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MADRAS RECORD OFFICE.**Government of Madras.***Public Works* **DEPARTMENT.**

G.O. No. <u>3636</u>	Press Mis.
<u>1-18-43</u>	
Dated <u>20-11-</u>	<u>1868.</u>

Not to be folded or roughly handled

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*Proceedings of the Madras Government, Public Works Department,
20th November 1863.*

No. 418 Read the following letter from the Chief Engineer, for Irrigation, to the Secretary to Government, Public Works Department, dated, Fort St. George, 21st October 1863, No. 79.—

1. Agreeably to the instructions conveyed in G O, No 2,809, dated 3rd September 1863, I have the honor to report that I recently visited the Perryaur valley in company with Captain Ryves and Lieutenant Coaker, Royal Engineers. Lieutenant Pennycuik, who was to have accompanied us, was taken ill with fever, and was unable to join Lieutenant Coaker until after my return to Madras.

2. Captain Ryves' Report contains very full information concerning the project. He has described the character of the Perryaur itself, the difficulty in the way of diverting it over the edge of the Ghat overlooking Madura, and the results which might be anticipated if these difficulties were overcome. It may be taken for granted, without further discussion, that if a continuous stream of water could be supplied to the plains of Madura, where both labor and agricultural skill are abundantly available, it would be readily purchased by the people at a high rate. With the example of the Cauvery on one side, and the Tambrapoorney on the other, the results as regards the remunerative character of an abundant supply of water may be regarded as altogether certain. Moreover, Captain Ryves' knowledge of the Madura District, and his long and varied experience of irrigation works, may be considered a guarantee of the general accuracy of his views, both as regards the facilities for leading the water from the Vigay river (into which he proposes to turn the Perryaur) and the extent of land which would be irrigated. He counts on irrigating 71,000 acres of land for two crops, and 7,000 for one crop, in all 149,000 acres, at four Rupees per crop per acre, which, after a deduction for dry cultivation thrown out, and an allowance of 50,000 Rupees per annum for maintenance, would yield a net return of five lakhs of Rupees.

3. The cost of the project, as estimated by Captain Ryves, amounts to twenty-one lakhs, but, if the returns are not greatly exaggerated, they would be highly remunerative to Government if even three times that amount had to be expended to carry out the scheme fully.

4. But everything depends on the feasibility of the proposed works on the Perryaur itself. The problem is to raise a river forcibly to the height of 150 feet above its natural level. The undertaking would be considered a formidable one, even if an Engineer had the choice of his ground, and it becomes much more formidable when, as would be the case at the Perryaur, the work had to be carried out in the middle of a jungly tract of country bearing a bad name for fever. Still, I am hopeful that the difficulty will not prove unsummountable. The place is only eight miles distant from the open country at the foot of the Ghats. There is a passable cart track up to that point, and the Cumbum valley is richly cultivated to within a mile or two of the same point. The clearance of jungle is extending; I was informed that a great improvement had taken place within the last few years. From the base to the head of the Ghat, the distance, by the present path, is only three miles, with an ascent of 700 or 800 feet, the distance onwards to the site of the proposed dam on the Perryaur is only five miles, and the descent between 100 and 200 feet. The ground for these eight miles is covered, it is true, with forest and an

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undergrowth of elephant grass, and the difficulty which one experiences in clearing one's way through the latter cannot fail to create an impression unfavorable to the penetrability of the country. But the grass would give way to fire in the dry season, and the forest differs in no degree in character from that which clothes nearly the whole line of the Western Ghats in Travancore and Canara, and through which numerous cart roads have been opened. The bamboo forest in the Wynad between Mysore and Manantoddy, on the high road to Cannanore, is or was as dense as the thickets which skirt the Perryaur, and there, roads have been carried out under the most adverse conditions, both as regards the supply of labor and the unhealthiness of the climate. Even on the new road up to Coonoor the workmen have had to come and go a distance of four or five miles every day,—and the cutting through the saddle which separates the Perryaur valley from the eastern face of the Ghats, might be carried on under circumstances no more unfavorable than these.

5. Again, the site of the bund, though too distant, to allow of workmen being settled at the foot of the Ghat, is surrounded by high hills which are quite open, and well supplied with drinking water; and, under proper management at a distance I cannot think there would be any great difficulty in persuading laborers to venture to advance eight miles beyond the limits, to which they would not mind going at present. But I consider that it would be necessary to proceed with great caution, and that it would be premature at present to decide on the mode of constructing the dam. It could not in any case be carried out unless roads were first opened out, and I would recommend that Government should grant a sufficiently liberal allotment to allow of their being proceeded with vigorously in the first instance, and that they should be aligned with special reference to their ultimate bearing on the Perryaur project, as well as with a view to their general utility independently of it.

6. It will be seen from inspection of the Trigonometrical map, that the Perryaur, at the site of the proposed dam, is at the distance of only fifteen miles from a part of the Tinnevely District, which is thickly settled with villages and tanks, and that the latter is cut off from easy communication with the Cumbum valley, by a range of hills which runs in a northerly direction for upwards of forty miles. A road from Cumbum to Shalloor in Tinnevely could not fail to be of great utility for general traffic, while as it would pass close to the site of the dam, it would accustom the people to frequent the locality, and would serve to dissipate their objections to settling down to work there. A second line of road might be opened from Cumbum to Goodalur, through Goodalur Taluk to Perumadi, twelve or fourteen miles (as the crow flies) further west, and to which point the Travancore Government have already expended upwards of a lakh of rupees in opening out a road from the Western Coast. Captain Macleod was employed for some time in tracing a line according to the course above indicated, but nothing further has been done. From Goodalur Taluk, or from some other point on the line between Cumbum and Tinnevely, and thus form a communication between the Travancore country and the latter. These roads would be useful, irrespective of the Perryaur project, but the officers employed in carrying them out would also have the opportunity of gaining further information in connection with the proposed works. They could establish a gauge in the river and could register the

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variations of surface level; and the results, combined with actual measurement of the volume of water discharged at different stages, would allow of more accurate information than we possess at present being obtained of the total supply which could be made available for the use of the Madura District. They could also make a minute examination of the ground to be taken up by the bund itself, and find out what depth of soil overlays the solid substratum of rock, both within the limits of the river channel and beyond them. An accurate estimate of the quantity as well as the quality of the soil available for the formation of a bund, and the mean distance to which it would have to be carried, could also be arrived at. I may here remark that I believe there will be no difficulty as regards either quantity or quality. The latter is much more favorable than I should have anticipated. It is of a clayey nature, very miry after rain, and does not exhibit any traces of decayed vegetable matter, such as might have been expected from the luxuriant tropical vegetation which covers it. The officers should also search for limestone, the distance from which this material would have to be conveyed, twenty-five miles, so far as is at present known, being one of the objections brought forward by

Report, paragraph 7.

Captain Ryves against the construction of a masonry dam.

7. Further, as it would be altogether essential that the officers who might be entrusted with the execution of the works should have the fullest confidence in their feasibility, and, on the assumption that Lieutenants Pennycuik and Coaker are more likely than any other officers to be selected for the duty, when the time for commencing work shall arrive, I consider it desirable that they should study the portion of the project relating to the bunding of the Perryaur and the excavation of a cut through the water-shed.

8. The ingenious method by which Captain Ryves proposes to carry out the bund is fully described in his report. Further enquiry on the spot will no doubt allow of a clearer judgment, than is perhaps at present practicable, being formed, as to whether this method is absolutely the best. But to arrive at any conclusion, it is evidently necessary that any other method, which may be suggested and which may be worthy of consideration at all, should also be studied and compared with the original design. One plan has been mentioned to me, of constructing the bund of a combination of masonry and earth-work. A second is, to build a solid structure of the best masonry, pierced with a number of small vents, to afford a passage for the flood-water, and to form the superstructure of a series of layers of concrete subjected to a great pressure with outer walls only sufficiently thick to keep it in its place. A third method, to raise the water by successive stages by means of brushwood and earthen bunds, and to allow it to escape on the east flank, where the ascent from the river is gradual, (averaging one in six,) may also be worthy of consideration.

9. I would beg leave to submit to Government a topographical sketch of the valley of the Perryaur, taken from the encamping ground overlooking it; a sketch of the Perryaur itself, from the centre of the proposed bund; and a photograph taken by Mr. J. R. Arbuthnott, C. S., from the upper end.

10. As the duties devolving on Lieutenants Pennycuik and Coaker will be of a more than usually arduous character, and as, moreover, their personal expendi-

*Proceedings of the Madras Government, Public Works Department,
20th November 1863*

ture must be very heavy, in consequence of their having to get their tents, supplies, and baggage, carried entirely by coolies at high rates, I would strongly urge their claim to be placed on the same footing, as regards special allowances, as the officers employed in the Wynaad.

No 419

ORDER THEREON, 20th November 1863

No 419

ORDER THEREON, 20th November 1868, No. 3,636.
N, No. 19.
1. Having

IRRIGATION, No. 19.

now reports his views of the scheme devised by Captain Ryves for turning the waters of the Perryaur into the Vigay in order to the better supply of the purposes of irrigation.

2. Giving it as his opinion that, if the returns stated by Captain Ryves as likely to be derived from the improvement of the supply of the Vigay by such a stream as would be diverted into it from the Perryaur if his project were successfully carried out, are not greatly exaggerated, the scheme would be remunerative even if it cost three times the amount of Captain Ryves' estimate of twenty-one lacs of Rupees. Colonel Anderson shows that the sole difficulty is the construction of the lofty dam which it is necessary to throw across the bed of the Perryaur to raise its waters 150 feet above their natural level to turn them over the saddle separating the valley of the Perryaur from that drained by the Vigay and its tributaries. The undertaking would, in Colonel Anderson's opinion, be a most formidable one anywhere, but is especially difficult where, as in the case of the Perryaur, the work will be situated in a jungly and feverish locality not very easily accessible.

3. He points out, however, that the spot on the Perryaur where the dam would have to be formed is only some eight miles from the foot of the hills, nearly up to which there is a passable cart track leading from the well cultivated Cumbum valley, and Colonel Anderson believes that, if this track were improved, and a road continued up the ghaut to the Perryaur, and thence, turning southward, were completed to Shtatoor in the Tinnevely District, considerable use would be made of the line of communication thus opened. This would familiarise the people with the country within the hills, and remove their fears of entering it. By this means, and by educating the workmen on the open hills which surround the Perryaur valley, and by careful management, Colonel Anderson considers that the difficulties of the work, and returning them in health, need not be great. He therefore proposes that, as a preliminary to further operations, a road be made in the direction above indicated, with a branch, if hereafter it should be found necessary, to join the road from Cumbum via Gooda-
Perryaur, and resolve

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*Proceedings of the Madras Government, Public Works Department,
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5 The services of Lieutenants Pennycuik and Coaker will be at the disposal of the Superintending Engineer, who will take measures for employing them to the best advantage in carrying out these orders, and in prosecuting further enquiries, and in completing survey and levelling operations at the Perryaur in accordance with the instructions which they will receive from the Chief Engineer for Irrigation. In consideration of the expense of travelling on the hills, the Government authorise Lieutenants Pennycuik and Coaker to draw double travelling allowance while employed on the special duty now assigned to them.

6. The Government are glad to learn that, on the whole, Colonel Anderson's personal examination of Captain Ryves' project has led him to form a favorable view of its practicability, notwithstanding the great natural difficulties the situation offers to the completion of the head works, on which hinge the success of the undertaking.

7. It has not yet been decided in what manner to proceed in carrying out the actual construction of the dam. Much will depend on the result of a search that will be made for limestone near the site of the work, as the comparative cost of masonry and earthwork, and the advantage of using one or the other will mainly depend [upon the distance from which lime will have to be carried, but Colonel Anderson seems to have no doubt of being able to devise the means of carrying out the work to a successful conclusion.

(True Extract.)

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

To the Chief Engineer for Irrigation, with Note of His Excellency the President.

Superintending Engineer, 8th Division.

Board of Revenue

Revenue Department.

Controller of Public Works Accounts.

Accountant General.

To Captain J. G. Ryves, R. E.

Ed. S. T. Augustin.

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Govt. of 1868 Madras.

PUBLIC WORKS.

To

THE CHIEF ENGINEER FOR IRRIGATION

&c. &c. &c.

Dated November, 20th

Recd.

Enc

G. O., 20th November 1868, No 3,636

NOVEMBER.

Nos. 418-419

No. 79.

From

COLONEL J. C. ANDERSON, R. E.,
Chief Engineer for Irrigation,

To

THE SECRETARY TO GOVERNMENT,
PUBLIC WORKS DEPARTMENT,

SIR

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2. Captain Ryves' Report contains very full information concerning the project. He has described the character of the Perryaur itself, the difficulty in the way of diverting it over the edge of the Ghat overlooking Madura, and the results which might be anticipated if these difficulties were overcome. It may be taken for granted, without further discussion, that if a continuous stream of water could be supplied to the plains of Madura, where both labor and agricultural skill are abundantly available, it would be readily purchased by the people at a high rate. With the example of the Cauvery on one side, and the Tambrapoorney on the other, the results as regards the remunerative character of an abundant supply of water may be regarded as altogether certain. Moreover, Captain Ryves' knowledge of the Madura District, and his long and varied experience of irrigation works, may be considered a guarantee of the general accuracy of his views, both as regards the facilities for leading the water from the Vigay river (into which he proposes to turn the Perryaur) and the extent of land which would be irrigated. He counts on irrigating 71,000 acres of land for two crops, and 7,000 for one crop, in all 149,000 acres, at four Rupees per crop per acre; which, after a deduction for dry cultivation thrown out, and an allowance of 50,000 Rupees per annum for maintenance, would yield a net return of five lakhs of Rupees.

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18 Oct 1868 (13)

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I have the honor to be,

Sir,

Your most obedieint servant,

W. M. M. M. Colonel, R. E.,
Chief Engineer for Irrigation.

FORT ST. GEORGE,
21st October 1868.

Ed. S. T. Augustin.

*on 1st Nov 1868
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in 1st Nov 1868
Sgt.*

Approved by 11

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Perrinadi.

The Govt. entirely
approve of these recom-
mendations, and resolve
to place Rs. 10,000 from
the Income Tax grant
at the disposal of the
Superintendent of the S.D.
in order that he may
make immediate ar-
rangements for the con-
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and road by Perrigau
to Cheahon, and a
the

the work will be of
great local utility. His
excellency the Governor
in Council agrees the
Board of Revenue to
allot an equal amount
from the Local Funds
of Madras.

The services of
Lieut. Pennington and
Coaker will be at the
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en-

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M. Phil

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To the Chief Engr. for
the
Supt. Engr. & Dir.
Board of Rev.
Rev. Sept.
Contractor
Acct. Genl.
Capt. J. G. Myers R.S.

Respd. 21/11/88

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Govt. of 1868 Madras.

PUBLIC WORKS.

The Chief Engineer for
Irrigation

to, to, &c

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G O. 20th Nov 1868, No 3686

Nos. 175 & 411

Perrans Report asking orders
on the letter from the Chief
Eng for Irrigation reporting
his views on the Perrans
Project in the Madras Co.

11-2-1872 II