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See

(3) 152

*Proceedings of the Madras Government, Public Works Department,
10th January 1876.*

No. 99. Read the following letter from Lieutenant-Colonel R. F. OAKES, R.E.,
Superintending Engineer, Tanjore. Lieutenant-Colonel J. MULLINS, R.E.,
Chief Engineer for Irrigation, Tanjore, 17th December 1875,
No. 2,356 :—

I HAVE the honor to inform you that before I proceeded to England on furlough I had had a survey made and levels taken of the heads of the Trimulrajaur and Moodicondaur, which branch from the Codamurty near Paupanassem, about 21½

- 1 Survey.
- 2 Sections.
- 1 Proposed Section of Regulator.
- 1 Memorandum A.

and 25 miles respectively below the Codamurty regulator, and I had hoped that by this time the regulation of those rivers would have been completed; but finding that nothing had been done, and that the railway from Tanjore to Combaconum crossed the Codamurty and Trimulrajaur about a mile west of Road No. 5, or between the head of the Trimulrajaur and that of the Moodicondaur rivers, and fearing that the regulation of the supply to the above streams might render it necessary for the Railway Engineers to modify their arrangements for bridging the Codamurty and Trimulrajaur, I proceeded to the spot, to examine the locality and to make observations relative to the discharges of the rivers, on the 2nd instant.

2. I need hardly remark that the more correct the regulation at the head of any branch of a river, the more necessary it becomes to regulate the distribution of the water amongst the minor branches of the stream. It has long been known that the regulation of the Codamurty and its branches has been very defective.

3. Road No. 5 crosses the three streams within a distance of 500 yards; and the bridges on that road to a certain, but very limited, extent may be said to regulate the supply to the three streams. The length

Acres.		Per Cent.
46,320 Codamurty	...	120 44.4
36,477 Moodicondaur	...	60 22.2
14,662 Trimulrajaur	...	90 33.3

of waterway of the bridges is as per margin, or as 4, 2 and 3, while the area dependent upon the streams respectively is as 4 (3.1) and (1.25), and the actual distribution in low floods is as 2, 1 and 5, and in high floods as 3, 1 and 2½; this will appear more clearly on a reference to enclosure A, from which it will be observed that, while the lands under the Trimulrajaur are receiving 1½ of what is termed the theoretical supply, the Moodicondaur receives 1th

and the Codamurty ¾ths of their theoretical supply, while the undivided stream is

carrying ⅓rd of a theoretical supply, i.e., the water instead of being divided as 47.6 to 37.4 to 15, is divided nearly as 22.2 to 11.1 to 66.6, or the rivers are receiving about ⅓ — ⅔ and four times the supply they should be receiving. In a moderate flood, when the undivided stream carries about 1½ a theoretical supply, the rivers receive ⅓, ⅓ and four times the theoretical supply, or the water is divided as 35.2 to 15.3 to 49.5, and in high floods as 46.6 to 15.5 to 37.9 when the undivided stream is carrying about 3¼ the theoretical supply.

4. In regulating the supply to the three streams it is desirable to regulate up to about 1½ the theoretical supply, and after that to take advantage of the natural capacity of the rivers to carry off flood waters. The Moodicondaur is a high level stream,

while the Trimulrajaur is a low level
Section A.
the theoretical supply it can carry only
rajaur carries 9½ its theoretical supply
in a high flood, as the Codamurty is the
viz., about 3½ of the theoretical supply, for the lands dependent upon it.

5. The influence of the north-east monsoon has not been felt to any extent in the interior of the country, and hence the rivers have been very low, and in despair of not being able to make observations of discharges at all this season if I delayed doing so any longer, I proceeded to make my observations on the 2nd instant when, as stated above, about ¼ of the theoretical supply for the lands dependent upon the undivided stream was passing down the rivers, and then there was so little water in the Moodicondaur that I fear the calculations made for higher floods from observations made in that river may not be so accurate as those for the other streams, though the quantities in high floods tally remarkably well with the calculations of discharge over the regulator at the Codamurty head.

6. The bridges on Road No. 5 have no floors, but they have retaining walls at a low level, that of the Codamurty being covered with 3 feet of sand under three arches, and 18 inches under the 4th arch on the 2nd instant, the calculations were, therefore, made entirely independently of the bridges though the flood levels were obtained from the readings of the gauges on the bridges, and are indicated in Statement A to facilitate a comparison, for the zero of the gauges is on different levels and vary as much as 1.565 feet, while the zero of gauge on Codamurty bridge is 2 feet 1 inch above the top of retaining wall; the levels however are all marked on the accompanying plans.

7. No supply is drawn from the Trimulrajaur above the bridge on Road No. 5, and the surplus into the Arsalaur has long been closed, and it was thought before the levels were taken that the Trimulrajaur head might be brought down to the Moodicondaur head, and a regulator for the three streams be built there; but this is out of the question, as the Codamurty has not the capacity to convey the water now carried by the Trimulrajaur in high floods from the Trimulrajaur to the Moodicondaur head; the surface level of the water would be raised 3¼ feet; as it is the waters of the three streams unite over the Padugay, as there is no bank over the Padugay to divide the Codamurty and Trimulrajaur in high floods.

8. A second suggestion which offers itself is to carry the Moodicondaur head up to a b opposite to Panpanassem, and to build the three regulators there in connection with the bridges of the railway feeder from Panpanassem to Kabistalem which will follow the line a b. The objection to this is that the Railway Department would have to provide a bridge for the new head of the Moodicondaur which the line does not now cross, and that the cost of the work would be considerably enhanced, as the sum to be paid for the Padugay only would be about Rupees 60,000.

9. A third suggestion is to regulate the supply to the Codamurty and Trimulrajaur only on the line a b in connection with the bridges on the railway feeder, and a fourth to place a regulator similar to that built at the Vettaur head at the head of the Trimulrajaur.

10. The difference of cost of schemes 3 and 4 would be about Rupees 10,400 in favor of No. 3 to Irrigation, but about Rupees 15,600 to Local Funds if the railway

feeder is to be formed; the line would be about 2 miles, but would be costly, as there are four rivers to be bridged, and, though a convenient line, would not, I think, bring much traffic to the railway, and it is probable that the Local Fund Board would not be able to provide funds for the road immediately, and perhaps it would be well to undertake the regulator independently of the road.

11. Lest it should be determined that the work is to be built in connection with bridges on the railway feeder, I forward what I consider should be the section of the work, if placed at a b the floor of the sluice would be 2 feet above the river bed or floor of the bridge over the Codamurty, and the floor of the bridge over Trimulrajaur would be ½ a foot lower, the drop of 2½ feet being broken into two steps if deemed advisable, this would place the floors of the vents about 6 inches below the average bed of the river at the point of bifurcation and would render regulation by the shutters easy; the first fresh or the freshes of the first season would probably raise the level of the beds of the streams to that of the floor of the sluices.

12. The vents provided in the regulators would be as per margin, or nearly in proportion to the quantities now carried by the two streams during heavy floods.

13. It will be observed from enclosure A, that even in high floods the Moodicondaur carries only one and a half times the theoretical supply for the lands dependent upon it, and it is believed that the supply to it and the Codamurty may be regulated by alterations to the retaining walls, and by providing a floor to the Codamurty bridge, or perhaps by dam stones under the bridge when a lower apron would probably be necessary, and this might be done without materially affecting the supply the Moodicondaur would receive during high freshes, and hence no regulating work at its head would be necessary, this question has not been worked out because, as stated in paragraph 5, there are some doubts relative to the accuracy of the discharges by the Moodicondaur. This regulation for the present is of minor importance; the great requirement of the moment is to regulate the distribution between the Trimulrajaur and Codamurty; the set is now completely on the head of the former, and the stream itself has become considerably enlarged during the last two years; what can be done by planting up the bend on the south above the head and by putting up temporary groynes to throw the head of the Trimulrajaur into back-water, as it were, has already been ordered, but at first the temporary remedies proposed will not be very effective.

14. The case appears to be of sufficient importance to apply as a special case for the commencement of the regulator during the approaching working season; if this may be done, and intimation is afforded as to what arrangements are approved, the estimate might be submitted in three weeks.

15. If the work cannot be commenced till 1877 the estimate may be sent in later in the year, as there are other works requiring immediate attention, such as the Arsalaur and Veerasholen dams, which must be modified to meet the changes in area of cultivation now found to be dependent upon the streams, and the changes in the regime of the bed of the rivers below the works which have in some respects vitiated the original calculations relative to the works.

Proceedings of the Madras Government, Public Works Department,
10th January 1876.

Statement showing the quantities of Water passing down the Codamurty, Trimulrajaur, and Moodicondanaur under various conditions of floods in 1875, and the proportions those quantities bear to the theoretical supply required, the lands dependent upon the streams.

1875.	TRIMULRAJENAU.			MOODICON.			CODAMURTY.			THREE RIVERS.			Corresponding readings on Canvey gauge at Upper Anicut.
	Acreage, 14,662.	Supply required, { 830 cubic feet per 1".	Proportion of theoretical supply.	Acreage, 26,000.	Supply required, { 1,042 cubic feet per 1".	Proportion of theoretical supply.	Acreage, 46,320.	Supply required, { 2,193 cubic feet per 1".	Proportion of theoretical supply.	Sum of Columns 3, 6, 9.	Proportion of supply to lands under all three Rivers.		
Months and Date.	Gauge reading on bridge on Road No. 5.	Quantity in cubic feet per second.	Proportion of theoretical supply.	Gauge reading on bridge on Road No. 5.	Quantity in cubic feet per second.	Proportion of theoretical supply.	Gauge reading on bridge on Road No. 5.	Quantity in cubic feet per second.	Proportion of theoretical supply.	Sum of Columns 3, 6, 9.	Proportion of supply to lands under all three Rivers.		
1	2	3	4	5	6	7	8	9	10	11	12	13	
2nd December...	43-02	453	1-37	43-09	94	0-116	43-065	183	0-176	721	0-338	FT. IN.	
21st November.	44-126	799	2-42	44-5	236	0-291	44-405	604	0-484	1,542	0-7	3 7	
6th " ...	45-72	1,339	4-06	45-756	41	0-504	45-57	955	0-916	2,708	1-23	4 6	
4th " ...	46-476	1,848	4-98	46-673	546	1-605	46-488	1,372	1-317	3,500	1-62	5 0	
2nd " ...	47-476	2,077	6-3	47-84	719	2-270	47-655	1,970	1-9	4,766	2-17	5 7	
31st July ...	48-29	2,406	7-56	49-09	941	2-46	48-905	2,600	2-58	6,127	2-8	6 4	
25th " ...	49-64	3,094	9-39	50-673	1,267	3-54	50-655	3,799	3-646	8,158	3-72	7 8	
												10 6	

TANJORE,
17th December 1875.

(Sig) R. F. OAKES, Lieut.-Colonel, R.E.,
Superintending Engineer, Tanjore.

No. 100. ORDER THEREON, 10 January 1876, No. 50.

IRRIGATION, No. 7-B.

water-supply of the Codamurty and of Moodicondanaur, under effective regulation. In the three rivers of 1-23 times the water required, the

Trimulrajaur takes four times the quantity needed; Moodicondanaur gets only half the requirements, and the Codamurty obtains a little less than its proper supply.

2. Under the circumstances stated, the Superintendent Engineer, His Excellency the Governor in Council is of opinion that the regulation of these rivers should be carried out independently of any railway feeders or works which may probably be undertaken.

3. It will not be practicable to provide funds for these regulating works either during the current year or by an entry in the Budget of 1876-77; but after the approval of the plans and estimates and of the sanction of the entry of the latter in the Budget

Proceedings of the Madras Government, Public Works Department,
10th January 1876.

of 1877-78, if possible, an allotment will be made to allow of the putting in of the foundations of the Trimulrajaur regulator during the working season after the north-east monsoon of 1876.

4. If the distribution of water between the Codamurty and the Moodicondanaur can be effected by alterations of, or additions to, the bridges on the road a short distance below the head of the latter river, this arrangement may be adopted, but it is considered that the regulation should be effected otherwise than by dam stones, which would be a much less perfect method than is desirable.

5. The levels are noted as being plotted from "datum 32-42," but what this datum is does not appear, and mean sea level should be the datum referred to in all cases.

(True Extract.)

James Walker Major-General, R.E.,
Secretary to Government.

To the Superintending Engineer, Tanjore.
" Chief Engineer for Irrigation.
" Revenue Department.

Exd. S. T. Austin.
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Revenue Department

No. 199.

Cost. of 1876 Madras

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER

TANJORE

&c. &c.

Date January 10th.

Issued

Recd. — a — 20.

G. O., 10th January 1876, No.

JANUARY.

Nos. 99-100

Codamurty and its branches, Tanjore.
Incl. — Passing orders on the report submitted by the Superintending Engineer regarding the regulation of the water-supply to the —

No. 162

Comm. to the
Board of Revenue

22^d Jan'y 76

14 Ld. Board of Rev. 20 Jan'y