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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Revenue DEPARTMENT

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Not to be folded or roughly handled.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

7th May 1877, No. 15 I.

Irrigation.

No. 29. Read the following paper:—

CONSERVANCY REPORT OF THE TRICHINOPOLY DISTRICT FOR 1876-77.

I. ABSTRACT OF EXPENDITURE IN SECTIONS.

Section.	RIVER CONSERVANCY.			Repair of Embankment.
	Groynes.	Natural Planting.	Removing Islands.	
	RS.	RS.	RS.	RS.
Cauvery... {No. I...	812	4,604	...	9,237
... {No. II...	2,094	3,517	...	4,977
Coleroon ... {No. I...	4,243	3,047	...	2,141
... {No. II...	...	4,251	...	1,468
... {No. III...	...	2,168	2,155	2,430
Total ...	7,149	17,587	2,155	20,253

This shows a total for each section as below:—

		RS.	RS.
Cauvery ... {No. I...	14,653	} 25,241	
... {No. II...	10,588		
Coleroon ... {No. I...	9,431	} 21,903	
... {No. II...	5,779		
... {No. III...	6,753		
Grand Total ...	...	47,144	

or nearly 48 per cent. of the whole Irrigation allotment.

II. RESULTS.—These have on the whole been highly satisfactory.

1. *Aim of Conservancy.*—This is of course mainly to confine the deep bed of the river to its normal width by marginal lines parallel to the axis of the river; the latter being as far as possible midway between the embankments. In rivers such as the Cauvery and more particularly the Coleroon this is not an easy matter; a bad set being only remedied after years of assiduous attention.

2. *Improvement effected since last Report.*—This is very marked. Last year there were at least six places in which the embankments were in danger; there is now not one, and indeed the only bad erosion is in the South Coleroon Padugay, about midway between the Upper Ancient and the bridge. The Padugay here being very wide, the embankment is in no danger. The evil will be remedied as soon as funds can be spared.

3. *Economy effected in Groynes.*—The serious expense in many places of stone groynes led me to devise schemes for lessening the cost. One of these consists in laying for the foundation of the groyne two rows of fascines, one in the direction of the groyne, the other at right angles to it; the fascines of the latter being in one piece, extending the whole width of the groyne. On this foundation the stone was laid; further protection was given on the up stream side and end by a row of boxes filled with stones. The object was first to cause equal settlement and therefore greater stability, and second to save stone. This latter was attained not only by a much smaller section being permissible, but also from the saving of stone in the foundation course,

which, under the old system, constituting one-third of the whole quantity, sank a yard or more in the sand before the groyne was finished. This method has been most successful. In one place there was a very heavy set almost at right angles to the bank, and a depth of water 6 feet. Action here being imperative, and the cost of a stone thrown in groyne enormous, I ordered sand to be thrown in up to the water surface, forming a platform of dimensions somewhat greater than that of the groyne, and on this the groyne was constructed as described. Six groynes were constructed in this way, and have stood remarkably well, while a saving of at least 56 per cent. in cost has been effected. Another method I adopted was a platform of coconut wood pieces protected as in the first case; a groyne constructed in this way stood a very heavy set for several months, and then partially failed by the sinking of the boxes (on the up-stream side) and the consequent tilting of the groyne in that direction; with, however, a little more care paid to its construction, a groyne constructed in this way will stand very well. I am quite satisfied with the result of the experiment, which is but a trifle more costly than the other.

4. *Work to be done in the coming season.*—This will be mainly to strengthen and extend the reclamations made and to complete the work of removing islands from the rivers. In this latter but little has been done owing to want of funds. The many Korumbos are a fruitful source of evil, as their material washed away by a fresh is deposited sooner or later and forms the nucleus of islands, or attaches itself to islands forming or formed and accelerates accretion.

5. *Embankments.*—The north embankment of the Agunda Cauvery between Musiri and the Upper Anicut has been substantively repaired. Further west the embankment is generally in good order. In some places there is no regular embankment, but there the ground is generally high and little damage is caused by overflow. The south embankment as far as the Cauvery bridge is in very good order.

One breach occurred in the south Coleroon embankment 4 miles east of bridge. This has been repaired, and the whole embankment put in good order.

Between the Upper Anicut and the bridge the north embankment requires repair. It is hugged throughout this length by the Iyen channel, which is to it a source of danger.

In the 59th mile two breaches of some size, besides several others of small importance, were caused by the very high fresh of 29th July (11' 9" at Cauvery bridge). These have been strongly repaired, but this embankment cannot be in a satisfactory condition till funds are available for carrying out the estimate, Rupees 15,550, for widening and raising it. This estimate was sanctioned in G.O., Financial Department, No. 592, dated 15th February 1877; of the whole amount, Rupees 15,550, one-third is to be provided by the Local Fund Board.

III. *CONSERVANCY OF PADUGAYS.*—A few remarks on this will not, I think, be considered out of place.

1. *Change in Establishment.*—The change sanctioned in G.O. No. 3,302 has been brought into effect and will, I think, work well. Under the old system there were a number of useless hands charged nominally with supervision which they never performed, and from this ensued that the Peons, (Lascars) who should have done good manual labor, considered their duties to be those that should have been performed by their superiors. With the exception of three men on Rupees 7, whom I have retained to make up accounts, send reports, and for similar work, every one has manual labor to perform, and a number of boys having been entertained, the number of working hands is much increased.

2. *Jungle Conservancy.*—Under this head the Revenue Department claims control of the trees and jungle on the Padugays. Conservancy with them is a complete misnomer, as the only thing they do is to give an order for trees to be cut down when application is made; and, as this is entirely under Native subordinates and the European Officers never visit the Padugays nor know anything about them, I consider this state of things most unsatisfactory, and, moreover, it seems to me questionable whether receipts from this source should not be credited to "Irrigation." I think they should, and that all embankments and Padugays (where not handed over to the Forest Department) should be under the entire control and management of the Public Works Department.

3. *Planting Trees.*—With the new establishment the planting of trees at the foot of embankments will receive attention. Of course little can be done year by year; but, if the works be only persevered in, the course of two generations should show all the embankments shaded and sheltered by fine avenues. All small plots of Government waste are planted up as fast as possible, principally with the sissoo which grows well from branches; also with the bamboo, but then they cannot see that the country is gradually becoming a desert. To effect this hundreds of years may be required, but the result is just as certain as that night succeeds day.

TRICHINOPOLY,
23rd April 1877.
To the Chief Engineer for Irrigation.

(Signed) J. VERTUE, Lt.-Col., R.E.,
District Engineer.

No. 29-A.

Note by the Chief Engineer for Irrigation.

CONSERVANCY Report of the Trichinopoly District for 1876-77.

PARA. I.—Abstract of expenditure in sections—

Cauvery—River Conservancy—						RS.	RS.
Groynes	...	...	...	...	...	2,906	
Nanel planting	...	...	...	...	...	8,121	
							11,027
River embankments	...	...	...	...	...		14,214
Total Cauvery	...	...	...	...	...		25,241

Of this expenditure the Agunda Cauvery or the part of the river above the Upper Anicut absorbed under—

River Conservancy—						RS.	RS.
Groynes	...	...	...	...	...	812	
Nanel planting	...	...	...	...	...	4,604	
							5,416
River embankments	...	...	...	...	...		9,237

On section II or the part of the river below the Upper Anicut the outlay was under—

River Conservancy—						RS.	RS.
Groynes	...	...	...	...	...	2,094	
Nanel planting	...	...	...	...	...	3,517	
							5,611
River embankments	...	...	...	...	...		4,977

COLEROON.—This river is divided into three sections and the expenditure incurred was for—

River Conservancy, Section I—

						RS.	RS.
Groynes	...	...	...	...	...	4,243	
Nanel planting	...	...	...	...	...	3,047	
							7,290

Section II—

Groynes	...	...	...	...	...	4,251	
Nanel planting	...	...	...	...	...		4,251

Section III—

Groynes	...	...	...	...	...	2,168	
Nanel planting	...	...	...	...	...	2,155	
Removing islands	...	...	...	...	...		4,323

Total Conservancy ... 15,864

River embankments.—Section I

Do. II	...	...	...	...	...	2,141	
Do. III	...	...	...	...	...	1,468	
							2,430

Total embankments ... 6,039

Total Coleroon ... 21,908

In future reports the mileage of each section should be noted, and with a view to comparison of expenditure during a series of years an appendix in the following form should be added to the reports:—

River.	Section.	Mileage.	Particulars.	Average of preced- ing 5 years.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
Cauvery...	I.	MS. CHS.	<i>River Conservancy.</i>						
			Groynes ...	...	812	...	...	...	...
			Nanel plantations...	...	4,604	...	...	...	...
			Removing islands, &c.	...	...	...	...	...	...
	II.		Miscellaneous ...	...	...	...	...	...	...
			Groynes ...	...	2,094	...	...	...	...
			Nanel plantations...	...	3,517	...	...	...	...
			Removing islands, &c.	...	...	...	...	...	...
			Miscellaneous ...	...	...	...	...	...	...
Total ...	...	...	Conservancy ...	...	11,027	...	...	...	...
	I.		<i>River embankments</i>	...	9,237	...	...	...	...
	II.		Do.	...	4,977	...	...	...	...
Total ...	...	...	Embankments ...	...	14,214	...	...	...	...
Coleroon...	I.		<i>River Conservancy.</i>						
			Groynes ...	...	4,243	...	...	...	...
			Nanel plantations...	...	3,047	...	...	...	...
			Removing islands, &c.	...	...	...	...	...	...
	II.		Miscellaneous ...	...	...	...	...	...	...
			Groynes ...	...	...	...	...	...	...
			Nanel plantations...	...	4,251	...	...	...	...
			Removing islands ...	...	...	...	...	...	...
	III.		Miscellaneous ...	...	...	...	...	...	...
			Groynes ...	...	...	...	...	...	...
			Nanel plantations...	...	2,168	...	...	...	...
			Removing islands ...	...	2,155	...	...	...	...
			Miscellaneous ...	...	...	...	...	...	...
Total ...	...	...	Conservancy ...	...	15,864	...	...	...	...
Coleroon...	I.		<i>River embankments</i>	...	2,141	...	...	...	...
	II.		Do.	...	1,468	...	...	...	...
	III.		Do.	...	2,430	...	...	...	...
Total ...	...	...	Embankments ...	...	6,039	...	...	...	...

A more complete review will then be practicable.

PARA. II. 1.—The embankments having been originally formed more or less irregularly, the proper axis of the river will generally lie away from the mid distance between the embankments, and the marginal lines denoting the proper boundaries of the river channel may from circumstances diverge more or less from parallelism with the axis, but with these modifications the description of the "aim of conservancy" given by the District Engineer is correct.

PARA. II. 3.—It is satisfactory to notice that the District Engineer is giving attention to the construction of groynes where necessary in an economical manner. Drawings of groynes as constructed

and found to answer will be useful. The security of groynes built on a sand platform as described in this paragraph would depend upon the depth to which the protecting box curtains may be carried down. The practicable methods of constructing groynes are determined chiefly by two circumstances—

- (1.) The materials available.
- (2.) The depth of water at the site.

When stone is abundant and not costly and when the work can be carried out in but a small depth of water, an earth core covered with nanel revetment and the whole protected by a stone casing makes an efficient and cheap groyne. Groynes composed entirely of durbah rollers have also been successfully used, and their cost is very small where grass is abundant.

PARA. II. 4.—Korumboos are a necessary evil, but it is believed that the cost of removing the nanel which takes root where it is not wanted, on the dispersion of their materials, will never be considerable if it be rooted up at once. Nanel is a very valuable grass, but wherever it is to be found, it is liable to grow where it is not wanted and such growth must be destroyed.

PARA. II. 5.—*Embankments.*—A good deal has yet to be done to make the embankments safe and efficient throughout, and the District Engineer should be careful that in all that is done a proper section at a uniform level above flood level is secured and that the repairs are carried out as far as possible from the upper end downwards, seeing that insecurity in the upper miles is likely to occasion double damage, first from the flood water breaching in and then from its breaching out again.

PARA. III. 2.—There is no reason why the Irrigation Department should desire any control over Padugays which are not required to be held by it in the interests of river conservancy. The department has more than enough to do to manage its own proper work, and jungle conservancy apart from any direct connection which it may have, as at the Upper Anicut jungle, with river conservancy, is not its proper work. The views of the District Engineer as expressed in this paragraph are therefore not concurred in.

PARA. III. 3.—Tree planting should be strictly subordinated to the requirements of the works in connection with which the trees may be planted, and to the wants of the department in connection with those and other works in the neighborhood. Trees and brushwood and bamboos, &c., are most useful and necessary for river defensive work, fencing, firewood for brickmaking, &c., and in furtherance of these objects, whenever the circumstances will admit of plantations being economically managed, trees and bamboos, &c., may be planted on ground in charge of the department. All other plantations should be left to the department whose more immediate duty it is to prevent the country being denuded of trees and to supply the wants of the community generally. Care must also be taken that trees planted by the Irrigation Department on land belonging to works in its charge do not injuriously overshadow lands the property of private

PUBLIC WORKS DEPARTMENT, 7TH MAY 1877, No. 15 I.

individuals. Consequently the trees used for demarcation purposes must be such as the palmyra if planted close to the boundary, or must be placed, if carrying a large head, sufficiently within the boundary to avoid encroachments.

2. The remarks made in this note will be of use to other District Engineers having river conservancy work to carry out and river embankments to maintain.

FORT ST. GEORGE,
27th April 1877.

(Signed) JOHN MULLINS, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

To the Joint Secretary to Government, P.W.D., Irrigation Branch.

No. 30.

ORDER THEREON, 7th May 1877, No. 15 I.

HIS GRACE the Governor in Council is glad to find that river conservancy and embankment work in Trichinopoly is being brought under more systematic treatment and subjected to annual review. The data which will in the future be obtainable from these reports will be of considerable value, and similar reports should be prepared annually for other districts similarly circumstanced. In Tanjore more particularly the subject is of very great importance, and the District Engineer should adopt measures for making the necessary information available at the end of the current year.

2. The views of the Chief Engineer for Irrigation in connection with the charge of the Padugays (river margins) and plantations are approved and should be acted upon generally.

(True Extract.)

John Mullins

Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To all District Engineers.
To the Chief Engineer for Irrigation.
" Revenue Department.
" Examiner of Public Works Accounts.

29-5

Ext. E. C. Shunker.

20 Spare Copies

Revenue Department
No 2680

IRRIGATION.

Gobt. of [1877] Madras.

PUBLIC WORKS.

To

ALL DISTRICT ENGINEERS,

&c., &c., &c.

Dated May 7th.

Issued

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G. O., 7th May 1877, No. 15 I.

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Nos. 29-30.

No. 3041.

Communicated to the Board
of Revenue and Conservators of
Forests.

CLL

30 May 1877-

Conservancy Report of the Trichinopoly
District for 1876-77.—Passing orders on
Note by the Chief Engineer for Irrigation
submitting with remarks and suggestions
the —.

With Obv.

1. To the M. J. Board of 30.5.77
2. To the Conserv. Board, 30.5.77