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Public works **DEPARTMENT.**

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213-214

Dated 10 — 1 — 1866.

Not to be folded or roughly handled

No. 243. Read the following Endorsementof the Superintending Engineer, 7th Division, dated Coimbatore, 15th December 1865 :—

Read the following letter from the Executive Engineer, Neilgherry Range, to the Superintending Engineer, 7th Division, dated Ootacamund, 9th December 1865, No. 201 :—

1. I have the honor to report that on the night of Tuesday the 5th instant, the south-eastern angle of the plateau of the Neilgherries was again visited by a terrific storm. The storm appears to have been quite local, and confined to this portion of the hills extending down the ghât at Coonoor only about five miles ; at Ootacamund though the lightning was very vivid it was evidently a long way off, as very little thunder was heard, and only an ordinary heavy shower of rain fell at about 3 A. M. Taking the mean of the Garrison Hospital and Public Works rain gauges at Wellington, the amount of rain which fell was 7½ inches in about the same number of hours, the storm commenced at about 8 P. M. and continued with unabated violence until nearly 3 A. M., the water at the Coonoor bridge rose two feet higher than it did on the occasion of the storm of the 23rd ultimo, which you witnessed when at Coonoor, the water stood to a height of five feet in the Sub-Magistrate's Office at Coonoor.

2. The damage done to Public Works in the Coonoor Sub-division of this Range is very considerable.

3. At Wellington it was reported to me that the rain was driven into the open colonnades of the Barracks in streams, and that the whole of the public buildings leaked considerably, which is only what might be expected in such unusual weather ; but on my inspection of the buildings on the 8th instant, none appeared to have sustained any real damage from the storm.

4. The outer edge of the plateau, in front of the married men's quarters, has sunk considerably, and in one place a deep hole has been cut in the embankment.

5. The Cantonment roads in some places have suffered considerably especially that portion of them situated to the north of the Barracks, where the foundation of a small brick bridge and the abutments of timber bridge have been undermined, and much of the road-way swept away ; the road from Wellington to the peat bog is reported as impassable, the water does not appear to have risen more than six inches higher in the Waterloo stream at Wellington than it did last time, the large timber bridge over this stream, though its platform was reached, is in perfect order.

6. On the road from Coonoor to the new forest, all the jungle-wood platform bridge have been destroyed.

7. The Sapper valley stream rose at least three feet higher than it did during the last storm, over-flowing the lower road to Coonoor and cutting it up a good deal.

8. The Commissariat bridge on the Waterloo stream this time lost one of its down-stream struts, some twenty odd feet of its left approach has been carried away, but the little bridge stands as firm as ever.

9. Between Wellington and Coonoor, on the road from Ootacamund to Coonoor (just opposite the burial ground), a tremendous slip took place, and another

none appeared to have sustained any real

lower down nearer to Coonoor, entirely blocking up the road, the whole of the Coolies employed on this line were set to clear it on Wednesday, and yesterday the road was open for carts and carriages again.

10. The stream running in the valley between Wellington and Coonoor became a huge river, and rose to an unprecedented height, the water flowed at least a foot above the road-way of the "Victoria bridge." I carefully examined this structure, and found the old cracks in the haunches of the bridge a good deal opened, and the crown of the arch apparently has sunk a few inches, the water was too deep to allow of my ascertaining if the foundations of the bridge have been exposed or not; the stone revetments in the angles of the wing-walls have been on one side washed away, and those on the other a good deal shaken; lower down this stream the timber truss bridge known as the "Mission bridge," is gone, a portion of one of the trusses is now sticking in a tree near the market place, and the water-mark shows that the platform must have been submerged at least two feet before it was swept away.

11. Some fifteen huts situated on the right bank of this stream, just below the site of the bridge, and two lines of huts known as the "Agraarum" on the left bank, just below the market place (at Coonoor), have been destroyed; two Brahmins, one a Revenue Goomastah and the other a College Moonshee, were swept away in the torrent.

12. At the junction of the Waterloo and Coonoor streams, the water must have risen above the crown of the arch of the bridge at least a foot, over-topping the wing and parapet walls and right and left approaches to the bridge, and notwithstanding the increased water-way existing in consequence of the destruction of the parapet wall and revetment at the head of the new ghát, during the last storm, as I have before mentioned, the water rose to a measured height of five feet in the Sub-Magistrate's Office, and was at least a foot in depth in the floor of the new Chuttrum; carried away the right wing-wall on the right approach to the bridge, as also the whole of the heavy revetments on its left approach, and destroyed the Sub-Magistrate's Office as well as half of the building known as "Bandy Pettah," washing away five carts and a bandyman; several portions of the roof and walls of the Sub-Magistrate's Office having fallen down the remainder leaning outwards in all directions, and being in a most dangerous condition, I had them pulled down, and all the materials that remained uninjured have been collected together. As a temporary measure to retain the road-way, and for safety sake, I have ordered a rough stone revetment to be built at once to re-place the last wing-wall of the Coonoor bridge There can be no doubt now that the water-way of this bridge is very insufficient. I would therefore recommend the addition of another arch, of similar dimensions to that now existing, to the bridge on its present right approach (plan and estimate for which will be submitted if the suggestion is approved of), the head of the new ghát being thrown further back and joining the main road to Ootacamund, just in front of where the remains of the Bandy Pettah now stands, which must be pulled down and built on higher ground. I have selected a good site for this building as also for the Sub-Magistrate's Office, near the market place at Coonoor.

13. Late on Wednesday evening I received notice of the storm from the Superintendent of the Coonoor Ghát road, and on Thursday morning I went down

the ghát, and found the first four miles of the road, with a few exceptions here and there, a complete wreck; the road is considerably damaged and cut up between the head of the ghát and Mrs. Stanes' house, just above which No. 1 timber bridge has disappeared bodily, the water having risen at least three feet above it and carried away about one hundred and thirty feet of heavy rough stone revetment on its left approach as also its left abutment; here, as a temporary measure, I have turned the road further up the stream, repairing and utilizing the old causeway so that cart traffic may not be interfered with.

14. Lower down the ghát in many places channels six and seven feet in depth have been cut by the water in the very centre of the road, rocks, trees, and land slips lying in all directions; but at the one in eighteen Nullah, where it crosses the old ghát, was the most serious obstacles of all: here tons upon tons of huge rocks, large trees, bushes, and earth had been washed into the road-way, forming a perfectly impassable barrier to all but the most active of foot passengers; numbers of drivers with laden cattle going down and coming up the ghát were thus compelled to halt here. On my way down the ghát I met my Assistant, Captain Law, on his way up to join from leave, he immediately volunteered to accompany me down again, and under our personal superintendence we succeeded in getting the road opened for horse and bullock traffic by 3 o'clock in the afternoon of Thursday the 7th instant.

15. Between the one in eighteen Nullah and No. 2 bridge, above Mr. Herklott's Estate, the road has been a good deal cut up, the water seems to have gone right over the bridge to a depth of a foot or more, and though the bridge has not suffered, a heavy revetment about 100 yards below it has been destroyed; beyond this no very great damage has happened, the left (rough stone) abutment of No. 4 timber bridge just below the Corambady Estate was washed away, but has been repaired again, and I trust that by Monday, at the latest, cart traffic may again be resumed on the ghát.

16. On the new ghát numbers of heavy land slips have taken place, but these are all to the good, only one or two minor revetments have been injured; all the heavy revetments have stood the severe tests they have been put to admirably.

17. I visited the site of "Stanes' bridge" on the new ghát: notwithstanding the increased water-way, the water here rose quite two feet above the height it attained in the last flood, and swept away all that was remaining of the parapet wall of the old structure. I fear that no pier we could ever succeed in building would stand in such a torrent, and I consider the experience gained in this storm as extremely valuable with reference to the proposed bridge at this site.

18. The Coonoor stream draining from 17 to 18 square miles before it flows through the gorge at the Coonoor bridge is afterwards joined by several small streams above "Stanes' bridge" site, all, on occasions like that of the storm under notice, becoming perfect rivers; the distance of the site of "Stanes' bridge" from the head of the gorge cannot be along the bed of the river quite a mile, while the fall to this point is certainly 800 feet, the measured sectional area attained by the water at the bridge site is 1,770 square feet, the effect of such a body of water running at the velocity due to such a fall, even broken as it is here and there by short level bits, would, I fear, demolish the best constructed work in the world. I would there-

none appeared to have sustained any real

fore recommend that the site of the bridge be changed to a point below where greater sectional area of discharge is obtained by very considerable extra depth in the bed of the river, and where by building a well-sheltered masonry abutment on the left bank of the river, and using the huge rock (which you of course remember) on the right bank as an abutment, the stream might be crossed by an iron girder bridge of from 80 to 90 feet span.

19. The timber truss bridge that has been already made for this bridge might be used at the head of the ghát on the new line of communication now being opened to Wellington, the construction of which bridge does away with the necessity of re-building the timber bridge reported as destroyed in the latter part of paragraph 10 of this letter.

Submitted for the information of Government, with an intimation that the Superintending Engineer will take advantage of the Christmas holidays to consult personally with Major Farewell on his proposals for increasing the water-way of the bridge at Coonoor, and of that intended to cross the same nullah lower down on the new ghát.

(Signed) G. W. WALKER, Lieut.-Colonel, R. E.,
Superintending Engineer, 7th Division.

No. 244. ORDER THEREON, 10th January 1866, No. 118.

ESTABLISHMENT, No. 20. Ordered to be recorded.

(True Extract.)
(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

Exd. S. T. Augustin.

Received 18 Dec 05 No 201
27. 7br 1865

Executive Engineer's Office
Nulgherries
Ootacamund 9 December 1865

From Major M. Farewell
Executive Engineer

To Lieut.-Colonel G. W. Walker &c.
Superg. Engineer 7th Div.
Coimbatore

Sir,

I have the honor to report that on the night of Tuesday the 5th Instant the South Eastern angle of the plateau of the Nulgherries was again visited by a terrific Storm. The storm appears to have been quite local and confined to this portion of the Hills extending down the ghaut at Coonoor only, about five miles, at ortabout. Though the lightning was very vivid it was evidently a long way off, as very little thunder was heard and only an ordinary heavy shower of rain fell at about 3 A.M. Taking the mean of the Garrison Hospital and public works rain gauges at Wellington, the amount of rain which fell was 7½ inches in about the same number of hours, the storm commenced at about 8 P.M and continued with unabated violence until nearly 3 A.M. the water at the Coonoor Bridge rose 2 ft higher than it did on the occasion of the storm of the 23d Nov which you witnessed when at Coonoor, the water stood to a height of 5 ft in the Sub Magistrates office at Coonoor.

2. The damage done to Public Works in the Coonoor Sub division of this Range is very considerable.

3. At Wellington it was reported that the rain was driven into the open colonnades of the Barracks in ~~Cotacamund~~ streams and that the whole of the public buildings leaked considerably, which is only what might be expected in such unusual weather, but on my inspection of the buildings on the 8th Instant none appeared to have sustained any real

damage from the storm.

4. The outer edge of the platform in front of the Married men's quarters has sunk considerably and in one place a deep hole has been cut in the embankment.

5. The Cantonment roads in some places have suffered considerably especially that portion of them situated to the north of the Barracks where the foundation of a small brick bridge and the abutments of timber bridge have been undermined and much of the roadway swept away, the road from Wellington to the Pratboy is reported as impassable the water does not appear to have risen more than six inches higher in the Waterloo stream at Wellington than it did last time; the large timber bridge over this stream though its platform was washed, is in perfect order.

6. On the road from Coonoor to the new forest all the Junglewood Platform Bridges have been destroyed.

7. The Sapper valley stream rose at least 3 ft higher than it did during the last storm overflowing the road to Coonoor and cutting it up a good deal.

8. The Commissariat Bridge on the Waterloo stream has lost one of its down stream stone some twenty odd feet of its left approach has been carried away but the little bridge stands as firm as ever.

9. Between Wellington and Coonoor on the road from Ootacamund to Coonoor just opposite the burial ground a tremendous slip took place and another lower down nearer to Coonoor entirely blocking up the road, the whole of the coolies employed on this line were set to clear it on Wednesday and yesterday the road was open for Carts and Carriages again.

10. The stream running in the valley between Wellington and Coonoor became a huge river, and rose to an unprecedented height, the water flowed at least a foot above the roadway of the Victoria Bridge. I carefully examined this structure and found the old cracks in the haunches of the Bridge a good deal opened and the crown of the arch apparently had sunk a few inches, the water was too deep to allow of my ascertaining if the foundations of the Bridge have been exposed or not, the stone returns in the angles of the wing walls have been on one side washed away and those on the other a good deal shaken; lower down this stream the timber trap Bridge known as the "Mynon Bridge" is gone, a portion of one of the trapes is now standing in a tree near the market place and the water mark shews that the platform must have been submerged at least two feet before it was swept away.

11. Nine fifteen huts situated on the right bank of this stream just below the site of the bridge and two lines of huts known as the "Agraharam" on the left bank just below the market place (ah Coonoor) have been destroyed two Brahmins one a Devanga Gounadan and the other a Soliga Moonshee were swept away in the torrent.

12. At the junction of the Waterloo and Coonoor streams the water must have risen above the Crown of the arch of the bridge at least a foot overtopping the wing and parapet walls on each right and left approaches to the bridge, notwithstanding the increased water waying in consequence of the destruction of the parapet wall and revetment at the head of the new ghaut during the last storm, as I have before mentioned the water rose to a measured height of 5 ft in the Sub Magistrates office and was at least a foot in depth in the floor of the new Cutcherry. Carried away the right wing wall on the right approach to the Bridge as also the whole of the heavy revetments on the left approach and destroyed the Sub Magistrates office as well as half of the building known as Canny Pettah washing away 5 Carts and a Bullock cart, several portion of the roof and walls of the Sub Magistrates office have fallen down the remainder leaning outwards in all directions and being in a most dangerous condition had them pulled down and all the

material that remained uninjured have been collected together as a temporary measure to retain the road way and for safety sake I have ordered a rough stone revetment to be built at once below the last wing wall of the Coonoor Bridge. There can be no doubt now that the waterway of this bridge is very insufficient I would therefore recommend the addition of another arch of similar dimensions to that now existing to the bridge on its present right approach. Plan and Estimate for which will be submitted if the suggestion is approved of the head of the new ghaut being thrown further back and joining the main road to Cotacamund just in front of where the remains of the Nandy pettah now stands which must be pulled down and built on higher ground. I have selected a good site for this building as also for the Subs Magistrates Office near the Market place at Coonoor.

13 Late on Wednesday morning I received notice of the storm from the Superintendent of the Coonoor Great road and on Thursday morning I went down the ghaut and found the first four miles of the road with a few exceptions here and there a complete wreck, the road is considerably damaged and cut up between the head of the ghaut and the Stones bridge just above which No 1 timber bridge has disappeared bodily, the water having risen at least 3 ft above it and carried away about 130 ft of heavy rough stone revetment on its left approach as also its left abutment. Here as a temporary measure I have turned the road further up the stream repairing and widening the old causeway so that Coolies may not be interfered with.

14. Lower down in many places channels six and seven feet in depth have been cut by the water in the very centre of the road, rocks trees and large stones lying in all directions but at the one mile fifteen chains where it crosses the old ghaut was the most serious obstacle of all, here tons upon tons of huge rocks large trees bushes and Earth had been washed into the roadway forming a perfectly impassable barrier to all but the most active of foot passengers, numbers of drivers with laden Cattle going down and coming up the ghaut were thus compelled to halt here on my way down the ghaut I met my Assistant Captain Law on his way up to join from leave, he immediately volunteered to accompany me down again and under my personal supervision we succeeded in getting the road opened for horse and bullock traffic by 3 o'clock in the afternoon of Thursday the 15th.

15. Between the 1 in 18 bullock and No 2 Bridge above Mr Herklotts Estate the road has been a good deal cut up, the water seems to have gone right over the Bridge to a depth of a foot or more and though the bridge has not suffered a heavy revetment about 100 yds below it has been destroyed, beyond this no very great damage has happened, the left approach to the No 1 timber bridge just below the Coorambady Estate was washed away but has been repaired again and I trust that by Monday the latest part traffic may again be resumed on the ghaut.

16. On the new ghaut number of heavy landslips have taken place but these are all to the good, only one or two minor revetments have been injured, all the heavy revetments have stood the severe tests they have been put to admirably.

17. I visited the site of the Stones Bridge on the new ghaut, notwithstanding the increase water way, the water here rose quite two feet above the highest it attained in the last flood and swept away all that was remaining of the parapet wall of the old structure. Spar that no pier we could ever succeed in building could stand in such a torrent and I consider the experience gained in this storm as extremely valuable with reference to the proposed bridge at this site.

18. The Coonoor stream draining from

to 10 Square Miles before it flows through the gorge at the Coonoor Bridge is afterwards joined by several small streams above "Evans Bridge" site, so that on occasions like that of the storm under notice becoming perfect rivers: the distance of the site of "Evans Bridge" from the head of the gorge cannot be along the bed of the river quite a mile while the fall to this point is certainly 800 ft. the measured sectional area attained by the water at the Bridge site is 1700 sft the effect of such a body of water running off the vertically down such a fall, even blocked as it is now and then by short level bits, would I fear demolish the best constructed work in the world, I would therefore recommend that the site of the Bridge be changed to a point below where greater sectional area of discharge is obtained by very considerable Cuts. debris in the bed of the river and where by building a well sheltered masonry abutment on the left bank of the river and using the huge rock which you of course remember on the right bank as an abatment the stream might be coped by an iron girder bridge of from 30 to 90 ft span.

19. The timber truss bridge that has been always made for this bridge might be used at the head of the Grant on the new line of Communication now being opened to Mettupolliam, the Construction of which bridge does away with the necessity of abutments the timber bridge reported as destroyed in the latter part of para 10 of this letter —

I have the honor to be
Sir
Your most obed servt

W Morrison Capt
Executive Engineer

Submitted for the information of Govt. with an intimation that the Superintr. will take advantage of the Christmas Holidays to connect personally with Major Innes on his proposed tour of inspection of the Waterway of the Bridge at Coonoor, and of that intended to cross the same at Mullah Lower down on the New Grant —

W Morrison Capt
Supdg Engr

Coimbatore
15th Decr 1865

No 118

Received

Fort St George
10th January 1866

No 118

Dispatch
to Govt for Jany
from No 504

The Executive Engineer
Trichinopoly
The Supdg Engr 2d Dn
Coimbatore

D/9 Dec/65
No 18

No 201

Report on the damages
caused by the storm of
the 8th instant
No. 118 10th January 1866

Recorded

No. 243. 244

Dispatch 1865 Dn. 2d Jany 1866