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

No. 92. 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 here 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 Pauponassem, about 21½
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

Acre.	Per Cent.
46,320 Codamurty	120 44.4
26,477 Moodicondaur	60 22.2
14,662 Trimulrajaur	50 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 theoreti-
cal supply, while the undivided stream is
carrying ¾rd 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
½ — ¼ 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 ¼, ½ 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 16.6 to 15.5 to 37.9 when the undivided stream is carrying about 3¾
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 Trimulrajénaur is a low level

Section A.

the theoretical supply it can carry on. Trimulrajénaur carries 93 its theoretical supply in a high flood, as the Codamurty is the

and; the capacity of the former is very small as will be observed from the fact that when the undivided stream carries 31 theoretical supply, while the Trimulrajénaur carries it is desirable the latter should carry as much as it can carry with safety, viz., about 33 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 1/4 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 Moodicondamaur 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 Trimulrajénaur 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 Trimulrajénaur head might be brought down to the Moodicondamaur 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 Trimulrajénaur in high floods from the Trimulrajénaur to the Moodicondamaur head; the surplus level of the water would be raised 31 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 Trimulrajénaur in high floods.

8. A second suggestion which offers itself is to carry the Moodicondamaur head up to a b opposite to Panjamassem, and to build the three regulators there in connection with the bridges of the railway feeder from Panjamassem to Kalistalem 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 Moodicondamaur 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 Trimulrajénaur 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 Vettur head at the head of the Trimulrajénaur.

10. The difference of cost of schemes 3 and 4 would be about Rupees 10,000 in favor of No. 3 to Irrigation, but about Rupees 15,000 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 Trimulrajénaur would be 1/2 a foot lower, the drop of 2 1/2 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 Codamurty, sixteen vents of 10 feet. regulators would be as per margin, or Trimulrajénaur, 10 feet with 41 feet shutters. 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 Moodicondamaur 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 Moodicondamaur 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 Moodicondamaur. This regulation for the present is of minor importance; the great requirement of the moment is to regulate the distribution between the Trimulrajénaur 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 Trimulrajénaur 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 Veeerasholen 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.

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10th January 1876.

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

Months and Date	TRIMULRAJENAU.			MOODICONDAUR.			CODAMURTY.			THREE RIVERS.			Corresponding readings on Cauvery gauge at Upper Arcot.
	Acreage, 11,000.	Supply required, { 300 cubic feet per second.	Proportion of theoretical supply.	Acreage, 20,000.	Supply required, { 500 cubic feet per second.	Proportion of theoretical supply.	Acreage, 40,000.	Supply required, { 1,000 cubic feet per second.	Proportion of theoretical supply.	Acreage, 97,400.	Supply required, { 2,100 cubic feet per second.	Proportion of supply to lands under all three rivers.	
1	2	3	4	5	6	7	8	9	10	11	12	13	
2nd December...	43.62	455	1.37	43.00	51	0.115	43.605	183	0.176	721	0.235	11.28	3 7
21st November...	44.128	720	2.42	44.5	108	0.201	44.105	601	0.484	1,542	0.7	4 6	
6th "	45.72	1,259	4.66	5.750	418	0.404	45.57	955	0.916	2,768	1.23	5 0	
4th "	45.476	1,512	4.63	45.673	542	0.605	45.458	1,072	1.317	3,500	1.62	5 7	
2nd "	47.476	2,077	6.3	47.84	719	0.76	47.075	1,070	1.9	4,700	2.17	6 4	
31st July	48.33	2,436	7.56	49.00	911	1.13	48.905	2,010	2.53	6,127	2.8	7 3	
25th "	49.61	3,051	9.33	50.673	1,207	1.54	50.615	3,790	3.615	8,108	3.72	10 6	

TANJORE,
17th December 1875.

(Signed) R. P. 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 the regulating works either during the current year or by an entry in the Budget of 1876-77; but after the approval of the entry of the latter in the Budget

LIEUTENANT-COLONEL OAKES' report and its accompaniments demonstrate very clearly the necessity for bringing the branches, the Trimulrajaur and Moodicondanaur, under effective regulation. A shows that with a total supply of water required, 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.

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

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of 1877-78, if possible, an allotment will be made to allow of the putting in of the foundations of the Trimulrajaur regulating works 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.)

(Signature) Major-General, R.E.,
Secretary to Government.

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

Exd. S. T. Anand.
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Museum. Department

No. 199.

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No. 162

Comm. to the
Board of River

27th Jan 1868