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MADRAS RECORD OFFICE.

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Public (Miscl) DEPARTMENT. Dec. 12-4-57

G.O. No. 569 Press Mis.

Dated 12-4- 18 57

Not to be folded or roughly handled

Fort Saint George, Public Works Consultation of 12th April 1859.

Read the following papers.

No. 99. From Colonel C. E. FABER, Chief Engineer; to J. D. BOURDILLON, Esq., Secretary to Government, dated 26th March 1859, No. 9039.

SIR,

1 Original letter with 1 Enclosure, containing several original papers.

The invitation to the Special Executive Engineer, Jackatalla, contained in para. 5 of Extract Minutes Consultation, No. 407, of the 18th Ultimo, to submit a counter-statement to the Chief Engineer's Report of the 24th January No. 7281, having now been complied with, I have the honor to solicit the indulgence of Government, towards my forwarding so voluminous a reply in original as it reached me.

2. I further hope I shall stand excused for having taken the liberty of making autograph notes on a good many of the papers Captain Campbell has pressed into the service of his defence, written Currente Calamo, as I perused each of these numerous additions to his cause.

3. Had I adopted the more usual and regular course, a very undesirable delay would have ensued, and with so much matter of an unexpected and purely recriminatory character to rejoin to, I think the convenience of the measure I have adopted may perhaps be allowed to excuse the irregularity.

4. One paper only, has it seemed necessary, to have transcribed with a half margin, namely, a series of leading questions to the Contractor by the Special Executive Engineer with Mr. Vigor's replies, in order that my own rejoinders seriatim may be perused paripassu with the original.

5. I acutely feel how false a position I have been compelled to occupy by the relegation to a Subordinate of a judicial opinion from the Head of the Department. But to avoid the possible injustice of condemnation on what may in one sense be regarded as an exparte statement, I do not see what other course the Government could have pursued.

6. I therefore feel bound to accept as the necessary sequence of my own candour the heavy counter-charges Captain Campbell has now brought forward at this late period, and I rely securely on the protection of Government, by the exercise of its accustomed discrimination, and I appeal with confidence to its denunciation of making public use of private notes between parties who had no official relation towards each other.

7. The gravamen of Captain Campbell's elaborate and astute defence is that up to the 17th June, the Waterloo Bridge was solely under the management and supervision of the District Engineer, and that as a Subordinate Officer he neither could, nor would it have been becoming for him to have a voice in the matter.

8. But if this be so, a point on which I cannot speak, what became of all the strong allegations contained in the printed P. W. Consultation of 17th August 1858, where in para. 7 of his letter to the Right Honorable Lord Harris, dated 26th July last, he draws a picture of this Contract work, the solitary one of his Range, the very reverse of what is recorded in Captain Campbell's present Memorandum. In the former, he represents himself as Executive doing every thing, but in the latter he describes himself as scarcely a spectator of the proceedings Mr. Vigor was carrying on under Captain Francis and Mr. Fraser.

9. Captain Campbell indignantly repudiates my own conclusion that the Waterloo Bridge was a distasteful one, because not emanating from himself; and the Government will now judge from the tone and tenor of para. 4 of the present Memorandum, whether even still there is not ground for such an inference.

10. I was not hitherto aware that Captain Francis was sent to Jackatalla for any such purpose as the Special Executive Engineer alleges in para. 7; on the contrary, that Officer gave much time to the Carcoor Trace and numerous other duties, and Captain Campbell's own Executive position remained quite unaltered, except that Captain Morgan was less exclusively under his control, though even that change only took place, if I do not mistake, after Captain Francis's departure had removed Mr. Fraser from the charge of the Ootacamund Range.

11. Para. 8 states and for the first time, that "Colonel Faber took active direction of the "Bridge upon himself, giving orders to Mr. Vigor without my intervention, and casually com-"municating his views to me." (Captain Campbell.)

12. If the Government should be pleased to accept as emphatic and unconditional, a denial on my own part as language permits me to convey in terms of profound respect, and if they should be clearly of opinion that the tenth of this negation is placed beyond all doubt by the several letters to the Central Office, which Captain Campbell has himself embodied in the Appendices to his Memorandum, as also by the private correspondence he has preserved to now produce, then I trust the Government will be pleased to take into serious consideration, how far an Officer who has taken so serious a liberty with truth, and has sought to shelter himself by the unfounded inculpation of the Head of his Department, is fit to be employed on his present duties.

13. To shew that as little de fact so as dejure could I take on me any controlling or other Waterloo Bridge duties, I have first to report that in consequence of an accident of a peculiarly painful nature, and well known to many of the Staff of His Lordship the Governor, I was unable to leave the house at Coonoor from the 28th of August to the 7th October. I observe also that the next prior visit to Waterloo Bridge *before* the 28th August, was on the 10th idem.

14. Moreover it is to attribute to me an ignorance of one of the first regulations of the service, namely, that a Medical Certificate disqualifies for performance of all functions of Office, to suppose for a moment that It much shaken in health, would presume to interfere with an Officer so jealous and greedy of authority and self, rule, as the writer of Captain Campbell's letter to the Governor of the 26th July, I cannot hesitate to say that if I had ever given a single direct *order* to Mr. Vigor in my life, Captain Campbell's Highland blood and vis vitœ would have been in open rebellion against my usurpation in five minutes. Add, to conclude, that if Colonel Faber ever were in active direction of the Bridge, why did the single brick rings continue for a month after my arrival? why did three proportions of sand to a time naturally meagre, continue to the very end? and why were all the arches and walls parallel to the length of the Bridge instead of transverse? If in any way my voice was listened to it was in this, that whereas the first arch remained 15 days, the second and third were only 9 and 10 days before being uncentered.

15. Before concluding my present painful duty, it is fitting that I should expressly acknowledge the error in paras. 22 and 23 of my Report to Government in mixing together the spandril and the wing-wall construction on the 7th October, which I was led into from Captain Campbell's first narrative. It is clear that the former had been built in point of fact in the latter part of September, although some time after I had indicated transverse treatment in my letter to Captain Campbell of the 10th September. This very ignorance, caused by six weeks confinement to the house, is a further proof how slight, not to say imaginary, my own active control had been over the Waterloo Bridge.

16. I would desire also to modify the expressions made use of in the 20th para. of my report, for I do agree with Captain Campbell that with a breadth of 4-3 at bottom and 2-3 at top of both side and abutment walls, tie-walls were essential to permanent stability. But an Executive Officer on the spot would not hesitate an instant in supplying defective strength by so obvious and common an expedient, and if I had been able to go and see the work in September, I cannot doubt but that in spite, of the profound discouragement I had met, I should have ventured to press on Captain Campbell the advantage of such a construction.

17. But on the 7th October, although the spandril walls and arches were built in, yet the wing-walls and abutment walls were in jeopardy, and there was no reason whatever why Captain Campbell should not have adopted the measures I had just concerted with Mr. Vigor even to the extent of marking out their position in the eastern approach, except that he preferred his own more elaborate and costly, to my readier and cheaper system.

18. With the modifications shewn above, I adhere then to each of the 4 conclusions to which I arrived in para. 21 of my despatch of the 24th January, except that I should wish Mr. Fraser's alleged testimony to the solubility of the bricks, to be cancelled; his opinions whatever they were having been given in a private dwelling house and I was wrong to allude to them.

19. The Government have now I hope, full means of arriving at a final opinion, whether the conclusions to which I arrived, have been shaken or confirmed by additional investigation.

P.S.—It ought to have been stated in reply to para. 7 of 407, 18th February, that the Contract had been completed and executed by the District Engineer before any report was made to the Central Office.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Southern Circle; to Colonel C. E. FABER, Chief Engineer, dated Jackatalla, 18th March 1859.

SIR,

With reference to your Telegram of the 17th Instant Registered No. 22, I have the honor to forward the enclosed papers received this day, relative to the fall of the Waterloo Bridge at this Station.

2. In the original order of Government,* I was not directed to make any enquiry into the matters reported by you relative to the Executive Engineer, and except on the point of Mr. Fraser's opinion of the Bricks, I have not interfered in the case, and as Captain Campbell's attention since my arrival at Jackatalla has been greatly taken up with his reply, I trust that I am acting correctly in forwarding the papers without remark.

* 18th February 1859, No. 407.

A.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to the Officiating Chief Engineer, dated 27th November 1858, No. 230.

SIR,

I have the honor to report for your information that at 8-*h*. 15-*m*. A. M. yesterday, the west arch of Waterloo Bridge fell, at 8-25 the centre arch followed and in ten minutes afterwards the shaken piers and the abutments alone remained of this Contract work.

2. The immediate cause of failure was the soakage of incessant heavy rain through the green arches which were not as they should have been, coated with asphalte or coal Tar, no such provision being entered in the specification. During the previous night the rain poured down in torrents with very slight intermission from 10 o'clock till day-light, we have now had some 36 days of this sort of weather, all out-door work has been suspended almost.

3. I shall write you further particulars in a few days of the estimated value of the still existing work, when I have decided on what is to be done and the Contractor has made up his actual loss.

4. Up to the period of my writing the fall of rain continues unexampled, the water is now going right through the road way and arches of two 30 feet Bridges, and I would most strongly recommend that as soon as fine weather sets in, the arches and backing of both these Bridges should be stripped and receive such a coating of Coal Tar, not less than $\frac{3}{8}$ of an inch, as will render them then thoroughly proof against the influence of future monsoons.

5. I shall be glad to be favored with your early instructions on this point, and the same course should be adopted over all the outside stair arches in the Barracks, so as to render them perfectly drop dry.

B.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to the Officiating Chief Engineer, dated 30th December 1858, No. 259.

SIR,

In continuation of my letter No. 230 of 27th Ultimo, I have the honor to submit for your information and that of Government, the following narrative of the failure of Waterloo Bridge, as it is now necessary to decide whether the loss is to be borne solely by Government, solely by the Contractor, or jointly by both, and if so, in what proportion. To assist you in coming to a decision, I forward herewith the documents as per margin.

1 Specification.
2 Contract.
3 Estimate.
4 Plan.
5 Contractor's Statement.
6 Do. 2nd Do.
7 New Estimate.

2. On the 21st July last, the eastern arch was uncentered 15 days after it was keyed, fine weather, and no cracks, on the 28th the middle arch was uncentered and found on the 31st by measurement to be 15 inches below its proper level, as reported to you in my letter No. 164 of 13th September, at the crown there was a space of 2 inches between the first brick ring (9 inches) and the upper coures of 15 inch work, an apparent subsidence of 9 inches was due to the use of an untrustworthy clinometer by the Contractor when setting out his center, the other 6 inches a real subsidence chiefly owing to the failure of the center at the part colored green in the Plan. On August 6th, the Contractor, Mr. Vigor, had removed the center and completely taken down the middle arch and west spandril (which had cracked) at his own expense; on the 10th August the Contractor commenced re-building the center arch on a center designed by himself, the prescribed one having proved too weak. Up to the 9th of November on which date Mr. Vigor drew my attention particularly to the weakness of his eastern wing-walls, the work proceeded satisfactorily, I then as I advised you in my letter No. 164 above quoted, strengthened the eastern work by counterforts and spandril walls. On the 21st September these counterforts and spandril walls were completed, and on the 28th the weather which had been wet, set in to rain with unusual severity. On the 5th October, Mr. Vigor, after carefully filling and punning the earthwork between the western wing-wall (which formed a gangway for his people) and making good nearly ⅔ of the spandril filling, was in my presence completing the rest, but before the work was finished one of the north spandril walls, 2 feet 3 inches at base, with only 14 feet of earth behind it, rent and bulged, carrying the parapet with it, the west side of the western arch was at the same time thrust very slightly forwards, and though the spandril walls were immediately relieved and good vents kept open, in case of squally weather which was imminent, still it came down after sunset in such heavy torrents, that the arches themselves must have been torn out at the crown, as the falling plaster plainly indicated, but for the exertions of a miscellaneous gang of bandymen, gardeners, and house servants who turned to with a will and hove the earth bodily over the side walls. Next day the abutments were further relieved, and the spandril walls were taken down by the Contractor at his own expense. On the 18th October spandril arches were turned and the whole well luted with 6 inches of stiff blue clay (as I advised you in my letter No. 164 above quoted, would be done). On the 20th November the brickwork which had been much delayed by constant rain was at length completed up to the blocking course; on the 26th, after 15 days almost incessant rain, the green work could stand it no longer, and the western arch gave way and brought the others with it in a few minutes after.

3. As it appears probable that some opinion may be expected from me, I have the honor on a careful review of the whole facts and with the specifications before me, to state that I consider

I. Mortar would have been better with an admixture of only 2 sand to 1 lime, though we have turned 30 feet arches here with 3 to 1.

II. That the rates in the Estimate were utterly insufficient to provide the best materials and labor, the arch-work was put down at 22 per 100 cubic feet, (I could not have done it myself under 30.)

III. That the arches should have been coated with asphalte or coal Tar.

IV. That the spaces between the arches should have been vaulted springing from dwarf walls, binded up with the spandril walls, and not filled up with earth.

V. That the middle and western arches should not in such weather as we have had (particularly when not asphalted) have been even yet uncentered, whereas they were both uncentered within 10 days after they were keyed.

VI. That the tabling of the rock for the eastern Pier with a superstructure of plain brick-work was insufficient, the footing of the brick-work I think should have been let in below the level of the rock at least four inches, and the brick-work carried up in cement at least 12 feet.

VII. That the centering was so weak as to render it highly probable, it would give and alter its form under heavy pressure, this happened to the part colored green in Plan.

4. The Contractor who volunteers to bear half the loss himself is now engaged clearing away the rubbish with the view to re-building the Bridge on fresh Estimate and Contract, and

will Guarantee his work for two years on the extra rates, if such meets your sanction, you will observe by my new Estimate enclosed, that the additional cost involved is Rupees (13,625) thirteen thousand six hundred and twenty-five.

	Rs.	A.	P.
5. In your Extract Proceedings No. 5489 of the 10th December 1857 to the District Engineer of Coimbatore you sanctioned for the Waterloo Bridge	19,716	15	0
and in your Extract Proceedings No, 8703 of the 1st April 1858, you sanctioned for the Reservoir	13,160	0	0
The new Estimate now requiring sanction, amounting to Rupees thirteen thousand, six hundred and twenty-five	13,625	0	0
	46,501	15	0
leaves an excess over the forty thousand Rupees.....	40,000	0	0
you calculated upon of Rupees six thousand, five hundred and one and annas fifteen	6,501	15	0
Deduct from this Rupees three thousand one hundred and twelve and annas eight.....	3,112	8	0
which the Contractor offers to bear the loss of, and it leaves Rupees three thousand, three hundred and eighty-nine and annas seven, still requiring sanction.....	3,389	7	0

C.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to the Officiating Chief Engineer, dated 13th September 1858, No. 164.

SIR,

In reply to your letter No. 3453 of 8th Instant, I have the honor to re-submit my Progress Reports, Estimental and Extra Estimental, giving the same total of expenditure for July 1858, as exhibited in my Account Current.

2. The failure of the centre arch of Waterloo Bridge arose from the Contractor, Mr. Vigor, having put up his centre 9 inches too low and from a sinking of 6 inches when the centre was taken down, when the arch was found to be 15 inches too low, and the west spandril-walls cracked in two places.

3. While on this subject, I may as well mention that considering the wing-walls of the eastern approach designed by Captain Francis too slight for safety, and being further apprehensive of the bulging of spandril-walls, which are to be filled up with earth while the weather is very rainy and inclement. I took the opportunity of asking Colonel Faber's valuable opinion as he was on the spot, in accordance with which I have issued very particular orders, for proper tamping of the earth-filling and a good lute of stiff clay over all immediately under the metalling of the road way, I have further with his consent tied the masonry with counterforts on the eastern side and have added two dwarf spandril-walls.

4. I trust what I have done may meet with your approval, though it is not all that I would have done had I acted solely on my own judgment, for I cannot regard as safe wing-walls 56 feet long, 21 feet high, 4 feet at base, 2 feet 3 inches at top, with an outside batter of 2 feet, however well the earth filling may be tamped and luted, I consider the pressure is more than green masonry of the above scantling is calculated to bear with safety, but I of course deferred at once to Colonel Faber's judgment.

D.

Blackheath, Coonoor.
Wednesday, 25th August 1858.

MY DEAR CAMPBELL,

* * *

In reference to Mr. Vigor, I like his Bridge-work, his materials and himself; and I cannot doubt but that your acceptance of his offer as adumbrated in present M. S. highly advantageous to Government.

* *

Believe me, ever your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—This is the first of a series of *private* notes which Captain Campbell having preserved, has now thought proper without previous reference to myself, to place before the Government. No official relations existed between us and could not. Thus my communications were those of courtesy and social conventionalism alone, expressed with freedom, sans ominie pensee, and the circumstance that they commonly are written in reply to applications from himself, should have forbidden their being turned to the use they have been.

In respect to the particular note now quoted, Captain Campbell had stated Mr. Vigor to be willing to build a Range of Married Buildings for some 5,000 Rupees less than the Estimate. At that particular time, the causes of dissatisfaction from delay and non-exertion had not arisen. Mr. Vigor's workmanship I always was satisfied with; his materials were as good as the Jackatalla supplies, which Captain Campbell and Lieutenant Hankins are aware I condemned, and of Mr. Vigor personally I now think as I thought in August 1858.

The subjoined note is a strange one as addressed to the Officer in charge of the Waterloo Bridge, who gave all his own orders direct to the Contractor, and only casually reported them subsequently to the Special Executive Engineer.

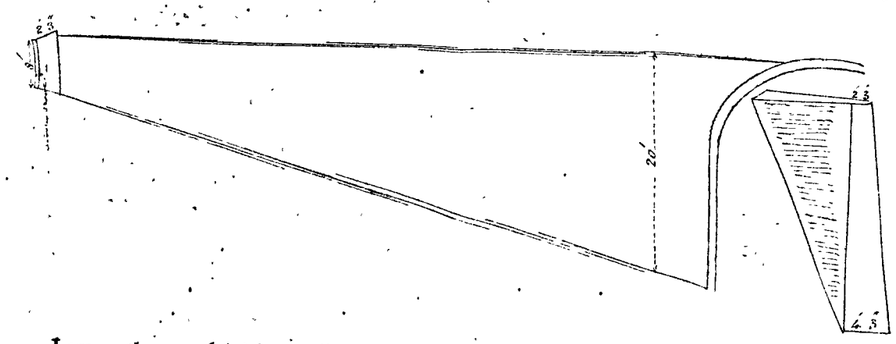
E.

My Dear Colonel Faber,

I am of opinion that if Vigor finishes the eastern approach to Waterloo Bridge on Francis' plan (and Estimate) that the wing-walls (some 4 feet at base and 2′ 3″ at top) with a pressure of 20 feet of earth behind them without a single counterfort, will as was the case with No. 1 Bridge at head of the valley, bulge with the first monsoon and fall with the second, under influence of a load full 6 times greater than the masonry could be safely calculated to bear.

Again between the arches there are no spandril walls to assist in staying 12 feet of fresh earth which it seems to me is a very bad arrangement.

Anent the downright temerity involved in para. I am loath to take upon myself to alter the plan of a Superintending Engineer, and yet I am still less inclined to witness his failure, especially on the field of Jackatalla, what say you to his sections? can they stand by any possibility?



I am on the eve of writing to Central Office to expect alteration, but venture as you are on the spot, to solicit your opinion first, as to Francis' section, if you will kindly give it.

Jackatalla,
10th September 1858.

Your's &c.,
(Signed) J. CAMPBELL, Captain,
Special Executive Engineer.

F.

Blackheath, Coonoor: Tuesday, 19th October 1858.

My Dear Campbell.

* * * *

You have gone very thoroughly, (but too expensively) to work at the Waterloo Bridge which seems now saved.

Ever your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—This note simply corroborates the text of the public despatch, viz., that work had been thoroughly done, but in too costly a manner, and the next copy. It is a proof that when my advice was given, it was thrown aside.

G.

Wednesday, 10th November 1858.

My Dear Campbell.

* * * *

I was much disappointed with the slow progress of Waterloo this morning when I inspected it with V. S. Murray, too bad, too bad. I then went over the Jackatalla Barracks and so toddled home.

Always your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—This seems to have been written a little more than a fortnight before the final catastrophe, and when it certainly was not expected, however much it may have been dreaded. Its tone seems to me to clearly imply, less any new want of exertion, than persistence in a previously recognized cause of neglect and inactivity on the part of the Contractor. Indeed such patience as I am endowed with had been quite exhausted long previously.

This forgotten note seems to altogether corroborate the Official representations to Government of July last.

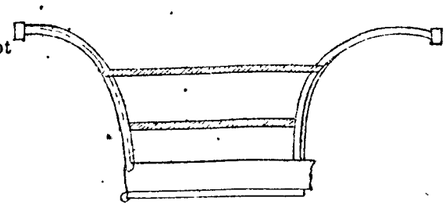
H.

Blackheath, Coonoor: Friday, 10th September 1858.

My Dear Campbell.

I have never seen any Plans or Drawings of the Waterloo Bridge here, except the truss diagrams for the centres as designed by Francis. If the earth be tamped as the walls ascend, and if a layer of clay be placed on the top underneath the actual metalling of the road-way, taking great care to make and keep the surface convex so that water shall discharge itself *through* the side walls by small apertures 3″ below the crest of the road left for the purpose, there ought to be and need be very little lateral pressure. Insistent weight by gravity is pretty nearly all so long as your earth or filling in retains its normal dimensions.

Now a luting of 3 to 4″ of stiff clay is literally impervious to water and would prevent all soakage if managed well, and superficial drainage provided, either by internal side masonry gutters or by holes through the walls (only that *they* stain the exterior in an unsightly way). However, you may at but slight expense run one or even two tie walls 1′ or 1′ 6″ thick to prevent bulging, taking care to *well* dimmiss the earth *under* them, as it is probably too late to give foundations.

4′ 3″ at foot  and 2′ 3″ at top is not a weak wall, but every thing depends on the filling in, the tamping, the luting and the drawing and with those dimensions with excess to good stiff clay. I should not hesitate to work off the job.

* * *

10th September. (Signed) EDWARD FABER.

Colonel Faber's Note.—This letter shows, 1st, that the Officer alleged to be in charge of the Bridge had not so much as seen a plan of the work; and 2ndly, that although the *transverse* tie-walls are now shown to have been recommended so early as the 20th September, before any bulging showed itself no action was taken on the suggestion; but at a later period a contrary treatment was pursued.

J.

Blackheath, Coonoor: Monday, 6th September 1858.

My Dear Campbell.

* * *

I have told Vigor that he may uncentre No. 3 to-day, but that was before the heavy rain of yesterday.

* * *

Believe me ever your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—I observe that throughout the whole month of September *I did not once visit the Waterloo Bridge*, but when Mr. Vigor came to *my quarters* and asked whether he might uncentre with safety, I simply said "yes" on the 10th day after being keyed, if the works were good. To save him the expense of a fresh scaffolding I added "mind you plaster your intrados at once before "you receive your entres, and the chunam will adhere far better if "applied whilst the arch is still damp." This was on a Saturday whilst walking up and done the verandah with a guest; the circumstance was mentioned to Captain Campbell in a note on Monday and this simple reply to a question from the Contractor regarding work I had not even seen has "been perverted into only casually reporting my orders! ! !" It may be noticed that the very language is simply permissive, and not authoratative or mandatory. Not "that he must" or "that he is to" but on the contrary "that he may uncentre" on the tenth day of keying' a semi-circular arch.

K.

To Captain J. A. CAMPBELL, Special Executive Engineer, Jackatalla.

Sir,

In continuation of my report on the Waterloo Bridge, I beg to inform you that in striking the centering of the middle and western arches I was guided by instructions received from Colonel Faber. The former was struck on the 10th day after keying and the latter on the 9th.

* * *

Jackatalla, December 10th 1858,

I am, &c.
(Signed) R. VIGOR.

Colonel Faber's Note.—The "instructions" were simply permissive as far as I consider it any longer remaining on the centres to be beneficial. To this extent, and in reply to questions asked at my own house, but no further, is the foregoing statement accurate.

L.

Memorandum.

Overseer Menzies is hereby directed to see the following orders carried out by Contractor Mr. Vigor.

1. The earth between the wing-walls to be well tamped as the walls ascend and to have a layer of clay 6″ thick placed on the top underneath the actual metalling of the road-way, taking

great care to make and keep the surface convex so that water shall discharge itself through the side walls by brick apertures 3″ below the crest of the road left for the purpose.

2. Two tie-walls of 1′ 6″ may be carried across but all depends on the tamping, and luting and drainage.

Jackatalla, 11th September 1858.

(Signed) J. CAMPBELL, Captain,
Special Executive Engineer.

Colonel Faber's Note.—Notwithstanding para. 2 of this order, Captain Campbell so far from building *cross* tiewalls built a series of longitudinal arches at the expense of much time and money; and hence my note (paper) of 19th October 1858.

M.

From W. FRASER, Esq., Acting District Engineer of Coimbatore: to Captain J. CAMPBELL, Special Executive Engineer, Jackatalla Barracks, dated Ootacamund, 15th March 1859, No. 209.

Sir,

In reply to your letter of this date No. 357, I have the honor to state that I have no recollection of ever making use of the expressions quoted in your letter, namely, that "the Bricks were abominable" and that they were "soluble in the stream where they had fallen."

Of Bricks in general as they are made up here I have expressed an unfavorable opinion, but I never expressed any opinion that these particular Bricks were worse than others.

As to their solubility in the stream where they had fallen it is unlikely that I ever said any thing, inasmuch as I never examined the ruins of the Bridge until Thursday last.

Colonel Faber's Note.— It would seem from this letter that my own language of para. 24, clause 4, had by Captain Campbell been imputed to Mr. Fraser; he naturally disclaims having ever used the expressions belonging to my own pen, and not his.

But as it was in a private visit at my own house on the 1st December that the depreciating remarks were made, it was clearly an error on my own part alluding to mere conversational topics, in the discussion of which I was not personally present. I would therefore beg that the para. should stand without the corroboration of Mr. Fraser's opinions which however it will be seen are as unfavorable to all Captain Campbell's bricks as mine. It is the peculiarity of the Jackatalla bricks that the shape and mouldings are excellent, but the mixing and burning wretched, even Tiles when broken shewing different colored layers of clay, blue, white, and pink in the puncture, without the homogeneity which though incorporative would have ensured.

My Dear Campbell.

* * *

Had Vigor wished the arch to fall he could not have done more than he has or better suited to the purpose.

* * *

26th November.

Very sincerely your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.— This seems to me simply corroborative of the text of the official despatch, and taken in continuation of letter G of the 10th November strongly tending to shew how vexed and disappointed I had been with the proceedings at the Bridge for some considerable time past.

O.

I hereby bind myself to build Waterloo Bridge at Jackatalla according to the Plan and Specification, for the sum of Rupees (19,716) nineteen thousand, seven hundred and sixteen, and to

complete the same in all particulars as therein set forth on or before the 31st August 1858, under a penalty of (10) ten Rupees a day for any period beyond that date, and under a penalty of 500 Rupees in other respects, and in event of any disagreement as to workmanship or materials with the Executive Engineer in charge, I agree to abide implicitly by the award of the District Engineer, I agree to receive instalments at the following rates, viz., 5,000 Rupees on the signing of this agreement, whatever has been received as advance on the Bridge to be in part of this exclusive of centering money and chunam stone, 5,000 Rupees on the Bridge being completed as far as the springing line ; a further sum of Rupees 2,000, when the centers are struck ; and the remainder on the work being completed to the satisfaction of the District Engineer, and in Security for the Instalments, I pledge all the Plant and Materials deposited and prepared for the work and in addition the Title Deeds of House Property at Ootacamund, valued at Rupees 10,000 deposited in Captain Campbell's Cash Chest for which I hold his receipt.

Witnesses.

(Signed) F. J. JACQUES, (Signed) R. VIGOR
(„) PEREIRA,

District Engineer's Office Jackatalla 1st March 1858.

Mr. VIGOR'S Statement of 8th March 1859.

1. How often did Colonel Faber visit your Bridge an on average per week ?
Answer. Very frequently, sometimes twice a week, from the date that he found fault with the 1st or east arch being turned in rings, I took all instructions from him direct, except on one occasion after remonstrating with him on the insufficient strength of the side-walls, for I told him at the time that I had known two bridges in Malabar carried away from same cause, they were too slight to stand the pressure of the earth.

Reply.
Unfortunately, for the accuracy of the Contractor's meaning, from Saturday 28th August to Thursday 7th of October 1858, not only did Colonel Faber not visit the Waterloo Bridge, but he was confined to the house, and often to his couch, under medical treatment for the whole of this large part of his residence at Coonoor.

2. What date do you refer to as that from which you took all orders from him direct ?
Answer. From time of failure of middle arch, in consequence of its being too low, and owing to which I took it down.

Mark Captain Campbell's change of words, substituting " orders" for Mr. Vigor's own expression " instructions."

I do not gather from Captain Campbell's narrative of 30th December, what is the *exact* time referred to, but apparently it cannot have been *earlier than about* the 8th of August, my own visits to the Waterloo Bridge subsequent to that date were exactly two in number, namely, Tuesday 10th and Saturday 28th August, whence accident imprisoning me to the house dates.

3. You say Colonel Faber gave you orders after the failure of centre arch, can you specify the terms or tenor of such orders ?
Answer. He inspected my arches after they were keyed and he gave me direct instructions as to the day on which I was to uncenter them.

The truth of this must depend on how long it took to build arches 2 and 3. If they *were* built and keyed between 8th and 28th August, and I really think I did see them in either a completed or nearly completed state, than the proof is perfect that the work is as little and the activity as great during August, as represented by me, I have had calculations made in the Estimate Department of Central Office and find that 30 Bricklayers are able on an average to turn two simicircular arches of 40 feet in 18 days. Seeing the arches keyed then on the 28th it is not unlikely I may have said that it would be quite safe to uncentre in 9 or 10 days, but my own impression and belief are that Mr. Vigor came to my own house and that in answer to a question from himself, I said what every body knows (the weather having been fine) that a week to ten days was a sufficient interval.

4. By whose orders did you plaster the intrados of your arches as soon as you did ?
Answer. By direct order of Colonel Faber.

Admitted, substituting "recommendation" for "direct orders."

5. Did Colonel Faber ever express to you any opinion of the style and quality of your work and materials.

Answer. Yes, I am quite positive that twice at any rate he told me as follows " Mr. Vigor, your Brick work appears very good." This was said at the Bridge and he spoke to the same effect at his own house.

Admitted, as to workmanship. On materials Mr. Vigor is discreetly silent.

6. Did you at the time of filling in your earthwork consider the side-walls safe to stand the pressure ?
Answer. No, I remonstrated with Colonel Faber after about ⅔ds of the earth was in, for I saw the pressure was more than the walls could stand.

How the remonstrance could be made I cannot see, my next visit being on 7th October; but if so fearful, why not build buttresses outside to support the walls instead of inside, and why not build cross tie-walls ?

7. What was the result of that remonstrance ?
Answer. He said "go on, go on," go on, if it is " necessary you may add binding walls, to " the Eastern approach, but I don't think it " necessary."

Very likely I did say, "go on, go on, go on," for as this was, or must have been 7th October it corresponds with my internal annoyance at finding how little had been done during my six weeks confinement to the house ; and clearly if the work were to be done at all, it was far better to do it vigourously with a strong gang than to shilly shally with a weak squad of perhaps 8 or 10 people, all whom I then saw ; yet it is after all not possible that I did use these words, or if I did it must have been in August, for it was on the 7th October that I went direct to Captain Campbell at Jackatalla to urgently press the constuction of wing-walls on that Officer, as stated in para. 21 of letter to Government.

Continued on 9th March, 8 A. M.

8. What induced you to build the east and middle arch in brick rings, and did you do so with the knowledge and consent of Captain Francis and Mr. Fraser ?
Answer. When the first centre was put up, Mr. Fraser and Captain Francis came down, inspected it, and gave it as their opinion that it was not strong enough to carry the weight of the arch; I then proposed to build the arch in brick rings, they considered the Plan good and gave their assent to it.

Captain Francis is not here to admit or deny; but Mr. Fraser positively contradicts the assertion. See Telegram herein annexed.

9. How can you account for your slow lax proceedings in July, August, and part of September, and why were you so much beyond your time, when the accident to centre arch might have been so soon repaired ?
Answer. All the Natives objected to work on the centres on account of their height, the Europeans took a whole month to get up the centering of the middle arch, and it fell the next day, owing to high winds.

10. Did you ever explain to Colonel Faber these causes of delay ?
Answer. Yes, I explained all the above to Colonel Faber.

I never heard, and I altogether disbelieve any thing of the sort. See also reply to A 3, as to real progress in August.

11. Did your works in any way suffer by having imposed on you by Captain Campbell, a system of arches for which there was neither time nor materials at hand ?

I can only emphatically aver that Mr. Vigor himself assured me such was the case.

Answer. Certainly not. The damage was all done before that—I mean the bulging of side walls and cracking of western arch, which would have been down on the night of 5th October had not the earth pressure been immediately relieved.

12. Can you speak positively as to the date on which the spandril walls between the arches were built by my order?
Answer. Yes, the spandril walls were built fully 15 days before the bulge of side walls on 5th October.

This shews I had been altogether mislead by Captain Campbell's narrative, para. 2 of 30th December 1858; and that the longitudinal walls and arches (instead of transverse) had really been built during, and not after my illness. But my letter of 10th September was antecedent and any professional Officer ought to have seen, that cross walls or arches, and not longitudinal, were a necessity; especially after a direct suggestion for so treating the wing walls, or rather recommending that they should be so treated for a cognate cause.

13. When the arches had been taken out and the relieving arches were being turned did Colonel Faber make any remark to you about the position?
Answer. When Colonel Faber saw the spandril walls and arches he said,—why they should have been turned the reverse way and asked me why they were done so—I told him that as the walls were already built in it was thought well to use them.
14. After you had turned your W. B., arches did you from economical or other motives decrease considerably your working gangs in the end of August?
Answer. No, I did not, I employed all the people I could command.

15. Did Colonel Faber strongly remonstrate with you in person as to the necessity of taking every advantage of the exceedingly favorable weather in August and September, and if so, why did you not pay any attention to what he said?

Observe that the Contractor avoids all reply to first part of querry and that the answer to the concluding part is neither full nor satisfactory.

Answer. I paid every attention to what he said. There was only one occasion on which I was in the least dilatory in carrying out his orders, and that was when I expressed my fears concerning the bulging of the side walls which I was afraid to fill in rapidly as he wished, because they were so slight.
This statement is correct.

(Signed) R. VIGOR.

Jackatalla, 15th March 1859.

Telegraphic Message from WILLIAM FRASER, Esq., District Engineer; to Colonel C. E. FABER, Chief Engineer, dated 25th March 1859.

I never gave any order about Waterloo Bridge, I don't know whether Francis ordered concentric rings. I have sent to ascertain and will report, twenty-fifth.

Telegraphic Message from WILLIAM FRASER, Esq., District Engineer; to Colonel C. E. FABFR, Chief Engineer, dated 26th March 1859.

Captain Francis gave no order to build the arches in rings, but he knew they were to be so built and did not disapprove, Saturday.

Letter from Captain J. CAMPBELL, Special Executive Engineer; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Southern Circle, dated 18th March 1859, No. 363.

SIR,

With reference to the special orders of Government and registered Telegraph No. 22 of yesterday's date, I have the honor to place in your hands, for submission to Government, my reply to and explanation of the charges preferred in Colonel Faber's letter No. 7281 of 24th January 1859, which letter did not reach me till 6 P. M. on the 8th Instant, thus the 10 days to which I am limited are not yet up.

2. The document comprising my reply herewith forwarded, are as follows:

1st. Forwarding Memorandum.

2nd. Chief Engineer's letter in half margin with replies thereto seriatim.

3rd. Appendix from A to O.

4th. Contractor's Statement.

Memorandum relative to the disaster to Waterloo Bridge at Jackatalla, on the 26th November 1858, forwarded with copy of Colonel Faber's letter, No. 7281 of 24th January 1859, in half margin, being a part of my reply thereto.

1. I most deeply regret that the Government in Extract Minutes of Consultation No. 407 of 18th February 1859, should have seen fit to pass such grave reflections upon my apparent conduct in this matter, but as it is pleased to say, that I shall not be condemned unheard, I proceed to submit explanations, which I have every confidence will abundantly exonerate me in its eyes.

2. For more explicit information on the charges contained in Colonel Faber's letter, I take leave to refer to my notes marginally appended to the different paras. of that communication, and will here offer such general remarks as will, I hope, be found to lay the whole question fairly and fully before the Government and enable them to determine whether in any particular I have failed in my duty as Engineer at Jackatalla.

3. It is charged against me that I have shewn professional inability in connection with the work, that I discarded the valuable opinions offered by so experienced an Officer as Colonel Faber; that I have shewn or allowed culpable laxness in its execution (for which an unworthy motive is assigned by Colonel Faber, but which I trust it is sufficient for me utterly to repudiate) and that I have permitted the use of bad materials.

4. The history of the Bridge is this. The design was entirely Captain Francis', a Contract for its execution was given to Mr. Vigor on the 1st March 1858, and it conditioned that the work was to be completed by the 31st August following. When I saw the specification in the rough, I offered sundry suggestions to Captain Francis, one only of which was adopted. Captain Francis, who was District Engineer and my immediate superior, regularly inspected the work* and directed the Contractor until he finally left Jackatalla about the middle of June or later previous to which he had inspected the Bridge with his successor Mr. Fraser.

* See para. 7 of Captain Campbell's letter of 26th July to Military Secretary to the Governor stating "the District Engineer cannot possibly ever see the work under construction." ! !

Colonel Faber's Note.—Para. 4 will perhaps be considered not free from that very spirit towards the District Engineer, Captain Francis, which I perhaps mistakenly believed to have noticed.

5. The Contractor assures me, that at this time Captain Francis recognized the weakness of the centre he had designed, and approved of Mr. Vigor's proposition to turn the arches in brick rings in order to take the pressure off the centre as much as possible.

6. On the 13th June the centre arch centering had fallen down, this being the second time.

7. By the 21st July the first or eastern arch had alone been completed, leaving thus only one month and 10 days to finish the whole Bridge according to the Contract. Up to this time nearly, the work had been under the exclusive direction and control of Captain Francis, who had been sent up especially to supervise the building of the Barracks, and I submit that no charge of short coming can be against me for what occurred at a period when I had no active control.

The Waterloo Bridge being the only Contract work, compare this statement with allegations contained in para. 7 of 26th July in printed P. W. Consultation of 17th August 1858.

8. On the 14th July Colonel Faber visited the Barracks, and on the 28th Idem he wrote me condemning Bridge building in brick rings. On this latter day the middle arch was uncentered found too low for reasons stated in my letter of 13th September (Appendix C.) It was taken down and in conformity with Colonel Faber's advice, the building in rings was discontinued. From the 28th July a period of the year by which the turning of arches had become a matter of considerable risk, Colonel Faber took active direction of the Bridge upon himself, giving orders to Mr. Vigor without my intervention, and casually communicating his views to me.

Not one order ever given by Colonel Faber see Captain Campbells former letter of 30th December 1858 altogether silent on so important a point.

9. On one occasion only did I fail to carry out views that were thus expressed, and it was simply because it could not have been done without taking down work *already* completed and incurring much extra expense. Colonel Faber suggested transverse spandril arches, but the walls had been already built to carry longitudinal ones.

Para. 2 of Captain Campbell's first letter says "on the 18th October, spandril arches were turned." Expense would have been greatly less and Captain Campbell's walls need not have been disturbed even.

10. In the presence of an authority of such professional experience and with a work too, the design of a Superior Officer I could hardly venture to make alterations on my own exclusive authority, but on the 10th September, seeing the season so far advanced and apprehending danger, I addressed Colonel Faber (vide Appendix E.) stating my opinion of the imperfectness of the structure, in reference to the wing-walls and want of spandril walls. Colonel Faber in his reply (Appendix H.) partially overruled my views, but favored the adoption of certain measures, and advised certain precautions which were inserted in the Overseer's Order Book, and immediately carried out, for copy of Order see Appendix L.

Yet the most important suggestion of transverse tie walls was not attended to.

11. On the 13th September I reported this to the Central Office (see Appendix C.) to which letter I beg to draw particular attention, for I therein expressly pointed out, that I deferred to Colonel Faber's superior judgment, but that my own opinion of the weakness of the walls remained unchanged, while I continued to regard the remedies applied as insufficient. I cannot gather from the Minutes of Consultation that this letter has ever been before Government.

Why then omit the chief remedy cross walls.

12. On the 19th October Colonel Faber wrote me (Appendix F.) "you have gone very "thoroughly (but too expensively) to work at the Waterloo Bridge which seems now saved."

13. I hope that this simple recital of facts will satisfy the Government that when acting of myself, I have not shewn professional inability in dealing with the construction of this Bridge,

which failed from original imperfection of design, aggravated by the bad weather of the late season of the year in which it was sought to complete it.

14. In respect of laxness in its construction, I have shewn that so short a time remained after the work may be said to have come into my immediate charge, that it could not be completed within the contract time, while my notes elsewhere shew the difficulties the Contractor had to experience in getting workmen, and that I did give him all the aid in my power. Large as my resources were, Mr. Vigor was stronger on his own small work than I was, but he had under-rated his difficulties till they rose before him. Large as my resources were they were severely tried, I had to roof in twenty-one thousand feet of Barracks just before the rains, and it was done.

On the contrary time after 17th June was not insufficient 30 men can turn a 40 feet arch in only 9 days!

A tolerable testimony as to the weather for building operations.

15. On the question of the quality of the materials, I may confine myself to a reference to Colonel Faber's letter of 25th August already quoted, (Appendix D.) to Mr. Fraser's letter* (Appendix M.) by which it appears he never uttered the condemnation ascribed to him, and Colonel Lawford after critical examination on the 14th Instant* pronounced both materials, and workmanship good.

* That is as good as Jackatalla Bricks, which are bad.

16. I trust that upon all the points made charges against me, I have even in this brief statement said sufficient to induce the Government to relieve me from the grave imputations on my professional character and conduct, which the Minutes of Consultation of the 18th February convey. Should however the Government not feel quite satisfied with the present explanation, I most respectfully request that they will authorize a special investigation into all the circumstances and facts of the case.

Jackatalla Range.

Central Office of Public Works, Fort Saint George, No. 7281, 24th January 1859.

From the Chief Engineer, to the Secretary to Government, Public Works Department.

SIR,

On the 30th of December 1858, or five weeks after the fall of the arches of the Waterloo Bridge, on the Ootacamund Road to Jackatalla, the Special Executive Engineer completed an official narrative detailing that unfortunate occurrence, but no reason is assigned for the completion of so important a duty having occupied more weeks than it would seem to have needed days.

2. The Superintending Engineer, Southern Circle, my stated adviser had proposed to again refer the subject to Captain Campbell, calling on that Officer for a more definite expression and elucidation of his views as to the share of future expenses he recommends Government to charge itself with; but the unexpected and apparently unnecessary delay that has already occurred, together with a degree of obscurity which I think falls far short of actual unintelligibility, have induced me to prefer an immediate submission of the Waterloo Bridge papers to Government, pending the receipt of Captain Campbell's reply.

Captain Campbell's reply.

I officially reported the accident on the 27th November 1858, vide Appendix A. and my strong impression is that I was told by Colonel Faber himself to keep back the detailed explanation so as to meet his arrival at Madras.

Colonel Faber's Note.—On the contrary I distinctly told both Mr. Vigor that I fully expected to find the subject finally disposed of before I resumed the duties of my own office, and I was greatly disappointed on learning on 31st December that no report had been received except the first, which was of no value whatever.

3. In fact the season had become favorable for resumed operations before the details of the disaster were despatched, and so precarious does the weather become on the Neilgherry Hills after the month of March,* that I must solicit such priority of consideration for the subject now placed before Government, as may admit of the earliest practicable issue of the orders of the Governor in Council.

4. I have ventured to append a few marginal notes as a commodious means of attracting attention to points which, it might be tedious to insert in the staple of my own communication, and I now proceed to offer such observations as not only belong to my office; but may the more be expected from me that I happened to reside for some months in the near neighbourhood of the Bridge that has fallen.

5. Briefly, the history of the Waterloo Bridge is that designed by Captain Francis, then District Engineer for a work of three semi-circular arches each of 40' span springing from a horizontal line between 17' and 18' above the deepest bed of the petty stream from piers 7' respectively of about 16 and 14' high. The plan bears date the 1st March 1858, and the Contract and specification binding Mr. Vigor to complete the undertaking by the 31st of August 1858, under a penalty of (10) Rupees ten a day fine, and general forfeiture (not very clearly expressed) of Rupees (500) five hundred were also duly signed and executed at the same time, at a total cost of Rs. (19,000) nineteen thousand, thus leaving a margin of Rupees 716-15-0 on the sanctioned estimate.

6. Instead of being finished on the 31st of August, the Waterloo Bridge was only drawing to a final close four months afterwards, and the Public were to have been admitted across the completed Bridge on the 1st December, if four days previously and in the morning of the 26th November between 8 and 9 o'clock the three arches beginning with that last built to the west had not fallen to the ground in succession, and I may here mention that I made a most careful personal examination of the ruins the same day.

7. The total cost of re-building and completing the Waterloo Bridge is estimated by Captain Campbell at the higher rates he speaks of, and in excess of those which governed the Contract only a few months earlier, to cost Rupees 13,625, and the Contractor values the work that has fallen at Rupees 6,225.

8. Mr. Vigor prays to be permitted to bear only half the loss represented by the above amount, and Captain Campbell by aggregating together in a manner as irregular as objectionable other sanctions with that of the Waterloo Bridge, Rupees 19,716-15-0 and by taking as a further credit in this total, the sum of Rupees 3,112-8-0, being the Contractor's moiety, shews that as these credits thus consolidated, there remains a deficit of Rupees 3,389-7-0, which he states to be "requiring sanction."

* Their remark is perfectly true and yet this was the season selected for Bridge Building by Captan Francis and it was pushed on to the very heart of an extraordinarily severe monsoon by Colonel Faber.

Colonel Faber's Note.—There was no stage of safety with the arches all under prosecution after my own arrival, and the idea of stopping work was never even thought of by any one, so far as I know.

These marginal notes being omitted in the copy of the letter forwarded to me for reply, I can of course enter upon no defence against them.

The Contract is for the whole sum Rupees 19,716. See Appendix O.

9. It is this aggregation of independent works and the mixing them up with the perfectly separate project of the Jackatalla Bridge, and the insertion of Rupees 3,112-8-0 in very significant silence as Mr. Vigor's assumed consribution, which Lieutenant-Colonel Lawford had objected to, and wished the Special Executive Engineer to be called on to explain more fully, and to disentangle from a series of figured amounts having no obvious connexion with the matter in hand, before addressing Government from the Central Office.

10. If thus disembarrassed from all other heads of account, the apparently correct statement of the pecuniary position of the work would obviously be from sanctioned Estimate of Bridge.....Rupees 19,716 15 0
Deduct as per Estimate of
work still required..... „ 13,627 0 0
And a balance of only Rupees 6,089 15 0
is left to represent the work already executed by Mr. Vigor, thus leaving him saddled with a deficit of the whole additional Estimate, or if even sharing the cost equally with Government with half that amount or Rupees 3,112-8-0, so that (supposing always the Contractor does not pay more than a moiety,) the differential between these two amounts, namely, Rupees 3,705 would appear to exhibit the advantage to Mr. Vigor and the loss to Government by Captain Campbell's consolidation of the Reservoir with the Bridge.

11. But reserving this feature of the case for the explanations already called for, I must now offer the expression of my own opinion on Captain Campbell's narrative and on the whole subject.

12. It is not a little remarkable that Captain Campbell is entirely silent on the three salient points, of 1st, the whole control of the Contractor's operations resting solely with the Executive Engineer, or Captain Campbell himself; of 2ndly, the Arch work being built in concentric separate rings of one Brick in thickness (as might be safely done if in cement) instead of turning the Arch whilst in progress of its full thickness; and of 3rdly, the Contractor's time of completion, the 31st of August last, having been so greatly exceeded without the assignment of any cause whatever. Yet taken separately and collectively these several considerations, I judge to be of more importance than any of the topics on which the Special Executive Engineer of Jackatalla has dilated.

13. Alike painful and invidious is the office of placing personal blame on individuals instead of ascribing disaster to causes beyond Executive control, as is often the case in a Country liable to frequent paroxysmal violence of weather and irregular storms of almost irresistible strength and fury. But in respect to a work proceeding, like the Waterloo Bridge, under my own observation, I not only can, but it is my duty, to assure the Government, of its failure having without any doubt whatever proceeded from the slow, lax and apparently unchecked proceedings of the Contractor during the favorable and almost unprecedented

There was no intention whatever to mystify. Government had originally sanctioned 40,000 Rupees for a Bridge and Bund. Subsequently a Bridge and Reservoir were sanctioned out of the same funds by the Chief Engineer No. 5489 of 10th December 1857. I designed to shew vide letter B. in Appendix, that Bridge and Reservoir and the new works required Rupees 46,501-15-0 being Rupees 6,501-15-0 in addition to the former grant, and as Mr. Vigor was to pay Rupees 3,112-8-0, of this the sanction of Government became requisite for the balance of Rupees 3,389-7-0. The item of Rupees 13,625 was thus made up.

My new Estimate shews:

Value of old work at old rates lost 6,225

New works.

	Rs.	
Stone coping...	1,050	
8 Guard Stones...	32	
A 3rd new Center...	1,500	
Centering small arches... ...	132	
Coal Tar.....	277	
Asphalte...	725	
Earth work...	117	—3,633
On additional rates constructing spandril arches and counterforts...		2,441
Re-building part of old work fallen on higher rates		1,326
Total of Estimate Rs...		13,625

1st. The Contractor's operation were entirely regulated by Captain Francis, from 1st March up to at least the 17th June 1858, and from the end of July, Colonel Faber, gave his orders, (almost always direct) to the Contractor.

Colonel Faber's Note.—Had Colonel Faber given any orders why did Captain Campbell apply for his advice?

2nd. Building in rings was a point on which I was not consulted, it was not necessary for Captain Francis to do so, and he arranged that with Mr. Vigor.

3rd. By the 13th June prior to Captain Francis' departure, the arch centerings had fallen twice, and it was not till the 21st July, subsequent to Colonel Faber's arrival at Coonoor, that the first arch was uncentered, these accidents taken in connection with the fact that Natives could not be induced to work at the centres, partly owing to their great height and partly owing to an absurd superstition that eleven lives must be sacrificed to the Bridge to appease the neighbouring Sawmy, owing to which the Contractor had to depend solely on the small available amount of European labor, will I think satisfactorily account for the delay. Mr. Vigor's own statement is that the failure of the centre arch and the second falling of his centering threw him back most seriously, (I beg to refer to Mr. Vigor's explanations sent herewith, No. 4.)

drought of July, August, and much of September last, I can say without hesitation that under the virgorous superintendence, and if required the profuse assistance of the controlling authority at Jackatalla, it was easily practicable even after my first visit to the Bridge in the middle of July, to fully complete the work and throw it open to Public use within the time fixed by the agreement. I deliberately go so for as to state that it is still much more unaccountable to me that such was not the case, considering all at stake, than that the time being exceeded and extended into a monsoon of unusual severity, the final result has been failure when success seemed at hand.

14. I next have to observe upon the novelty in Madras Bridge building in the Department Public Works, of completing each arch in separate brick rings of one brick without any bond or joint with the succeeding concentric layers. On observing the central arch thus built with only a single brick, I at once predicted that with varying degrees of induration of mortar and of shrinkage according to less and greater dryness, separation of the rings was unavoidable; but to my surprise, as much indeed as caused by the practice itself, the Executive Engineer took no action whatever on my condemnation of the Contractor's process.

15. I must here state that I am unable to attach official blame in this and all subsequent cases of Captain Campbell's plenary non recognition of my position as Chief Engineer; for divested of all functions of office by Medical Certificate, I possessed no authority whatever to enforce my recommendation. Naturally unreserved on professional subjects, I most freely tendered my opinion and advice on one occasion, indeed in great and practical detail, visiting him for the purpose on the 7th October at his own house after concerting measures with the Contractor, but the result was uniform in the Executive Engineer, either ignoring altogether or acting quite contrary to my own professional views.

16. Meanwhile the centre arch was no sooner struck than the rings having no cohesion with each other separated as so confidently foretold from each other, and the entire arch had

Colonel Faber's Note.—I fear that much of this is after thought, at least I neither saw nor heard of any such difficulty, on the contrary, the progress made for the first short period of my stay was not at all unsatisfactory. It was not until nearly the end of August that I had reason to change my opinions, and so vexed was I that I did not once visit the work in the month of September ht all. Powerless to accelerate operations, I withdrew from a source of such disappointment and irritation. Mr. Vigor in consequence came frequently to Coonoor, chiefly with reference to his wish to Contract for a Block of the Jackatalla Married Quarters. It was during some of these, far from welcome, visits, that I freely told him a week to ten days was long enough for a *semicircular* arch of 40 feet to remain on its centre. It is both natural and usual for persons like Mr. Vigor to use such *opinions* for their own purposes; but I suppose Captain Campbell to be about the very last man in the world to submit to interference and I certainly am not the first to attempt such an irregularity.

I have already explained above in para. 12 that the system of building in rings was authorized by Captain Francis, and considered a good expedient for lightening the load on a centre acknowledged after it was put up (so says the Contractor) to be too weak for building on. Every 8th joint was bonded.

So far from this I pressed on Mr. Vigor the propriety of turning this arch (which had to be taken down for reasons assigned in my letter (Appendix C.) of 13th September in the ordinary departmental fashion of completing the whole thickness from haunch at the same time. This was accordingly done in deference to Colonel Faber's advice and opinion.

Colonel Faber's Note.—Or rather, regard being had to the length of time during which no change was made, though alteration ultimately was made, because my previous predictions were fulfilled by the rings separating 6 and 15 inches from each other. See para. 2 of 259 of 30th December 1858, and the deference was not due to Colonel Faber's earlier advice, but to subsequent failure.

I beg to refer to my notes on paras. 22 and 23.

Colonel Faber's Note.—I knew not, until now produced, that I had recommended the wing-walls being tied together by two cross ties so early as the 10th September, up to which time and long afterwards, I had never, seen the Plan at all !! It is thus now *undeniable* that my advice was given long *before* any measures for the alternative longitudinal treatment had been adopted by Captain Campbell.

It was rebuilt on Colonel Faber's own plan in consequence of his professional objection to the rings approved by Captain Francis and Mr. Vigor.

to be taken down and rebuilt to the unavoidable loss of some time, yet a week might have been sufficient to repair this error, and without causing delay in any other part of the Bridge.

17. My impression at the time was, and nothing has yet transpired to alter it, that no sooner had the arches been turned, than in view to economy, a great decrease took place in the strength of the gangs. The scene of activity presented early in August was changed to one of comparative desertion towards the end of that month, and my strongest personal remonstrances to Mr. Vigor to take advantage of the exceedingly favorable weather, so dry indeed, that Burghers were leaving their villages for want of water, and my written representations to Captain Campbell to the same effect were alike either unheeded, or unproductive of reform. From that time I clearly foresaw the ruinous results to be anticipated from such unaccountable indifference, and I made no secret of my apprehensions.

18. Had the controlling Executive duly appreciated the importance of the occasion and the specialty of bridge building at all times he would at once have reinforced the Contractor's gangs (of course at Mr. Vigor's expense) by withdrawal from the buildings exposed to no risk at Jackatalla, but I had reason to conclude that the circumstance of Captain Francis having planned the Waterloo Bridge and not himself, produced a very feeble interest in its successful or early completion.

19. To ascertain the correctness of my belief as to Bricklayer's services being dispensed with, when the arches were turned, I particularly begged Captain Campbell to obtain the Contractor's daily muster rolls of attendance books, before they could be tampered with and to forward Extracts to the Central Office, as evidence of Mr. Vigor's activity or otherwise, but the information has not been sent.

20. With respect to that portion of para. 2 of the Executive Engineer's narrative which details the danger to the Northern side wall above the spandril, and to the abutment walls being also forced outward by the internal pressure of wet earth which differed little, if at all, save in hue from black cotton soil, it is to be admitted that as stated in Captain Campbell's objection No. iv para. 3, it would especially with simicircular arches have been better to have designed the Bridge with a spandril arch to favor the unity of structure and its general cohesion. as well as relieve the side walls of the pressure of such portion of the falling in (the insistent weight of the remainder obviously being vertical on the pier itself) as is represented by a triangle whose height is half the breadth of the roadway, and whose base is the height of the spandril wall. It is quite true that the thickness of this latter 2' 3" is, if composed of good and well set brick masonry, far more than is necessary to sustain such triangle; but time

Colonel Faber wrote me on 25th August that he was highly pleased with every thing (vide his note Appendix D.) and I find no written communication testifying any dissatisfaction until on the 10th November (Appendix G.) he wrote me of " slow Progress.") But on the 19th October (vide his note Appendix F.) just three weeks before he used only words of commendation.

Colonel Faber's Note.—It has already been stated that at first and for some time I was hopeful of success and pleased with Mr. Vigor, and nothing now urged goes to invalidate the test of my despatch.

I did this and gave the Contractor 181 Coolies in September, 20 Bricklayers, 59400 Bricks and 725 Coolies in October, and 142 coolies, 3180 Bricks and 336 Parahs of Lime in November, in addition to a previous supply of 3,000 Parahs of Lime in the raw stone of the very best quality at commencement.

Colonel Faber's Note.—But it was insufficient nevertheless.

Colonel Faber did so I believe on the 3rd December, but Mr. Vigor kept no Acquittance Rolls, he paid weekly by Tickets, and thus no such books as called for could have been forwarded.

Colonel Faber's Note.—Means might nevertheless have been found, to obtain *some* information; but that suggestion like my other more important ones, was ignored.

Not the danger but the actual failure on the 5th October.

On the 10th September I wrote to Colonel Faber (Appendix E) pointing out the danger to the wing-walls, as similar to that which had caused the destruction of the wing-walls of the large single arched Bridge in the Jackatalla, valley. In the same letter, I pressed on his attention the want of spandril walls to resist the earth pressure, and finally, while pointing out the down right temerity of the design, I was, I stated, loathe to alter the plan of a Superintending Engineer, while still less desirous of witnessing failure. I end by giving a section of the walls and with the words " can they stand by any possibility." I further added that I was on the eve of writing the Central Office to report the alterations I proposed to make (and did make) on my own responsibility, but soliciting his opinion as to Captain Francis' section. His reply of same date, (Appendix H,) barely admits the danger, says he would not

would have been saved by a spandril arch and the haunches of the main arches would have been screened from the weather, but whilst agreeing with Captain Campbell, I only regret the more deeply that whilst so clearly seeing this defect, he himself had not authorized the Contractor to turn transverse simicircular arches over the spandril, whilst the work was in progress.

hesitate to work off the job if the filling in were well tamped, luted, and drained, but consents to a trifling addition of masonry to be built without any foundation, as it is he adds probably too late for that arrangement.

The proposal for spandril walls he pays no attention to whatever till after the side walls had failed, and I am then blamed for not having done what he declined to sanction by his opinion when asked.

I then wrote to Central Office (vide Appendix C.) detailing what I had done, but clearly stating that I refrained from further precautionary measures, because Colonel Faber did not admit their necessity.

21. On the 7th October Mr. Vigor pointed out the state of his abutment and side walls to me, and seeing that his masonry was green, that his mortar had throughout never appeared to me deserving its name, and that heavy rains were occasionally falling, I shewed him that to counteract the expensive tendency he was afraid of, two strong cross walls, tying the North and South abutment walls together, would be much more effective than inward buttresses already built by the Executive Engineer to counteract an inward pressure, and similarly that his spandril-walls could also be secured by one cross-wall carried from the piers upwards, by which not only would expansion be prevented, but the filling in of the spandril would be separated with two masses, thus relieving his green brick work from half the pressure, as shewn in subjoined diagram, in which the dotted lines mark the proposed tie-walls to counteract the pressure from within, transverse connexion being the great object in view.

Vide Colonel Faber's letter of 25th August, (Appendix D.)

Colonel Faber's Note.—Perhaps it would be impossible to more clearly shew than the foregoing remarks do, how utterly unconnected Colonel Faber really was with a work he is elsewhere said to have active charge of. The plan had never been seen at all, nor this work itself for 14 days before or 38 after the note was written (I was a Prisoner to the house, and often to the Couch from 28th August to 7th October) and the very least Captain Campbell could do (*he seeing* what I neither did nor could was to have built the cross-walls which I only supposed) mistakenly he could not give a foundation to, whilst it really seems little less than childish to maintain I paid no attention to his proposal about spandril walls; for obviously what was recommended for the wing-walls was yet more applicable to spandril-ties which, of course, would rest on the solid piers themselves.

22. Mr. Vigor as a practical man readily admitted the value of the simple and cheap devise I have described, and after rightly calculating the extra cost on the spot at 6 or 700 Rupees, I immediately rode to Captain Campbell's quarters and explaining with the greatest care my proposal, and pointing out that the evil to be guarded against was only to be met by transverse cross walls binding the front and rear together, and strongly recommending him to authorize the immediate execution of the works as involving the safety of the whole structure, I left in the belief that the completion of the Bridge had now been effectually provided for.

23. I did not repeat my visit until the 16th of October and then only learnt that instead of operating transversely Captain Campbell had sought to strengthen the works by a series of longitudinal spandril and abutment semicircular arches, contributing indeed to the general cohesion of the mass, and blocking up the hollow of the spandril almost entirely, but by no means in an equal degree with the simple transverse tie-walls, and at a cost of between 2 and 3,000 Rupees instead of 700, and of what was far more valuable of additional time worth more

It is quite true Colonel Faber did on the 7th October fully set out his views as here stated, it is equally true that I did not follow the course prescribed, nor could I have done so, without putting Government to very considerable expense, for the simple reason that the spandril-walls for the spandril arches had been completed on the 21st September or 16 days previous to that on which Colonel Faber at last recommended their construction, and taking advantage of comparatively fine weather the spandril arches were all turned on the 14th of October.

Colonel Faber's Note.—It is clear that I was misled as to dates of *spandril* arches by taking para. 2 of Captain Campbell's narrative of 30th December, no doubt it then was too late for allbut the *wing-walls*; but the principle had been shewn on 10th September *before* any spandril arches were begun.

I do not now as I did not then discuss the comparative professional value attacheable to longitudinat or transverse spandrilwalls and arches, I may however perhaps here without impropriety state that I followed the English mode. For the proof of this I refer to Bree's

there than the larger sum. Accordingly it was the lack and a half of bricks instead of perhaps 40,000 which Mr. Vigor afterwards assured me had thrown his works into the monsoon month of November. If my own plan had been followed, the Bridge ought to have been opened with ease by the 31st of October, and this single circumstance will serve to shew how far the 2nd and 3rd arches were likely to be managed according to my own views as stated in the Contractor's second letter, to meet as I suppose, Captain Campbell's after thought of retaining semicircular arches on their centres from August to January, the former month being as hot and dry as in the plains.

Railway Practice, 2nd series Bridge over Clyde at Milton, Geo. Buchanan Engineer and Aide Memorie Vol. III, fol. 86.

Colonel Faber's Note.—This shews exactly what I always supposed, viz., that Captain Campbell preferred his own sources of information, to the opinions I gave him. Had the object been only to fill up the spandril hollows with light masonry instead of heavy earth, he might safely have conformed to the precepts of the authorities he quotes. Unfortunately (as in the position of his buttresses) he fails to perceive that the object was to strengthen the too weak side walls, and to prevent their bulging outwards, from internal pressure, by connecting them together by transverse tie-walls.

60,000 Bricks were all that Mr. Vigor required, and they were supplied (see para. 18 above) in October. He only took 3,000 from me to complete in November.

Colonel Faber's Note.—But how long had he to wait for them?

The 2nd and 3rd arches were built according to Colonel Faber's expressed desire and the ring system was abandoned, in support of this I may here quote his letter to me of 6th September, (Appendix J.) in which he writes "I have told Vigor that he may uncenter No. 3 to-day, but that was before the heavy rain of yesterday," and I beg also to refer to Mr. Vigor's report to me of the 10th December (Appendix K.)

Reviewing these what I have written the following are my own conclusions.

1st. The Plan and centre were adequate nd safe, and the rates and time sufficient, but transverse spandril arches would have been preferable to filling in with earth.

2ndly. There seems to be no reason assigned or assignable for non-completion within the fixed period, 31st of August.

3rdly. The controlling Executive Engineer wholly failed in exacting a proper degree of expedition at the most favorable season for Bridge operations, and holding strong opinions of defective provisions and precautions such as

The best proof of the insufficiency of the Plan and centre is that the walls failed under pressure of earth behind them, though every precaution was used in filling, tamping, and luting with stiff clay, while in place of the defective centre which fell twice, the Contractor constructed another of his own at considerable extra expense.

4 Months and 21 days were consumed on the 1st arch which was uncentered on 21st July, the failure of centre arch and 2 sets of centerings caused delay and great loss to Contractor.

I recommended Asphalte and objected to the defective footing of the Eastern pier, but my immediate superior, Captain Francis, declined the former and built upon the latter as it was, then how could I possibly authorize them.

Asphalte to the extrados and better footingg iven to the foundation, and weakness of centre, he neglected to authorize the same whilst subsequently by the construction of inner abutment and wing-wall buttresses and of longitudinal arches he ordered much more costly additions on his own responsibility.

4thly. That the mortar was abominable and altogether unfit for the triple dose of the sand agreed upon and which Captain Campbell should have discovered and amended, I am credibly informed that after inspecting the ruins, the District Engineer, Mr. Fraser, expressed an equally unfavorable opinion of the bricks, which he represented to be soluble in the stream where they had fallen.

Finally it remains to offer an opinion as to the amount of reconstruction to be borne by the Contractor, and this I am constrained to recommend shall not exceed one half. My reasons are, that I am confident if Mr. Vigor had been employed under Mr. Fraser or other professional Officer of skill and experience, the work would have been finished by the 31st of August and at a latter period it would have been completed by the 31st October, if the Executive Engineer had not compromised its safety and virtually caused the disaster by imposing on the Contractor a system of arches for the construction of which there was neither time nor material at hand. But the most important reason of all is that the Executive Engineer having submitted the Contract for the private opinion of a Civil Judge of acknowledged ability (Mr. Holloway from Calicut) has been assured that the Contractor would come off scot free in any Court of Law in the Madras Presidency. There is much in the honesty, sturdy, manliness and shrewd sense of Mr. Vigor to enlist ones sympathies in his behalf, and I shall be glad if under all the circumstances set forth, the Government shall feel at liberty to accept his terms.

(Signed) J. CAMPBELL, Captain.

I have, &c.
(Signed) C. E. FABER, Col.,
Chief Engineer.

(A true Copy.)
(Signed) CHARLES A. ORR, Captain,
Superintending Engineer in charge S. C.

Forwarded to the Special Executive Engineer at Jackatalla with reference to Extract Minutes Consultation No. 407, dated 18th February 1859, and the Chief Engineer's Proceedings thereon No. 8100, dated 23rd Feby. 1859.

Colonel Faber's Note.—Why could he not have applied Asphalte to the extrados? if he wished, there was no Captain Francis.

These were measure of emergency in a degree recommended by Colonel Faber himself on 7th October and of which he on the 19th October spoke as follows "you have gone very thoroughly "(but too expensively) to work at the W. B. "which seems now saved."

For the quality of materials again I appeal to Colonel Faber's written Statement to me, (Appendix D.) of 25th August, in which he says "in "re Mr. Vigor I like his Bridge work, his ma- "terials and himself, and I cannot doubt that "your acceptance of his offer as adumbrated in present M. S. highly advantageous to Government." If the mortar had been of this quality, surely Colonel Faber in his constant inspection would have noticed it or at least not have expressed approval of materials. Mr. Faber never inspected the ruins of this Bridge till 6 weeks after this letter was written and never expressed the opinions attributed to him (vide his lettter attached Appendix M.)

By Colonel Fabers own shewing para. 23 ante the system of arches had been completed between 7th and 16th October. The arches were really completed on 12th and measured by Overseer Menzies. Out of the 7 days 4 rained and could work have been done quicker with safety?

It is submitted that almost up to the time of the failure of the work the tone of commendation was unbroken; but from that period the censure is as strong as the following para. from Colonel Faber's letter of the 26th "November conveys. (See appendix N.) Had Vigor "wished the arch to fall he could not have done "more than he has or better suited to the purpose."

No. 100. Read the following letter from Colonel C. E. FABER, Chief Engineer; to J. D. BOURDILLON, Esq., Secretary to Government, dated 5th April 1859, No. 9335.

SIR,

2 Original letters with 17 do. Enclos.

It is with much concern that I am again compelled to trouble the Government with some papers and explanations about the Waterloo Bridge, its contract, its re-construction, and the transferance of Mr. Vigor's Securities.

2. The documents I am obliged to forward seem to me not only of a perplexing, but in some respects of a self contradictory character, and I cannot say that I think any of them are either satisfactory in themselves or creditable to the Writers.

3. I have first to solicit attention to the despatch of the 29th Ultimo, from the Superintending Engineer on special duty at Jackatalla, covering two enclosures, one from the Executive Engineer, and one from the Contractor, and I find it very difficult to deal with this letter from an Engineer Officer in Lieutenant Colonel Lawford's position.

4. The decision of Government conveyed in Extract Minutes of Consultation No. 674, of the 22nd Ultimo, ought to have found its most vigorous and effective supporter in the Superintending Engineer on the spot, who I had deemed bound to enforce his very clear instructions but by an inexplicable fatality the very order by Telegraph forbidding interference with operations in progress will be seem to have had the effect of stopping Mr. Vigors' work of re construction altogether, and by the conclusion of his letter, it will be observed that Lieutenant Colonel Lawford demurs to the resolution of Government being carried into effect, so that the Superintending Engineer's presence, instead of proving a means of facilitating matters, is rather a source of embarrasment especially in making himself the channel of communicating much voluminous and often irrelevant other matters.

5. Mr. Vigor's reasons for recusancy seem to me of little if any value, regard being had to antecedent full discussion and disposed of the topics now re-urged. The only novelty is the alleged "instructions and promises" of Colonel Faber. The former were confined to directions how to recover and store the bricks in the bed of the stream, as I was riding past the work for the last time en route to Ootacamund; and as to the latter, I was not in a position to give any promises whatever, and the more so that I fully alike believed and hoped an accident which took in November would have been placed before Government before I rejoined the Central Office.

6. I now arrive at a second series of papers elicited by Extract Minutes of Consultation No. 593 of 15th Ultimo, on the subject of Mr. Vigor's Securities being non-availabe for the Waterloo Bridge Contract, because transferred to a later and much larger agreement between Captain Campbell and Mr. Vigor.

7. The first paper on this branch of the subject is a somwhat remarkable letter of the 22nd Ultimo, from Lieutenant Colonel Lawford, to the Special Executive Engineer at Jackatalla containing four questions for reply, and the latter of which strikes me alike objectionable in its suggestiveness and imputativeness, albert it fails to elicit any very *direct* response.

8. But I must here acknowledge that I now and to my shame be it spoken for the first time, seem to obtain some clue towards explaining, the previously inexplicable difference between the Contractors early activity (which won my first good opinion and which remained in full force to the end of August) and that lax and dilatory progress which, subsequently characterized the Contractors proceedings, and which eventually sealed the fate of the Bridge. It seems now to be something more than conjective that the mot d' enigme of the diminished working parties at the Bridge is to be found in the new Contract at Jackatalla and in the advance Mr. Vigor received from Captain Campbell, of which I was wholly ignorant until the paper now received enlightened me. It argues however, no small lack of penetration on my own part, that I failed to detect this connexion between cause and effect even at the time; but my confinement to the house and illness, together with the disappointment caused by the slow progress of the bridge had tended to nearly extinguish the active personal interest I naturally took in the earlier part of my residence.

9. I entirely concur with all that Lieutenant-Colonel Lawford states in the second para. of his letter of the 22nd Ultimo, and it raises my wonder that Captain Campbell should have

actually authorized Mr. Vigor to commence (and apparently to carry on with considerable vigor) new operations when he could not but be aware that even if the Bridge were not languishing for want of stronger gangs, it was obviously his duty to allow no action to be taken on the new agreement until the old one, by being worked out, had set Mr. Vigor free. I do not say that this applies to Carpenter's work in doors and windows, for that class of Artificers was under a fixed agreement to work for Mr. Vigor and was no longer wanted at the Bridge, but I do maintain that the common labourers for the excavation of the foundations, and perhaps also (for I am not certain) the Bricklayers for the masonry of the block of Jackatalla Married Quarters, were greatly required at the Waterloo Bridge.

10. Captain Campbell's reply to the Superintending Engineer's letter above stated is numbered 310, and dated the 28th March and is sufficiently brief and cetegorical, except that when called on to state the position of the Bridge on the 20th September, he observes that I had consented to the last arch being uncentered on the 6th Idem. The dilemma was to shew the Bridge was far enough advanced to make the completion of the second Contract prudent and unobjectionable on the 20th September, and yet so backward as to allow of all October and November being required for the work without culpability or responsibility to himself as the controlling Officer.

11. From Campbell's answer to query 4, he would seem to wish his readers to infer that though he made no official report to Colonel Faber (with whom he had no official relations of any kind) of Mr. Vigor's Securities having been transferred, yet that my personal cognizance was by no means wanting. This again affords an excellent test of the amount of intercommunication between the Executive Engineer and myself, and of my interest in impending arrangements, that the whole of the legal measures and of the execution of the Contract for the Marri- ed Quarters, were carried on so completely without my knowledge that Lieutenant-Colonel Lawford's Telegram after he reached the Hills was the very first information of the transfer of Securities that I ever received.

12. As to the Contract being "a simple concession to Colonel Faber's very strongly urged [illegible] as one unfounded on fact. It now seems, what I [illegible] with His Lordship the Governor in April 1858, Mr. [illegible] My own intervention and very strongly [illegible] towards the end of August that I [illegible] for Rupees 50,000, what was Esti- [illegible] Fact of Mr. Vigor's circumstances I knew [illegible] at all details and Securities would be [illegible] Campbell himself, for it will be readily [illegible] of such a nature would be the last

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[illegible] part of the Special Executive Engi- [illegible] Faber, that if even the alle- [illegible] Captain Campbell is per- [illegible] that an Officer cannot divest [illegible] less by endeavouring to

[illegible] of between the 20th [illegible] work were performed, a

[illegible] be brief, the Appen- [illegible] dated the 28th March [illegible] have de- [illegible] Office, and [illegible] Campbell [illegible] of and [illegible] I trust the [illegible] par-

16. After all, so well as I can understand the case, Mr. Vigor's Securities never have been rendered unavailable, the transfers of the 20th of September 1858, in the Ootacamund Civil Court being personal and general, rather than specially referring to the Block of Married Quarters, and Lieutenant Darling expressly states that the Registry was to enable Captain Campbell to make advances of cash on account of any Public Works, but that no particular work was specified.

17. In conclusion, I have to call attention to the cash transactions which have unauthorizedly taken place between Captain Campbell and Mr. Vigor, and to avoid the delay of making copies, I again beg leave to forward all these documents in original, viz.:

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty; to Colonel C. E. FABER, Chief Engineer, dated Jackatalla, 29th March 1859, No.

SIR,

With reference to Extract Minutes Consultation No. 674, dated 22nd March 1859, I have the honor to forward the accompanying papers conveying the refusal of Mr. Vigor to complete the original Contract of the Waterloo Bridge and his reasons for the same.

2. With regard to para. 5, I beg to observe that in resuming work on the Bridge, Mr. Vigor certainly was not acting on his first Contract, but as he states on the presumed acceptance of the terms proposed in the Chief Engineer's letter to Government* of which he was well aware.

* 24th January 1859.

3. When I found the work in progress I told the Contractor I would apply for instructions, which I did by Telegraph, and the reply that "I should in no wise interfere," I communicated to Captain Campbell, who having misunderstood both my previous conversation and my transmission of the Telegram, conveyed an order to Mr. Vigor to stop the work.

How? To that "non-interference" arrests all operations in progress.

4. I do not think this is a matter of any real importance, as Mr. Vigor would not have been able, however willing, to carry the Bridge to completion on his own resources, and as already explained, his Securities were considered no longer available.

5. I am decidedly of opinion that it is necessary to complete the Bridge without the intervention of any Contractor, because I believe that while labour is so scarce at Jackatalla as to cripple the works under the Executive Engineer, any such intervention of a private speculation can only add to the difficulty.

6. Without taking on myself to offer an opinion on the probable success of an action against Mr. Vigor on the part of Government, supposing his Securities still to stand good, I must candidly confess my hope that such a measure will not be adopted.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty, dated Jackatalla, 29th March 1859, No. 312.

SIR,

I have the honor to forward copy of a letter just received from Mr. Contractor Vigor, in which for reasons assigned, he distinctly declines to carry out the original Contract for Waterloo Bridge.

Letter from Mr. VIGOR, Contractor; to Captain J. A. CAMPBELL, Special Executive Engineer, Jackatalla, dated 29th March 1859.

SIR,

According to promise I beg to submit my reasons for declining to carry out the original Contract for the Waterloo Bridge.

1st. In my Contract I am not responsible for the stability of any portion of the Bridge, except the foundations and centering.

2. The side-walls were insufficient for the pressure of earth that was to come against them under any circumstances, the height of filling being 15 feet, and the thickness of the walls 2' 3"*

* (At top and 4' 3" at bottom) 15th April.

3. I warned Colonel Faber of the danger the arches were in, in consequence of the weakness of the walls.†

† And (disregard his advice to build cross-walls.)

4. The extra work ordered by the Executive Officer will prove the insufficiency of the side-walls.

admitted.

5. I was re-constructing the Bridge at my own risk, depending on the justice of the Government, and the instructions and promises I had received from Colonel Faber, when I was stopped by an official order from the Executive Officer.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer; to Colonel C. E. FABER, Chief Engineer, dated Jackatalla, 29th March 1859.

SIR,

Referring to Extract Minutes Consultation No. 593 dated 15th March 1859, I have the honor to forward the enclosed papers received from Captain Campbell on the subject of the transfer of Mr. Vigor's Securities from the Waterloo Bridge, to the Married Quarters at Jackatalla.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty, dated 28th March 1859.

SIR,

In reply to your letter of 24th Instant, I have the honor to submit the following replies.

I. Mr. Vigor's Contract for the Married Quarters was executed on the 20th of September 1858.

II. The actual state of Waterloo Bridge was such, that on the 6th September Colonel Faber wrote to apprize me that he had given Mr. Vigor permission to uncenter the last or Western arch that day.

III. The transfer of Mr. Vigor's Security took place on this wise. My Assistant, Captain Dobbie, forwarded to me under date 13th September, the valuation of the property tendered by Contractor, amounting on measurement to Rupees 12,487-11-8, Lieutenant Darling on the 23rd of September 1858, effected the transfer from Captain Francis to my name in open Court of the Subordinate Judge at Ootacamund. Appendix A is the old Security given to Captain Francis, founded on no valuation. B is the new Security on valuation assigned to me. The registry was made on my letters, (vide Appendex C. & D.) Nos. 158 & 171 of 16th and 22nd September 1858, and Lieutenant Darling distinctly states, (Appendex E.) that the registry was for advances in general and not for any specific work. This is the case, though the Security was immediately intended to cover advances on Married Quarters.

IV. I did not make any Official Report to Colonel Faber, of the transfer of the original Security papers. The Contract was a simple concession to Colonel Faber's very strongly urged opinions and advice, he was perfectly aware that Contractor's whole means were embarked in Waterloo Bridge.

2. You demand explanation as to how Mr. Vigor with confessedly inadequate means, could proceed with a 2nd Contract, when unequal to the fulfilment of the first. In reply I have the honor to submit, that the 2nd Contract was never allowed to interfere with the first, the chief reason for making it before completion of the Bridge was simply that Mr. Vigor might not lose the

services of 18 Carpenters, bound to serve him for 2 years, these men who had no longer any work on the Bridge, became on execution of this Contract immediately available for making up Doors and Windows for a Range of Married Quarters, which were accordingly prepared from the Bridge centerings.

A.

Know all men by these Presents, that I, Reuben Vigor, Architect and Builder at Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree and bind myself fully in the sum of Company's Rupees (10,000) ten thousand, to Captain Peregrine Madgwick Francis, Civil Engineer, Seventh Division, or in case of his removal to his successor, whoever he may be, for the due and lawful fulfilment of my Contract made and executed between me and the said Captain Peregrine Madgwick Francis, Civil Engineer of the Seventh Division, and I do hereby voluntarily make over my Plan and Title Deeds of my Property situated at Ootacamund, and one Purchase Receipt, together with my House and all Buildings attached thereto, together with the Bond of Security executed by Mister Edward Atkins, for Company's Rupees 5,000, five thousand.

As Witness my hand and seal at Ootacamund, this thirtieth day of December, in the year of our Lord one thousand, eight hundred and fifty-seven.

Witnesses.

(Signed) GEORGE EDDINGTON,
(Signed) EDWARD ATKINS.

(Signed) R. VIGOR.

This is to Certify that the above Deed of Mortgage was registered before me in open Court this *17th day of September* 1858, at 2¼ o'clock, P. M. and that the copy thereof is entered as No. 3 of 1858, in page 6 of the Registry Book of Deeds of Mortgage of the Subordinate Court of Ootacamund.

Given under my hand and the seal of the Court, this 17th day of September, A. D. 1858.

(Signed) E. W. BIRD,
Sub Judge.

" Seal."

A.

Know all Men by these Presents, that I, Edward Atkins of Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree, and bind myself, on behalf of Mister Reuben Vigor, Architect and Builder of the said place and station, to be Security for him, the said Reuben Vigor, and on his behalf, to Captain Peregrine Madgwick Francis, Civil Engineer of the Seventh Division, in the sum of Company's Rupees (5,000,) five thousand, and I do hereby voluntarily make over and assign as Security for the said Reuben Vigor, to the said Captain Peregrine Madgwick Francis, the Title Deeds and two Plans of my Property, known by the designation and name of "Hamilton Cottage." The Title Deeds, three in number, bearing the numbers fifteen, twenty-six, and sixty respectively, until such period as the terms of the aforesaid Contract, namely, between the aforesaid Reuben Vigor on the one hand, and Captain Peregrine Madgwick Francis, Civil Engineer, Seventh Division on the other, be fully completed and approved of.

As Witness my hand and seal at Ootacamund, this thirtieth day of December, in the year of our Lord one thousand, eight hundred and fifty-seven.

Witnesses.

(Signed) GEORGE EDDINGTON,
(„) J. O. KNOP.

(Signed) EDWARD ATKINS.

" Seal."

This is to Certify that the above Deed of Mortgage was registered before me in open Court this 17th day of September 1858, at 2¼ o'clock, P. M., and that the copy thereof is entered as No. 4 of 1858 in page 7, of the Registry Book of Deeds of Mortgage of the Subordinate Court of Ootacamund.

Given under my hand and the seal of the Court, this 17th day of September, A. D. 1858.

"Seal."

(Signed) E. W. BIRD,
Sub-Judge.

B.

Know all Men by these Presents, that I, Edward Atkins of Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree and bind myself, on behalf of Mister Reuben Vigor, Architect and Builder, of the said place and station, to be Security for him, the said Reuben Vigor, and on his behalf, to Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, or in case of his removal to his successor, whoever he may be, in the sum of Company's Rupees (2,500,) Two thousand, five hundred, and I do hereby voluntarily make over and assign as Security for the said Reuben Vigor, to the said Captain John Alexander Campbell, the Title Deeds and two Plans of my Property, known by the designation and name of "Hamilton Cottage." The Title Deeds, three in number, bearing the numbers, fifteen, twenty-six, and sixty respectively, until such period as the terms of the aforesaid Contract, namely, between the aforesaid Reuben Vigor on the one hand, and Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, on the other, be fully completed and approved of.

As Witness my hand and seal at Ootacamund, this twentieth day of September, in the year of our Lord one thousand eight hundred and fifty-eight.

Witnesses.
(Signed) THOMAS DARLING, Lieutenant,
(„) E. A. P. ANTONIO.

(Signed) E. ATKINS.

This is to Certify that the within Deed of Mortgage was registered before me in open Court, this 23rd day of September 1858, at 1¾ o'clock, P. M., and that the copy thereof is entered as No. 6 of 1858, in page 9, of the Registry Book of Deeds of Mortgage of the Subordinate Court of Ootacamund.

Given under my hand and seal of the Court, this 23rd day of September, A. D. 1858.

"Seal"

(Signed) E. W. BIRD,
Sub-Judge.

Know all Men by these Presents, that I, Reuben Vigor, Architect and Builder at Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree and bind myself fully in the sum of Company's Rupees (7,500) seven thousand, five hundred, to Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, or in case of his removal to his successor, whoever he may be, for the due and lawful fulfilment of my Contract, made and executed between me and the said Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, and I do hereby voluntarily make over my Plan and Title Deeds of my Property, situated at Ootacamund, and one Purchase Receipt, together with my House and all Buildings attached thereto, together with the Bond of Security, executed by Mister Edward Atkins, for Company's Rupees 2,500 two thousand, five hundred.

As Witness my hand and seal at Ootacamund, this twentieth day of September, in the year of our Lord, one thousand eight hundred and fifty-eight.

Witnesses.
(Signed) THOS. DARLING, Lieutenant,
(„) E. A. P. ANTONIO.

(Signed) R. VIGOR.

This is to Certify that the within Deed of Mortgage was registered before me in open Court, this 23rd day of September 1858, at 1¾ o'clock, P. M., and that the copy thereof is entered as

No. 5 of 1858, in page 8 of the Registry Book of Deeds of Mortgage of the Subordinate Court of Ootacamund.

Given under my hand and seal of the Court, this 23rd day of September, A. D. 1858.

(Signed) E. W. BIRD,
Sub-Judge.

"Seal."

C.

Letter from Captain J. CAMPBELL, Special Executive Engineer; to E. W. BIRD, Esq., Subordinate Judge of Ootacamund, dated Jackatalla, 16th September 1858, No. 158.

SIR,

I have the honor to request you will be so good as register the Mortgage Bond of Mr. Vigor's and Mr. Atkin's Property at Ootacamund, as per accompanying two valuation papers drawn up by the Executive Engineer, Neilgherry Range, in original (to be returned please) in your Court, under Act 19 of 1843, quoted in your letter No. 73 of 1st September 1858, as Security for advances.

D.

Letter from Captain J. CAMPBELL, Special Executive Engineer; to E. W. BIRD, Esq., Subordinate Judge, Ootacamund, dated Jackatalla, 22nd September 1858, No. 171.

SIR,

I have the honor to request you will be so good as have registered in your Court in my name and favor, the two Bonds accompanying. Those you registered on the 17th were made out in favor of Captain Francis, and were erroneously brought before you for registry through a mistaken view of my instructions.

E.

Letter from Lieut. THOMAS DARLING; to Captain J. CAMPBELL, Special Executive Engineer, Jackatalla, dated 28th March 1859.

SIR,

With reference to your question, I have to state that as directed by yourself in September last, I presented Mr. R. Vigor's Security Bonds for registry in the Subordinate Court, Ootacamund, for the purpose I understood, of enabling you to make advances of Cash to Mr. Vigor on account of any Public Works which he might Contract for, but I do not recollect that any particular work was specified.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty, dated 24th March 1859, No. 306.

SIR,

In reply to Chief Engineer's Extract Proceedings No. 8655 and para. 3 of its enclosure, Extract Minutes Consultation No. 593 of 16th and 15th Instant, I have the honor to state that Mr. Contractor Vigor's Securities were transferred from Waterloo Bridge to a Range of Married Quarters at Jackatalla under the following circumstances.

2. On the 23rd April 1858, Mr. Vigor sent in a tender to Captain Francis, District Engineer of Coimbatore, for a block of Married Quarters, which he offered to construct for Rupees 50,000 (or 24 per cent. below the Estimated cost, the acceptance of this offer in particular to which the Bridge Securities were transferred with a proviso and of Contracts in general was very

strongly urged by Captain Francis and by Colonel Faber, by whose direction I was told that if I objected to carry on the works on these conditions (that his Contract given by my Superiors) "that there would be no difficulty in finding another Officer to do the duty" see copy of letter No. 238 of 12th May 1858 attached, marked A.

3. In August 1858, Mr. Vigor reverted to his offer to build a Married Quarter Range for 50,000. This offer Colonel Faber strongly recommended for my acceptance adding (Vide Appendix B.) "It seems to me a bad bargain for him and conversely an admirable one for you, as he is solely in your power," and the Chief Engineer further urged me to advance ¼ of the aggregate or Rupees 12,500 before commencing the work.

4. Now after the lengthened correspondence with District and Central Officers in both of which my views (with reference to Contracts at Jackatalla, vide Appendix C and D) had been overruled, I did not like to act in opposition to Colonel Faber's advice, the more so that at this very time that Officer had expressed great satisfaction with Mr. Vigor's Contract work on the Bridge which was then so far advanced, that apparently the Securities might be safely transferred to the Married Quarters, and on which in no other way could the prescribed advance which I took on myself to reduce to 5,000 be possibly made. Mr. Vigor having no other available Security.

5. Thus the transfer was made and the Contract given, but on the express understanding that the completion of the Waterloo Bridge should be in no way interfered with, and though the anticipated result has not been realized, I venture to put the question, would any Officer under the circumstances have acted otherwise than I did? and this fact furnishes another proof of the systematic attention which I paid to Colonel Faber's views, while diametrically opposed to my own.

6. This statement would not be complete if I omitted to add that on the 3rd December 1858, Mr. Vigor (Appendix E) petitioned for a release from the Married Quarter's Contract on the ground that he could not work on the rates contracted for; well knowing the truth of this, I consented as far as I was concerned to allow him (10,000) ten thousand Rupees more, provided always the Bridge was re-built to my satisfaction, but I would not consent to destroy the Contract for (50,000) fifty thousand Rupees till the Bridge was completed, for which completion it was the strongest collateral Security I could have, inasmuch as the Contractor by completing the Bridge stood to lose 4,000 less, than if as a penalty for failing in his engagement, compelled to work out his Married Quarters Contract for 50,000.

7. In the end of February Mr. Vigor begged to be let off building the Married Quarters on any terms, he said he could make nothing on it, owing to his want of capital, at 60,000 Rupees, he then asked me to measure up his work, and settle his account which I readily did, and made him an advance of Rupees 3,548 on the transferred Securities, to carry on the Bridge work which he did up to the 15th Instant.

8. I have the honor to forward this explanation with Documents, A, B, C, D and E, for the information of and submission to Government.

A.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Southern Circle; to the District Engineer of Coimbatore, dated 12th May 1858, No. 238.

SIR,

I am directed to acknowledge the receipt of Captain Francis's letter No. 133, dated 6th May 1858, with its enclosures, with reference to which the Chief Engineer is fully of opinion that the views held by Captain Campbell on the subject of Contracts for portions of the work, under his Executive charge, are untenable, while those of Captain Francis and Mr. Fraser are just and binding on the Officers of this Department.

2. This decision is not only founded on general principles, but is in strict accordance with the practice at the Presidency, where alone the Contract system has ever been at all prevalent, for under the late Military Board, the Superintending or Executive Engineer performed exactly the same functions in regard to Contract works, as those recommended by Mr. Fraser.

3. The Chief Engineer is quite disposed to accede to your proposition that Mr. Vigor should undertake the construction by Contract, of at least one block of the Married Quarters, at 24 per cent. below the Estimate, and if Captain Campbell still objects to carry on the works, under these conditions, there will be no difficulty in finding another Officer to undertake the duty.

4. You will be pleased to report more fully on the quality of the sand used by Captain Campbell noticed in para. 7 of Captain Francis's letter.

B.

Blackheath, Coonoor, Wednesday, 25th August 1858.

MY DEAR CAMPBELL,

* * *

Meanwhile here is Mr. Vigor with a specification rather than a tender for 50,000 Rupees, for a block which by my Memo. is sanctioned for some 66,000 odd. It seems to me a bad bargain for *him* and conversely an admirable one for you, as he is solely in your power. * * *

Believe me ever your's,
(Signed) EDWARD FABER.

C.

Letter from Captain J. CAMPBELL, Executive Engineer, Jackatalla; to the District Engineer of Coimbatore, dated 17th April 1858, No. 385.

SIR,

I have the honor to acknowledge receipt of your letter No. 95 of 6th Instant, in which you propose arranging with me before you leave what works you think should be given on Contract; meeting my wishes as far as your views will allow you, also stating it as your opinion that the following works

			Rs.
1.	Tower, Estimated at		32,000
2.	Mill		40,030
3.	Bakery		14,230
4.	Gun Shed		740
5.	Prison Cells	say	32,000
6.	Bath		4,700
7.	One Married Block		66,333
			1,90,033

may with advantage to general progress be assigned to Mr. Vigor, a discharged Soldier from H. M's. Regiment, whose whole Security apparently is his dwelling house at Ootacamund; or other Contractors, had he however or any other Contractor been in a position to furnish much more tangible Security, I would not on any account at this date pledge myself to give a Contract to one person for more than one work at a time, and I must now distinctly record my strongest protest against any Contracts whatever being granted for any work framed on my Estimates and under my executive charge, except such Contract be given by myself and on my own terms, for if Contracts are given without my consent, then in justice I should be absolved from all responsibility, either for the quantity or quality of the work done, as well as for the execution of the work within the estimated cost, I do not by any means assume that it is your wish to take works (placed by Government under my charge) out of my hands and assign them to Contractors without my consent, but to prevent all misunderstanding, I now record my opinion and most distinctly decline pledging myself to any Contracts whatever. Should your views however, after perusing my grounds of objection still lead you to differ from me, should you still wish to dispose of any of my works by Contract, a point which I consider a strictly executive one, falling entirely within my own province, and narrowly effecting my own administrative arrangements, present, and future, and therefore a point on which I should so far from being interfered with, be left perfectly free and unfettered, then in that case I have the honor to request you

will submit your proposal together with this my letter of remonstrance to the Chief Engineer for his consideration and opinion.

2. As a general principle, I am averse to give to a Contractor a job which I can perform better myself, especially when it is the Contractor's avowed object to make as much as he can at the expense of Government, for all he gains Government must pay, except perhaps in the one item of time, and that gain even is very uncertain. I cannot perhaps better illustrate some of my particular objections than by the case of Waterloo Bridge, by this Contract (yielded at your request) where I had myself to furnish (155) one hundred and fifty-five Tons of Lime Stone, I calculate I have sustained a direct loss on my Estimates of at least (3,000) three thousand Rupees, for the centering alone (which stand in your Estimate at Rupees 4,961) would have been worth the former sum to my works when the Bridge was finished, the above sum is a direct loss to Government, and the same rule may be applied in a different ratio to the item of 623 for scaffolding, much of which would have cost me little more than the carriage and fixing.

* * *

I could easily adduce other ill effects likely to arise from the Contract system, but I trust I have said more than sufficient to shew you that if carried out it would cut the very ground from under my feet, the Contractor would become a real Executive, while I should be a mere middleman between him and the District Engineer.

3. There are, I allow, some works which it might be desirable for specific reasons to assign on Contracts, hence it was that I gave Contracts* for the Commissariat Godowns, for two Bridges on Coonoor Road† and for the Commissariat Staff Serjeant's Quarters‡, and there are still other works before me which, as far as I can judge at present, might be given on Contract, but I repeat the assignment in its date and terms must entirely be in my own hands, or my works may be most seriously interfered with, and this I have now made it my duty fully to point out to you.

* Rupees	.....	17,040,
† "	.....	2,730,
‡ "	.....	4,680,
Rupees	.....	24,450

4. It only remains for me to notice the last para. of your letter under acknowledgment, in which on certain conditions, you have provided for taking off Mr. Vigor's hands certain materials on valuation, now I beg to state that such a course might not necessarily suit me, unless I had works going on so situated as to bring the carriage of the said materials within a reasonable distance, I do not in this case anticipate difficulty on this score, I merely advert to the difficulty in which I might on other occasions be placed, by like arrangements on the part of the District Engineer.

D.

Letter from Captain J. CAMPBELL, Executive Engineer, Jackatalla; to the District Engineer of Coimbatore, dated 24th April 1858. No. 396.

SIR,

It was I confess, with some surprise that I received your proposal No. and date as per margin, to give the Reservoir and filter on Contract to Mr. Vigor, while the points mooted on my letter No. 385 of 17th Instant, were still unsettled, however I will draw up the draft, specification and Contract called for, merely repeating my conviction that unless I give the Contract in my own terms (terms which the above Contractor may not accept) Government must lose about 20 per cent. in direct money value, though they may stand to gain 1 per cent. in time.

* * * *

2. So fully aware am I of the certain results of the Contract system generally (in this uncivilized country where all European experience and theory are at fault) that though I shall thereby be saved much trouble and perhaps gain some temporary credit for increased show of

work, I dare not lend my own sanction to your proposal, while if my objections are overruled by the highest authority, I have at any rate done my duty in stating them fully, and on these statements I shall take my stand, should I be unable to clear these works within the Estimated cost, a result I do honestly contemplate as not all unlikely if my arrangements are interfered with.

3. I have the honor to request you will be so good as to submit this letter as well as my letter No. 385, for the consideration of the Chief Engineer when, as you propose, you lay the Contract question before him for his decision. I cannot conceive why you wish to force Contracts on any Officer in whose judgement you have confidence, after such strong reasons have been assigned for differing from you, knowing as well as I do, that we have the same object at heart, the interest of Government.

E.

Letter from Mr. R. VIGOR, Contractor; to Captain J. A. CAMPBELL, Special Executive Engineer, Jackatalla, dated 3rd December 1858.

SIR,

I, Reuben Vigor, Contractor, humbly beg the Government to release me from my Contract of No. 4 Married Quarters (Jackatalla Barracks). My reasons for this request are as follows. I find by sad experience in the Waterloo Bridge and work already done for the Married Quarters, that I cannot work for the ratio I formerly anticipated, in consequence of the high prices of materials and labour, and the many losses in the brick-fields from wet weather, and Sub Contractors failing in their Contracts The above being the case, and fearing that I shall disappointment the expectations of those who have kindly recommended me for this work, and involve myself in pecuniary difficulties, I humbly solicit the Government to release me from the Contract, for which favour I hope ever to feel grateful.

SIR,—I hope you will be pleased to forward this petition to Government, if you are not prepared to do so, please to let me know and I will forward one direct.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle; to Captain J. A. CAMPBELL, Special Executive Engineer, dated Ootacamund, 24th March 1859.

SIR,

With reference to your letter of this date No. 306, I have the honor to request you will be good enough to state distinctly the following points, viz.:

1st. The date on which Mr. Vigor's Contract for the Married Men's Quarters was accepted and confirmed by you?

2nd. The actual state of the Waterloo Bridge work at the above date.

3rd. The means by which the transfer of his Security for the first Contract to the second was effected?

4th. Whether Colonel Faber was aware of the transfer of the Security?

It appears that the second Contract was made about three months before the fall of the Bridge, and it should be explained how Mr. Vigor could proceed with the Married Men's Quarters, when his means were confessedly inadequate to the efficient fulfilment of his first Contract. When the progress of the Bridge was found to be so slow as to endanger its safety, it would surely have been your duty to compel the Contractor to give his entire attention and all his available strength to its completion, rather than endeavour to carry on simultaneously a second work, demanding no such exertion.

I shall be glad to be favored with your early reply to this enquiry.

No. 100A. Minute by the Honorable the President, dated 8th April 1859.

It is evident from these papers, from those contained in the other bundle circulated herewith, and from Captain Campbell's repeated confessions of inability to complete within a reason-

able period, the important works entrusted to him, unless a large amount of forced labour were placed at his disposal by the neighbouring Collectors, that he has mistaken his profession, and that it would not be for the public advantage that he should continue to be connected with the Department of Public Works. I therefore propose that his services should be re-placed at the disposal of the Commander-in-Chief, and that the Chief Engineer should advise the Government as to the selection of a qualified Officer to be entrusted with the completion of the Barracks.

2. With the more full knowledge which we now possess, I see no advantage in proceeding against Mr. Vigor. If any account remains to be settled with him, that should be done, and we should have nothing more to do with him as a Contractor.

3. Might not assistance for the completion of the Barracks be obtained from the Sappers and Miners or from the European Soldiers working for extra pay? We constructed Barracks for an entire European Regiment in the Jamaica Nilgiris (Blue Mountains) at a very moderate cost, through the agency of the Troops themselves.

C. E. TREVELYAN.

No. 101.

ORDER THEREON, No. 864; dated 12th April 1859.

Para. 1. The Government have given their attentive consideration to the correspondence placed before them in the letters of the Chief Engineer recorded above; as well as the papers already to be found on their records regarding the progress of the Jackatalla Barracks, and the circumstances connected with the failure of the Waterloo Bridge at that Station.

2. The Government are decidedly of opinion that Captain Campbell was the Executive Officer in charge of the Waterloo Bridge, and that his attempt to throw the blame on Colonel Faber fails entirely. His business was to inspect progress, to object to departures from plan, or bad material, and to keep the Contractor to time; but in all these particulars he appears to have altogether failed.

3. It is however evident from the papers before Government and from Captain Campbell's repeated confessions of inability to complete within a reasonable period the important works entrusted to him unless a large amount of forced labor were placed at his disposal by the neighbouring Collectors, that it would not be for the public advantage that he should continue to be connected with the Department of Public Works. The Government have therefore resolved to replace his services at the disposal of His Excellency the Commander-in-Chief.

4. The Chief Engineer will be requested to consider and report whether assistance for the completion of the Barracks may not be obtained from the Sappers and Miners, or from Soldiers of the Regiment at Jackatalla working for extra pay.

5. As regards the Contractor Mr. Vigor, the Government, with the further information now before them are not disposed to proceed against him for a breach of his Contract. They direct that his account be at once adjusted and that he be then released from further responsibility in connection with the Bridge Contract.

6. Pending a more permanent arrangement, Lieutenant-Colonel Lawford will take over charge of the works at Jackatalla from Captain Campbell, and carry them on till further orders. He will be careful to receive charge in due form and after fully satisfying himself *on all* necessary points.

(Signed) J. D. BOURDILLON,
Secretary to Government.

Central Office of C.E.
Fort St. George
26th March 1859.

No 1039.

From

The Chief Engineer

To

The Secretary to Government,
Public Works Department,

Sir,

Public Communication Bridge.

Encls 2 Regl letter with 1 Encl containing duplicate and papers.

I have the honor to solicit the invitation to the Special Executive Engineer at Jackatalla Camp contained in Paras 8 & 9 of Govt. Mins. Cons. 107 of the 18th Ultimo, to submit a Counter-statement to the Chief Engineer's Report of the 26th January 1281, having now been furnished with, & have the honor to solicit the indulgence of Government towards any forwarding to the Committee a reply as originally it reached me.

2 I further hope I shall stand excused for having taken the liberty of making autograph notes on a good many of the papers Captain Campbell has forwarded with the terms of his defence, written Counter

Calamo

Calamo, as I perused each of their numerous
auxiliaries to his Cause."

3. And I addressed the mine[illegible]
nual & regular Course, a very undesirable
delay would have ensued; and with so much
matter of an unexpected & purely recriminatory
character to rejoin to, I think the Continuance
of the measure I have adopted may perhaps
be allowed to excuse the irregularity.

4. One paper only, has it
seemed necessary to have answered with a
half margin, namely a series of leading
questions to the Contractor by the special Exe-
cutive Engineer with his digested replies, in
order that any new rejoinders seriatim may be
forwarded packed up with the original.

5. I acutely feel how false
a position I have been compelled to occupy
by the relegation to a subordinate of a judicial
opinion from the Head of the Department.

But

to avoid the possible imputation of
Condemnation on what may in one sense
be regarded as an ex parte statement, I
do not see what other Course the Government
could have pursued.

6. I therefore feel bound,
to accede to the necessary sequence of my
own Candour the heavy Counter charges Captn
Camphell has now brought forward, at
this late period, & solely to secure
the protection of Government, by the exercise
of its accustomed discrimination, & I appeal
with confidence to its denunciation of
making public now of private notes between
parties who had no official relation towards
each other.

7. The gravamen of Captn Camp-
bells elaborate & astute defence is that
up to the 17th June, the Waterloo Bridge
was solely under the management & superintendence
of

of the District Engineer, & that as a subordinate Officer he neither could, nor would it have been becoming for him to have a voice in the matter).

8 But if this be so, a point on which I cannot speak, what became of all the strong allegations contained, and also struck at by Consultation of 17th August 1858, wherein Para: 7 of his letter to the Right Honorable Lord Harris dated 26th July last, her drawn a picture of this Contract work, the solitary one of his Range, the very reverse of what is Recorded, and Capt.n Campbell's present Memorandum (for the former he represents himself as Executive doing every thing, but in the latter he describes himself, as scarcely a Spectator of the proceedings Ens.n Fagan was Carrying on under Capt.n Francis & Ens.n Fraser.

Capt.n

Capt.n Campbell indignant.

9. ly repudiates my own Conclusion that the Waterloo Bridge was a distasteful one, because not emanating from himself; & the Government will now judge from the tone & tenor of Para: 4 of the present Memorandum, whether even at all there is not ground for such an inference.

10. I was not hitherto aware that Capt.n Francis was sent to Jeerkatalah for any such purpose as the Special Executive Engineer alleges in Para: 7; on the Contrary that Officer gave much time to the Carcoor trace & numerous other duties, & Capt.n Campbell's own Executive position remained quite unaltered, except that Capt.n Morgan was less exclusively under his Control, though even that change only took place, if I do not mistake, after Capt.n Francis's departure had removed Ens.n Fraser from the charge

of

of the Ootacamund Range.

11. Para. 8 states &. for the first time, that "Col. Baker took active direction of the Bridge upon himself, giving orders to Mr. Vigor without any intervention, & casually communicating his views to me". (Capt. Campbell)

12. If the Government should be pleased to accept as unshaken & uncontradicted a denial on my own part as language permits me to carry in terms of profound respect, & if they should be clearly of opinion that the truth of this negation is placed beyond all doubt by the several letters to the Central Office which Capt. Campbell has himself embodied in the Appendices to his Memorandum, as also by the private Correspondence he has preserved to now produce, then I trust the Government will be pleased

to take into serious consideration, how far an Officer who has taken so serious a liberty with truth & has sought to shelter himself by the unfounded imputation of the Head of his Department, is fit to be employed on his present duties.

13. To shew that as little de facto as de jure could I take on me any Controlling or other Waterloo Bridge duties, I have first to report that in consequence of an accident of a peculiarly painful nature & well known to many of the Staff of His Lordship the Governor, I was unable to leave the house at Coonoor from the 28th of August to the 7th October. I observe also that the next prior visit to Waterloo Bridge before the 28 August, was on the 19th idem.

14. Moreover it is to attribute to me an ignorance of one of the first regulations of

of the Service, namely that a Medical Certificate disqualifies for performance of all functions of Office, do suppose for a moment that Lt Jones's character in Health would presume to interfere with an Officer so jealous and proudy of authority & right as the writer of Capt Campbell's letter to the Governor of the 26th July. I cannot hesitate to say that if I had ever given a single direct order to Brt Major on my life, Capt Campbell's Highland blood, & his virtue would have been an open rebellion against my usurpation in five minutes.

To Add, to conclude, that if Col. Fraser or Jones were in active direction of the Bridge, why did the single brick range continue for a month after my arrival? why did three proportions of Land so unnaturally meagre, continue to the very end? & why were all the Arches & walls parallel to the length of the Bridge instead of transverse?

If in any way my voice was listened to, it was in this, that whereas the first arch remained 15 days, the second and third were only 9 & 10 days before being uncentered.

15. Before concluding my present painful duty, it is fitting that I should expressly acknowledge the error in paras 22 & 23 of my report to Government in mixing together the spandril & the wing wall Construction on the 7th October, which I was led into from Capt Campbell's first narrative. It is clear that the former had been built in front of Jacks on the latter part of September, although some time after I had noticed transverse treatment in my letter to Capt Campbell of the 10th Sept. This very ignorance, caused by the weak Government to the House, is a further proof how slight, not to say imaginary, any own active Control had been over the Waterloo Bridge.

I

16. I would desire also to modify the expressions made use of in the 20th para of my report, for I do agree with Captn Campbell that with a breadth of 4.3 at bottom & 2.3 at top of both side & abutments walls, the walls were essential to permanent stability. But an Executive Officer on the spot would not hesitate an instant on supplying defective strength by 20 devices & common an expedients, & if I had been able to go & see the works in September, I cannot doubt but that in spite of the profound discouragement I had met, I should have ventured to press on Captn Campbell the advantage of such a construction

17. But on the 7th October, although the spandrils walls & arches were built in, yet the wing walls & abutments walls were in jeopardy, & there was no reason whatever why Captn Campbell should not have adopted the measures I had just concerted with Brt. Major even to the extent of marking out their position on the eastern approach except that he preferred his own more elaborate & costly, to my readier & cheaper system.

18. With the modifications above I adhere then to each of the 4 Conclusions to which I arrived in para: 24 of my despatch of the 24th January, except that I should wish Bre Fraser's alleged testimony to the solubility of the Bricks, to be cancelled; his opinions whatever they were having been given in a private dwelling house & I was wrong to allude to them.

19. The Government have now I hope full means of arriving at a final opinion, whether the Conclusions to which I arrived have been shaken or confirmed by additional investigation

I have the honor to be
Sir,
Your most obedient Servant
Chas Ed Pasley Col.
Chief Engineer.

Central Office of P.W.
Fort St George
26th March 1839.

P.S.

Col. L.

It might be drawn thus stated,
in reply to Para. 7 of his, 18th February, that
the Contract had been Completed & executed,
by the District Engineer before any report
was made to the Central Office.

Chief, E.O.
E.C.

Cons 25th February 59 No 35-34
17 August 58 - 122-123

Public Works 1859 Dept
Cons 12th April
No 727

From
The Chief Engineer

To
The Secretary to Govt
Punjab

Dated 26 } Branch 1859
Rec'd 28 }
No 9039.

With 2 Encls Returned
24-6-59

Sir

I have the honor to forward with this observations, the Coombs statements in original from the Special Engineer Jackatallah required by Para 5 of Ebr C. No of 6th Feb 59.

No 99.

I have the honor to be
Sir
Your most obedient servant

Chief Engineer

1st April

Sir

I am directed to forward herewith a letter from the Special Engineer on Special duty at Jackatallah covering two Statements one from the Executive Engineer and

end

one from the Contractor, and I find it very difficult to deal with this letter from an Engineer Officer in Lieutenant Colonel Crawford's position. —

4 The decision of Government conveyed in Extract Minutes of Consultation, No 674, of the 22nd Ultimo, ought to have found its most vigorous and effective supporter in the Superintending Engineer on the spot, who I had deemed bound to enforce his very clear instructions but by an inexplicable fatality the very order by telegraph forbidding interference with operations in progress will be seen to have had the effect of stopping Mr Vigor's work of reconstruction altogether, and by the conclusion of his letter, it will be observed that Lieutenant Colonel Crawford demurs to the resolution of Government being carried into effect, so that the Superintending Engineer's presence instead of proving a means of facilitating matters is rather a source of embarrassment especially in making himself the channel of communicating much voluminous and often irrelevant other matters. —

5 Mr Vigor's reasons for resistance seem to me of little if any value, regard being had to antecedent full discussion and disposal of the topics now renewed. The only novelty is the alleged "instructions and promises" of Colonel Faber. The former were confined to directions how to remove and store the bricks in the bed of the stream as I was riding past the work for the last time on my route to Cotacamundi; and as to the latter, I was not in a position to give any promises whatever, and the more so that I fully alike believed and hoped an accident which took place in November would have been placed before Government before I resigned the Central Office.

6 I now arrive at a second series of papers elicited by Extract Minutes of Consultation No 593 of 15th Ultimo on the subject of Mr Vigor's securities being unavailable for the Waterloo Bridge contract, because transferred to a later and much longer agreement between Captain Campbell and Mr Vigor. —

2nd Letter

The first paper in this branch of the subject is a somewhat remarkable letter of the 22nd Ultimo, from Lieutenant Colonel Crawford to the Special Executive Engineer at Jackatallah containing 4 questions for reply, and the latter of which

Encl

which strikes me alike objectionable in its suppressio
to and imputativeness, albeit it fails to elicit any
very direct response —

But I must here acknowledge
in that I now and to my shame be it spoken for the
2 first time, seem to obtain some clue towards explain
the previously inexplicable difference between the
Contractors early activity (which won my first good
opinion and which remained in full force to the
end of August) and that lax and dilatory progr
which subsequently characterized the Contractors
proceedings and which eventually sealed the fate
of the Bridge. It seems now to be something
more than conjecture that the not d'. emigne
of the diminished working parties at the Bridg
is to be found in the new Contract at Sackatallah
and in the advances Mr. Vigor received from Captain
Campbell of which I was wholly ignorant until
the paper now received enlightened me. It argue
him however no small lack of penetration in my own
part that I failed to detect this connexion betwe
cause and effect even at the time, but my
confinement to the house and illness together
with the disappointment caused by the slow
progress

5

progress of the Bridge had tended to nearly
extinguish the active personal interest I naturally
took in the earlier part of my residence —

I entirely concur with all that
Lieutenant Colonel Crawford states in the seven
para. of his letter of the 22nd Ultimo, and
it raises my wonder that Captain Campbell
should have actually authorized Mr Vigor
to commence (and apparently to carry on with
considerable vigor) new operations when he
could not but be aware that even if the
Bridge were not languishing for want of stronger
gangs, it was obviously his duty to allow no
action to be taken on the new agreement until
the old one, by being worked out, had set Mr Vigor
free. I do not say that this applied to
Carpenters work in doors and windows, for
that class of artificers was under a fixed
agreement to work for Mr Vigor and was
no longer wanted at the Bridge, but I do
maintain that the common labourers for
the excavation of the foundations, and
perhaps also (for I am not certain) the
bricklayers

6

bricklayers for the masonry of the block of Jackatallah married Quarters, were greatly required at the Waterloo Bridge —

10 Captain Campbell's reply to the Superintending Engineer's letter above stated is numbered 310 and dated the 28th March and is sufficiently brief and categorical except that when called on to state the position of the Bridge on the 20th September he observes that I had consented to the last arch being uncentered on the 6th Idem. The dilemma was to shew the bridge was far enough advanced to make the completion of the second contract prudent and unobjectionable on the 20th September and yet so backward as to allow of all October and November being required for the work without culpability or responsibility to himself as the controlling Officer —

11 From Captain Campbell's answer to query 6 he would seem to wish his readers to infer that though he

made

made no official report to Colonel Faber with whom he had no official relations of any kind / of the Rights Securities having been transferred, yet that my personal cognizance was by no means wanting. This again affords an excellent test of the amount of intercommunication between the Executive Engineer and myself, and my interest in impending arrangements, that the whole of the legal measures and of the execution of the contract for the married Quarters were carried on to completely without my knowledge that Lieutenant Colonel Lawford's telegram after he reached the Hills was the very first information of the transfer of Securities that I ever received —

12 As to the contract being a simple concession to Colonel Faber's very strongly urged opinions I utterly repudiate

the

the allegations as one unfounded in fact. It now seems, what I did not ever know, that during my absence with His Lordship the Governor in April 1858 Mr. Vigor had already tendered for the work in question. My own interventions very strongly urged opinions were limited to telling Captain Campbell towards the end of August that I thought favorably of Mr. Vigor and that an offer to build for Rupees 50,000, what was estimated at Rupees 66,000 was too good to be neglected. But of Mr. Vigors circumstances I knew nothing whatever and of course took it for granted that all details and securities would be placed on a thoroughly satisfactory footing by Captain Campbell himself for it will be readily believed one must indeed be self evident that considerations of such a nature would be the last for an Officer on such Certificate to enter into

13 I will only add

add on the renewed endeavour on the part of the Special Executive Engineer to shift the burden of responsibility from himself to Mr. Faber that if ever the allegations were true as emphatically pronounced them to be otherwise, Captain Campbell is perhaps the last man in the Service whom it can be necessary to inform that an Officer can not divest himself of the direct responsibility of his own personal acts and still less by endeavouring to place it upon an Officer absent from site on Medical Certificate.

14 In regard to para 2 of Rc 310 I hold it to be fully contradictory of between the 21st of September and the 26th November 1858. after heavier Carpenters work was performed, a question it might be well to ask by telegraph.

15 But if Captain Campbell & Lieut. Col. Lawford be brief the difference of Rs 306 in reference to Dy No Civ. No 393 dated the 24th March are very numerous and I humbly conceive such as Lieut. Colonel Lawford should have declined to receive comments as they do on his own acts and orders in the Central Office and on those of his superior Officers Captain Francis and

Capt

and Mr Fraser. I consider Captain Campbell to be both disrespectful & unparliamentarie in these again regarding matter finally disposed of and which he embodied in his letter to His Excellency the Governor of the 26th July last. I trust the Government will not wholly overlook the unmilitary conduct of Captain Campbell in the particulars

16 After all, so well as I can understand the case, Mr Ogier's Securities never have been rendered unavailable the transfers of the 20th of September 1858 in the Ootacamund Civil Court being personal and general rather than specially referring to the Block of Barracks and Lieut Darling respectfully states that the Registering was to enable Captain Campbell to make advances of cash on account of any P.W. but that no particular work was specified.

17 In conclusion I have to call attention to the cash transactions which have unauthorizedly taken place between Captain Campbell and Mr Ogier, and to avoid the delay of making copies I again beg leave to forward all these documents in original viz-

From Lt Col Lawford dated 29th March 1859 with 2 Encls. viz 1 Letter from Captain Campbell No 312 and 1 Letter from Mr Ogier dated 29th March 1859.-

From Lt Col Lawford with 5 Encls viz

1 Letter from Capts Campbell No 310 dated 28th July 55 forwarding papers marked A. B. C. D. & E.-

1 Letter from Captain Campbell No 306 of 26th March 1859 forwarding papers marked A. B. C. D. & E.-

1 Copy of letter from Lt Col Lawford to Capt Campbell dated 26th March 1859.-

I have the honor to be,
Sir,
Your most obt Servt

Fort St George
5th April 1859

Alex Taylor Colonel
Chief Engineer

To
The Secretary to Government
&c &c &c

Queries

1. Considering the
main line Kaduna
Nguru and the branches
which it is proposed to
construct from it
2. Has Major Adams
to furnish his estimate
for the Kano Sokoto
& Nguru branches that
he may be enabled to
report upon the
same?
3. Is Major Adams aware
of the proposed
alteration of the
Kano Sokoto
Railway to the
Eastward of Kano
Kano & Sokoto to be
reported upon

Copies of Correspondence with Lieut Col Lawford
relative to the Railway Survey of the Kano Sokoto
Nguru & Bornu Branches

P.W. Cons: 22nd March 1859 Nos 133-134-5
— 15th March 1859 — 129-130
— 1st April — 64-62.
from Rt Secretary Gen 26th March 1859. Cons: 727.

Nos 1 & 2 Works 1859 Dept Works
Cons 12 April 1859 = 815.
Copies sent to Mr Chief Engineer
Do Mr Engineer in Charge Kano

Cairo 5th April 1859.
Rec 15

No 9335

Enclosure No 1 Returned 24-6

No 864 = 12th April 59
Submits with his own observations the Proceedings of Lieut Col Lawford Chief Engineer in Africa on the Executive Council of 16th & 22nd March 1859 respecting the Watershed between the Kaduna & Nguru Rivers & the Branch Railways proposed to be constructed.

No 100

6th April

3. The other matter pro-
-ferred in the Evidence of Capt.
Campbell in making the con-
-tract for the Block of Bar-
-racks with Mr Riggs in
Septr last, & transferring his
Securities for the Bridges con-
-tract to that new contract.

4. The entering into this second
Contract with him at all, or
that Terms & in the actual state
of matters at the Bridge, was
perfectly improper; but entering
the transfer of the Securities
was on Ch. Fabens Think
that the undertaking of the
second Contract tended towards
-fully to the catastrophe of the
Bridges, by delaying the works

5- Then again it seems that
after contracting with Mr
Riggs & build the Barracks
for 50000 D. Capt. Campbell
received 10,000 D. & the remain-
-ing finally annulled the contract
entering on Mr D. pleading
that he had made nothing by
it.

Part 7 of Capt.
Ch letter of
March 24.

6. Ch. Faben may have
given his opinion & advice
about both the Bridges &
the Barracks too freely; but
that did not bind Capt.
Campbell, he was a judge for

the Chief Engineer who had
never been upon during part
the time when the work
was in progress, and who wrote
his own personal knowledge
Government blames &
blames Campbell, the
immediate Executive Officer.

Capt

himself in such a matter, & nothing that is not right but is more than a simple expression of opinion as to future proceedings, & in an official way.

April 6.

Rec.d 11 AM after I had taken the papers, in ch I expressed my views on the Bridge question alone, concerning that alone had been consulted for orders

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Memorandum

On the 19th February Government had under consideration a report from the Chief Engineer (enclosing one from the Special Executive Engineer at Jochtatalla on the Neilgherry Hills,) respecting the fall of the Waterloo bridge in building by contract at that place.

Note-See his Report printed in Consultation of Feby 25/54

Adopting the views of the Chief Engineer who has been on the spot during part of the time when the work was in progress, and who wrote of his own personal knowledge the Government blamed Captain Campbell, the Special Executive Officer,

but

bers before finally deciding, they sent Colonel Faber's letter to him for Report; and that report was now coming, with a second letter from the Chief Engineer, and Secretary to the papers for orders.

Colonel Fisher's charges against Captain Campbell were the following.

First. That there was Sellers Jany. 24 & 15
great delay in the works which Captain Campbell ought to have prevented.

Second. That he ought also to have prevented the unusual and unsafe plan followed of building the arches in concentric rings of 1 brick thick. do 8th

Third. That all his (Colonel Fabers') suggestions and remonstrances were disregarded by Captain Campbell. do 9th

Fourth. That in particular that Officer neglected the means suggested by him (Colonel Faber) for securing the side walls of the approaches from the effect of the lateral pressure of the earth filled in, and used other more expensive and less effective means. Paras 21 to 23.

4. To these charges Captain Campbell replies 1st That practically he had not charge of the work except for a very limited time. That the late District Engineer Captain Fanshawe personally directed it till the 17th June, and that from the 28th July Colonel Faber, being on the Hills, gave direct orders to the Contractor and quite took the control out of his (Captain Campbell's) hands. Wams Paras 4 & 8.

2nd

2nd That Captain Francis approved of Mr Vigors plan, of turning the arches in ~~concentric~~ one brick rings, the reason being the weakness of the centring which Captain Francis himself had planned. D° Para 5°

3d Captain Campbell asserts that he failed on only one occasion to carry out Colonel Faber's suggestions, and that because it was then too late. D°. Para 9.

4th Captain Campbell says that Colonel Faber's suggestion was carried out. D°. Para 10.

5. On the first point Col. Faber joins issue with Captain Campbell. He denies that Captain Francis kept charge of the bridge till the 17th June, and he denies that he himself interfered after the 28th July, except in the way of suggestion and remonstrance. On the former part of the denial he appeals to Captain Campbell's ~~Francis~~ letter of July 26th* to the Governor, in which he speaks strongly of his want of authority. Capt C. would no doubt reply that he was describing matters as on the 26th July, and it is quite clear that in speaking of the District Engineer (in Para 7) he referred to Mr Fraser and not to Captain Francis. But on the other hand

* In the packet

hand he expressly says in Para 3 that the whole responsibility of the Barracks had long before devolved on him, from Captain Francis's necessary absence on other duty.

6 As one means of getting at the truth of this matter I have procured from the Chief Engineer's Office Captain Francis's Inspection Reports for the first six months of 1858, and they are put up with the papers. These Reports purport to shew the nature of door work on which the Engineer is engaged every day; but they do not always include every work. The Contract with Mr Vigor was signed on the 1st March 1858. In that month Captain Francis passed seven days at Jacketallah engaged about the Barracks chiefly. In April he was 21 days at Jeeckatillah, engaged on various matters. In May he spent the first seven days there, and on the 8th gave over charge of the District to Mr Fraser, on his appointment to act as Superintending Engineer. From the 23rd to the 30th he was again at Jeeckatillah engaged on the Barracks with Mr Fraser. In June also he spent about ten days at the same place.

It is to be

be remarked that the bridge does not once occur in all these Reports and yet no reason appears why Captain Fremier should have systematically suppressed his visits to that work. I should not infer from this silence that he never saw the bridge; it is natural that he should take an interest in a work of his own projecting, and should visit it and give advice or even instructions about it when in the neighbourhood; but I think the entire absence of all mention of it in these papers is strongly against the idea that he took the active and authoritative part in connection with it which Captain

Captain Campbell asserts that he did.

7. As to Colonel Faber's interference, he and Captain Campbell are directly at issue. But Captain Campbell's own ninth para. seems to contradict what is stated at the close of the 8th. The note* of September 10th to Colonel Faber and the reply⊗ of the latter also seem opposed to it. Colonel Faber also declares that he was confined to his house from August 28th to October 7th & that his last visit before that confinement was August 10th. But see also appendix J & K with Colonel Faber's remarks below and marginal remarks to Para 20 of

Chief Engineer's private letter Paras 12 & 14.

* Appendix C
⊗ App. H

Chief

Chief Engineer's letter of January 24th appended to the Memo. These remarks seem uncon-nected with the assertion of exclusive con-tract by Colonel Faber.

8. In addition to all this, Captain Campbell also says that he did give aid to Mr. Vigor in September and October (see marginal remark to Para 18 of Chief Engineer's letter of January 24th appended to Captain Campbell's memo. This however was long after the time when delay was of most consequence.

9. Captain Campbell's ground for saying that Colonel Faber assumed charge of the work and gave orders, seems to be Colonel Faber's note in appendix J. which see, together with Colonel Faber's explanation at the foot. See also appendix N. and remarks at foot.

10. On the second charge viz. that respecting the mode of building the arches, Captain Campbell says that it was approved by Captain Fraser, and this state-ment is partly corrobora-ted by the telegram No 524 from Mr. Fraser, appended to the papers by Colonel Faber, in which it is stated that Captain Francis knew of Mr. Vigor's plans and did not disapprove. Of course this did not bind Captain Campbell, but it might reasonably make him

king backward to interfere.

11. The third charge has been considered jointly with the first.

12. The fourth charge is that whereas Colonel Faber strongly recommended cross tie-walls to strengthen the retaining walls of the esplanade, Captain Campbell ~~[illegible]~~ ~~[illegible]~~ did not build them.

On this point see appendices C, H, & L. The last is a copy of Captain Campbell's orders to the Overseer.

See also the marginal remarks on Para 22 of the letter of January 24th. Captain Campbell there admits that ~~Captain~~ Col Faber ~~Evans~~ recommended the tie

See Counter-remark 2 Para 15 of the letter of 5 Jany. 24.

tie walls on the 7th October, 1861 he does not send up his letter or note. But appendix K. suggests the same on the 10th September, and it appears that the longitudinal walls were built after that. See counter remarks on Captain Campbell's remarks on Paras 15 of letter of January 24th. See also Para 11 of the Memo and Colonel Faber's note thereon.

13. It is to be noted however, that tho' Colonel Faber now insists so strongly on the tie walls, he did not do so on the 10th September but only suggested them, and expressly said that all depended on the filling in &c.

14. As the general question of divergence of Colonel Faber's suggestions, see remarks to Paras 23 of the letter of January 24th; and Colonel Faber's counter remarks appended thereto.

15. Besides all the Reports there are the replies of the Contractor in Appendix D. for what they are worth.

16. I beg also to call attention to Para 5 of Captain Campbell's report of December 30th. Appendix B.

No reason appears why he should not have corrected all the defects noticed under Heads I. III. IV.

The centering was proposed by Captain Francis, a good officer, and is held by

Capt. Campbell also means by N. 8 of his Memo. that the 2nd & 3rd arches were built in the usual way, and I & Col. Faber advise Brick work.

& counter rem. on N. 14 of Jany 24.

with respect to the Centering see also Remarks & Counter-remarks in Para 12 of the letter of Jany 24.

by Colonel Faber to have been sufficient - and at all events the Contractor was not bound to use it, or Captain Campbell to permit its use. see Specification, in Consultation of February 18th Para. 8

17. Since then every endeavour to give some aid to the Members of Government in going through the confused mass of papers.

On the whole it seems to me that Captain Campbell was not relieved of control over the works, by interference on the part of Captain Francis or Colonel Faber.

That preventible delays occurred in the early

early stages of the work: which protracted it into the rains, and so caused the diversion.

That Captain Campbell did not adopt all Colonel Faber's suggestions; but in one important respect adopted a very different plan; that however he was not bound to attend to them as Colonel Faber was only hired and possessed no official authority.

18. If the first two of these propositions are held to be established, it is apprehended that Captain Campbell must be held to be at least partly responsible for the catastrophe to the bridge.

Vide P.P. in his letter of Jany 24

Col. Faber strongly condemns the

methods of the builders - that
see and Appendix D. 2
neither; also P. 15 of Capt
Campbell's
of Col. Faber's
testimony known it must
be added, that such is the
feeling between him & Capt.
Faber - that he was to dis-
tend to approve what
the latter had condemned.

Minute

D.G.
April 6.

It is evident from these Papers, from those contained in the other Bundle circulated herewith, and from Captain Campbell's repeated confessions of inability to complete within a reasonable period the important Works entrusted to him unless a large amount of forced labour were placed at his disposal by the neighbouring Collectors, that he has mistaken his profession, and that it would not be for the public advantage that he should continue to be connected with the

Department of Public Works. I therefore propose that his services should be replaced at the disposal of the Commander in Chief and that the ~~Executive~~ Engineer should ~~advise the Government as to the selection of a qualified officer to be instructed to take charge of the works for the completion of the Barracks~~ be entrusted with the completion of the Barracks.

With the more full knowledge which we now possess I see no advantage in proceeding against Mr Digby. If any account remains to be settled with him, that should be done & we should have nothing more to do with him as a Contractor.

Might not assistance for the completion of the Barracks be obtained from the Sappers & Miners or from the European Soldiers working for extra pay? We could construct Barracks for an entire European Regiment in the Jamaica Nilgiris (Blue Mountains) at a very moderate cost through the agency of the troops themselves.

Madras 9 April 59

Capt Campbell Royal Engineers & Executive Engineer Nilgiris has made a long & laborious Estimate for the Barracks & Hospital now under construction at Jackatalla & Ootacamund which he has submitted to me for sanction. I have looked through the Estimate & find that the Materials & Workmanship are to be of the best description & that the Rates are liberal. The Estimate must be Revised & Corrected before it can be sanctioned. [illegible]

The amount of Advance received from the Provincial Officer in charge is stated to be insufficient to defray the Expenditure for Labour & Materials & to keep the Contractor to time.

The Officer in charge has failed in all these particulars.

The Officer in charge has left his Establishment without leave.

He has failed to do so.

I concur in the opinion of the Executive Engineer that the Contractor is justly responsible for the failure of his Sureties to complete the Buildings in the time specified.

I consider the suggestion to employ Volunteer Troops & Soldiers on remunerative [illegible]

9/4/59

Capt Campbell's letter - Barracks Nilgiris - Reinforcement to Executive Engineer - Employment of Soldiers on Extra Pay

I quite agree in the necessity that

exists for his removal

Plaintiff discovers any fact that
release of Mr Dyer from [illegible] his original
contract for the Bridge - nor does there
appear to me to have been any cancel-
-lation of the security Bond executed
by Mr Adams to Capt Travers - altho'
there appears to have been additional
security - by Capt Carrick
but the whole affair to me looks
but Mr Dyer & his sureties is to be released, that neither case
can they be made liable - there is no contract
with Dyer made out - there is no contract
with Dyer as to the ~~[illegible]~~ Bark
Jeannette -

If there are no other matters to appeal
to, in respect to Capt C letters &c an-
-swer the P. M. G - I therefore think
that has transpired as to this matter
of dealing with Mr Dyer in reference
to the Carrick Corduroy - Plainly
shows that the Government Engineer
first drew in the specifications the words

and that his removal from the work should
not peculiarly called for -

Mr Dyer et sureties have had a clear
& Unlimited piece for carrying on the Bridge
This should be adjusted - if a balance
is found against them which he can
2 Not Meet - his security should be
called on to make it good -

Yours

Public Works 1859 Deptt.
Comrs 12th April.

No 879 A.

Minute by the Honorable
the President.
Dd 8th April 1859.

Resolving, for reasons stated
to place the services of Captn Campbell
in charge of the Waterloo Bridge, at
the disposal of the Commander in Chief.
The Chief Engr to report whether assistance
for the completion of the Jacktallah
Barracks may not be obtained from
the Sappers and Miners, or from
Soldiers of the Regt at the Station,
working for Extra pay. The Govt
are not disposed to proceed against
Mr Vigor the Contractor, for a breach
of Contract & therefore desire to
adjust his account at once & to
release him from further
responsibility connected with the
Bridge Contract. Col Lawford
to take over charge of the works
at Jacktallah from Captain
Campbell.

99
No 100 A.

Pub. Works Dep.
Cons. 12th April
No 864
Encl. Mem. of Cons.
of 12th April 1859

Fort Saint George, Public Works Consultation of 12th April 1859.

Read the following papers.

No. 99. From Colonel C. E. FABER, Chief Engineer; to J. D. BOURDILLON, Esq., Secretary to Government, dated 26th March 1859, No. 9039.

SIR,

The invitation to the Special Executive Engineer at Jackatalla, contained in para. 5 of Extract Minutes Consultation, No. 407, of the 18th Ultimo, to submit a counter-statement to the Chief Engineer's Report of the 24th January No. 7281, having now been complied with, I have the honor to solicit the indulgence of Government, towards my forwarding so voluminous a reply in original as it reached me.

1 Original letter with 1 Enclosure, containing several original papers.

2. I further hope I shall stand excused for having taken the liberty of making autograph notes on a good many of the papers Captain Campbell has pressed into the service of his defence, written Currente Calamo, as I perused each of these numerous auxiliaries to his cause.

3. Had I adopted the more usual and regular course, a very undesirable delay would have ensued, and with so much matter of an unexpected and purely recriminatory character to rejoin to, I think the convenience of the measure I have adopted may perhaps be allowed to excuse the irregularity.

4. One paper only, has it seemed necessary, to have transcribed with a half margin, namely, a series of leading questions to the Contractor by the Special Executive Engineer with Mr. Vigor's replies, in order that my own rejoinders seriatim may be perused paripassu with the original.

5. I acutely feel how false a position I have been compelled to occupy by the relegation to a Subordinate of a judicial opinion from the Head of the Department. But to avoid the possible injustice of condemnation on what may in one sense be regarded as an exparte statement, I do not see what other course the Government could have pursued.

6. I therefore feel bound to accept as the necessary sequence of my own candour the heavy counter-charges Captain Campbell has now brought forward at this late period, and I rely securely on the protection of Government, by the exercise of its accustomed discrimination, and I appeal with confidence to its denunciation of making public use of private notes between parties who had no official relation towards each other.

7. The gravamen of Captain Campbell's elaborate and astute defence is that up to the 17th June, the Waterloo Bridge was solely under the management and supervision of the District Engineer, and that as a Subordinate Officer he neither could, nor would it have been becoming for him to have a voice in the matter.

8. But if this be so, a point on which I cannot speak, what became of all the strong allegations contained in the printed P. W. Consultation of 17th August 1858, where in para. 7 of his letter to the Right Honorable Lord Harris, dated 26th July last, he draws a picture of this Contract work, the solitary one of his Range, the very reverse of what is recorded in Captain Campbell's present Memorandum. In the former, he represents himself as Executive doing every thing, but in the latter he describes himself as scarcely a spectator of the proceedings Mr. Vigor was carrying on under Captain Francis and Mr. Fraser.

9. Captain Campbell indignantly repudiates my own conclusion that the Waterloo Bridge was a distasteful one, because not emanating from himself; and the Government will now judge from the tone and tenor of para. 4 of the present Memorandum, whether even still there is not ground for such an inference.

10. I was not hitherto aware that Captain Francis was sent to Jackatalla for any such purpose as the Special Executive Engineer alleges in para. 7; on the contrary, that Officer gave much time to the Carcoor Trace and numerous other duties, and Captain Campbell's own Executive position remained quite unaltered, except that Captain Morgan was less exclusively under his control, though even that change only took place, if I do not mistake, after Captain Francis's departure had removed Mr. Fraser from the charge of the Ootacamund Range.

No 99 - 101

11. Para. 8 states and for the first time, that " Colonel Faber took active direction of the " Bridge upon himself, giving orders to Mr. Vigor without my intervention, and casually com- " municating his views to me." (Captain Campbell.)

12. If the Government should be pleased to accept as emphatic and unconditional, a denial on my own part as language permits me to convey in terms of profound respect, and if they should be clearly of opinion that the tenth of this negation is placed beyond all doubt by the several letters to the Central Office, which Captain Campbell has himself embodied in the Appendices to his Memorandum, as also by the private correspondence he has preserved to now produce, then I trust the Government will be pleased to take into serious consideration, how far an Officer who has taken so serious a liberty with truth, and has sought to shelter himself by the unfounded inculpation of the Head of his Department, is fit to be employed on his presen duties.

13. To shew that as little de fact so as dejure could I take on me any controlling or other Waterloo Bridge duties, I have first to report that in consequence of an accident of a peculiarly painful nature, and well known to many of the Staff of His Lordship the Governor, I was unable to leave the house at Coonoor from the 28th of August to the 7th October. I observe also that the next prior visit to Waterloo Bridge *before* the 28th August, was on the 10th idem.

14. Moreover it is to attribute to me an ignorance of one of the first regulations of the service, namely, that a Medical Certificate disqualifies for performance of all functions of Office, to suppose for a moment that It much shaken in health, would presume to interfere with an Officer so jealous and greedy of authority and self, rule, as the writer of Captain Campbell's letter to the Governor of the 26th July, I cannot hesitate to say that if I had ever given a single direct *order* to Mr. Vigor in my life, Captain Campbell's Highland blood and vis vitæ would have been in open rebellion against my usurpation in five minutes. Add, to conclude, that if Colonel Faber ever were in active direction of the Bridge, why did the single brick rings continue for a month after my arrival ? why did three proportions of sand to a time naturally meagre, continue to the very end ? and why were all the arches and walls parallel to the length of the Bridge instead of transverse ? If in any way my voice was listened to it was in this, that whereas the first arch remained 15 days, the second and third were only 9 and 10 days before being uncentered.

15. Before concluding my present painful duty, it is fitting that I should expressly acknowledge the error in paras. 22 and 23 of my Report to Government in mixing together the spandril and the wing-wall construction on the 7th October, which I was led into from Captain Campbell's first narrative. It is clear that the former had been built in point of fact in the latter part of September, although some time after I had indicated transverse treatmen in my letter to Captain Campbell of the 10th September. This very ignorance, caused by six weeks confinement to the house, is a further proof how slight, not to say imaginary, my own active control had been over the Waterloo Bridge.

16. I would desire also to modify the expressions made use of in the 20th para. of my report, for I do agree with Captain Campbell that with a breadth of 4-3 at bottom and 2-3 at top of both side and abutment walls, tie-walls were essential to permanent stability. But an Executive Officer on the spot would not hesitate an instant in supplying defective strength by so obvious and common an expedient, and if I had been able to go and see the work in September I cannot doubt but that in spite, of the profound discouragement I had met, I should have ventured to press on Captain Campbell the advantage of such a construction.

17. But on the 7th October, although the spandril walls and arches were built in, yet the wing-walls and abutment walls were in jeopardy, and there was no reason whatever why Captain Campbell should not have adopted the measures I had just concerted with Mr. Vigor even to the extent of marking out their position in the eastern approach, except that he preferred his own more elaborate and costly, to my readier and cheaper system.

18. With the modifications shewn above, I adhere then to each of the 4 conclusions to which I arrived in para. 24 of my despatch of the 24th January, except that I should wish Mr Fraser's alleged testimony to the solubility of the bricks, to be cancelled; his opinions whatever they were having been given in a private dwelling house and I was wrong to allude to them

19. The Government have now I hope, full means of arriving at a final opinion, whether the conclusions to which I arrived, have been shaken or confirmed by additional investigation.

P.S.—It ought to have been stated in reply to para. 7 of 407, 18th February, that the Contract had been completed and executed by the District Engineer before any report was made to the Central Office.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Southern Circle; to Colonel C. E. FABER, Chief Engineer, dated Jackatalla, 18th March 1859.

SIR,

With reference to your Telegram of the 17th Instant Registered No. 22, I have the honor to forward the enclosed papers received this day, relative to the fall of the Waterloo Bridge at this Station.

2. In the original order of Government,* I was not directed to make any enquiry into the matters reported by you relative to the Executive Engineer, and except on the point of Mr. Fraser's opinion of the Bricks, I have not interfered in the case, and as Captain Campbell's attention since my arrival at Jackatalla has been greatly taken up with his reply, I trust that I am acting correctly in forwarding the papers without remark.

* 18th February 1859, No. 407.

A.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to the Officiating Chief Engineer, dated 27th November 1858, No. 230.

SIR,

I have the honor to report for your information that at 8-*h.* 15-*m.* A. M. yesterday, the west arch of Waterloo Bridge fell, at 8-25 the centre arch followed and in ten minutes afterwards the shaken piers and the abutments alone remained of this Contract work.

2. The immediate cause of failure was the soakage of incessant heavy rain through the green arches which were not as they should have been, coated with asphalte or coal Tar, no such provision being entered in the specification. During the previous night the rain poured down in torrents with very slight intermission from 10 o'clock till day-light, we have now had some 36 days of this sort of weather, all out-door work has been suspended almost.

3. I shall write you further particulars in a few days of the estimated value of the still existing work, when I have decided on what is to be done and the Contractor has made up his actual loss.

4. Up to the period of my writing the fall of rain continues unexampled, the water is now going right through the road way and arches of two 30 feet Bridges, and I would most strongly recommend that as soon as fine weather sets in, the arches and backing of both these Bridges should be stripped and receive such a coating of Coal Tar, not less than $\frac{5}{8}$ of an inch, as will render them then thoroughly proof against the influence of future monsoons.

5. I shall be glad to be favored with your early instructions on this point, and the same course should be adopted over all the outside stair arches in the Barracks, so as to render them perfectly drop dry.

B.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to the Officiating Chief Engineer, dated 30th December 1858, No. 259.

SIR,

In continuation of my letter No. 230 of 27th Ultimo, I have the honor to submit for your information and that of Government, the following narrative of the failure of Waterloo Bridge, as it is now necessary to decide whether the loss is to be borne solely by Government, solely by the Contractor, or jointly by both, and if so, in what proportion. To assist you in coming to a decision, I forward herewith the documents as per margin.

1 Specification.
2 Contract.
3 Estimate.
4 Plan.
5 Contractor's Statement.
6 Do. 2nd Do.
7 New Estimate.

2. On the 21st July last, the eastern arch was uncentered 15 days after it was keyed, fine weather, and no cracks, on the 28th the middle arch was uncentered and found on the 31st by measurement to be 15 inches below its proper level, as reported to you in my letter No. 164 of 13th September, at the crown there was a space of 2 inches between the first brick ring (9 inches) and the upper coures of 15 inch work, an apparent subsidence of 9 inches was due to the use of an untrustworthy clinometer by the Contractor when setting out his center, the other 6 inches a real subsidence chiefly owing to the failure of the center at the part colored green in the Plan. On August 6th, the Contractor, Mr. Vigor, had removed the center and completely taken down the middle arch and west spandril (which had cracked) at his own expense; on the 10th August the Contractor commenced re-building the center arch on a center designed by himself, the prescribed one having proved too weak. Up to the 9th of November on which date Mr. Vigor drew my attention particularly to the weakness of his eastern wing-walls, the work proceeded satisfactorily, I then as I advised you in my letter No. 164 above quoted, strengthened the eastern work by counterforts and spandril walls. On the 21st September these counterforts and spandril walls were completed, and on the 28th the weather which had been wet, set in to rain with unusual severity. On the 5th October, Mr. Vigor, after carefully filling and punning the earthwork between the western wing-wall (which formed a gangway for his people) and making good nearly ⅔ of the spandril filling, was in my presence completing the rest, but before the work was finished one of the north spandril walls, 2 feet 3 inches at base, with only 14 feet of earth behind it, rent and bulged, carrying the parapet with it, the west side of the western arch was at the same time thrust very slightly forwards, and though the spandril walls were immediately relieved and good vents kept open, in case of squally weather which was imminent, still it came down after sunset in such heavy torrents, that the arches themselves must have been torn out at the crown, as the falling plaster plainly indicated, but for the exertions of a miscellaneous gang of bandymen, gardeners, and house servants who turned to with a will and hove the earth bodily over the side walls. Next day the abutments were further relieved, and the spandril walls were taken down by the Contractor at his own expense. On the 18th October spandril arches were turned and the whole well luted with 6 inches of stiff blue clay (as I advised you in my letter No. 161 above quoted, would be done). On the 20th November the brickwork which had been much delayed by constant rain was at length completed up to the blocking course; on the 26th, after 15 days almost incessant rain, the green work could stand it no longer, and the western arch gave way and brought the others with it in a few minutes after.

3. As it appears probable that some opinion may be expected from me, I have the honor on a careful review of the whole facts and with the specifications before me, to state that I consider

I. Mortar would have been better with an admixture of only 2 sand to 1 lime, though we have turned 30 feet arches here with 3 to 1.

II. That the rates in the Estimate were utterly insufficient to provide the best materials and labor, the arch-work was put down at 22 per 100 cubic feet, (I could not have done it myself under 30.)

III. That the arches should have been coated with asphalte or coal Tar.

IV. That the spaces between the arches should have been vaulted springing from dwarf walls, binded up with the spandril walls, and not filled up with earth.

V. That the middle and western arches should not in such weather as we have had (particularly when not asphalted) have been even yet uncentered, whereas they were both uncentered within 10 days after they were keyed.

VI. That the tabling of the rock for the eastern Pier with a superstructure of pla brick-work was insufficient, the footing of the brick-work I think should have been let in belo the level of the rock at least four inches, and the brick-work carried up in cement at least 1 feet.

VII. That the centering was so weak as to render it highly probable, it would g and alter its form under heavy pressure, this happened to the part colored green in Plan.

4. The Contractor who volunteers to bear half the loss himself is now engaged clearin away the rubbish with the view to re-building the Bridge on fresh Estimate and Contract, a

will Guarantee his work for two years on the extra rates, if such meets your sanction, you will observe by my new Estimate enclosed, that the additional cost involved is Rupees (13,625) thirteen thousand six hundred and twenty-five.

	Rs.	A.	P.
5. In your Extract Proceedings No. 5489 of the 10th December 1857 to the District Engineer of Coimbatore you sanctioned for the Waterloo Bridge	19,716	15	0
and in your Extract Proceedings No, 8703 of the 1st April 1858, you sanctioned for the Reservoir	13,160	0	0
The new Estimate now requiring sanction, amounting to Rupees thirteen thousand, six hundred and twenty-five	13,625	0	0
	46,501	15	0
leaves an excess over the forty thousand Rupees	40,000	0	0
you calculated upon of Rupees six thousand, five hundred and one and annas fifteen	6,501	15	0
Deduct from this Rupees three thousand one hundred and twelve and annas eight	3,112	8	0
which the Contractor offers to bear the loss of, and it leaves Rupees three thousand, three hundred and eighty-nine and annas seven, still requiring sanction	3,389	7	0

C.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to the Officiating Chief Engineer, dated 13th September 1858, No. 164.

SIR,

In reply to your letter No. 3453 of 8th Instant, I have the honor to re-submit my Progress Reports, Estimental and Extra Estimental, giving the same total of expenditure for July 1858, as exhibited in my Account Current.

2. The failure of the centre arch of Waterloo Bridge arose from the Contractor, Mr. Vigor, having put up his centre 9 inches too low and from a sinking of 6 inches when the centre was taken down, when the arch was found to be 15 inches too low, and the west spandril-walls cracked in two places.

3. While on this subject, I may as well mention that considering the wing-walls of the eastern approach designed by Captain Francis too slight for safety, and being further apprehensive of the bulging of spandril-walls, which are to be filled up with earth while the weather is very rainy and inclement. I took the opportunity of asking Colonel Faber's valuable opinion as he was on the spot, in accordance with which I have issued very particular orders, for proper tamping of the earth-filling and a good lute of stiff clay over all immediately under the metalling of the road way, I have further with his consent tied the masonry with counterforts on the eastern side and have added two dwarf spandril-walls.

4. I trust what I have done may meet with your approval, though it is not all that I would have done had I acted solely on my own judgment, for I cannot regard as safe wing-walls 56 feet long, 21 feet high, 4 feet at base, 2 feet 3 inches at top, with an outside batter of 2 feet, however well the earth filling may be tamped and luted, I consider the pressure is more than green masonry of the above scantling is calculated to bear with safety, but I of course deferred at once to Colonel Faber's judgment.

D.

Blackheath, Coonoor.
Wednesday, 25th August 1858.

MY DEAR CAMPBELL,

In reference to Mr. Vigor, I like his Bridge-work, his materials and himself; and I cannot doubt but that your acceptance of his offer as adumbrated in present M. S. highly advantageous to Government.

Believe me, ever your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—This is the first of a series of *private* notes which Captain Campbell having preserved, has now thought proper without previous reference to myself, to place before the Government. No official relations existed between us and could not. Thus my communications were those of courtesy and social conventionalism alone, expressed with freedom, sans ominie pensee, and the circumstance that they commonly are written in reply to applications from himself, should have forbidden their being turned to the use they have been.

In respect to the particular note now quoted, Captain Campbell had stated Mr. Vigor to be willing to build a Range of Married Buildings for some 5,000 Rupees less than the Estimate. At that particular time, the causes of dissatisfaction from delay and non-exertion had not arisen. Mr. Vigor's workmanship I always was satisfied with; his materials were as good as the Jackatalla supplies, which Captain Campbell and Lieutenant Hankins are aware I condemned, and of Mr. Vigor personally I now think as I thought in August 1858.

The subjoined note is a strange one as addressed to the Officer in charge of the Waterloo Bridge, who gave all his own orders direct to the Contractor, and only casually reported them subsequently to the Special Executive Engineer.

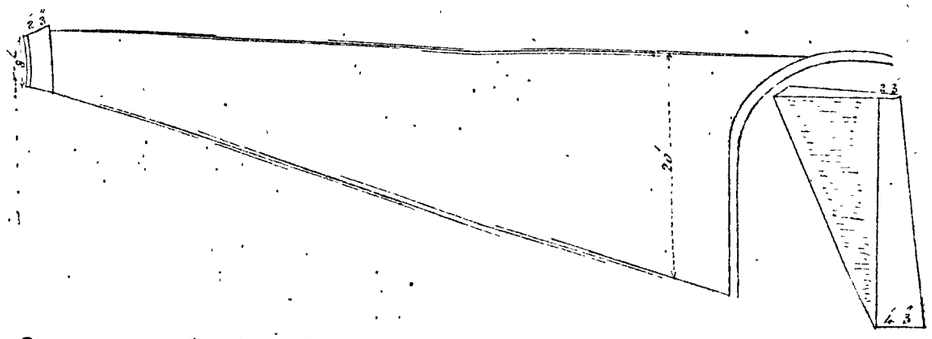
E.

My Dear Colonel Faber,

I am of opinion that if Vigor finishes the eastern approach to Waterloo Bridge on Francis' plan (and Estimate) that the wing-walls (some 4 feet at base and 2′ 3″ at top, with a pressure of 20 feet of earth behind them without a single counterfort, will as was the case with No. 1 Bridge at head of the valley, bulge with the first monsoon and fall with the second, under influence of a load full 6 times greater than the masonry could be safely calculated to bear.

Again between the arches there are no spandril walls to assist in staying 12 feet of fresh earth which it seems to me is a very bad arrangement.

Anent the downright temerity involved in para. I am loath to take upon myself to alter the plan of a Superintending Engineer, and yet I am still less inclined to witness his failure, especially on the field of Jackatalla, what say you to his sections? can they stand by any possibility?



I am on the eve of writing to Central Office to expect alteration, but venture as you are on the spot, to solicit your opinion first, as to Francis' section, if you will kindly give it.

Yours &c.,
(Signed) J. CAMPBELL, Captain,
Special Executive Engineer.

Jackatalla,
10th September 1858.

F.

Blackheath, Coonoor: Tuesday, 19th October 1858.

My Dear Campbell.

* * *

You have gone very thoroughly, (but too expensively) to work at the Waterloo Bridge which seems now saved.

Ever your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—This note simply corroborates the text of the public despatch, viz., that work had been thoroughly done, but in too costly a manner, and the next copy. It is a proof that when my advice was given, it was thrown aside.

G.

Wednesday, 10th November 1858.

My Dear Campbell.

* * *

I was much disappointed with the slow progress of Waterloo this morning when I inspected it with V. S. Murray, too bad, too bad. I then went over the Jackatalla Barracks and so toddled home.

Always your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—This seems to have been written a little more than a fortnight before the final catastrophe, and when it certainly was not expected, however much it may have been dreaded. Its tone seems to me to clearly imply, less any new want of exertion, than persistence in a previously recognized cause of neglect and inactivity on the part of the Contractor. Indeed such patience as I am endowed with had been quite exhausted long previously.

This forgotten note seems to altogether corroborate the Official representations to Government of July last.

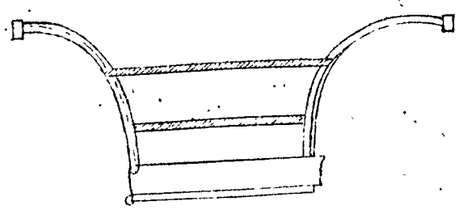
H.

Blackheath, Coonoor: Friday, 10th September 1858.

My Dear Campbell.

I have never seen any Plans or Drawings of the Waterloo Bridge here, except the truss diagrams for the centres as designed by Francis. If the earth be tamped as the walls ascend, and if a layer of clay be placed on the top underneath the actual metalling of the road-way, taking great care to make and keep the surface convex so that water shall discharge itself *through* the side walls by small apertures 3″ below the crest of the road left for the purpose, there ought to be and need be very little lateral pressure. Insistent weight by gravity is pretty nearly all so long as your earth or filling in retains its normal dimensions.

Now a luting of 3 to 4″ of stiff clay is literally impervious to water and would prevent all soakage if managed well, and superficial drainage provided, either by internal side masonry gutters or by holes through the walls (only that *they* stain the exterior in an unsightly way). However, you may at but slight expense run one or even two tie walls 1′ or 1′ 6″ thick to prevent bulging, taking care to *well* dimmiss the earth *under* them, as it is probably too late to give foundations.

4′ 3″ at foot  and 2′ 3″ at top is not a weak wall, but every thing depends on the filling in, the tamping, the luting and the drawing and with those dimensions with excess to good stiff clay. I should not hesitate to work off the job.

* * *

10th September.

(Signed) EDWARD FABER.

Colonel Faber's Note.—This letter shows, 1st, that the Officer alleged to be in charge of the Bridge had not so much as seen a plan of the work; and 2ndly, that although the *transverse* tie-walls are now shown to have been recommended so early as the 20th September, before any bulging showed itself no action was taken on the suggestion; but at a later period a contrary treatment was pursued.

J.

Blackheath, Coonoor: Monday, 6th September 1858.

My Dear Campbell.

* * *

I have told Vigor that he may uncentre No. 3 to-day, but that was before the heavy rain of yesterday.

* * *

Believe me ever your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.—I observe that throughout the whole month of September *I did not once visit the Waterloo Bridge*, but when Mr. Vigor came to *my quarters* and asked whether he might uncentre with safety, I simply said "yes" on the 10th day after being keyed, if the works were good. To save him the expense of a fresh scaffolding I added "mind you plaster your intrados at once before "you receive your entres, and the chunam will adhere far better if "applied whilst the arch is still damp." This was on a Saturday whilst walking up and done the verandah with a guest; the circumstance was mentioned to Captain Campbell in a note on Monday and this simple reply to a question from the Contractor regarding work I had not even seen ha "been perverted into only casually reporting my orders! ! !" It may be noticed that the ver language is simply permissive, and not authoratative or mandatory. Not "that he must" or "that he is to" but on the contrary "that he may uncentre" on the tenth day of keying a semi-circular arch.

K.

To Captain J. A. CAMPBELL, Special Executive Engineer, Jackatalla.

Sir,

In continuation of my report on the Waterloo Bridge, I beg to inform you that in striking the centering of the middle and western arches I was guided by instructions received from Colonel Faber. The former was struck on the 10th day after keying and the latter on the 9th.

* * *

Jackatalla, December 10th 1858,

I am, &c.
(Signed) R. VIGOR.

Colonel Faber's Note.—The "instructions" were simply permissive as far as I consider it any longer remaining on the centres to be beneficial. To this extent, and in reply to questions asked at my own house, but no further, is the foregoing statement accurate.

L.

Memorandum.

Overseer Menzies is hereby directed to see the following orders carried out by Contractor Mr. Vigor.

1. The earth between the wing-walls to be well tamped as the walls ascend and to have a layer of clay 6″ thick placed on the top underneath the actual metalling of the road-way, taking

great care to make and keep the surface convex so that water shall discharge itself through the side walls by brick apertures 3″ below the crest of the road left for the purpose.

2. Two tie-walls of 1′ 6″ may be carried across but all depends on the tamping, and luting and drainage.

Jackatalla, 11th September 1858.

(Signed) J. CAMPBELL, Captain,
Special Executive Engineer.

Colonel Faber's Note.—Notwithstanding para. 2 of this order, Captain Campbell so far from building *cross* tiewalls built a series of longitudinal arches at the expense of much time and money; and hence my note (paper) of 19th October 1858.

M.

From W. FRASER, Esq., Acting District Engineer of Coimbatore: to Captain J. CAMPBELL, Special Executive Engineer, Jackatalla Barracks, dated Ootacamund, 15th March 1859, No. 209.

Sir,

In reply to your letter of this date No. 357; I have the honor to state that I have no recollection of ever making use of the expressions quoted in your letter, namely, that "the Bricks were abominable" and that they were "soluble in the stream where they had fallen."

Of Bricks in general as they are made up here I have expressed an unfavorable opinion, but I never expressed any opinion that these particular Bricks were worse than others.

As to their solubility in the stream where they had fallen it is unlikely that I ever said any thing, inasmuch as I never examined the ruins of the Bridge until Thursday last.

Colonel Faber's Note.— It would seem from this letter that my own language of para. 24, clause 4, had by Captain Campbell been imputed to Mr. Fraser; he naturally disclaims having ever used the expressions belonging to my own pen, and not his.

But as it was in a private visit at my own house on the 1st December that the depreciating remarks were made, it was clearly an error on my own part alluding to mere conversational topics, in the discussion of which I was not personally present. I would therefore beg that the para. should stand without the corroboration of Mr. Fraser's opinions which however it will be seen are as unfavorable to all Captain Campbell's bricks as mine. It is the peculiarity of the Jackatalla bricks that the shape and mouldings are excellent, but the mixing and burning wretched, even Tiles when broken shewing different colored layers of clay, blue, white, and pink in the puncture, without the homogeneity which though incorporative would have ensured.

My Dear Campbell,

* * *

Had Vigor wished the arch to fall he could not have done more than he has or better suited to the purpose.

* * *

26th November.

Very sincerely your's,
(Signed) EDWARD FABER.

Colonel Faber's Note.— This seems to me simply corroborative of the text of the official despatch, and taken in continuation of letter G of the 10th November strongly tending to shew how vexed and disappointed I had been with the proceedings at the Bridge for some considerable time past.

O.

I hereby bind myself to build Waterloo Bridge at Jackatalla according to the Plan and Specification, for the sum of Rupees (19,716) nineteen thousand, seven hundred and sixteen, and to

complete the same in all particulars as therein set forth on or before the 31st August 1858, under a penalty of (10) ten Rupees a day for any period beyond that date, and under a penalty of 500 Rupees in other respects, and in event of any disagreement as to workmanship or materials with the Executive Engineer in charge, I agree to abide implicitly by the award of the District Engineer, I agree to receive instalments at the following rates, viz., 5,000 Rupees on the signing of this agreement, whatever has been received as advance on the Bridge to be in part of this exclusive of centering money and chunam stone, 5,000 Rupees on the Bridge being completed as far as the springing line ; a further sum of Rupees 2,000, when the centers are struck ; and the remainder on the work being completed to the satisfaction of the District Engineer, and in Security for the Instalments, I pledge all the Plant and Materials deposited and prepared for the work and in addition the Title Deeds of House Property at Ootacamund, valued at Rupees 10,000 deposited in Captain Campbell's Cash Chest for which I hold his receipt.

Witnesses. (Signed) R. VIGOR

(Signed) F. J. JACQUES,
(„) PEREIRA,

District Engineer's Office Jackatalla 1st March 1858.

Mr. VIGOR'S Statement of 8th March 1859.

1. How often did Colonel Faber visit your Bridge an on average per week ?

Answer. Very frequently, sometimes twice a week, from the date that he found fault with the 1st or east arch being turned in rings, I took all instructions from him direct, except on one occasion after remonstrating with him on the insufficient strength of the side-walls, for I told him at the time that I had known two bridges in Malabar carried away from same cause, they were too slight to stand the pressure of the earth.

2. What date do you refer to as that from which you took all orders from him direct ?

Answer. From time of failure of middle arch, in consequence of its being too low, and owing to which I took it down.

3. You say Colonel Faber gave you orders after the failure of centre arch, can you specify the terms or tenor of such orders ?

Answer. He inspected my arches after they were keyed and he gave me direct instructions as to the day on which I was to uncenter them.

Reply.

Unfortunately, for the accuracy of the Contractor's meaning, from Saturday 28th August to Thursday 7th of October 1858, not only did Colonel Faber not visit the Waterloo Bridge, but he was confined to the house, and often to his couch, under medical treatment for the whole of this large part of his residence at Coonoor.

Mark Captain Campbell's change of words, substituting " orders" for Mr. Vigor's own expression " instructions."

I do not gather from Captain Campbell's narrative of 30th December, what is the *exact* time referred to, but apparently it cannot have been *earlier than about* the 8th of August, my own visits to the Waterloo Bridge subsequent to that date were exactly two in number, namely, Tuesday 10th and Saturday 28th August, whence accident imprisoning me to the house dates.

The truth of this must depend on how long it took to build arches 2 and 3. If they *were* built and keyed between 8th and 28th August, and I really think I did see them in either a completed or nearly completed state, than the proof is perfect that the work is as little and the activity as great during August, as represented by me, I have had calculations made in the Estimate Department of Central Office and find that 30 Bricklayers are able on an average to turn two simicircular arches of 40 feet in 18 days. Seeing the arches keyed then on the 28th it is not unlikely I may have said that it would be quite safe to uncentre in 9 or 10 days, but my own impression and belief are that Mr. Vigor came to my own house and that in answer to a question from himself, I said what every body knows (the weather having been fine) that a week to ten days was a sufficient interval.

4. By whose orders did you plaster the intrados of your arches as soon as you did ?

Answer. By direct order of Colonel Faber.

Admitted, substituting "recommendation" for " direct orders."

5. Did Colonel Faber ever express to you any opinion of the style and quality of your work and materials.

Answer. Yes, I am quite positive that twice at any rate he told me as follows " Mr. Vigor, your Brick work appears very good." This was said at the Bridge and he spoke to the same effect at his own house.

Admitted, as to workmanship. On materials Mr. Vigor is discreetly silent.

6. Did you at the time of filling in your earth-work consider the side-walls safe to stand the pressure ?

Answer. No, I remonstrated with Colonel Faber after about ⅔ds of the earth was in, for I saw the pressure was more than the walls could stand.

How the remonstrance could be made I cannot see, my next visit being on 7th October ; but if so fearful, why not build buttresses outside to support the walls instead of inside, and why not build cross tie-walls ?

7. What was the result of that remonstrance ?

Answer. He said " go on, go on," go on, if it is " necessary you may add binding walls, to " the Eastern approach, but I don't think it " necessary."

Very likely I did say, "go on, go on, go on," for as this was, or must have been 7th October it corresponds with my internal annoyance at finding how little had been done during my six weeks confinement to the house ; and clearly if the work were to be done at all, it was far better to do it vigourously with a strong gang than to shilly shally with a weak squad of perhaps 8 or 10 people, all whom I then saw ; yet it is after all not possible that I did use these words, or if I did it must have been in August, for it was on the 7th October that I went direct to Captain Campbell at Jackatalla to urgently press the constuction of wing-walls on that Officer, as stated in para. 21 of letter to Government.

Continued on 9th March, 8 A. M.

8. What induced you to build the east and middle arch in brick rings, and did you do so with the knowledge and consent of Captain Francis and Mr. Fraser ?

Answer. When the first centre was put up, Mr. Fraser and Captain Francis came down, inspected it, and gave it as their opinion that it was not strong enough to carry the weight of the arch ; I then proposed to build the arch in brick rings, they considered the Plan good and gave their assent to it.

Captain Francis is not here to admit or deny ; but Mr. Fraser positively contradicts the assertion. See Telegram herein annexed.

9. How can you account for your slow lax proceedings in July, August, and part of September, and why were you so much beyond your time, when the accident to centre arch might have been so soon repaired ?

Answer. All the Natives objected to work on the centres on account of their height, the Europeans took a whole month to get up the centering of the middle arch, and it fell the next day, owing to high winds.

10. Did you ever explain to Colonel Faber these causes of delay ?

Answer. Yes, I explained all the above to Colonel Faber.

I never heard, and I altogether disbelieve any thing of the sort. See also reply to A 3, as to real progress in August.

11. Did your works in any way suffer by having imposed on you by Captain Campbell, a system of arches for which there was neither time nor materials at hand ?

I can only emphatically aver that Mr. Vigor himself assured me such was the case.

Answer. Certainly not. The damage was all done before that—I mean the bulging of side walls and cracking of western arch, which would have been down on the night of 5th October had not the earth pressure been immediately relieved.

12. Can you speak positively as to the date on which the spandril walls between the arches were built by my order?
Answer. Yes, the spandril walls were built fully 15 days before the bulge of side walls on 5th October.

This shews I had been altogether mislead by Captain Campbell's narrative, para. 2 of 30th December 1858; and that the longitudinal walls and arches (instead of transverse) had really been built during, and not after my illness. But my letter of 10th September was antecedent and any professional Officer ought to have seen, that cross walls or arches, and not longitudinal, were a necessity; especially after a direct suggestion for so treating the wing walls, or rather recommending that they should be so treated for a cognate cause.

13. When the arches had been taken out and the relieving arches were being turned did Colonel Faber make any remark to you about the position?
Answer. When Colonel Faber saw the spandril walls and arches he said,—why they should have been turned the reverse way and asked me why they were done so—I told him that as the walls were already built in it was thought well to use them.
14. After you had turned your W. B., arches did you from economical or other motives decrease considerably your working gangs in the end of August?
Answer. No, I did not, I employed all the people I could command.

15. Did Colonel Faber strongly remonstrate with you in person as to the necessity of taking every advantage of the exceedingly favorable weather in August and September, and if so, why did you not pay any attention to what he said?
Answer. I paid every attention to what he said. There was only one occasion on which I was in the least dilatory in carrying out his orders, and that was when I expressed my fears concerning the bulging of the side walls which I was afraid to fill in rapidly as he wished, because they were so slight.
This statement is correct.
(Signed) R. VIGOR.
Jackatalla, 15th March 1859.

Observe that the Contractor avoids all reply to first part of querry and that the answer to the concluding part is neither full nor satisfactory.

Telegraphic Message from WILLIAM FRASER, Esq., District Engineer; to Colonel C. E. FABER, Chief Engineer, dated 25th March 1859.

I never gave any order about Waterloo Bridge, I don't know whether Francis ordered concentric rings. I have sent to ascertain and will report, twenty-fifth.

Telegraphic Message from WILLIAM FRASER, Esq., District Engineer; to Colonel C. E. FABFR, Chief Engineer, dated 26th March 1859.

Captain Francis gave no order to build the arches in rings, but he knew they were to be so built and did not disapprove, Saturday.

Letter from Captain J. CAMPBELL, Special Executive Engineer; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Southern Circle, dated 18th March 1859, No. 363.

SIR,

With reference to the special orders of Government and registered Telegraph No. 22 of yesterday's date, I have the honor to place in your hands, for submission to Government, my reply to and explanation of the charges preferred in Colonel Faber's letter No. 7281 of 24th January 1859, which letter did not reach me till 6 P. M. on the 8th Instant, thus the 10 days to which I am limited are not yet up.

2. The document comprising my reply herewith forwarded, are as follows:

1st. Forwarding Memorandum.

2nd. Chief Engineer's letter in half margin with replies thereto seriatim.

3rd. Appendix from A to O.

4th. Contractor's Statement.

Memorandum relative to the disaster to Waterloo Bridge at Jackatalla, on the 26th November 1858, forwarded with copy of Colonel Faber's letter, No. 7281 of 24th January 1859, in half margin, being a part of my reply thereto.

1. I most deeply regret that the Government in Extract Minutes of Consultation No. 407 of 18th February 1859, should have seen fit to pass such grave reflections upon my apparent conduct in this matter, but as it is pleased to say, that I shall not be condemned unheard, I proceed to submit explanations, which I have every confidence will abundantly exonerate me in its eyes.

2. For more explicit information on the charges contained in Colonel Faber's letter, I take leave to refer to my notes marginally appended to the different paras. of that communication, and will here offer such general remarks as will, I hope, be found to lay the whole question fairly and fully before the Government and enable them to determine whether in any particular I have failed in my duty as Engineer at Jackatalla.

3. It is charged against me that I have shewn professional inability in connection with the work, that I discarded the valuable opinions offered by so experienced an Officer as Colonel Faber; that I have shewn or allowed culpable laxness in its execution (for which an unworthy motive is assigned by Colonel Faber, but which I trust it is sufficient for me utterly to repudiate) and that I have permitted the use of bad materials.

4. The history of the Bridge is this. The design was entirely Captain Francis', a Contract for its execution was given to Mr. Vigor on the 1st March 1858, and it conditioned that the work was to be completed by the 31st August following. When I saw the specification in the rough, I offered sundry suggestions to Captain Francis, one only of which was adopted. Captain Francis, who was District Engineer and my immediate superior, regularly inspected the work* and directed the Contractor until he finally left Jackatalla about the middle of June or later previous to which he had inspected the Bridge with his successor Mr. Fraser.

* See para. 7 of Captain Campbell's letter of 26th July to Military Secretary to the Governor stating "the District Engineer cannot possibly ever see the work under construction." ! !

Colonel Faber's Note.—Para. 4 will perhaps be considered not free from that very spirit towards the District Engineer, Captain Francis, which I perhaps mistakenly believed to have noticed.

5. The Contractor assures me, that at this time Captain Francis recognized the weakness of the centre he had designed, and approved of Mr. Vigor's proposition to turn the arches in brick rings in order to take the pressure off the centre as much as possible.

6. On the 13th June the centre arch centering had fallen down, this being the second time.

7. By the 21st July the first or eastern arch had alone been completed, leaving thus only one month and 10 days to finish the whole Bridge according to the Contract. Up to this time nearly, the work had been under the exclusive direction and control of Captain Francis, who had been sent up especially to supervise the building of the Barracks, and I submit that no charge of short coming can be against me for what occurred at a period when I had no active control.

The Waterloo Bridge being the only Contract work, compare this statement with allegations contained in para. 7 of 26th July in printed P. W. Consultation of 17th August 1858.

8. On the 14th July Colonel Faber visited the Barracks, and on the 28th Idem he wrote me condemning Bridge building in brick rings. On this latter day the middle arch was uncentered found too low for reasons stated in my letter of 13th September (Appendix C.) It was taken down and in conformity with Colonel Faber's advice, the building in rings was discontinued. From the 28th July a period of the year by which the turning of arches had become a matter of considerable risk, Colonel Faber took active direction of the Bridge upon himself, giving orders to Mr. Vigor without my intervention, and casually communicating his views to me.

Not one order ever given by Colonel Faber see Captain Campbells former letter of 30th December 1858 altogether silent on so important a point.

9. On one occasion only did I fail to carry out views that were thus expressed, and it was simply because it could not have been done without taking down work *already* completed and incurring much extra expense. Colonel Faber suggested transverse spandril arches, but the walls had been already built to carry longitudinal ones.

Para. 2 of Captain Campbell's first letter says "on the 18th October, spandril arches were turned." Expense would have been greatly less and Captain Campbell's walls need not have been disturbed even.

10. In the presence of an authority of such professional experience and with a work too, the design of a Superior Officer I could hardly venture to make alterations on my own exclusive authority, but on the 10th September, seeing the season so far advanced and apprehending danger, I addressed Colonel Faber (vide Appendix E.) stating my opinion of the imperfectness of the structure, in reference to the wing-walls and want of spandril walls. Colonel Faber in his reply (Appendix H.) partially overruled my views, but favored the adoption of certain measures, and advised certain precautions which were inserted in the Overseer's Order Book, and immediately carried out, for copy of Order see Appendix L.

Yet the most important suggestion of transverse tie walls was not attended to.

11. On the 13th September I reported this to the Central Office (see Appendix C.) to which letter I beg to draw particular attention, for I therein expressly pointed out, that I deferred to Colonel Faber's superior judgment, but that my own opinion of the weakness of the walls remained unchanged, while I continued to regard the remedies applied as insufficient. I cannot gather from the Minutes of Consultation that this letter has ever been before Government.

Why then omit the chief remedy cross walls.

12. On the 19th October Colonel Faber wrote me (Appendix F.) "you have gone very "thoroughly (but too expensively) to work at the Waterloo Bridge which seems now saved."

13. I hope that this simple recital of facts will satisfy the Government that when acting of myself, I have not shewn professional inability in dealing with the construction of this Bridge,

which failed from original imperfection of design, aggravated by the bad weather of the late season of the year in which it was sought to complete it.

14. In respect of laxness in its construction, I have shewn that so short a time remained after the work may be said to have come into my immediate charge, that it could not be completed within the contract time, while my notes elsewhere shew the difficulties the Contractor had to experience in getting workmen, and that I did give him all the aid in my power. Large as my resources were, Mr. Vigor was stronger on his own small work than I was, but he had under-rated his difficulties till they rose before him. Large as my resources were they were severely tried, I had to roof in twenty-one thousand feet of Barracks just before the rains, and it was done.

On the contrary time after 17th June was not insufficient 30 men can turn a 40 feet arch in only 9 days!

A tolerable testimony as to the weather for building operations.

15. On the question of the quality of the materials, I may confine myself to a reference to Colonel Faber's letter of 25th August already quoted, (Appendix D.) to Mr. Fraser's letter* (Appendix M.) by which it appears he never uttered the condemnation ascribed to him, and Colonel Lawford after critical examination on the 14th Instant* pronounced both materials, and workmanship good.

* That is as good as Jackatalla Bricks, which are bad.

16. I trust that upon all the points made charges against me, I have even in this brief statement said sufficient to induce the Government to relieve me from the grave imputations on my professional character and conduct, which the Minutes of Consultation of the 18th February convey. Should however the Government not feel quite satisfied with the present explanation, I most respectfully request that they will authorize a special investigation into all the circumstances and facts of the case.

Jackatalla Range.

Captain Campbell's reply.

Central Office of Public Works, Fort Saint George, No. 7281, 24th January 1859.

From the Chief Engineer, to the Secretary to Government, Public Works Department.

SIR,

On the 30th of December 1858, or five weeks after the fall of the arches of the Waterloo Bridge, on the Ootacamund Road to Jackatalla, the Special Executive Engineer completed an official narrative detailing that unfortunate occurrence, but no reason is assigned for the completion of so important a duty having occupied more weeks than it would seem to have needed days.

2. The Superintending Engineer, Southern Circle, my stated adviser had proposed to again refer the subject to Captain Campbell, calling on that Officer for a more definite expression and elucidation of his views as to the share of future expenses he recommends Government to charge itself with; but the unexpected and apparently unnecessary delay that has already occurred, together with a degree of obscurity which I think falls far short of actual unintelligibility, have induced me to prefer an immediate submission of the Waterloo Bridge papers to Government, pending the receipt of Captain Campbell's reply.

I officially reported the accident on the 27th November 1858, vide Appendix A. and my strong impression is that I was told by Colonel Faber himself to keep back the detailed explanation so as to meet his arrival at Madras.

Colonel Faber's Note.—On the contrary I distinctly told both Mr. Vigor that I fully expected to find the subject finally disposed of before I resumed the duties of my own office, and I was greatly disappointed on learning on 31st December that no report had been received except the first, which was of no value whatever.

3. In fact the season had become favorable for resumed operations before the details of the disaster were despatched, and so precarious does the weather become on the Neilgherry Hills after the month of March,* that I must solicit such priority of consideration for the subject now placed before Government, as may admit of the earliest practicable issue of the orders of the Governor in Council.

* * Their remark is perfectly true and yet this was the season selected for Bridge Building by Captan Francis and it was pushed on to the very heart of an extraordinarily severe monsoon by Colonel Faber.

Colonel Faber's Note.—There was no stage of safety with the arches all under prosecution after my own arrival, and the idea of stopping work was never even thought of by any one, so far as I know.

4. I have ventured to append a few marginal notes as a commodious means of attracting attention to points which, it might be tedious to insert in the staple of my own communication, and I now proceed to offer such observations as not only belong to my office; but may the more be expected from me that I happened to reside for some months in the near neighbourhood of the Bridge that has fallen.

These marginal notes being omitted in the copy of the letter forwarded to me for reply, I can of course enter upon no defence against them.

5. Briefly, the history of the Waterloo Bridge is that designed by Captain Francis, then District Engineer for a work of three semi-circular arches each of 40' span springing from a horizontal line between 17' and 18' above the deepest bed of the petty stream from piers 7' respectively of about 16 and 14' high. The plan bears date the 1st March 1858, and the Contract and specification binding Mr. Vigor to complete the undertaking by the 31st of August 1858, under a penalty of (10) Rupees ten a day fine, and general forfeiture (not very clearly expressed) of Rupees (500) five hundred were also duly signed and executed at the same time, at a total cost of Rs. (19,000) nineteen thousand, thus leaving a margin of Rupees 716-15-0 on the sanctioned estimate.

The Contract is for the whole sum Rupees 19,716. See Appendix O.

6. Instead of being finished on the 31st of August, the Waterloo Bridge was only drawing to a final close four months afterwards, and the Public were to have been admitted across the completed Bridge on the 1st December, if four days previously and in the morning of the 26th November between 8 and 9 o'clock the three arches beginning with that last built to the west had not fallen to the ground in succession, and I may here mention that I made a most careful personal examination of the ruins the same day.

7. The total cost of re-building and completing the Waterloo Bridge is estimated by Captain Campbell at the higher rates he speaks of, and in excess of those which governed the Contract only a few months earlier, to cost Rupees 13,625, and the Contractor values the work that has fallen at Rupees 6,225.

8. Mr. Vigor prays to be permitted to bear only half the loss represented by the above amount, and Captain Campbell by aggregating together in a manner as irregular as objectionable other sanctions with that of the Waterloo Bridge, Rupees 19,716-15-0 and by taking as a further credit in this total, the sum of Rupees 3,112-8-0, being the Contractor's moiety, shews that as these credits thus consolidated, there remains a deficit of Rupees 3,389-7-0, which he states to be "requiring sanction."

9. It is this aggregation of independent works and the mixing them up with the perfectly separate project of the Jackatalla Bridge, and the insertion of Rupees 3,112-8-0 in very significant silence as Mr. Vigor's assumed contribution, which Lieutenant-Colonel Lawford had objected to, and wished the Special Executive Engineer to be called on to explain more fully, and to disentangle from a series of figured amounts having no obvious connexion with the matter in hand, before addressing Government from the Central Office.

10. If thus disembarrassed from all other heads of account, the apparently correct statement of the pecuniary position of the work would obviously be from sanctioned Estimate of Bridge.....Rupees 19,716 15 0

Deduct as per Estimate of work still required.....	,,	13,627	0 0
And a balance of only Rupees		6,089	15 0

is left to represent the work already executed by Mr. Vigor, thus leaving him saddled with a deficit of the whole additional Estimate, or if even sharing the cost equally with Government with half that amount or Rupees 3,112-8-0, so that (supposing always the Contractor does not pay more than a moiety,) the differential between these two amounts, namely, Rupees 3,705 would appear to exhibit the advantage to Mr. Vigor and the loss to Government by Captain Campbell's consolidation of the Reservoir with the Bridge.

11. But reserving this feature of the case for the explanations already called for, I must now offer the expression of my own opinion on Captain Campbell's narrative and on the whole subject.

12. It is not a little remarkable that Captain Campbell is entirely silent on the three salient points, of 1st, the whole control of the Contractor's operations resting solely with the Executive Engineer, or Captain Campbell himself; of 2ndly, the Arch work being built in concentric separate rings of one Brick in thickness (as might be safely done if in cement) instead of turning the Arch whilst in progress of its full thickness; and of 3rdly, the Contractor's time of completion, the 31st of August last, having been so greatly exceeded without the assignment of any cause whatever. Yet taken separately and collectively these several considerations, I judge to be of more importance than any of the topics on which the Special Executive Engineer of Jackatalla has dilated.

13. Alike painful and invidious is the office of placing personal blame on individuals instead of ascribing disaster to causes beyond Executive control, as is often the case in a Country liable to frequent paroxysmal violence of weather and irregular storms of almost irresistible strength and fury. But in respect to a work proceeding, like the Waterloo Bridge, under my own observation, I not only can, but it is my duty, to assure the Government, of its failure having without any doubt whatever proceeded from the slow, lax and apparently unchecked proceedings of the Contractor during the favorable and almost unprecedented

There was no intention whatever to mystify. Government had originally sanctioned 40,000 Rupees for a Bridge and Bund. Subsequently a Bridge and Reservoir were sanctioned out of the same funds by the Chief Engineer No. 5480 of 10th December 1857. I designed to shew [illegible]ter B. in Appendix, that Bridge and Reservoir [illegible] the new works required Rupees 46,501-15-0 being Rupees 6,501-15-0 in addition to the former grant, and as Mr. Vigor was to pay Rupees 3,112-8-0, of this the sanction of Government became requisite for the balance of Rupees 3,389-7-0. The item of Rupees 13,625 was thus made up.

My new Estimate shews:

Value of old work at old rates lost 6,225

New works.

	Rs.	
Stone coping...	1,050	
8 Guard Stones...	32	
A 3rd new Center...	1,500	
Centering small arches... ...	132	
Coal Tar.....	277	
Asphalte...	725	
Earth work...	117	—3,633
On additional rates constructing spandril arches and counterforts...		2,441
Re-building part of old work fallen on higher rates		1,326
Total of Estimate Rs...		13,625

1st. The Contractor's operation were entirely regulated by Captain Francis, from 1st March up to at least the 17th June 1858, and from the end of July, Colonel Faber, gave his orders, (almost always direct) to the Contractor.

Colonel Faber's Note.—Had Colonel Faber given any orders why did Captain Campbell apply for his advice?

2nd. Building in rings was a point on which I was not consulted, it was not necessary for Captain Francis to do so, and he arranged that with Mr. Vigor.

3rd. By the 13th June prior to Captain Francis' departure, the arch centerings had fallen twice, and it was not till the 21st July, subsequent to Colonel Faber's arrival at Coonoor, that the first arch was uncentered, these accidents taken in connection with the fact that Natives could not be induced to work at the centres, partly owing to their great height and partly owing to an absurd superstition that eleven lives must be sacrificed to the Bridge to appease the neighbouring Sawmy, owing to which the Contractor had to depend solely on the small available amount of European labor, will I think satisfactorily account for the delay. Mr. Vigor's own statement is that the failure of the centre arch and the second falling of his centering threw him back most seriously, (I beg to refer to Mr. Vigor's explanations sent herewith, No. 4.)

drought of July, August, and much of September last, I can say without hesitation that under the virgorous superintendence, and if required the profuse assistance of the controlling authority at Jackatalla, it was easily practicable even after my first visit to the Bridge in the middle of July, to fully complete the work and throw it open to Public use within the time fixed by the agreement. I deliberately go so for as to state that it is still much more unaccountable to me that such was not the case, considering all at stake, than that the time being exceeded and extended into a monsoon of unusual severity, the final result has been failure when success seemed at hand.

14. I next have to observe upon the novelty in Madras Bridge building in the Department Public Works, of completing each arch in separate brick rings of one brick without any bond or joint with the succeeding concentric layers. On observing the central arch thus built with only a single brick, I at once predicted that with varying degrees of induration of mortar and of shrinkage according to less and greater dryness, separation of the rings was unavoidable; but to my surprise, as much indeed as caused by the practice itself, the Executive Engineer took no action whatever on my condemnation of the Contractor's process.

15. I must here state that I am unable to attach official blame in this and all subsequent cases of Captain Campbell's plenary non recognition of my position as Chief Engineer; for divested of all functions of office by Medical Certificate, I possessed no authority whatever to enforce my recommendation. Naturally unreserved on professional subjects, I most freely tendered my opinion and advice on one occasion, indeed in great and practical detail, visiting him for the purpose on the 7th October at his own house after concerting measures with the Contractor, but the result was uniform in the Executive Engineer, either ignoring altogether or acting quite contrary to my own professional views.

16. Meanwhile the centre arch was no sooner struck than the rings having no cohesion with each other separated as so confidently foretold from each other, and the entire arch had

Colonel Faber's Note.—I fear that much o this is after thought, at least I neither saw no heard of any such difficulty, on the contrary, th progress made for the first short period of my stay was not at all unsatisfactory. It was no until nearly the end of August that I hac reason to change my opinions, and so vexec was I that I did not once visit the work in th month of September ht all. Powerless to accelerate operations, I withdrew from a source of such disappointment and irritation. Mr. Vigor in consequence came frequently to Coonoor, chiefly with reference to his wish to Contract for a Block of the Jackatalla Married Quarters. It was during some of these, far from welcom visits, that I freely told him a week to ten days was long enough for a *semicircular* arch of 40 feet to remain on its centre. It is both natural and usual for persons like Mr. Vigor to use such *opinions* for their own purposes; but I suppose Captain Campbell to be about the very last man in the world to submit to interference and I certainly am not the first to attempt such an irregularity.

I have already explained above in para. 12 that the system of building in rings was authorized by Captain Francis, and considered a good expedient for lightening the load on a centre acknowledged after it was put up (so says the Contractor) to be too weak for building on. Every 8th joint was bonded.

So far from this I pressed on Mr. Vigor the propriety of turning this arch (which had to be taken down for reasons assigned in my letter (Appendix C.) of 13th September in the ordinary departmental fashion of completing the whole thickness from haunch at the same time. This was accordingly done in deference to Colonel Faber's advice and opinion.

Colonel Faber's Note.—Or rather, regard being had to the length of time during which no change was made, though alteration ultimately was made, because my previous predictions were fulfilled by the rings separating 6 and 15 inches from each other. See para. 2 of 259 of 30th December 1858, and the deference was not due to Colonel Faber's earlier advice, but to subsequent failure.

I beg to refer to my notes on paras. 22 and 23.

Colonel Faber's Note.—I knew not, until now produced, that I had recommended th wing-walls being tied together by two cross ties so early as the 10th September, up to which time and long afterwards, I had never, seen the Plan at all !! It is thus now *undeniable* that my advice was given long *before* any measures for the alternative longitudinal treatment had been adopted by Captain Campbell.

It was rebuilt on Colonel Faber's own plan in consequence of his professional objection to the rings approved by Captain Francis and Mr. Vigor.

to be taken down and rebuilt to the unavoidable loss of some time, yet a week might have been sufficient to repair this error, and without causing delay in any other part of the Bridge.

17. My impression at the time was, and nothing has yet transpired to alter it, that no sooner had the arches been turned, than in view to economy, a great decrease took place in the strength of the gangs. The scene of activity presented early in August was changed to one of comparative desertion towards the end of that month, and my strongest personal remonstrances to Mr. Vigor to take advantage of the exceedingly favorable weather, so dry indeed, that Burghers were leaving their villages for want of water, and my written representations to Captain Campbell to the same effect were alike either unheeded, or unproductive of reform. From that time I clearly foresaw the ruinous results to be anticipated from such unaccountable indifference, and I made no secret of my apprehensions.

18. Had the controlling Executive duly appreciated the importance of the occasion and the specialty of bridge building at all times he would at once have reinforced the Contractor's gangs (of course at Mr. Vigor's expense) by withdrawal from the buildings exposed to no risk at Jackatalla, but I had reason to conclude that the circumstance of Captain Francis having planned the Waterloo Bridge and not himself, produced a very feeble interest in its successful or early completion.

19. To ascertain the correctness of my belief as to Bricklayer's services being dispensed with, when the arches were turned, I particularly begged Captain Campbell to obtain the Contractor's daily muster rolls of attendance books, before they could be tampered with and to forward Extracts to the Central Office, as evidence of Mr. Vigor's activity or otherwise, but the information has not been sent.

20. With respect to that portion of para. 2 of the Executive Engineer's narrative which details the danger to the Northern side wall above the spandril, and to the abutment walls being also forced outward by the internal pressure of wet earth which differed little, if at all, save in hue from black cotton soil, it is to be admitted that as stated in Captain Campbell's objection No. iv para. 3, it would especially with simicircular arches have been better to have designed the Bridge with a spandril arch to favor the unity of structure and its general cohesion. as well as relieve the side walls of the pressure of such portion of the falling in (the insistent weight of the remainder obviously being vertical on the pier itself) as is represented by a triangle whose height is half the breadth of the roadway, and whose base is the height of the spandril wall. It is quite true that the thickness of this latter 2' 3" is, if composed of good and well set brick masonry, far more than is necessary to sustain such triangle; but time

Colonel Faber wrote me on 25th August that he was highly pleased with every thing (vide his note Appendix D.) and I find no written communication testifying any dissatisfaction until on the 10th November (Appendix G.) he wrote me of "slow Progress.") But on the 19th October (vide his note Appendix F.) just three weeks before he used only words of commendation.

Colonel Faber's Note.—It has already been stated that at first and for some time I was hopeful of success and pleased with Mr. Vigor, and nothing now urged goes to invalidate the test of my despatch.

I did this and gave the Contractor 181 Coolies in September, 20 Bricklayers, 59400 Bricks and 725 Coolies in October, and 142 coolies, 3180 Bricks and 336 Parahs of Lime in November, in addition to a previous supply of 3,000 Parahs of Lime in the raw stone of the very best quality at commencement.

Colonel Faber's Note.—But it was insufficient nevertheless.

Colonel Faber did so I believe on the 3rd December, but Mr. Vigor kept no Acquittance Rolls, he paid weekly by Tickets, and thus no such books as called for could have been forwarded.

Colonel Faber's Note.—Means might nevertheless have been found, to obtain *some* information; but that suggestion like my other more important ones, was ignored.

Not the danger but the actual failure on the 5th October.

On the 10th September I wrote to Colonel Faber (Appendix E) pointing out the danger to the wing-walls, as similar to that which had caused the destruction of the wing-walls of the large single arched Bridge in the Jackatalla, valley. In the same letter, I pressed on his attention the want of spandril walls to resist the earth pressure, and finally, while pointing out the down right temerity of the design, I was, I stated, loathe to alter the plan of a Superintending Engineer, while still less desirous of witnessing failure. I end by giving a section of the walls and with the words "can they stand by any possibility." I further added that I was on the eve of writing the Central Office to report the alterations I proposed to make (and did make) on my own responsibility, but soliciting his opinion as to Captain Francis' section. His reply of same date, (Appendix H,) barely admits the danger, says he would not

would have been saved by a spandril arch and the haunches of the main arches would have been screened from the weather, but whilst agreeing with Captain Campbell, I only regret the more deeply that whilst so clearly seeing this defect, he himself had not authorized the Contractor to turn transverse simicircular arches over the spandril, whilst the work was in progress.

hesitate to work off the job if the filling in were well tamped, luted, and drained, but consents to a trifling addition of masonry to be built without any foundation, as it is he adds probably too late for that arrangement.

The proposal for spandril walls he pays no attention to whatever till after the side walls had failed, and I am then blamed for not having done what he declined to sanction by his opinion when asked.

I then wrote to Central Office (vide Appendix C.) detailing what I had done, but clearly stating that I refrained from further precautionary measures, because Colonel Faber did not admit their necessity.

21. On the 7th October Mr. Vigor pointed out the state of his abutment and side walls to me, and seeing that his masonry was green, that his mortar had throughout never appeared to me deserving its name, and that heavy rains were occasionally falling, I shewed him that to counteract the expensive tendency he was afraid of, two strong cross walls, tying the North and South abutment walls together, would be much more effective than inward buttresses already built by the Executive Engineer to counteract an inward pressure, and similarly that his spandril-walls could also be secured by one cross-wall carried from the piers upwards, by which not only would expansion be prevented, but the filling in of the spandril would be separated with two masses, thus relieving his green brick work from half the pressure, as shewn in subjoined diagram, in which the dotted lines mark the proposed tie-walls to counteract the pressure from within, transverse connexion being the great object in view.

Vide Colonel Faber's letter of 25th August, (Appendix D.)

Colonel Faber's Note.—Perhaps it would be impossible to more clearly shew than the foregoing remarks do, how utterly unconnected Colonel Faber really was with a work he is elsewhere said to have active charge of. The plan had never been seen at all, nor this work itself for 14 days before or 38 after the note was written (I was a Prisoner to the house, and often to the Couch from 28th August to 7th October) and the very least Captain Campbell could do (*he seeing* what I neither did nor could was to have built the cross-walls which I only supposed) mistakenly he could not give a foundation to, whilst it really seems little less than childish to maintain I paid no attention to his proposal about spandril walls; for obviously what was recommended for the wing-walls was yet more applicable to spandril-ties which, of course, would rest on the solid piers themselves.

22. Mr. Vigor as a practical man readily admitted the value of the simple and cheap devise I have described, and after rightly calculating the extra cost on the spot at 6 or 700 Rupees, I immediately rode to Captain Campbell's quarters and explaining with the greatest care my proposal, and pointing out that the evil to be guarded against was only to be met by transverse cross walls binding the front and rear together, and strongly recommending him to authorize the immediate execution of the works as involving the safety of the whole structure, I left in the belief that the completion of the Bridge had now been effectually provided for.

23. I did not repeat my visit until the 16th of October and then only learnt that instead of operating transversely Captain Campbell had sought to strengthen the works by a series of longitudinal spandril and abutment semicircular arches, contributing indeed to the general cohesion of the mass, and blocking up the hollow of the spandril almost entirely, but by no means in an equal degree with the simple transverse tie-walls, and at a cost of between 2 and 3,000 Rupees instead of 700, and of what was far more valuable of additional time worth more

It is quite true Colonel Faber did on the 7th October fully set out his views as here stated, it is equally true that I did not follow the course prescribed, nor could I have done so, without putting Government to very considerable expense, for the simple reason that the spandril-walls for the spandril arches had been completed on the 21st September or 16 days previous to that on which Colonel Faber at last recommended their construction, and taking advantage of comparatively fine weather the spandril arches were all turned on the 14th of October.

Colonel Faber's Note.—It is clear that I was misled as to dates of *spandril* arches by taking para. 2 of Captain Campbell's narrative of 30th December, no doubt it then was too late for allbut the *wing-walls*; but the principle had been shewn on 10th September *before* any spandril arches were begun.

I do not now as I did not then discuss the comparative professional value attacheable to longitudinat or transverse spandrilwalls and arches, I may however perhaps here without impropriety state that I followed the English mode. For the proof of this I refer to Bree's

there than the larger sum. Accordingly it was the lack and a half of bricks instead of perhaps 40,000 which Mr. Vigor afterwards assured me had thrown his works into the monsoon month of November. If my own plan had been followed, the Bridge ought to have been opened with ease by the 31st of October, and this single circumstance will serve to shew how far the 2nd and 3rd arches were likely to be managed according to my own views as stated in the Contractor's second letter, to meet as I suppose, Captain Campbell's after thought of retaining semicircular arches on their centres from August to January, the former month being as hot and dry as in the plains.

Railway Practice, 2nd series Bridge over Clyde at Milton, Geo. Buchanan Engineer and Aide Memorie Vol. III, fol. 86.

Colonel Faber's Note.—This shews exactly what I always supposed, viz., that Captain Campbell preferred his own sources of information, to the opinions I gave him. Had the object been only to fill up the spandril hollows with light masonry instead of heavy earth, he might safely have conformed to the precepts of the authorities he quotes. Unfortunately (as in the position of his buttresses) he fails to perceive that the object was to strengthen the too weak side walls, and to prevent their bulging outwards, from internal pressure, by connecting them together by transverse tie-walls.

60,000 Bricks were all that Mr. Vigor required, and they were supplied (see para. 18 above) in October. He only took 3,000 from me to complete in November.

Colonel Faber's Note.—But how long had he to wait for them?

The 2nd and 3rd arches were built according to Colonel Faber's expressed desire and the ring system was abandoned, in support of this I may here quote his letter to me of 6th September, (Appendix J.) in which he writes "I have told Vigor that he may uncenter No. 3 to-day, but that was before the heavy rain of yesterday," and I beg also to refer to Mr. Vigor's report to me of the 10th December (Appendix K.)

Reviewing these what I have written the following are my own conclusions.

1st. The Plan and centre were adequate nd safe, and the rates and time sufficient, but transverse spandril arches would have been preferable to filling in with earth.

2ndly. There seems to be no reason assigned or assignable for non-completion within the fixed period, 31st of August.

3rdly. The controlling Executive Engineer wholly failed in exacting a proper degree of expedition at the most favorable season for Bridge operations, and holding strong opinions of defective provisions and precautions such as

The best proof of the insufficiency of the Plan and centre is that the walls failed under pressure of earth behind them, though every precaution was used in filling, tamping, and luting with stiff clay, while in place of the defective centre which fell twice, the Contractor constructed another of his own at considerable extra expense.

4 Months and 21 days were consumed on the 1st arch which was uncentered on 21st July, the failure of centre arch and 2 sets of centerings caused delay and great loss to Contractor.

I recommended Asphalte and objected to the defective footing of the Eastern pier, but my immediate superior, Captain Francis, declined the former and built upon the latter as it was, then how could I possibly authorize them.

Asphalte to the extrados and better footingg iven to the foundation, and weakness of centre, he neglected to authorize the same whilst subsequently by the construction of inner abutment and wing-wall buttresses and of longitudinal arches he ordered much more costly additions on his own responsibility.

4thly. That the mortar was abominable and altogether unfit for the triple dose of the sand agreed upon and which Captain Campbell should have discovered and amended, I am credibly informed that after inspecting the ruins, the District Engineer, Mr. Fraser, expressed an equally unfavorable opinion of the bricks, which he represented to be soluble in the stream where they had fallen.

Finally it remains to offer an opinion as to the amount of reconstruction to be borne by the Contractor, and this I am constrained to recommend shall not exceed one half. My reasons are, that I am confident if Mr. Vigor had been employed under Mr. Fraser or other professional Officer of skill and experience, the work would have been finished by the 31st of August and at a latter period it would have been completed by the 31st October, if the Executive Engineer had not compromised its safety and virtually caused the disaster by imposing on the Contractor a system of arches for the construction of which there was neither time nor material at hand. But the most important reason of all is that the Executive Engineer having submitted the Contract for the private opinion of a Civil Judge of acknowledged ability (Mr. Holloway from Calicut) has been assured that the Contractor would come off scot free in any Court of Law in the Madras Presidency. There is much in the honesty, sturdy, manliness and shrewd sense of Mr. Vigor to enlist ones sympathies in his behalf, and I shall be glad if under all the circumstances set forth, the Government shall feel at liberty to accept his terms.

(Signed) J. CAMPBELL, Captain.

I have, &c.
(Signed) C. E. FABER, Col.,
Chief Engineer.

(A true Copy.)
(Signed) CHARLES A. ORR, Captain,
Superintending Engineer in charge S. C.

Forwarded to the Special Executive Engineer at Jackatalla with reference to Extract Minutes Consultation No. 407, dated 18th February 1859, and the Chief Engineer's Proceedings thereon No. 8100, dated 23rd Feby. 1859.

Colonel Faber's Note.—Why could he not have applied Asphalte to the extrados? if he wished, there was no Captain Francis.

These were measure of emergency in a degree recommended by Colonel Faber himself on 7th October and of which he on the 19th October spoke as follows "you have gone very thoroughly "(but too expensively) to work at the W. B. "which seems now saved."

For the quality of materials again I appeal to Colonel Faber's written Statement to me, (Appendix D.) of 25th August, in which he says "in "re Mr. Vigor I like his Bridge work, his ma- "terials and himself, and I cannot doubt that "your acceptance of his offer as adumbrated in present M. S. highly advantageous to Government." If the mortar had been of this quality, surely Colonel Faber in his constant inspection would have noticed it or at least not have expressed approval of materials. Mr. Faber never inspected the ruins of this Bridge till 6 weeks after this letter was written and never expressed the opinions attributed to him (vide his lettter attached Appendix M.)

By Colonel Fabers own shewing para. 23 ante the system of arches had been completed between 7th and 16th October. The arches were really completed on 12th and measured by Overseer Menzies. Out of the 7 days 4 rained and could work have been done quicker with safety?

It is submitted that almost up to the time of the failure of the work the tone of commendation was unbroken; but from that period the censure is as strong as the following para. from Colonel Faber's letter of the 26th "November conveys. (See appendix N.) Had Vigor "wished the arch to fall he could not have done "more than he has or better suited to the purpose."

No. 100. Read the following letter from Colonel C. E. FABER, Chief Engineer; to J. D. BOURDILLON, Esq., Secretary to Government, dated 5th April 1859, No. 9335.

SIR,

It is with much concern that I am again compelled to trouble the Government with some papers and explanations about the Waterloo Bridge, its contract, its re-construction, and the transferance of Mr. Vigor's Securities.

2 Original letters with 17 do. Enclos.

2. The documents I am obliged to forward seem to me not only of a perplexing, but in some respects of a self contradictory character, and I cannot say that I think any of them are either satisfactory in themselves or creditable to the Writers.

3. I have first to solicit attention to the despatch of the 29th Ultimo, from the Superintending Engineer on special duty at Jackatalla, covering two enclosures, one from the Executive Engineer, and one from the Contractor, and I find it very difficult to deal with this letter from an Engineer Officer in Lieutenant Colonel Lawford's position.

4. The decision of Government conveyed in Extract Minutes of Consultation No. 674, of the 22nd Ultimo, ought to have found its most vigorous and effective supporter in the Superintending Engineer on the spot, who I had deemed bound to enforce his very clear instructions but by an inexplicable fatality the very order by Telegraph forbidding interference with operations in progress will be seem to have had the effect of stopping Mr. Vigors' work of re-construction altogether, and by the conclusion of his letter, it will be observed that Lieutenant Colonel Lawford demurs to the resolution of Government being earried into effect, so that the Superintending Engineer's presence, instead of proving a means of facilitating matters, is rather a source of embarrasment especially in making himself the channel of communicating much voluminous and often irrelevant other matters.

5. MR. Vigor's reasons for recusancy seem to me of little if any value, regard being had to antecedent full discussion and disposed of the topics now re-urged. The only novelty is the alleged "instructions and promises" of Colonel Faber. The former were confined to directions how to recover and store the bricks in the bed of the stream, as I was riding past the work for the last time en route to Ootacamund; and as to the latter, I was not in a position to give any promises whatever, and the more so that I fully alike believed and hoped an accident which took in November would have been placed before Government before I rejoined the Central Office.

6. I now arrive at a second series of papers elicited by Extract Minutes of Consultation No. 593 of 15th Ultimo, on the subject of Mr. Vigor's Securities being non-availabe for the Waterloo Bridge Contract, because transferred to a later and much larger agreement between Captain Campbell and Mr. Vigor.

7. The first paper on this branch of the subject is a somwhat remarkable letter of the 22nd Ultimo, from Lieutenant Colonel Lawford, to the Special Executive Engineer at Jackatalla containing four questions for reply, and the latter of which strikes me alike objectionable in its suggestiveness and imputativeness, albert it fails to elicit any very *direct* response.

8. But I must here acknowledge that I now and to my shame be it spoken for the first time, seem to obtain some clue towards explaining, the previously inexplicable difference between the Contractors early activity (which won my first good opinion and which remained in full force to the end of August) and that lax and dilatory progress which, subsequently characterized the Contractors proceedings, and which eventually sealed the fate of the Bridge. It seems now to be something more than conjective that the mot d' enigme of the diminished working parties at the Bridge is to be found in the new Contract at Jackatalla and in the advance Mr. Vigor received from Captain Campbell, of which I was wholly ignorant until the paper now received enlightened me. It argues however, no small lack of penetration on my own part, that I failed to detect this connexion between cause and effect even at the time; but my confinement to the house and illness, together with the disappointment caused by the slow progress of the bridge had tended to nearly extinguish the active personal interest I naturally took in the earlier part of my residence.

9. I entirely concur with all that Lieutenant-Colonel Lawford states in the second para. of his letter of the 22nd Ultimo, and it raises my wonder that Captain Campbell should have

actually authorized Mr. Vigor to commence (and apparently to carry on with considerable vigor) new operations when he could not but be aware that even if the Bridge were not languishing for want of stronger gangs, it was obviously his duty to allow no action to be taken on the new agreement until the old one, by being worked out, had set Mr. Vigor free. I do not say that this applies to Carpenter's work in doors and windows, for that class of Artificers was under a fixed agreement to work for Mr. Vigor and was no longer wanted at the Bridge, but I do maintain that the common labourers for the excavation of the foundations, and perhaps also (for I am not certain) the Bricklayers for the masonry of the block of Jackatalla Married Quarters, were greatly required at the Waterloo Bridge.

10. Captain Campbell's reply to the Superintending Engineer's letter above stated is numbered 310, and dated the 28th March and is sufficiently brief and cetegorical, except that when called on to state the position of the Bridge on the 20th September, he observes that I had consented to the last arch being uncentered on the 6th Idem. The dilemma was to shew the Bridge was far enough advanced to make the completion of the second Contract prudent and unobjectionable on the 20th September, and yet so backward as to allow of all October and November being required for the work without culpability or responsibility to himself as the controlling Officer.

11. From Campbell's answer to query 4, he would seem to wish his readers to infer that though he made no official report to Colonel Faber (with whom he had no official relations of any kind) of Mr. Vigor's Securities having been transferred, yet that my personal cognizance was by no means wanting. This again affords an excellent test of the amount of intercommunication between the Executive Engineer and myself, and of my interest in impending arrangements, that the whole of the legal measures and of the execution of the Contract for the Married Quarters, were carried on so completely without my knowledge that Lieutenant-Colonel Lawford's Telegram after he reached the Hills was the very first information of the transfer of Securities that I ever received.

12. As to the Contract being "a simple concession to Colonel Faber's very strongly urged opinions," I utterly repudiate the allegations as one unfounded on fact. It now seems, what I did not even know, that during my absence with His Lordship the Governor in April 1858, Mr. Vigor had already tendered for the work in question. My own intervention and very strongly urged opinions were limitted to telling Captain Campbell towards the end of August that I thought favorably of Mr. Vigor and that an offer to build for Rupees 50,000, what was Estimated at Rupees 66,000 was too good to be neglected. But of Mr. Vigor's circumstances I knew nothing whatever, and of course I took it for granted that all details and Securities would be placed on a thoroughly satisfactory footing by Captain Campbell himself, for it will be readily believed and must indeed be self evident that considerations of such a nature would be the last for an Officer on Sick Certificate to enter into.

13. I will only add on this renewed endeavour on the part of the Special Executive Engineer to shift his burden of responsibility from himself to Colonel Faber, that if even the allegations were as true as I emphatically pronounce them to be otherwise, Captain Campbell is perhaps the last man in the service whom it can be necessary to inform that an Officer cannot divest himself of the direct responsibility of his own personal acts, and still less by endeavouring to place it upon an Officer absent from duty on Medical Certificate.

14. In regard to para. 2 of No. 310, I hold it to be self contradictory if between the 20th of September and the 26th November 1858, other besides Carpenters' work were performed, a question it might be well to ask by Telegraph.

15. But if Captain Campbell's reply to Lieutenant Colonel Lawford be brief, the Appendices to No. 306, in reference to Extract Minutes Consultation No. 593, dated the 24th March are very numerous, and I humbly conceive such as Lieutenant Colonel Lawford should have declined to receive, commending as they do on his own acts and orders in the Central Office, and on those of his superior Officers, Captain Francis and Mr. Fraser. I consider Captain Campbell to be both disrespectful and insubordinate in thus again re-arguing matter finally disposed of and which he embodied in his letter to His Lordship the Governor of the 26th July last. I trust the Government will not wholly overlook the unmilitary conduct of Captain Campbell on this particular.

16. After all, so well as I can understand the case, Mr. Vigor's Securities never have been rendered unavailable, the transfers of the 20th of September 1858, in the Ootacamund Civil Court being personal and general, rather than specially referring to the Block of Married Quarters, and Lieutenant Darling expressly states that the Registry was to enable Captain Campbell to make advances of cash on account of any Public Works, but that no particular work was specified.

17. In conclusion, I have to call attention to the cash transactions which have unauthorizedly taken place between Captain Campbell and Mr. Vigor, and to avoid the delay of making copies, I again beg leave to forward all these documents in original, viz.:

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty; to Colonel C. E. FABER, Chief Engineer, dated Jackatalla, 29th March 1859, No.

SIR,

With reference to Extract Minutes Consultation No. 674, dated 22nd March 1859, I have the honor to forward the accompanying papers conveying the refusal of Mr. Vigor to complete the original Contract of the Waterloo Bridge and his reasons for the same.

2. With regard to para. 5, I beg to observe that in resuming work on the Bridge, Mr. Vigor certainly was not acting on his first Contract, but as he states on the presumed acceptance of the terms proposed in the Chief Engineer's letter to Government* of which he was well aware.

* 24th January 1859.

3. When I found the work in progress I told the Contractor I would apply for instructions, which I did by Telegraph, and the reply that "I "should in no wise interfere," I communicated to Captain Campbell, who having misunderstood both my previous conversation and my transmission of the Telegram, conveyed an order to Mr. Vigor to stop the work.

How? To that "non-interference" arrests all operations in progress.

4. I do not think this is a matter of any real importance, as Mr. Vigor would not have been able, however willing, to carry the Bridge to completion on his own resources, and as already explained, his Securities were considered no longer available.

5. I am decidedly of opinion that it is necessary to complete the Bridge without the intervention of any Contractor, because I believe that while labour is so scarce at Jackatalla as to cripple the works under the Executive Engineer, any such intervention of a private speculation can only add to the difficulty.

6. Without taking on myself to offer an opinion on the probable success of an action against Mr. Vigor on the part of Government, supposing his Securities still to stand good, I must candidly confess my hope that such a measure will not be adopted.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty, dated Jackatalla, 29th March 1859, No. 312.

SIR,

I have the honor to forward copy of a letter just received from Mr. Contractor Vigor, in which for reasons assigned, he distinctly declines to carry out the original Contract for Waterloo Bridge.

Letter from Mr. VIGOR, Contractor; to Captain J. A. CAMPBELL, Special Executive Engineer, Jackatalla, dated 29th March 1859.

SIR,

cording to promise I beg to submit my reasons for declining to carry out the original for the Waterloo Bridge.

1st. In my Contract I am not responsible for the stability of any portion of the Bridge, except the foundations and centering.

2. The side-walls were insufficient for the pressure of earth that was to come against them under any circumstances, the height of filling being 15 feet, and the thickness of the walls 2′ 3″*

* (At top and 4′ 3″ at bottom) 15th April.

3. I warned Colonel Faber of the danger the arches were in, in consequence of the weakness of the walls.†

† And (disregard his advice to build cross-walls.)

4. The extra work ordered by the Executive Officer will prove the insufficiency of the side-walls.

admitted.

5. I was re-constructing the Bridge at my own risk, depending on the justice of the Government, and the instructions and promises I had received from Colonel Faber, when I was stopped by an official order from the Executive Officer.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer; to Colonel C. E. FABER, Chief Engineer, dated Jackatalla, 29th March 1859.

SIR,

Referring to Extract Minutes Consultation No. 593 dated 15th March 1859, I have the honor to forward the enclosed papers received from Captain Campbell on the subject of the transfer of Mr. Vigor's Securities from the Waterloo Bridge, to the Married Quarters at Jackatalla.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty, dated 28th March 1859.

SIR,

In reply to your letter of 24th Instant, I have the honor to submit the following replies.

I. Mr. Vigor's Contract for the Married Quarters was executed on the 20th of September 1858.

II. The actual state of Waterloo Bridge was such, that on the 6th September Colonel Faber wrote to apprize me that he had given Mr. Vigor permission to uncenter the last or Western arch that day.

III. The transfer of Mr. Vigor's Security took place on this wise. My Assistant, Captain Dobbie, forwarded to me under date 13th September, the valuation of the property tendered by Contractor, amounting on measurement to Rupees 12,487-11-8, Lieutenant Darling on the 23rd of September 1858, effected the transfer from Captain Francis to my name in open Court of the Subordinate Judge at Ootacamund. Appendix A is the old Security given to Captain Francis, founded on no valuation. B is the new Security on valuation assigned to me. The registry was made on my letters, (vide Appendex C. & D.) Nos. 158 & 171 of 16th and 22nd September 1858, and Lieutenant Darling distinctly states, (Appendex E.) that the registry was for advances in general and not for any specific work. This is the case, though the Security was immediately intended to cover advances on Married Quarters.

IV. I did not make any Official Report to Colonel Faber, of the transfer of the original Security papers. The Contract was a simple concession to Colonel Faber's very strongly urged opinions and advice, he was perfectly aware that Contractor's whole means were embarked in Waterloo Bridge.

2. You demand explanation as to how Mr. Vigor with confessedly inadequate means, could proceed with a 2nd Contract, when unequal to the fulfilment of the first. In reply I have honor to submit, that the 2nd Contract was never allowed to interfere with the first, the chief for making it before completion of the Bridge was simply that Mr. Vigor might not

services of 18 Carpenters, bound to serve him for 2 years, these men who had no longer any work on the Bridge, became on execution of this Contract immediately available for making up Doors and Windows for a Range of Married Quarters, which were accordingly prepared from the Bridge centerings.

A.

Know all men by these Presents, that I, Reuben Vigor, Architect and Builder at Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree and bind myself fully in the sum of Company's Rupees (10,000) ten thousand, to Captain Peregrine Madgwick Francis, Civil Engineer, Seventh Division, or in case of his removal to his successor, whoever he may be, for the due and lawful fulfilment of my Contract made and executed between me and the said Captain Peregrine Madgwick Francis, Civil Engineer of the Seventh Division, and I do hereby voluntarily make over my Plan and Title Deeds of my Property situated at Ootacamund, and one Purchase Receipt, together with my House and all Buildings attached thereto, together with the Bond of Security executed by Mister Edward Atkins, for Company's Rupees 5,000, five thousand.

As Witness my hand and seal at Ootacamund, this thirtieth day of December, in the year of our Lord one thousand, eight hundred and fifty-seven.

Witnesses.

(Signed) GEORGE EDDINGTON,
(Signed) EDWARD ATKINS.

(Signed) R. VIGOR.

This is to Certify that the above Deed of Mortgage was registered before me in open Court this 17*th day of September* 1858, at 2¼ o'clock, P. M. and that the copy thereof is entered as No. 3 of 1858, in page 6 of the Registry Book of Deeds of Mortgage of the Subordinate Court of Ootacamund.

Given under my hand and the seal of the Court, this 17th day of September, A. D. 1858.

(Signed) E. W. BIRD,
Sub Judge.

"Seal."

A.

Know all Men by these Presents, that I, Edward Atkins of Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree, and bind myself, on behalf of Mister Reuben Vigor, Architect and Builder of the said place and station, to be Security for him, the said Reuben Vigor, and on his behalf, to Captain Peregrine Madgwick Francis, Civil Engineer of the Seventh Division, in the sum of Company's Rupees (5,000,) five thousand, and I do hereby voluntarily make over and assign as Security for the said Reuben Vigor, to the said Captain Peregrine Madgwick Francis, the Title Deeds and two Plans of my Property, known by the designation and name of "Hamilton Cottage." The Title Deeds, three in number, bearing the numbers fifteen, twenty-six, and sixty respectively, until such period as the terms of the aforesaid Contract, namely, between the aforesaid Reuben Vigor on the one hand, and Captain Peregrine Madgwick Francis, Civil Engineer, Seventh Division on the other, be fully completed and approved of.

As Witness my hand and seal at Ootacamund, this thirtieth day of December, in the year of our Lord one thousand, eight hundred and fifty-seven.

Witnesses.

(Signed) GEORGE EDDINGTON,
(„) J. O. KNOP.

(Signed) EDWARD ATKINS.

"Seal."

This is to Certify that the above Deed of Mortgage was registered before me in open Court of September 1858, at 2¼ o'clock, P. M., and that the copy thereof is entered page 7, of the Registry Book of Deeds of Mortgage of the Subordinate Court

Given under my hand and the seal of the Court, this 17th day of September, A. D. 1858.

"Seal."

(Signed) E. W. BIRD,
Sub-Judge.

B.

Know all Men by these Presents, that I, Edward Atkins of Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree and bind myself, on behalf of Mister Reuben Vigor, Architect and Builder, of the said place and station, to be Security for him, the said Reuben Vigor, and on his behalf, to Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, or in case of his removal to his successor, whoever he may be, in the sum of Company's Rupees (2,500,) Two thousand, five hundred, and I do hereby voluntarily make over and assign as Security for the said Reuben Vigor, to the said Captain John Alexander Campbell, the Title Deeds and two Plans of my Property, known by the designation and name of "Hamilton Cottage." The Title Deeds, three in number, bearing the numbers, fifteen, twenty-six, and sixty respectively, until such period as the terms of the aforesaid Contract, namely, between the aforesaid Reuben Vigor on the one hand, and Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, on the other, be fully completed and approved of.

As Witness my hand and seal at Ootacamund, this twentieth day of September, in the year of our Lord one thousand eight hundred and fifty-eight.

Witnesses.
(Signed) THOMAS DARLING, Lieutenant,
(„) E. A. P. ANTONIO.

(Signed) E. ATKINS.

This is to Certify that the within Deed of Mortgage was registered before me in open Court, this 23rd day of September 1858, at 1¾ o'clock, P. M., and that the copy thereof is entered as No. 6 of 1858, in page 9, of the Registry Book of Deeds of Mortgage of the Subordinate Court of Ootacamund.

Given under my hand and seal of the Court, this 23rd day of September, A. D. 1858.

"Seal"

(Signed) E. W. BIRD,
Sub-Judge.

Know all Men by these Presents, that I, Reuben Vigor, Architect and Builder at Ootacamund, on the Neilgherry Hills, in the Presidency of Madras, do hereby agree and bind myself fully in the sum of Company's Rupees (7,500) seven thousand, five hundred, to Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, or in case of his removal to his successor, whoever he may be, for the due and lawful fulfilment of my Contract, made and executed between me and the said Captain John Alexander Campbell, Special Executive Engineer, Jackatalla, and I do hereby voluntarily make over my Plan and Title Deeds of my Property, situated at Ootacamund, and one Purchase Receipt, together with my House and all Buildings attached thereto, together with the Bond of Security, executed by Mister Edward Atkins, for Company's Rupees 2,500 two thousand, five hundred.

As Witness my hand and seal at Ootacamund, this twentieth day of September, in the year of our Lord, one thousand eight hundred and fifty-eight.

Witnesses.
(Signed) THOS. DARLING, Lieutenant,
(„) E. A. P. ANTONIO.

(Signed) R. VIGOR.

This is to Certify that the within Deed of Mortgage was registered before
this 23rd day of September 1858, at 1¾ o'clock, P. M., and that the copy th

No. 5 of 1858, in page 8 of the Registry Book of Deeds of Mortgage of the Subordinate Court of Ootacamund.

Given under my hand and seal of the Court, this 23rd day of September, A. D. 1858.

"Seal."

(Signed) E. W. BIRD,
Sub-Judge.

C.

Letter from Captain J. CAMPBELL, Special Executive Engineer; to E. W. BIRD, Esq., Subordinate Judge of Ootacamund, dated Jackatalla, 16th September 1858, No. 158.

SIR,

I have the honor to request you will be so good as register the Mortgage Bond of Mr. Vigor's and Mr. Atkin's Property at Ootacamund, as per accompanying two valuation papers drawn up by the Executive Engineer, Neilgherry Range, in original (to be returned please) in your Court, under Act 19 of 1843, quoted in your letter No. 73 of 1st September 1858, as Security for advances.

D.

Letter from Captain J. CAMPBELL, Special Executive Engineer; to E. W. BIRD, Esq., Subordinate Judge, Ootacamund, dated Jackatalla, 22nd September 1858, No. 171.

SIR,

I have the honor to request you will be so good as have registered in your Court in my name and favor, the two Bonds accompanying. Those you registered on the 17th were made out in favor of Captain Francis, and were erroneously brought before you for registry through a mistaken view of my instructions.

E.

Letter from Lieut. THOMAS DARLING; to Captain J. CAMPBELL, Special Executive Engineer, Jackatalla, dated 28th March 1859.

SIR,

With reference to your question, I have to state that as directed by yourself in September last, I presented Mr. R. Vigor's Security Bonds for registry in the Subordinate Court, Ootacamund, for the purpose I understood, of enabling you to make advances of Cash to Mr. Vigor on account of any Public Works which he might Contract for, but I do not recollect that any particular work was specified.

Letter from Captain J. CAMPBELL, Special Executive Engineer, Jackatalla; to Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle, on Special Duty, dated 24th March 1859, No. 306.

SIR,

In reply to Chief Engineer's Extract Proceedings No. 8655 and para. 3 of its enclosure, Extract Minutes Consultation No. 593 of 16th and 15th Instant, I have the honor to state that Mr. Contractor Vigor's Securities were transferred from Waterloo Bridge to a Range of Married Quarters at Jackatalla under the following circumstances.

the 23rd April 1858, Mr. Vigor sent in a tender to Captain Francis, District Engi-
ore, for a block of Married Quarters, which he offered to construct for Rupees
ut. below the Estimated cost, the acceptance of this offer in particular to
rities were transferred with a proviso and of Contracts in general was very

strongly urged by Captain Francis and by Colonel Faber, by whose direction I was told that if I objected to carry on the works on these conditions (that his Contract given by my Superiors) "that there would be no difficulty in finding another Officer to do the duty" see copy of letter No. 238 of 12th May 1858 attached, marked A.

3. In August 1858, Mr. Vigor reverted to his offer to build a Married Quarter Range for 50,000. This offer Colonel Faber strongly recommended for my acceptance adding (Vide Appendix B.) "It seems to me a bad bargain for him and conversely an admirable one for you, as he is solely in your power," and the Chief Engineer further urged me to advance ¼ of the aggregate or Rupees 12,500 before commencing the work.

4. Now after the lengthened correspondence with District and Central Officers in both of which my views (with reference to Contracts at Jackatalla, vide Appendix C and D) had been overruled, I did not like to act in opposition to Colonel Faber's advice, the more so that at this very time that Officer had expressed great satisfaction with Mr. Vigor's Contract work on the Bridge which was then so far advanced, that apparently the Securities might be safely transferred to the Married Quarters, and on which in no other way could the prescribed advance which I took on myself to reduce to 5,000 be possibly made. Mr. Vigor having no other available Security.

5. Thus the transfer was made and the Contract given, but on the express understanding that the completion of the Waterloo Bridge should be in no way interfered with, and though the anticipated result has not been realized, I venture to put the question, would any Officer under the circumstances have acted otherwise than I did? and this fact furnishes another proof of the systematic attention which I paid to Colonel Faber's views, while diametrically opposed to my own.

6. This statement would not be complete if I omitted to add that on the 3rd December 1858, Mr. Vigor (Appendix E) petitioned for a release from the Married Quarter's Contract on the ground that he could not work on the rates contracted for; well knowing the truth of this, I consented as far as I was concerned to allow him (10,000) ten thousand Rupees more, provided always the Bridge was re-built to my satisfaction, but I would not consent to destroy the Contract for (50,000) fifty thousand Rupees till the Bridge was completed, for which completion it was the strongest collateral Security I could have, inasmuch as the Contractor by completing the Bridge stood to lose 4,000 less, than if as a penalty for failing in his engagement, compelled to work out his Married Quarters Contract for 50,000.

7. In the end of February Mr. Vigor begged to be let off building the Married Quarters on any terms, he said he could make nothing on it, owing to his want of capital, at 60,000 Rupees, he then asked me to measure up his work, and settle his account which I readily did, and made him an advance of Rupees 3,548 on the transferred Securities, to carry on the Bridge work which he did up to the 15th Instant.

8. I have the honor to forward this explanation with Documents, A, B, C, D and E, for the information of and submission to Government.

A.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Southern Circle; to the District Engineer of Coimbatore, dated 12th May 1858, No. 238.

SIR,

I am directed to acknowledge the receipt of Captain Francis's letter No. 133, dated 6th May 1858, with its enclosures, with reference to which the Chief Engineer is fully of opinion that the views held by Captain Campbell on the subject of Contracts for portions of the work, under his Executive charge, are untenable, while those of Captain Francis and Mr. Fraser are just and binding on the Officers of this Department.

2. This decision is not only founded on general principles, but is in strict acc[ord] the practice at the Presidency, where alone the Contract system has ever been a[llowed] for under the late Military Board, the Superintending or Executive Engineer [had] actly the same functions in regard to Contract works, as those recommended by M[r.]

3. The Chief Engineer is quite disposed to accede to your proposition that Mr. Vigor should undertake the construction by Contract, of at least one block of the Married Quarters, at 2½ per cent. below the Estimate, and if Captain Campbell still objects to carry on the works, under these conditions, there will be no difficulty in finding another Officer to undertake the duty.

4. You will be pleased to report more fully on the quality of the sand used by Captain Campbell noticed in para. 7 of Captain Francis's letter.

B.

Blackheath, Coonoor, Wednesday, 25th August 1858.

MY DEAR CAMPBELL,

* * *

Meanwhile here is Mr. Vigor with a specification rather than a tender for 50,000 Rupees, for a block which by my Memo. is sanctioned for some 66,000 odd. It seems to me a bad bargain for *him* and conversely an admirable one for you, as he is solely in your power. * * *

Believe me ever your's,

(Signed) EDWARD FABER.

C.

Letter from Captain J. CAMPBELL, Executive Engineer, Jackatalla; to the District Engineer of Coimbatore, dated 17th April 1858, No. 385.

SIR,

I have the honor to acknowledge receipt of your letter No. 95 of 6th Instant, in which you propose arranging with me before you leave what works you think should be given on Contract; meeting my wishes as far as your views will allow you, also stating it as your opinion that the following works

		Rs.
1.	Tower, Estimated at	32,000
2.	Mill	40,030
3.	Bakery	14,230
4.	Gun Shed	740
5.	Prison Cells	say 32,000
6.	Bath	4,700
7.	One Married Block	66,333
		1,90,033

may with advantage to general progress be assigned to Mr. Vigor, a discharged Soldier from H. M's. Regiment, whose whole Security apparently is his dwelling house at Ootacamund; or other Contractors, had he however or any other Contractor been in a position to furnish much more tangible Security, I would not on any account at this date pledge myself to give a Contract to one person for more than one work at a time, and I must now distinctly record my strongest pro[test] against any Contracts whatever being granted for any work framed on my Estimates and executive charge, except such Contract be given by myself and on my own terms, re given without my consent, then in justice I should be absolved from all for the quantity or quality of the work done, as well as for the execution e estimated cost, I do not by any means assume that it is your wish to Government under my charge) out of my hands and assign them to Consent, but to prevent all misunderstanding, I now record my opinion and pledging myself to any Contracts whatever. Should your views however, nds of objection still lead you to differ from me, should you still wish to orks by Contract, a point which I consider a strictly executive one, fall- own province, and narrowly effecting my own administrative arrange- ture, and therefore a point on which I should so far from being interfered and unfettered, then in that case I have the honor to request you

will submit your proposal together with this my letter of remonstrance to the Chief Engineer for his consideration and opinion.

2. As a general principle, I am averse to give to a Contractor a job which I can perform better myself, especially when it is the Contractor's avowed object to make as much as he can at the expense of Government, for all he gains Government must pay, except perhaps in the one item of time, and that gain even is very uncertain. I cannot perhaps better illustrate some of my particular objections than by the case of Waterloo Bridge, by this Contract (yielded at your request) where I had myself to furnish (155) one hundred and fifty-five Tons of Lime Stone, I calculate I have sustained a direct loss on my Estimates of at least (3,000) three thousand Rupees, for the centering alone (which stand in your Estimate at Rupees 4,961) would have been worth the former sum to my works when the Bridge was finished, the above sum is a direct loss to Government, and the same rule may be applied in a different ratio to the item of 623 for scaffolding, much of which would have cost me little more than the carriage and fixing.

* * *

I could easily adduce other ill effects likely to arise from the Contract system, but I trust I have said more than sufficient to shew you that if carried out it would cut the very ground from under my feet, the Contractor would become a real Executive, while I should be a mere middleman between him and the District Engineer.

3. There are, I allow, some works which it might be desirable for specific reasons to assign on Contracts, hence it was that I gave Contracts* for the Commissariat Godowns, for two Bridges on Coonoor Road† and for the Commissariat Staff Serjeant's Quarters‡, and there are still other works before me which, as far as I can judge at present, might be given on Contract, but I repeat the assignment in its date and terms must entirely be in my own hands, or my works may be most seriously interfered with, and this I have now made it my duty fully to point out to you.

* Rupees	.....	17,040,
† „	.....	2,730,
‡ „	.....	4,680,
Rupees	.....	24,450

4. It only remains for me to notice the last para. of your letter under acknowledgment, in which on certain conditions, you have provided for taking off Mr. Vigor's hands certain materials on valuation, now I beg to state that such a course might not necessarily suit me, unless I had works going on so situated as to bring the carriage of the said materials within a reasonable distance, I do not in this case anticipate difficulty on this score, I merely advert to the difficulty in which I might on other occasions be placed, by like arrangements on the part of the District Engineer.

D.

Letter from Captain J. CAMPBELL, Executive Engineer, Jackatalla; to the District Engineer of Coimbatore, dated 24th April 1858, No. 396.

Sir,

It was I confess, with some surprise that I received your proposal No. and gin, to give the Reservoir and filter on Contract to Mr. Vigor, while the letter No. 385 of 17th Instant, were still unsettled, however I will draw tion and Contract called for, merely repeating my conviction that un my own terms (terms which the above Contractor may not accept) Gove 20 per cent. in direct money value, though they may stand to gain l

* * *

2. So fully aware am I of the certain results of the Contract syst civilized country where all European experience and theory are at f thereby be saved much trouble and perhaps gain some tempor

work, I dare not lend my own sanction to your proposal, while if my objections are overruled by the highest authority, I have at any rate done my duty in stating them fully, and on these statements I shall take my stand, should I be unable to clear these works within the Estimated cost, a result I do honestly contemplate as not all unlikely if my arrangements are interfered with.

3. I have the honor to request you will be so good as to submit this letter as well as my letter No. 385, for the consideration of the Chief Engineer when, as you propose, you lay the Contract question before him for his decision. I cannot conceive why you wish to force Contracts on any Officer in whose judgement you have confidence, after such strong reasons have been assigned for differing from you, knowing as well as I do, that we have the same object at heart, the interest of Government.

E.

Letter from Mr. R. VIGOR, Contractor; to Captain J. A. CAMPBELL, Special Executive Engineer, Jackatalla, dated 3rd December 1858.

Sir,

I, Reuben Vigor, Contractor, humbly beg the Government to release me from my Contract of No. 4 Married Quarters (Jackatalla Barracks). My reasons for this request are as follows. I find by sad experience in the Waterloo Bridge and work already done for the Married Quarters, that I cannot work for the ratio I formerly anticipated, in consequence of the high prices of materials and labour, and the many losses in the brick-fields from wet weather, and Sub Contractors failing in their Contracts The above being the case, and fearing that I shall disappointment the expectations of those who have kindly recommended me for this work, and involve myself in pecuniary difficulties, I humbly solicit the Government to release me from the Contract, for which favour I hope ever to feel grateful.

Sir,—I hope you will be pleased to forward this petition to Government, if you are not prepared to do so, please to let me know and I will forward one direct.

Letter from Lieutenant-Colonel E. LAWFORD, Superintending Engineer, Central Circle; to Captain J. A. CAMPBELL, Special Executive Engineer, dated Ootacamund, 24th March 1859.

Sir,

With reference to your letter of this date No. 306, I have the honor to request you will be good enough to state distinctly the following points, viz.:

1st. The date on which Mr. Vigor's Contract for the Married Men's Quarters was accepted and confirmed by you?

2nd. The actual state of the Waterloo Bridge work at the above date.

3rd. The means by which the transfer of his Security for the first Contract to the second was effected?

4th. Whether Colonel Faber was aware of the transfer of the Security?

It appears that the second Contract was made about three months before the fall of the Bridge, d it should be explained how Mr. Vigor could proceed with the Married Men's Quarters, when ere confessedly inadequate to the efficient fulfilment of his first Contract. When the e Bridge was found to be so slow as to endanger its safety, it would surely have to compel the Contractor to give his entire attention and all his available strength n, rather than endeavour to carry on simultaneously a second work, demanding n.

glad to be favored with your early reply to this enquiry.

Minute by the Honorable the President, dated 8th April 1859.

ent from these papers, from those contained in the other bundle circulated here- Captain Campbell's repeated confessions of inability to complete within a reason-

able period, the important works entrusted to him, unless a large amount of forced labour were placed at his disposal by the neighbouring Collectors, that he has mistaken his profession, and that it would not be for the public advantage that he should continue to be connected with the Department of Public Works. I therefore propose that his services should be re-placed at the disposal of the Commander-in-Chief, and that the Chief Engineer should advise the Government as to the selection of a qualified Officer to be entrusted with the completion of the Barracks.

2. With the more full knowledge which we now possess, I see no advantage in proceeding against Mr. Vigor. If any account remains to be settled with him, that should be done, and we should have nothing more to do with him as a Contractor.

3. Might not assistance for the completion of the Barracks be obtained from the Sappers and Miners or from the European Soldiers working for extra pay? We constructed Barracks for an entire European Regiment in the Jamaica Nilgiris (Blue Mountains) at a very moderate cost, through the agency of the Troops themselves.

C. E. TREVELYAN.

No. 101. ORDER THEREON, No. 864; dated 12th April 1859.

Para. 1. The Government have given their attentive consideration to the correspondence placed before them in the letters of the Chief Engineer recorded above; as well as the papers already to be found on their records regarding the progress of the Jackatalla Barracks, and the circumstances connected with the failure of the Waterloo Bridge at that Station.

2. The Government are decidedly of opinion that Captain Campbell was the Executive Officer in charge of the Waterloo Bridge, and that his attempt to throw the blame on Colonel Faber fails entirely. His business was to inspect progress, to object to departures from plan, or bad material, and to keep the Contractor to time; but in all these particulars he appears to have altogether failed.

3. It is however evident from the papers before Government and from Captain Campbell's repeated confessions of inability to complete within a reasonable period the important works entrusted to him unless a large amount of forced labor were placed at his disposal by the neighbouring Collectors, that it would not be for the public advantage that he should continue to be connected with the Department of Public Works. The Government have therefore resolved to replace his services at the disposal of His Excellency the Commander-in-Chief.

4. The Chief Engineer will be requested to consider and report whether assistance for the completion of the Barracks may not be obtained from the Sappers and Miners, or from Soldiers of the Regiment at Jackatalla working for extra pay.

5. As regards the Contractor Mr. Vigor, the Government, with the further i
now before them are not disposed to proceed against him for a breach of his Cont
direct that his account be at once adjusted and that he be then released from fur
bility in connection with the Bridge Contract.

6. Pending a more permanent arrangement, Lieutenant-Colonel Lawfo
charge of the works at Jackatalla from Captain Campbell, and carry them on
He will be careful to receive charge in due form and after fully satisfying
sary points.

(Signed) J. D. BOURDILL
Secre

E.W.D. 2

No. 864.

Extract from the Minutes of Consultation
Under date the 12th April 1859.

Read the following Papers.

From the Chief Engineer — (Here enter 26th March 1859 No 9039)

From — Do — Do — (Here enter 5th April — 9335)

Minute by the Honorable the President — (Here enter 8th — — —)

P. The Government have given their attentive consideration to the correspondence placed before them in the letters of the Chief Engineer recorded above, as well as the papers already to be found on their records regarding the progress of the Jackatalla Barracks, and the circumstances connected with the failure of the Waterloo bridge at that station.

E. W. D.

The

2 The Government are decidedly of opinion that Captain Campbell was the Executive Officer [redacted] in charge of the Waterloo Bridge, and that his attempt to throw the blame on Colonel Faber fails entirely. His business was to inspect progress, to object to departures from plans or bad material, and to keep the Contractor to time; but all in these particulars he appears to have altogether failed.

3 It is however evident from the papers before Govt. and from Captain Campbell's repeated confessions of inability to complete within a reasonable period the important works entrusted to him unless a large amount of forced labor were placed at his disposal by the Neighbouring Collectors, that it would not be for the public advantage that he should continue to be connected with the department of Public Works. The Government have therefore resolved to replace his services at the disposal of His Excellency the Commander in Chief.

4 The Chief Engineer will be requested to consider and Report whether assistance for the completion of the Barracks may not be obtained from the Sappers and Miners, or from soldiers of the Regt. at Jackatalla working for extra pay.

5 As regards the Contractor Mr. Vigor, the Govt. with the further information now before them are not disposed to proceed against him for a breach

of

of his contract. ~~And~~ They ~~re-~~
~~quest~~ direct that ~~Mr Tyson's~~ his accounts
be at once adjusted and that
he be then released from further
responsibility in connection
with the bridge Contract.

6. Pending some permanent arrangement, Lt Col Lumsford will take charge of the works at Jacksatta from Capt. Campbell and carry them on till further orders, He will be careful to receive charge in due form & after fully satisfying himself on all matters by Counts.

R. E. Office [illegible]

[illegible] to
[illegible]

Cons 25 Feb 59 - No 35 -
17 Augt - 58 - 122 - 124
22 March 59 - 133 - 134.
15 " - 129 - 130.
1 April - 61 - 62

Fortifications 1859 - Dept.
Cons. 12 April

No. 864.

Extract Mins of Cons.
of 12 April 1859.

From Capt. J. Campbell
1 July 59 & No. 1908. on Cons.
From Chief Engr. of 8 November 59
No. 2905 - Reports the state of the Waterloo
Bridge on Cons.
From Do. of 19 Decr. 59 & No. 2981
From Do. of 5 Feb. 60 & No. 2241
Placing the services of Captain
Campbell in Charge of the Waterloo
Bridge, at the disposal of the Comr.
under in Chief - The Chief Engr. to
report whether assistance for the
completion of the Dacca Cantonment
Barracks may not be obtained
from the Sappers and Miners or
Volunteers of the Province - &c.
&c. &c.

No 99 - 100 - 100 a & & 1081.