was in fact, fully and clearly shown in the plans of the opening machinery, which were submitted to the committee, and approved by them in August 1880. I also find from my diary that these drawings were explained to the committee at the time. In further explanation of these drawings, I may now add the following remarks, taking the features in the order in which they are mentioned by Mr. Barry. 1st—The reduced height of the lower roller path to which Mr. Barry first refers, is a matter of small importance, and it will be sufficient to say that it was necessitated by the limited height of the roadway and approaches, which height was then also finally fixed as shown upon these drawings and upon the plans of approaches and engine chamber which were submitted to the committee and approved by them at the same time. The last feature referred to by Mr. Barry is the modified form of the upper roller path. I have already explained some of the reasons which at the time dictated the adoption of the modified construction. It has become evident that the manufacture of the original castings by the means available for the purpose would be attended with some difficulty, and much risk. At the same time it was desirable to distribute the weight of the bridge (which had been considerably increased) more evenly and effectually, if possible, over the front and back edges of the circle of roller, i.e., to place more of the weight upon those rollers which lie towards the north and south aides of the circle, and the modified construction offered the means of accomplishing this more readily by placing the cross-girders upon the top of the roller path instead of at the side, and increasing the number of cross-girders which bear upon the circle. It is now certainly late, and perhaps unnecessary, to discuss the theoretical rigidity of this construction but I may say briefly that in designing this modification I calculated the stresses and strains of each member with the same care as in every other part of this structure, and in this case allotted to each member a degree of strength which limits the stress to a very low intensity—lower than in any other part of the bridge, and which ensures a greater strength and rigidity than was possessed by the original design, in order to prove for the increased weight of the bridge before mentioned; and I have no doubt that the work if properly executed, will possess a greater rigidity than the original castings. If the requirements of the work demanded any alteration affecting the general design of the bridge (in the broad and public outline) I should of course consult the committee before altering such alterations to be made: but it would be inconsistent with my duty as engineer to refer to the committee any of the numerous technical questions and technical details that have to be considered. I the execution of the work, or any modifications of those details which I may find it necessary to make. In a work of this character it would be a serious misapprehension that once the plans have been prepared the execution can then be carried on by a mere mechanical adherence to the drawings, and without any further exercise of judgment and discretion of the engineer. On the contrary, there will always arise in the execution of such works circumstances and considerations which call for the continual exercise of the engineer's judgment, and which necessitate, in many instances, a departure from the lines of drawing, and provision for such alterations is, therefore, made in the terms of the contract. In fact no engineer who has any extended experience of the unforeseen and unforeseeable contingencies which commonly arise in the execution of such works would be willing to undertake their supervision unless he were permitted the free exercise of his discretion in adapting the detailed execution of the work to the requirements which may present themselves in the course of its execution and experience is the very function for which he is appointed, and any attempt on his part to escape from it would be an evasion of his chief duty to his clients. If the discretionary power of ordering these alterations which is now vested in the engineer, were to be cancelled or transferred, the existing contract arrangements would be subverted, and great inconvenience and embarrassment, at the least, would ensue in the further continuance and completion of the works under the several contracts."

The committee ordered that Mr. Fidler's report should be forwarded to the Corporation. On the meeting of the Harbour Board on the 8th of March the discussion on the bridge and the correspondence that passed took place, and during the discussion Mr.

Fidler entered, accompanied by Mr. Robert Walker, C.E. The chairman, addressing Mr. Fidler, observed :—

"The hoard has had to-day under consideration a report made to it some time ago by their engineer, Mr. Barry, and a report made by you to the Corporation, which is in some measure a kind of answer to that. The board have expressed no opinion on the alteration referred to in these reports. It has lately come upon them by surprise that alterations have been made at all without their their being acquainted of it. The Harbour Board do not want to impede the work nor to have any quarrel with the Corporation, but Mr. Barry is either unable or unwilling to advise the board as to whether the alterations made are such as the board can assent to, or whether they are harmless or otherwise. On hearing that statement from Mr. Barry it was suggested that probably you might like to say something to this hoard, and that is why we sent for you"

During the long discussion that followed on the part of several members, and in reply to questions, Mr. Fidler made several explanations bearing out his report. Ultimately a resolution was proposed and carried to the following effect :—

"That the engineer of the board be authorised to proceed where he thought best, with a view of obtaining information on the subject of swing bridges, and report to this board within a fortnight."

The mover of this resolution (Mr. Sugrue) observed :—

"It had been stated that Stoney was not a bridge builder, but Mr. Fidler himself honestly admitted that he never built a swivel bridge before, and therefore he did not see why they should attach more importance to his opinion. They all knew how careful Mr. Barry was, and what an interest he took in the affairs of the board."

At the meeting of the Corporation, held on the 10th ult., the bridge question was discussed again, when the following letter was read from Mr. Fidler :

Referring to the interview which I had with the Harbour Board yesterday, I see by the published reports that some discussions had already taken place in regard to the construction of the turn-table, and it may, perhaps, be well to make some brief observations upon a few of the points then raised, as my replies to the questions of the boards were, of course, given in ignorance of what had previously passed. In regard to the supposed roughness of the roller paths, mentioned by one of the members, I ought, perhaps, to say that this is entirely a misconception. The roller paths are properly machined, and in this respect no change whatever has been made in the work. I find by further reference to my letter-book that the drawings of the opening machinery, mentioned in my last report as showing clearly the modified construction of the turn-table, were laid before the committee on August 15th, 1880, and were sent to Mr. Barry on September 21st, 1880, for the purpose of his making copies. I find that two of these drawings were at this time inspected by Mr. Barry, and not copied until June, 1881, but the construction of the turn-table was contained in the drawings which he first copied in September, 1880, and I must say that they explain the construction far more clearly to the mind of an engineer than any written description, although it appears to have been overlooked by Mr. Barry at the time. These plans in fact show the entire design for the opening machinery of the bridge, including the turn-table, roller paths, chain drum and central pivot, and the hydraulic cylinders for working the turn-table. No objection was raised by Mr. Barry and it is clearly too late to raise any objections to any particular feature in the construction when the works are in a forward state, and have arrived nearly at completion. With regard to this and any other alterations which I have found it necessary to make, my position, and the duties involved in my position, are perfectly clear. The terms of the contract, which have been agreed by the joint committee, not only empower me to make any alterations in the works shown in the original drawings, but above all, the very nature of my position as engineer of the work places upon me not only the power but the obligation of making such alterations as in my judgment may be demanded by the practical requirements of the work, and it is quiet obvious that I am obliged to deal with these requirements promptly as they arise, and in a practical and decisive manner. I may remark here that there is nothing tangible in Mr. Barry's report for me to deal with, as he really declines to offer any opinion. In my last report I mentioned that there are several alterations which I have recently ordered, and which are now in hand, and I

pointed out that it would be inconsistent with my duty and subversive of existing contract arrangements to refer these questions to any other authority, but I proposed to take an early opportunity of meeting the committee for the purpose of explaining the nature of these alterations which are in progress, or in contemplation, and I intend to wait upon the committee for that purpose to-day.

The minutes of the committee of the 9th ult. were then read, which were to the effect that Mr. Fidler, in compliance with the wish conveyed to him from the committee, explained in detail sundry modifications of works, extra works and alterations, which he had ordered, or had in contemplation. The following resolution was agreed to:—

“That the several modifications, alterations, and additions to works now explained by the engineer be approved, and that the secretary write to the Harbour Board acquainting them therewith, but without acknowledging on the part of the Corporation that it is necessary same should be affirmed by the board, or that the several matters referred to are not entirely within the discretion of the engineer (Mr. Fidler) under the provisions of the several contracts”

The Corporation, after some further discussion, confirmed the minutes, and resolved to acquiesce in Mr. Fidler's recommendation and action in respect to the new bridge.

Pendant to the foregoing, Mr. Alexander Rooney addressed the following letter to the *Cork Constitution*:—

“In Mr. Fidler's affidavit, sworn on the 7th February, 1881, in the case of the Corporation against me, he states as follows:—‘The second material alteration was in the turn-table, which was a serious matter; this alteration was sanctioned by me at defendant's request, as appears by his letter to me, dated, 17th May, 1880’. I now merely desire to state for the information of the public, on this important question, the following facts:—On the 18th February, 1880, I was written to by Mr. Panton, manager of the Stockton Forge Company, stating that ‘Mr. Fidler has also made some considerable alterations in the roller path; and the design will be entirely altered.’ After that I received the following letter from Mr. Panton:—15th Mat, 1881, ‘I was in London yesterday and saw Mr. Fidler, and left with him a tracing of the proposed alterations to the roller path. He wishes to retain this so that he could look through it, though he approved provisionally of most of the details. He said if you made a proper application to him he would agree to the alteration. He wishes your letter worded somewhat as follows:—‘Anglesea Bridge.—The Stockton Forge Company find that there would be great difficulty in making the turn-table of this bridge as designed, on account of the very large size of the castings. They would be very awkward to machine properly, and the expense and risk of conveyance would be very great. They would therefore be glad if you would alter this part of the work to the tracing sent to you by them. The alteration will not entail any extra charge, and the contract price will not be altered. I may state that this proposed change meets with my approval.’ As desired, I sent this letter to Mr. Fidler, who with Mr. Panton settled the matter between them, without further reference to me or to any one else.”

We have no doubt but our readers have heard now more than enough about the surroundings of the new bridge, which has certainly become historic in a manner before it has been opened. When open, are we to suppose in the lines of Fr. Prout,

“The bells of Shandon
Will sound more grand on
The pleasant waters of the River Lee”?

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