M.R.O. 1—20,002—12-8-65.

(1) Number of Pages 8

(2) Date of repair 7-8-68

(3) Initials of the Referencer

MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No. 1538	~~Press~~
B.P. No.	Mis.
Dated 22-7-1875	196 .

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
14th July 1875.

Read the following papers:—

No. 390. Endorsement of the Acting Secretary to Government, Revenue Department, dated 14th June 1875.

Proceedings of the Board of Revenue, dated 20th May 1875, No. 1,372.

From W. McQUHAE, Esq., Collector of Madura, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated Tirumangalum, 9th April 1875, No. 157.

By desire of the District Engineer, I have the honor to submit copy of his letter of 25th March 1875, No. 5,295, though I doubt whether it can lead to any practical result at present.

2. In paragraph 11 the District Engineer expresses a doubt whether the expenditure of the ordinary repair grants has been of much use, or is likely to be of much use. The Irrigation works in Madura are very badly kept up, and the insufficiency of the grants is not the only cause. The Public Works Department establishment is very inefficient, and this is a fact which no one can deny, but to apply a remedy is more difficult. The supply of honest, hard-working men with the necessary training as Engineers seems to be insufficient.

Enclosure No. 1.

From Lieutenant-Colonel J. F. FISCHER, R.E., District Engineer, Madura, to W. McQUHAE, Esq., Collector of Madura, dated Madura, 25th March 1875, No. 5,295.

In continuation of my letter of the 18th September 1874, No. 2,627, proposing to reconsider the subject of the Perryaur Project in connection with the Vigay river for the extension of irrigation in this district, I have the honor to forward a copy of the register kept of the water passing over the causeway at Madura during last October, November, and December for the Municipality, and against each day I have entered the approximate discharge of the river in the twenty-four hours. A section of the river at the causeway, with the bedfall of the river noted thereon, accompanies this letter.

1 Statement.

2. I estimate the total quantity of water discharge by the Vigay during this time was upwards of 900 million cubic yards; the rainfall at Pereacolam during the same period was upwards of twenty-one inches; and as the drainage area of the basin above the first anicut is upwards of 1,200 square miles, or 3,600 million square yards, nine inches of this rainfall must at least have run off to give the quantity which passed the causeway, but this is by no means all the water which must have come into the river; for there are many open channel-heads above the causeway supplying tanks, as well as the supply taken off by means of the Chillanai and Peranai anicuts, and we have no account of the freshes in July, August, or September.

3. But from the observations we have, I am led to believe, considering the excessively steep character of the basin of the Vigay, that we may safely estimate it is capable of supplying fully 1,200 million cubic yards of water for irrigation and navigation purposes, or twelve inches of rainfall run off the whole drainage area in any season; but, as the character of these vary very much, it is absolutely necessary to have in the basin a large reservoir to store as much of the floods as possible and distribute the water by means of proper headworks.

4. It was proposed to obtain only 1,100 million cubic yards of water from the Perryaur and convey it for miles to the Melur taluq, but here it appears we have actually a better supply at hand in the Vigay; not that I would omit utilizing the waters of the former to supplement the latter

with during the early part of the season when its own freshes are very small and occur only at irregular intervals, but what I wish to point out is that this district does possess in itself ample means to establish a good system of irrigation and navigation if properly regulated; 1,200 million cubic yards of water will suffice for 240,000 acres of rice irrigation and for 720,000 acres of cholum or raggy cultivation.

5. Again, I find that, though it was proposed to obtain 1,100 million cubic yards of water from the Perryaur, the registers kept up there for two successive years only show that the total discharge from June to December in one year was little more than 900 million cubic yards, and in the other it was under 700 million cubic yards. I am aware that it is expected the proposed reservoir in this river will regulate the discharge so as to yield the quantity speculated upon, but I nowhere find that the formidable character of the work to be performed has been estimated; the maximum pressure of the water against a bund 220 feet high is 1,512,500 lbs. on every foot in length, against a dam 100* feet high it is only 312,500 lbs., that is to say five times as much work at the least must be done in the one case than in the other, and not allowing a fraction for the factor of safety or anything for the enormous additional lift, but merely for the weight of materials actually required. I cannot then but consider Colonel Orr was perfectly justified in characterizing this project as a most formidable undertaking and requiring far more consideration than appears to have been given to it; the slightest plan in the construction of such a dam would certainly lead to consequences which it is hardly possible to conceive the horrors of; so that, however much ingenuity and skill may have been displayed in overcoming the obstacles which presented themselves, it is a matter of congratulation almost that the work has never been attempted.

* As high almost as any attempted.

6. In the matter of the existing means of irrigating from the Vigay, I beg to draw your attention to the fact, which has lately forced itself on my notice, that all the tanks supplied by the channels led from this river surplus one into another and then out to sea by drainages which *never return to the Vigay;* that these channels have open heads, and it is impossible to tell what quantity of water is drawn off by them; and that, therefore, it is a matter of no surprise that the Vigay waters seldom or ever reach the sea when they are drawn off in this irregular way and discharge into it by other drainages: this arrangement must be a fertile cause of water, and itself demands prompt remedial measures to be adopted.

7. I have before brought to notice the circumstance of the loss of water in this river's huge sandy-bed during the months when its freshes are not heavy: taking this into account, as well as the waste abovementioned, I believe I am well within the mark if I estimate the water-supply of the Vigay as amply sufficient for the irrigation of 100,000 acres of rice land or 300,000 acres of cholum or raggy in addition to all the land it supplies at present.

8. In their orders of the 3rd March 1875, No. 614, the Government appear to consider that it is enough to maintain existing works or improve them, and consequently disallowed the establishment I had applied for to prepare projects for fully utilizing the waters of the Shunmuganaddy river in the Pulni Taluq; but I would very respectfully beg to submit, for their consideration, that the old native works of this district are generally of such insufficient capacity that it is impossible to improve them, and so constructed that it is impossible to utilize the available water-supply in the most economical manner; take for instance this very Shunmuganaddy river draining the rainfall off an area of 180 square miles of the Pulni hills on which 60 inches of rainfall in any year; this, if properly stored and distributed, should irrigate at least 50,000 acres of rice or 150,000 acres of cholum or raggy; whereas by the existing arrangements the largest tank does not irrigate more than 2,000 acres, and the whole extent of irrigation by every means is under 20,000 acres; about the hills and all over the northern parts of the valley the dry crops fail year after year for want of the necessary rainfall, and remissions amounting to as much as seventy-five per cent. of the demand have to be made, whilst close at hand there are abundant and never failing means to supply all the requirements of the people, and to secure the Government revenue in full every year as well

Proceedings of the Madras Government, Public Works Department,
14th July 1875.

as greatly to increase it, if only the necessary works are carried out; this is only one instance, but exactly the same state of affairs exists on the river near Battalagundoo, about which the Sub-Collector has addressed you lately; again the same thing occurs on the Vigay. Shallow tanks are supplied from it by channels having open heads and their surplus allowed to find its way to the sea in the best way it can at the very time that complaints are made that all the eastern portions of Ramnad are starving for want of water.

9. The old native works of this district never were constructed on the gigantic scale of those in Bellary or Cuddapah; no such thing as a bund across any large valley has ever been attempted by them in this part of the Presidency; the whole area of Madura is studded with shallow reservoirs very much silted up, and it would cost far more to repair these than to construct thoroughly efficient new works; for, not only should we have to pay for the mere repairs and constructions, but very large sums must be paid for land compensation; as the works are so close to one another, the waterspread of one always floods the cultivation above it; this is now so arranged as not to be injurious, but at the same time this very circumstance utterly precludes the possibility of improving existing works to any extent.

10. Again, in acting on the principle that only the old native works are to be maintained efficiently, we are ignoring the condition of the population under British rule, fancying it is similar to that which prevailed when these works supplied for all their wants; this, I would beg most respectfully to observe, is a most dangerous error, and likely to lead to most serious consequences. With the security to life and property afforded by the British Government, the unbroken peace now enjoyed for so many years in these districts, and the many sanitary measures being carried out to prevent or mitigate the ravages of cholera and other diseases, the population is increasing very rapidly, and it is impossible for any one to contemplate what would occur here if one or two bad seasons happened without the gravest apprehensions: assuredly we should then find that a population three or four times as large as ever existed under native rule could not be fed by means of works which at the best could only just afford relief during times of famine or scarcity to those living immediately in their vicinity; common humanity, therefore, calls upon us to adopt measures for improving the real resources of the district, and not to rest content in the hope we may never be worse off than our predecessors were; we must, or at all events ought to, be aware our circumstances are totally changed, and on any emergency we should have to meet it quite unprepared as in Bengal.

11. I have thus endeavored to lay before you my views as regards irrigation in the district after giving the subject a good deal of thought and consideration in communication with the Sub-Collector, and I trust you will be good enough to submit the matter to the Revenue Board for the disposal of the Government; so far as I am able to judge, I do not think the expenditure on the ordinary repair grants for this district have been of much use; and as we are constantly being called upon to continue, or even increase, this, I beg to say we are not likely ever to do much good with it. In Bellary by improving the existing works we managed to double the area of irrigation in about five years, but I have already pointed out in paragraph 9 that this is impracticable here; that we have in some of the larger and better-supplied valleys of the district abundant means for largely increasing the area of irrigation and the means of support to the population; that on the main river of the district the existing means of irrigation are almost as defective as they well can be, causing enormous waste, whilst its natural water-supply, if properly regulated, would, in all probability, greatly extend the cultivation and afford at least one navigable canal to the coast; that, under the circumstances of the British rule, the population must be increasing at so rapid a rate that the ordinary means of raising food for them in the district itself must fail in any ordinarily bad seasons, and be attended with the most disastrous consequences should famine occur by two bad seasons following each other. It may be urged that the railway would then bring food into the district, but with a population kept alive only by means of this work and all their other industrial resources undeveloped, how long could the strain be borne? If the people have to trust to the railway only to supply food during famine and not to stimulate

their industry, it is to be feared this work will not be a very paying speculation, and, like many others of its kind, will have to look to the general revenues of the country for its dividends. In conclusion, I have only to add the past season has been generally favorable for rainfall; the Vigay river maintained a more than usually uniform flow of water during the months of October, November, and December, and part of January, but no heavy freshes occurred this year, the greatest rise having been under five feet with a discharge of under 118 million cubic yards in the twenty-four hours, whereas it has been known to rise as much as nine feet on the causeway at Madura, when its probable discharge would be upwards of 360 million cubic yards in the same time.

Register of Water kept at the Causeway of Vigay River from 12th October 1874.

Month and Date.	Place registered.	6 A. M.	12 A. M.	6 P. M.	Remarks.
		YDS. FT. IN.	YDS. FT. IN.	YDS. FT. IN.	C. yds. per day.
12th Oct. 1874.	Madura, causeway ...	0 0 6	... ...	0 0 8	4,800,000
13th „	Do.	0 0 10	... ...	0 0 11	9,400,000
14th „	Do.	0 0 9	0 0 9	0 0 7	7,200,000
15th „	Do.	0 0 7	0 0 7	0 0 6	4,300,000
16th „	Do.	0 0 4	0 0 4	0 0 4	2,000,000
17th „	Do.	0 0 4	0 1 8	0 1 8	9,600,000
18th „	Do.	0 0 8	0 1 0	0 0 8	7,900,000
19th „	Do.	0 0 9	0 0 8	0 0 7	7,200,000
20th „	Do.	0 0 6	0 1 3	0 1 0	14,300,000
21st „	Do.	0 0 11	0 0 9	0 0 9	9,400,000
22nd „	Do.	0 0 10	0 0 9	0 0 8	7,200,000
23rd „	Do.	0 0 7	0 0 7	0 0 7	4,800,000
24th „	Do.	0 0 7	0 0 7	0 0 7	4,800,000
25th „	Do.	0 0 5	0 0 5	0 0 4	2,000,000
26th „	Do.	0 0 4	0 0 3	0 0 3	1,500,000
27th „	Do.	... ...	... ...	... ...	
28th „	Do.	... ...	... ...	0 0 3	
29th „	Do.	0 0 3	0 0 3	0 0 3½	1,000,000
30th „	Do.	0 0 10	0 0 11	0 0 9	7,200,000
31st „					1,094,000,000
1st Nov. 1874.	Do.	0 0 8	0 0 6	0 0 6	4,300,000
2nd „	Do.	0 0 5	0 0 5	0 0 5	2,000,000
3rd „	Do.	0 0 5	0 0 5	0 0 5	2,000,000
4th „	Do.	0 0 5	0 0 5	0 0 4	2,000,000
5th „	Do.	0 0 4	0 0 3	0 0 3	1,000,000
6th „	Do.	0 0 2	0 0 2	0 0 2	500,000
7th „	Do.	... ...	0 0 3	0 0 5	500,000
8th „	Do.	0 0 11	0 0 10	0 0 9	700,000
9th „	Do.	0 0 9	0 0 8	0 0 7	5,000,000
10th „	Do.	0 0 7	0 0 7	0 0 7	4,800,000
11th „	Do.	0 0 7	0 0 7	0 0 7	4,800,000
12th „	Do.	0 1 0	1 0 3	0 2 11	48,000,000
13th „	Do.	1 0 4	1 0 4	1 0 0	72,000,000
14th „	Do.	0 2 11	0 2 9	0 1 4	48,000,000
15th „	Do.	0 1 1	0 1 0	0 1 0	14,300,000
16th „	Do.	0 0 11	0 0 10	0 0 8	7,200,000
17th „	Do.	0 0 8	0 0 7	0 0 7	4,800,000
18th „	Do.	0 0 7	0 0 6	0 0 6	4,800,000
19th „	Do.	0 0 6	0 0 6	0 0 6	4,800,000
20th „	Do.	0 0 6	0 0 6	0 0 6	4,800,000
21st „	Do.	0 0 6	0 0 5	0 0 5	4,000,000

Register of Water kept at the Causeway of Vigay River from 12th October 1874.—(Concld.)

Month and Date.	Place registered.	6 A. M.	12 A. M.	6 P. M.	Remarks.
		YDS. FT. IN.	YDS. FT. IN.	YDS. FT. IN.	C. yds. per day.
22nd Nov. 1874.	Madura, causeway ...	0 0 4	0 0 4	0 0 4	2,000,000
23rd „	Do.	0 0 3	0 0 3	0 0 3	1,000,000
24th „	Do.	0 0 2½	0 0 2½	0 0 2	500,000
25th „	Do.	0 0 2	0 0 2	0 0 2	500,000
26th „	Do.	0 0 2	0 0 2	0 0 3	500,000
27th „	Do.	0 1 0	0 2 3	1 0 5	72,000,000
28th „	Do.	0 1 6	1 1 6	1 0 7	117,120,000
29th „	Do.	0 2 4	0 2 4	0 2 2	72,000,000
30th „	Do.	0 2 0	0 2 0	0 1 10	40,800,000
					553,220,000
1st Dec. 1874.	Do.	0 1 7	0 1 7	0 1 7	24,000,000
2nd „	Do.	0 1 6	0 1 5	0 1 3	18,000,000
3rd „	Do.	0 1 0	0 11 0	0 0 11	9,600,000
4th „	Do.	0 0 9	0 0 9	0 0 7	5,000,000
5th „	Do.	0 0 7	0 0 7	0 0 7	4,800,000
6th „	Do.	0 0 7	0 0 6	0 0 6	4,800,000
7th „	Do.	0 0 6	0 0 6	0 0 6	4,800,000
8th „	Do.	0 0 5	0 0 5	0 0 5	4,000,000
9th „	Do.	0 0 4	0 0 4	0 0 4	2,000,000
10th „	Do.	0 0 4	0 0 4	0 0 4	2,000,000
11th „	Do.	0 0 3	0 0 3	0 0 3	1,000,000
12th „	Do.	0 0 3	0 0 3	0 0 2½	500,000
13th „	Do.	... ...	... ...	... ...	
14th „	Do.	... ...	... ...	0 0 8	
15th „	Do.	0 0 7	0 2 6	1 0 0	72,000,000
16th „	Do.	0 2 5	0 2 0	0 1 7	40,800,000
17th „	Do.	0 1 5	0 1 2	0 1 2	18,000,000
18th „	Do.	0 1 0	0 0 11	0 0 11	9,600,000
19th „	Do.	0 0 10	0 0 10	0 0 9	7,200,000
20th „	Do.	0 0 8	0 0 7	0 0 7	5,000,000
21st „	Do.	0 0 7	0 0 7	0 0 7	5,000,000
22nd „	Do.	0 0 6	0 0 6	0 0 5	48,000,000
23rd „	Do.	0 0 5	0 0 5	0 0 4	4,000,000
24th „	Do.	0 0 4	0 0 4	0 0 3	2,000,000
25th „	Do.	0 0 3	0 0 3	0 0 3	1,000,000
26th „	Do.	0 0 3	0 0 3	0 0 3	1,000,000
27th „	Do.	0 0 3	0 0 3	0 0 3	1,000,000
28th „	Do.	... ...	0 0 2	0 0 2	500,000
29th „	Do.	... ...	... ...	... ...	
30th „	Do.	0 1 0	0 1 0	0 1 3	18,000,000
31st „	Do.	0 1 0	0 1 0	0 1 0	9,600,000
					280,000,000
			Total for 3 months ...		942,620,000

MADURA,
25th March 1875.

(Signed) J. F. FISCHER, Lieut.-Colonel, R.E.,
District Engineer, Madura.

SUBMITTED to Government in continuation of Board's Proceedings, dated 16th January 1875, No. 87.

2. The District Engineer's scheme seems to be to substitute a series of works for the utilization of the waters of the Vigay for the irrigation of the Madura District instead of the larger project of diverting the waters of the Perryaur, and independent of aid from that source.

3. The matter appears to be one for the professional opinion of the Chief Engineer for Irrigation.

(True Copies and Extract.)
(Signed) H. E. STOKES,
Acting Secretary.

TRANSFERRED to the Public Works Department.
(Signed) A. MACGREGOR,
Acting Secy. to Govt.

No. 648.

MEMORANDUM.

GOVERNMENT have in their Order of the 30th April 1875 on the Perryaur Project directed certain additional investigations to be made, and these will be provided for as soon as possible. In the meantime the question of supplementing the supply of water for irrigation purposes in the Madura District will have to remain in abeyance.

2. In his letter of the 25th March 1875 to the address of the Collector of Madura, the District Engineer after making some remarks on the Perryaur Project, with even the leading features of which, and the circumstances of the river valley, he is unacquainted, proceeds to state that the water-supply of the Vigay, as yet unutilized, exceeds that of the Perryaur which it has been proposed to divert into the former, and advocates apparently the construction of reservoirs in the upper valleys of this river to supersede the numerous shallow tanks with which the district abounds, and which he believes will cost far more to repair than the amount necessary for the construction of new and efficient reservoirs. He further points out the defects of the channels taking off at present from the Vigay.

3. That the irrigation under the Vigay may be very much improved may be accepted as certain, but the character and capabilities of this river need to be established on much better evidence than any which Lieutenant-Colonel Fischer has hitherto adduced. There are two anicuts the Chittany and Perany, and from the registers kept at these, supplemented if necessary by further observations, there should be no great difficulty in obtaining fairly reliable information as to what the water-supply available really is. The District Engineer lately forwarded to this office a book of registers, the correctness and value of which he considered doubtful, but which had not been averaged, abstracted, or really made use of in any way, and they were returned to him in order that the information which they contained might be worked out and put into a shape capable of being turned to account.

4. With regard to the existing tanks also it is quite useless to say generally that they are inefficient, costly to maintain, unadapted to the wants of an increasing population, &c. The Government cannot abandon or arrange for superseding hundreds or it may be thousands of tanks in any case. Nor can they deal with them at all except upon detailed information, the collection of which will need long and patient inquiry and investigation.

5. What the District Engineer should do is to divide the tanks connected directly or indirectly with the Vigay into groups according to their physical or geographical position and circumstances, and ascertain what the condition of each group is, what the revenue involved amounts to, what the cost of maintenance has been, what work is needed to make them efficient for the existing cultivation under them, and to make them safe also? It will doubtless be found that some tanks may

properly be abandoned because their circumstances are and perhaps always have been such as to make their construction at all a mistake: also that others have deteriorated or silted up so much as to render them of little use; while certainly it will be ascertained that a great many will do good service for many years to come. Under this office circular No. 62, the District Engineer can obtain the assistance required to carry out any well-considered scheme of investigation of the kind referred to, and when he has accomplished all that can be done for the improvement and efficiency of existing Irrigation works, he will find no difficulty in obtaining support for proposals to turn to account hitherto unutilized sources of water-supply and to make them available for the extension of irrigation or for the greater security of irrigation now carried on with more or less success.

6. With regard to the Vigay waters now stated by the District Engineer to be greatly wasted something more than a mere assertion is required. It can and should be ascertained what becomes of the water which surpluses from the last of each series of tanks supplied by river channels. It may be found that it is not wasted; that in indirect if not direct ways it is of benefit to the country through or into which it passes, and that were it stopped the result would by no means be entirely advantageous. Open river channels are in most cases objectionable. It should be ascertained what the circumstances of each channel are, and then it can be decided whether head sluices are needed or not. There is nothing to prevent the District Engineer attending to such matters practically, instead of writing about them, a proceeding which may impress those who do not know how a District Engineer should occupy his time, but which is usually very barren of results.

7. The Irrigation works of the Madura District are, like those of other districts, greatly in need of intelligent treatment, and this can be based only upon full and accurate knowledge involving much labor in its acquisition and much judgment in the use to which it is subsequently put. The District Engineer may do much good if he takes care that the knowledge of the works he has to deal with precedes the advocacy of schemes for their treatment. Hitherto this right order appears to have been reversed, and a return to it will be the only advisable course for him to follow.

OOTACAMUND, 15*th June* 1875.
(Signed) JOHN MULLINS, Lieut.-Colonel, R.E.,
Offg. Chief Engineer, P.W.D.

No. 391. ORDER THEREON, 14th July 1875, No. 2,005.

IRRIGATION, No. 41.

THE foregoing memorandum will be communicated to the Revenue Department for information, and to the District Engineer, Madura, for information and guidance in dealing with the Irrigation works of the district under his charge.

(True Extract.)

Major, R.E.,
Offg. Joint Secretary to Government.

To the Revenue Department.
" District Engineer, Madura.
" Chief Engineer for Irrigation.

Exd. E. C. Shunker.

2 Spare Copies

Rev: 1875 Sept
N. 2838.

Govt. of {1875} Madras.

PUBLIC WORKS.

To

THE REVENUE DEPARTMENT,

&c., &c., &c.

4 Sheets

Dated July 1875.

Issued

Rcvd. 6 2/8!

Encl.

G. O., 14th July 1875, No. 2,005.

Rev Dept

JULY.

Nos. 390-391

Mes

14 Sheets Orig Plan & Sketch

Perryaur Project, Madura.—The memorandum by the Officiating Chief Engineer on Proceedings of the Board of Revenue on the revised scheme proposed in connection with the —, communicated to the Revenue Department for information and to the District Engineer for information and guidance.

No. 1538 Comm^d to the Board of Revenue for information— 6 Aug 1875