

- (1) பக்கங்களின் எண்ணிக்கை 50
 (2) புதுக்கித் திருப்பிய நாள் 4/90
 (3) ஆதரங்குறிப்பவர் சுருக்கொப்பம் 100

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

(3/4)

P. M. D. துறை

அரசாணை எண். மு. கோப்புத் தாள் எண்.	2789	அச்சகம் பலவகை
நாள் : 5. 4	10-1889	198

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

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2789
5TH OCTOBER 1889, No. 2789 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.
PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From W. JOPP, Esq., Executive Engineer, to the Superintending Engineer,
VI Circle, dated Ramnad, 16th September 1889, No. 1936.

In submitting herewith a report on the administration of agricultural works in the Ramnad estate since it has been under the management of the Court of Wards, I have the honor to remark that although I was not desired to submit one, it appeared that it might be useful as all operations have ceased and the estate is to be handed over to the zemindar next month.

2. *Introductory.*—Owing to many years of misrule and extortion, the estate was reduced to such a wretched condition that, in 1871, the zemindar, the father of the present minor zemindar, was unable to meet the annual peishcush and the estate was attached by Government as security for arrears and the management undertaken by it.

This management continued until March 1873, when the zemindar died, leaving a minor son, and thus the estate was transferred to the Court of Wards for administration for the term of the minority which will cease in October of the present year.

3. At the time the Court of Wards entered into management the estate was heavily involved and the economical condition of the people very unsatisfactory. The advances made by Government to discharge the debts of the late zemindar amounted to Rs. 12,72,830. An advance was also made to the management for improving irrigation works amounting to Rs. 1,50,000. These sums added to the arrears of peishcush or Rs. 2,55,000 brought the gross total of indebtedness of the estate to Government to Rs. 16,77,830. The whole condition also, of the ryots, of the irrigation works, of the system of cultivation, was so deplorable that it took many years of very careful management and heavy outlay before any surplus was shown in the revenues of the estate for discharging this heavy debt or any perceptible improvement had taken place in the economical condition of the people. In fact, at the end of 1879 (fasli 1289), the whole sum named above remained still at the debit of the estate. The condition of the zemindari was thus described by the officer then in charge :—“The people are for the most part extremely poor, squalid and miserable. It is very sad to see the widespread ruin everywhere visible, brought on by neglect and misrule. Everywhere you meet with ruined tanks, channels, anicuts, &c.; saddest of all, however, is the ruin wrought in the people themselves by a long course of robbery and corruption.”

4. The numerous irrigation works constructed many years ago with some skill, and evidently at great cost, had all fallen into the greatest disrepair. The numerous breaches in tanks and channels had remained unclosed for years, the banks consisting of a very loose friable soil had in many cases either been almost blown away by the very high winds or washed away by annual rains so that they were scarcely distinguishable from the surrounding plain, and many had fallen utterly into disuse from their inability to hold water at all.

Such a state of things caused wholesale emigration of entire villages and thus the population had become abnormally deficient. Those people who remained were in a wretched and hopeless state of poverty; utterly apathetic and lawless, ignorant of any good system of cultivation, and quite unable to carry it out had they been in possession of such knowledge.

The immediate action of the Court of Wards was naturally to take energetic measures for the restoration of these ruined irrigation works.

Unfortunately the staff engaged to carry this out was at first too small and without any special qualifications or training, and the annual expenditure of some Rs. 30,000 was consumed chiefly in closing of breaches and such minor works. In later years, however, a larger staff was appointed and several important improvements were started to the larger irrigation works, notably the Ragunathacauvery channel, the Rajasingamangalam and Ramnad tanks. These efforts were, however, very considerably discounted by the period of drought and famine of 1876 and excessive rainfall and floods in the faslis 1287, 1290, 1292, 1293 and 1294. The floods of this last year, 1884, were most disastrous. In October of that year, the excessive rain and heavy floods in the Vaigai and Gundaur caused the breaching of a great number of tanks which were partially closed at a cost of some Rs. 15,000, when again in the month of December a severe cyclone passed over the whole estate attended with floods in the rivers causing the heaviest damage to almost every irrigation work in the zemindari. Considering only the larger tanks upwards of 500 were badly breached. As for instance the Rajasingamangalam tank, in which there were 56 breaches. It was at this crisis that the Government decided to put the estate works under the management of Public Works Department and a new but temporary division was formed for that purpose in February 1885, which immediately set to work to restore the damages.

5. *Result of direct Court of Wards' administration of Agricultural works.*—During the period that the estate management directly carried out its work in the estate, namely, the 12 years from March 1873 to March 1885, a sum of Rs. 5,47,491 was spent on irrigation works. Of this—

Rs. 2,30,464 was spent on emergent repairs to 599 tanks, such as closing breaches.

Rs. 3,17,027 was spent on improvements of 126 irrigation works.

As there are 1,217 tanks of all kinds in the zemindari, it will thus be seen that 492 tanks (1,217—599—126) had absolutely no repairs of any kind carried out to them during that period, and as it is known that no repairs were carried out on them for many long years before the Government attached the estate, they may be fairly regarded as having fallen into ruin. Before considering in detail the operations of Public Works Department, from its incumbency in March 1884, up to date it will be as well to describe shortly the materials on which it had to work.

6. *Description of Estate.*—The Ramnad estate contains an area of 2,351 square miles. Its two northern taluks, Hanumanthagudy and Rajasingamangalam, contain the richest bearing wet land; their soil varies from a light red clay to a loose friable earth free from stones. In the Ramnad and Mutukulatūr taluks the soil is either a light red clay or else black cotton, except near the coast where it becomes very sandy. In the Kamuthi taluk black cotton, and red gravelly soil occurs nearly up to the sea where it becomes sandy. The Pullimadam taluk also consists of black cotton and this red gravelly soil.

The country is singularly denuded of forests or trees and is for the most part flat, and near the sea there are extensive salt swamps. The chief rivers are the Vaigai and the Gundaur. The Vaigai is the larger and has a course of about 30 miles in the estate. It frequently fails, but in average years it supplies a large number of tanks in the Ramnad and Rajasingamangalam taluks. Its water may be said practically never to reach the sea, as after supplying many tanks it is expended in filling the Ramnad tank and of itself there is seldom more than enough to do this.

The Gundaur, although smaller, is of equal value to the estate, as by means of an earthen dam across its bed at the village of Kamuti its waters are diverted into a channel 26 miles in length, the Ragunathacauvery, from which more than 20,000 acres of land are irrigated. There are many other small jungle streams chiefly in the northern taluks which are of use in supplying many tanks.

Two hundred and twenty-five tanks are supplied from these rivers and jungle streams, the remainder being dependent on local rainfall.

There are in the estate altogether 1,217 tanks, but 295 of these are sub-tanks which do not possess separate ayacuts, and so for matters of calculation the net total

may be taken as 922. The following tabular statement will show at a glance the proportions of large and small tanks, their ayacuts and percentages of the actual irrigated area to waste when the estate was undertaken by the Court of Wards:—

NUMBER OF TANKS IRRIGATING						Irrigable area.	Irrigated area.	Waste.	Percentage of waste to irrigable area.	Remarks.
Under 50 acres.	Under 100 acres.	Under 200 acres.	Under 500 acres and over 200 acres.	Over 500 acres.	Total.					
373	198	192	104	55	922	80,271	27,936	42,345	53	The irrigated area is the average of the first 3 years at beginning of Court of Wards administration.
763										

A noticeable point in this table is the very large proportion of land out of the irrigable area which remained uncultivated. It will also be remarked that the very large majority of the tanks are of very small capacity indeed, 763 out of 922 being incapable of irrigating more than 200 acres.

The rainfall is singularly uncertain; in some years failing altogether and in some falling in great excess, and being intensified by the denuded state of the country very heavy floods result. The case is similar with the rivers Vaigai and Gundaur, and if these happen to be in fresh coincidently with heavy rainfall which occurs about once in four years the damage to irrigation works is very considerable.

The estate is singularly destitute of all the usual building materials to be obtained with ease in most districts. No stone whatever is procurable except in the Pullimadam and a small area of the Kamuthi taluk. Bricks only of a very inferior description and of a very high (relative) price are to be obtained; all the soil in the zemindari is impregnated with salts which cause the destruction of bricks in a very few years if not carefully plastered over. There is no market in which timber of any kind can be purchased; all is imported by sea by special arrangement. Lime is, however, easily procurable and is of good quality.

These difficulties are further increased by the entire absence of roads. There is one metalled road in the estate 25 miles in length from Ramnad in the direction of Madura. There is, however, a breach in it impassable to wheeled traffic during the rains. In fact travelling of any kind, on horse-back or in a cart, is an impossibility from the burst of the monsoon about the middle of October until the end of December or middle of January.

Such was the state of things when the Public Works Department were asked to take up the works of the estate in March 1885.

7. *Public Works Department Programme of Operations.*—Early in that year the Superintending Engineer, Colonel Mead, inspected a portion of the country and reported on it. He remarked—"As a rule the soil is bad, it is black cotton and sandy; the tanks are unprovided with masonry escapes and there are but few masonry sluices; that little had been done to put the works in a proper state of repair, all the tanks may be said to be in a most neglected state; and owing to the cyclonic rains and floods of 1884 nearly every tank in the estate was seriously damaged or breached." Seeing this the Superintending Engineer considered that it was "hopeless to attempt to place all the tanks in the estate in good order and provide them with masonry escapes of sufficient capacity and with masonry sluices." He therefore laid down the following programme for the guidance of the Executive Engineer:—

1st.—That as the revenue of the ensuing year was dependent on the immediate closure of the numerous breaches that had been caused by the cyclone of the previous year, every effort should first be directed to accomplish this end, as well as to strengthen the bunds of such tanks as had been seriously damaged, even without previously sanctioned estimates.

2nd—That estimates should then be prepared for the improvements and repairs of all tanks irrigating over 500 acres including sufficiency of masonry escapes and irrigation sluices.

3rd—That then the tanks irrigating less than 500 and more than 200 acres should be taken up and treated in a similar manner.

4th—The Superintending Engineer did not consider it expedient or possible to deal with the large number of tanks irrigating less than 200 acres in the same manner as those irrigating above 200 acres. He proposed merely to permanently fix their F.T.L. by means of a simple masonry floor, where a natural byewash was not available, and then to take up their bunds to the requisite height and section.

But bearing in mind the large number of the tanks and their very neglected state even such a programme was far too lengthy to carry out completely during the short time that the estate was to remain under management.

8. Year 1885-86.—A temporary Public Works Department division was formed under Mr. Bell in March 1885 of three upper subordinates. Mr. Bell was succeeded by Mr. Harrington in May of the same year; during the course of the year two of the upper subordinates were changed.

Mr. Harrington and his staff were fully engaged during the year in carrying out the first part of the Superintending Engineer's programme.

Breaches were closed and banks strengthened in 450 tanks and in the two large irrigation channels at a cost of Rs. 1,08,163.

In the meanwhile sanction was obtained to the employment of the necessary survey establishment for the preparation of estimates for the improvement of tanks irrigating over 500 acres as laid down in the second part of the Superintending Engineer's programme.

The season (1885-86) was on the whole favorable to cultivation, the rainfall except in the latter part of the year being timely and sufficient, but unfortunately during a flood in the Gundaur one of the worst breaches in the Ragunathacauvery channel near Appanur head-sluice which had been previously closed was opened out again and there was a failure of water-supply to some tanks under it.

9. Year 1886-87.—Mr. Harrington continued in charge of the division throughout the year 1886-87. The strength of his establishment was increased from 3 to 4 upper subordinates.

During this year also ordinary repairs were undertaken and completed to 220 tanks at a cost of Rs. 48,005.

Four estimates for the improvement of the largest irrigation works in the estate, namely, the Ramnad tank, the Rajasingamangalam tank, the Kalary tank, the Anaikolam tank, were sanctioned, but unfortunately owing to a difficulty in procuring labor and in getting honest and intelligent contractors to come forward, but little progress was made on them, before the rains set in, and stopped further operations, by filling the tanks.

The expenditure was thus only Rs. 11,230, the total expenditure on irrigation works being Rs. 59,235.

The cultivation season was not on the whole a favorable one, as the rains being untimely the yield from the land cultivated was indifferent. There were no serious damages from floods to irrigation works, although the usual and unavoidable breaches to minor tanks occurred.

10. Year 1887-88.—The beginning of the next year 1887-88 still found Mr. Harrington in charge of the estate works, but the division had in March 1887 been reduced to the status of a sub-division and notices of dismissal had been served on the Executive Engineer and his temporary establishment.

These changes and the condition of an uncertainty to which their services was reduced naturally resulted in a great falling off in progress of work.

It was not until the month of May 1887 that Mr. Harrington was finally relieved by Mr. Target and the charge again raised to the status of a separate division.

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Mr. Target remained in charge until February 1888, when he was relieved by me.

Soon after his assuming charge and at his representation that the work of the division could not be efficiently performed with less than six upper subordinates, one more was assigned, thus raising the number to five.

During the year two of these upper subordinates were changed.

Owing to the causes noted above, to the unsatisfactory behaviour of contractors and to the very early advent of rains, filling the tanks and rendering it difficult to obtain earth and the necessity for most available labor to leave works, in order to plough their dry lands, the progress on works was again indifferent.

Only Rs. 31,567 were spent on the improvements of large works irrigating more than 500 acres, and none of them had made any great advance towards completion.

Of tanks irrigating less than 200 acres, 44 were put in hand and their repairs completed.

The total expenditure on irrigation works during the year being Rs. 49,642.

The seasons were again fairly good for cultivation, the rains being early and favorable. No serious accidents occurred to irrigation works, there being no unmanageable floods either by local rainfall or by rivers.

11. Year 1888-89 (up to July 1889).—I remained in charge of the division throughout the year 1888-89 (having joined it in February 1888). As the minor zemindar was to attain his majority in October 1889, it was arranged with the manager of the estate that no new works were to be put in hand after the 31st March 1889; and to enable the division to be wound up in time, it was ordered by the Chief Engineer that all active operations should cease on the 31st July 1889. The expenditure therefore between the 1st April and 31st July 1889 is comparatively and necessarily small and for the present purposes may be included as part of the year 1888-89.

The executive staff remained of the same strength as in last year, namely, 5 upper subordinates.

The changes amongst these were very frequent. The services of one were dispensed with, two resigned, two went sick, one was transferred, making six changes in all. They were brought about for the most part by the nature of their temporary employment, by the knowledge of the early winding up of the division, and by sickness. Nevertheless very good progress was made with works.

The four largest irrigation works in the division were fully improved according to estimate except a portion of the work on the Kalary tank, which tank, however, may be held now to be in an efficient order.

Improvements and repairs were also completed to seven more tanks irrigating more than 500 acres as laid down by Colonel Mead.

Three tanks irrigating more than 200 but less than 500 acres were also thoroughly improved under Colonel Mead's programme.

Emergent repairs were also carried out to 174 tanks; the breaches that occurred to them during the rains were fully closed and weak places in their banks strengthened. The total expenditure that was thus incurred on irrigation works was Rs. 87,826.

The north-east monsoon burst towards the end of October and soon filled the various tanks. Again on the 14th and 15th of December 1888 a very severe cyclonic storm passed over the whole estate accompanied with very heavy rain, heavier than on occasion of the cyclone of 1884; heavy freshes in the rivers and jungle streams were also coincident, and thus there was the greatest danger to most irrigation works and numerous breaches occurred. Fortunately owing to the improvements already carried out to the greater tanks and to energetic measures taken by the department in whose sole charge they are, there was not a single breach or accident of any serious consequence to them, thus saving the crops and the heavy cost of repairs. In the smaller tanks the breaches were numerous, some occurring unavoidably, but many being cut by ryots, to prevent the water rising over their crops which they are in the habit of planting in the tank beds. Prompt measures were taken, and except in the Mutukulatur taluk where labor is not readily obtainable, all breaches were closed and no loss of crops resulted.

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12. The operations of the department since March 1885 may be conveniently tabulated as below :—

Years.	EXPENDITURE.		Total.
	Agricultural original works.	Agricultural repairs including emergent repairs.	
1885-86	Rs. 739	Rs. 1,08,163	Rs. 1,08,902
1886-87	11,230	48,005	59,235
1887-88	31,567	18,075	49,642
1888-89	55,061	32,575	87,636
Total	98,597	2,06,818	3,05,415

The results attained by the expenditure may be conveniently shown thus :—

Description.	Improved with masonry escapes and sluices.	Put into fair order.	Repaired emergently by closing of breaches, &c.	Totals of each kind of tanks repaired.	Total number of each kind of tank in estate.	Difference of columns 5 and 6 is the number of tanks remaining unrepaired.
1	2	3	4	5	6	7
Tanks irrigating more than 500 acres.	11	44	..	55	55	..
Tanks irrigating less than 500 acres and more than 200 acres ..	3	101	..	104	104	..
Tanks irrigating less than 200 acres..	5	231	255	236	763	272

It will be seen at a glance that only 272 out of 922 tanks in the estate have not received repairs of some kind since the incumbency of the Public Works Department.

It should also be borne in mind, as already stated above, that many of these 922 tanks have long ago fallen into ruin and disuse; it may therefore be roughly asserted that nearly every existing tank in the estate has had some repair carried out to it, and that the first part of Colonel Mead's programme has been fully carried out.

Then as to the second part, it will be remarked that 11 out of the 55 tanks irrigating over 500 acres have been fully repaired and supplied with masonry escapes and sluices; besides these, there are seven which have good natural escapes, thus leaving 37 yet to be supplied with escapes. The bunds of all have, however, been repaired, and with careful attention breaches should not occur. The zemindar will be able to take up this work and gradually provide them all with masonry escapes.

As to sluices, only such of the tanks as have their F.T.L. at a greater height than 6 feet above the proposed sluice sill level need have pukka masonry sluices. There are very few such in the estate, and almost all have already been provided; palmyrah sluice will suffice for the rest.

Considering the difficulty that the department has had to contend with in the matter of materials and labor and the short time that they have had for the preparation and sanction of designs and estimates as well as execution of works, I think that the progress made with masonry works may be considered fair.

It was not until 1886-87 that arrangements could be made for starting such works, and by the end of 1888-89 the following results were attained :—

14 new surplus weirs were constructed.

18 do. irrigation sluices.

3 large surplus sluices were altered, improved and thoroughly repaired.

Many old irrigation sluices were repaired.

13. Schemes to be carried out hereafter.—I should now mention such schemes as may be considered useful or profitable, but which there has unfortunately not been sufficient time or opportunity to accomplish.

(1) Improvements to the Ragunathacauvery Channel.—This is taken off from the Gundaur at Kamathi. It was excavated by a former zemindar, and afterwards in 1819, when the estate was under attachment, it was repaired by the head tahsildar, Narayana Row. From that time until the year 1876 no repairs whatever were carried out.

In 1876 a scheme was drawn up by Mr. Turner, then in charge of the estate, for the repairs and improvements of the channel amounting to Rs. 3,20,000, of which Rs. 1,11,530 was for the improvement of the main channel and the balance for the improvements of the distributaries and tanks. The improvements of the main channel consisted of widening its bed and the construction of head-sluices to distributaries which were not already provided.

An expenditure of Rs. 1,17,781 was actually made against the estimate. It was prepared without professional assistances and was not altogether the best or most economical manner of dealing with the scheme. The channel is still in an inefficient state and requires further improvements, and it was proposed that this work should be taken up by the Public Works Department.

It is one of some magnitude and would require very careful consideration from a financial point of view. The preparation of the levels and the collection of such information as would be necessary to accompany an estimate for consideration and sanction of the Court of Wards necessarily took a long time and they were not ready in time to offer any hope of the work being undertaken before the estate was handed over to the zemindar.

Most of the information has, however, been collected, and the details of the scheme have been discussed with the Superintending Engineer, and has received his provisional sanction. Rough estimates were taken out showing that the cost of the project would be between 2 and 3 lakhs. All the levels and papers in connection will be handed over to the estate management.

(2) The Narayanacauvery Channel.—This also is a channel taking off from the Gundaur some few miles higher up than the Ragunathacauvery near the village of Tirushuli.

This old channel is entirely silted up and the tanks under it fallen into disuse. This might be a paying work to take up; some information was collected by the department, but as there was little hope of its eventually being carried out in the time available, the establishment was put on to other more immediately urgent duties.

(3) Providing sufficient surplus weirs or sluices to the Gundaur Dam at Kamathi.—This work is really the most important and necessary of all works in the estate. It is necessary to consider it in connection with the scheme for improvements to the Ragunathacauvery channel.

The bed of the Gundaur is entirely dammed across by an earthen dam making a junction with high ground at each extremity. The river water can discharge itself only down the Ragunathacauvery channel and over two surplus weirs each 150 feet in length. These discharges are utterly insufficient in time of flood, thus the earthen dam and the banks of the channel are repeatedly and heavily breached. Designs and estimates have been drawn up and the work would have been undertaken last year, but unfortunately it was necessary that certain points in connection with the improvements to the Ragunathacauvery channel should first be settled, which caused delay.

(4) The alteration of the surplus weir in the left bank of the Vaigai just before it empties itself into the Ramnad tank.—This weir was intended to discharge the waters of the Vaigai when the Ramnad tank had already received its full supply. It in no way does this, and almost every year a breach has to be cut in the river bank to get rid of the surplus water at considerable cost. The weir is a substantial work, and it can be rendered thoroughly efficient by lowering its crest and providing shutters with screw gearing. Such a work would repay its cost in two or three years.

(5) Another work of great utility that should be incumbent on the Ramnad estate is the provision of head-sluices to all the channels that take off from the Vaigai to supply tanks in the triangular portion of country comprised between the Vaigai

right bank and the Madura-Ramnad road from Permagudy to Ramnad, and the putting of the tanks in that area in good order. Whenever heavy local rains fall coincidentally with heavy floods in the river, the flood water is entirely without control and the tanks suddenly breaching not only cause serious damages to the Ramnad tank but also to the Madura road, the only means of communication in the zemindari. Last year there were numerous breaches in the road caused in this way and traffic was stopped entirely for a considerable time.

(6) There are several other schemes which, although they do not appertain to public works but are rather the duty of local Unions or Boards, might be carried out by the minor zemindar.

Ramnad has for years enjoyed a reputation of being one of the most unsanitary towns of Southern India and the *nidus* of cholera. I do not think the reputation is undeserved. The town is filthy, there are large pools of filthy stagnant water lying about the town which by evaporation become concentrated filth. The catchment of the two drinking-water tanks is used as the latrine of the town; all subsoil water is undrinkable, being brackish.

By a channel little more than a mile long a good water-supply could be obtained from the Ramnad tank direct, and the filthy pools of the town might be efficiently drained by an extension of the bund of the Chackaracottai tank and excavation of necessary channels.

14. *Results of Court of Wards' management.*—It would be possible to get a fair idea of the results accruing by the Court's management and by the expenditure on improvements to irrigation works only by taking average of several years. It would be useless for instance to compare the famine years with those of comparative prosperity. And again in the earlier years the water-supply and rainfall were precarious, thus the fluctuations in the area under cultivation and the revenue were great. If we take averages of three years, a fair comparison may possibly be made. A statement is appended for easy comparison showing the results of Court of Wards' administration of the estate:—

Years.	Revenue.	Average revenue.	Cultivated area in acres.	Average area cultivated.	Average value of melwaram per acre.	Outturn per acre.	Average.	Remarks.
1873-74	Rs. 1,95,096	Rs. 2,91,638	31,258	37,926	Rs. 7-7	K. M. M. M. 3 2 4 1/2	4 1 1 1/2	1 kalam = 16 markals. 1 markal = 6 Madras measures. or 144 Madras measures.
1874-75	3,01,605		36,460			4 6 5		
1875-76	3,78,212		46,060			4 8 8		
1886-87	4,32,200		48,156					
1887-88	5,13,526	4,87,462	49,346	49,391	9-9	5 11 0	5 11 0	
1888-89	5,16,661		50,673					
Difference between average of first three and last three years.		1,95,824	..	11,465	2-2	..	1 9 4 1/2	

It may be noted—

- 1st—that the total revenue from wet land has increased about 67 per cent.;
- 2nd—that the area under cultivation has increased by about 11,465 acres or 30 per cent.;
- 3rd—that the value of the estate share of the crops brought up on the increased area cultivated is alone about Rs. 1,13,503, which accounts for all the increase of the revenue except Rs. 82,321, which may be ascribed to better revenue collection and administration in harvesting operations under the waram system;
- 4th—that the zemindar's share off of an acre of land has increased from Rs. 7-7 to 9-9.

These very satisfactory results may be fairly assigned—

- 1st—to an improved state of the irrigation works, not only enabling the cultivator to put down a larger area of cultivation without risk of failure of his crops from a precarious water-supply which he originally ran,

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but, besides, owing to his supply of water being more plentiful and reliable, enabling him to obtain a yield of 516 Madras measures of paddy off an acre of land whereas he originally got but 366 1/2 measures;

2nd—to improved arrangements for the distribution of water and closer supervision of the harvesting operations and so better collection of the land-lord's (melwaram) fair share of the outturn.

The area of the land that is commanded by the various tanks in the estate is estimated at 80,271 acres; out of this, 42,345 acres, or 53 per cent. of the whole, was lying waste at the beginning of the administration. At present there are on an average but 30,880 acres or 38 per cent. remaining uncultivated and 49,391 acres are cultivated.

Now of the total cultivable area (80,271 acres) the following tanks command an area of 26,804:—

Name of tank	Ayacut.	Actually cultivated.
	ACRES.	ACRES.
Ramnad tank	6,648	2,276
Rajasingamangalam tank	8,484	2,749
Kalary tank	3,645	1,206
Anaikolam tank	1,830	640
Kananoor tank	881	136
Kamenocottai tank	657	334
Pullangudy tank	815	230
Abiramum tank	1,996	Not available.
Periyur tank	1,247	218
Tirushuli tank	581	182
Total	26,804	7,971

All of these have been put in thorough order by Public Works Department and supplied with proper escapes and sluices. The irrigated area under them should increase year by year and with ordinary care on their maintenance no large expenditure on them should be necessary for some years.

A further area of 25,008 acres is commanded by the Ragunathacauvery channel, on the improvement of which the Court of Wards spent a large sum prior to the Public Works Department incumbency. Its supply of water occasionally fails owing to breaches occurring in its right bank, sufficient length of surplus weir not having been constructed; still the area commanded by it may be considered fairly secure. Thus there are but 28,459 acres of the total ayacut of the estate which are dependent on the minor rain-fed tanks.

Although speaking generally of minor tanks (those irrigating less than 200 acres) they cannot be said to be in good repair, yet with ordinary attention to them and the major works alluded to above, the estate should be secure of the present area or wet cultivation.

15. *Probability of extension of wet cultivation.*—As to the question whether the area under wet cultivation is likely to extend, there seems to me a possibility but the greatest improbability of its so doing, as long as the zemindari remains devoid of communications as it now is.

The storage of water in some of the tanks, especially those lately improved, is sufficient for their ayacut, but only a small portion of it is actually cultivated and there is certainly a possibility of further considerable extension. It is an established fact that the value of paddy has steadily decreased as the cultivated area has increased and this appears to be due to a want of communications with markets. In some parts the grain rots in the granaries before it can be got rid of. It is not likely then that cultivators will at present take up more land. There is a rumour that a line of coasting steamers is shortly to be started and that they will call at several ports in the estate; if roads were opened up to these ports no doubt an impetus would be given to cultivation.

No. 263 R.N.

Forwarded to the Chief Engineer, Public Works Department, for transmission, if necessary, to the Court of Wards.

2. Mr. Jopp has taken much pains in collecting various information and drawing up the above report which will be found most useful to his successors.

TRICHINOPOLY,
24th September 1889.

(Signed) A. C. SMITH, Lieut.-Col., R.E.,
Superintending Engineer, VI Circle.

ORDER—dated 5th October 1889, No. 2789 W., Public Works.

Communicated to the Revenue Department.

2. Mr. Jopp's report is valuable and creditable to him.

(True Extract.)

Captain, R.E.,
Under-Secy. to Govt., P.W.D.

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

Exd. J. Moses.
Spare Copies

2789

6

IRRIGATION.

Gobt. of {1889} Madras.
PUBLIC WORKS.

Dated October, 5th.

Recd.

Encl.

G.O., 5th Oct. 1889, No. 2789 W.

OCTOBER.

Agricultural Works in the
Ramnad Estate

Orders on report of Mr. Jopp, Executive
Engineer, on state of the —.

No 1936

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E. S. Engineer's Office
Ramnad - 16th Sept 1889
C. S. 172

Mr. Jopp, Executive
Engineer, Ramnad.

The Superintending Engineer
V. K. Circle

Sir,

I am submitting herewith a report on the
administration of ^{agricultural} works in the Ramnad
Estate since it has been under the management
of the Board of Works, I have the honor to remark
that although I was not desired to submit one,
it appeared ~~to me~~ that it might be useful in all
operations ~~have~~ ^{be} carried out the Estate is to be handed
over to the Government next month.

Introductory

2. During so many years of misrule and
neglect the Estate was ~~at length~~ reduced to
a state of wretched condition that in 1871, the
Government, the father of the present misrule
order, was unable to meet the annual expenses
and the Estate was attached by Government in
consequence for arrears and the management was
undertaken by the —

This management continued until
March

March 1877 when the remainder died, leaving
a vacant place and thus the estate was transferred
to the Court of Wards for administration for the
term of the minority which will cease in 1883
October of the present year.

3. At the time the Court of Wards entered
into management, the estate was heavily indebted
and the economical conditions of the people very
unsatisfactory. The advances made by Government
to discharge the debts of the late remainder amounted
to Rs 12,72,830. An advance was also made to
the management for improving irrigation works
amounting to Rs 1,50,000. These sums added to the
surplus of previous years or Rs 2,55,000 brought the
gross total of indebtedness of the estate to Rs
Rs 16,77,830. The whole condition also of the
peasants, of the irrigation works, of the system of
cultivation was so deplorable that it took many
years of very careful management and heavy
outlay before any surplus was shown in the revenues
of the estate for discharging this heavy debt or
any perceptible improvement ^{had taken} place in the
economical condition of the people. In fact at
the end of 1877 (note 1287) the whole remainder
about remained still at the debt of the estate.
The condition of the remainder was thus
described

288 described by the officer then in charge - "The people
are for the most part extremely poor, ragged and
unwashed. It is very sad to see the widespread
poverty everywhere visible, brought on by neglect
and misrule. Everywhere you meet with ruined
houses, channels, ancient or, saddest of all, housing
is the ruin brought in the people themselves by
a long course of robbery and corruption."

4. The numerous irrigation works constructed
many years ago with some skill, and evidently
at great cost, had all fallen into the greatest
disrepair. The numerous breaches in tanks and
channels had remained unclosed for years, the
banks consisting of a very loose friable soil, had
in many cases either been almost blown away
by the very high winds or washed away by
annual rains, so that they were scarcely to be
able to hold the water in the plain, and many
had fallen utterly into disrepair from their inability
to hold water at all.

Such a state of things caused wholesale
migration of entire villages and thus the
population had become almost wholly deficient.
Those people who remained were in a wretched
and hopeless state of poverty; utterly apathetic
and lawless, ignorant of any good system
of

of cultivation and quite unable to carry it out had they been in possession of such knowledge.

The immediate action of the Court of Ward was naturally to take energetic measures for the restoration of these ruined irrigation works.

Unfortunately the staff engaged to carry this out was at first too small, and without any special qualifications or training and the annual expenditure of some Rs. 50,000 was consumed chiefly in closing of branches and such minor works. In later years however a larger staff was appointed and several important improvements were started in the larger irrigation works notably the Rajagomathasamudra channel, the Rajagomathasamudra and Rajagomath tanks. These efforts were however very considerably discounted by the period of drought and famine of 1876 and excessive rain-fall and floods in the years 1287-1290-1292-1293 & 1294. The floods of this last year, 1884, were most disastrous. In October of that year, the excessive rain and heavy floods in the Vargai and Gandhar, caused the breaching of a great number of tanks which were partially closed at a cost of some Rs. 15,000, when again in the month of December a severe cyclone passed over the whole estate attended

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attended with floods in the river causing the harvest damage to almost every irrigation work in the Zamindari. Considering only the large tanks upwards of 600 were badly broken. At for instance the Rajagomathasamudra tank, in which there were 86 branches. It was at this crisis that the Court decided to put the Estate under the management of Public Works Department and a new tank temporary division was formed for that purpose in February 1885, which immediately set to work to restore the damages.

Result of direct
cost of Ward's
administration of
agricultural works.

5. During the period that the Estate management directly carried out its work in the Estate namely the 12 years from March 1875 to March 1887 a sum of Rs. 5,77,911 was spent on irrigation works of the

Rs. 2,00,000 was spent on emergent repairs, Rs. 577

Rs. 577 was spent on improvements of 126 irrigation works.

In these 12 years tanks of all kinds in the Zamindari, at least there be seen, that 192 tanks (1817-57-84) but absolutely no repair of any kind carried out to them during that period as it is known that no repairs were carried out on them for many long years before the Government attacked the

the Estate, they may be fairly regarded as having fallen into ruin. Before considering in detail the operation of P. M. S. from its inauguration in March 1904, up to date it will be as well to describe briefly the material on which it had to work.

69. The Land Estate contains an area of 235 square miles. The low northern Salween valley, a mangrove and swampy region, contains the richest bearing soil land. This soil varies from a light red clay to a loose friable earth free from stones. In the Rannad and Doodhathatta Salween, the soil is either a light red clay or else black cotton, except near the coast where it becomes very sandy. In the Kamath Salween black cotton, and red granitic soil occurs nearly up to the sea where it becomes sandy. The Palkum Salween also consists of black cotton and this red granitic soil.

The country is singularly denuded of forests or trees and is for the most part flat, and near the sea there are extensive salt swamps. The chief rivers are the Tazai and the Gomdun. The Tazai is the larger and has a course of about 30 miles in the Estate. It frequently finds large numbers of tanks in the Rannad and Doodhathatta Salween. Its water may be said practically never

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never to reach the sea as it is often supplying many tanks in the upper Salween valley. The Rannad and Doodhathatta Salween are not only the main sources of supply for the tanks in the lower Salween but also supply the tanks in the upper Salween.

The Rannad Salween, although smaller, is of great value to the Estate, as by means of an extensive dam across it has a large village of tanks, the water is directed into a series of small lengths, the Salween valley, from a few miles then some acres of land are irrigated. There are many other small tanks showing chiefly in the northern Salween which are of use in supplying tanks.

Two hundred and twenty five tanks are supplied from these rivers and jungle streams. The Rannad Salween depends on local rain-fall.

There are also the Estate altogether 1017 tanks but 25% of these are sub-tanks which do not possess separate agents and as for matters of calculation the total may be taken as 992. The following statement will show a glance the proportions of large and small tanks and the percentage of the actual irrigated area to water when the Estate was under the control of the Government of India.

Number of trunks existing					Area	Area	Area	Area	Area	Remarks
Under 100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000	
372	197	192	104	53	722	80271	27926	162345	63	The irrigated area is the average of the first 3 years at beginning of each of these administrations.
762										

A noticeable point in this table is the very large proportion of land out of the irrigated area which remains unutilized. It must also be remarked that the very large majority of the trunks are of very small capacity indeed 762 of 902 being incapable of irrigating more than 200 acres.

The rainfall is singularly uncertain, in some years failing altogether and in some falling in great excess, and being interfered by the ^{damaged} state of the country, ^{and heavy floods result.} The case is similar with the Saint Vrain and Colorado, and if these happen to be in flood coincidently with heavy rainfall, which occurs about once in four years the damage to irrigation work is very considerable.

The estate is singularly deficient of all the usual building materials to be obtained with ease in most districts. No stone whatever is discoverable except in the Poudre canon and a small area of the Kamatie Valley. Bricks are only of a very

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very inferior description, not of a very high quality (relative) price is to be obtained, all the work in the surrounding is impregnated with salt, which causes the deterioration of bricks in a very few years of not carefully preserved ones. There is no material in which timber of any kind can be purchased, as is provided by, and by special arrangement. Lumber is however easily procurable and of good quality.

These difficulties are further increased by the entire absence of roads. There is one road leading to the butte 20 miles in length from Denver in the direction of the river. There is however a branch in it impossible to calculate traffic during the rain. In fact travelling of any kind over horse back is almost an impossibility from the first of the season - about the middle of October, until the end of December or middle of January.

Such was the state of things when the P.D. more than took of the mother of the butte in March 1905.

P.D. program of operations. Early in that year the Superintendent Engineer looked back, inspected a portion of the country and reported on it. It was marked into a route to be followed and it is black cotton and sandy, the tanks are unprovided with necessary facilities and there

there are but few masonry sluices, that little has
been done to put the works in a proper state of
repair, and the tanks may be said to be in a
most neglected state, and owing to the cyclone
of the year of 1884 nearly every tank in the
estate was seriously damaged or breached.

Seeing this the Superintending Engineer has
considered that it was "hopeless to attempt
to place all the tanks in the estate in good
order and provide them with masonry escapes
of sufficient capacity and with masonry sluices.
He therefore laid down the following programme
for the guidance of the Executive Engineer.

1st That as the revenues of the ensuing year
were dependent on the immediate closure of the
numerous breaches that had been caused by the
cyclone of the previous year, every effort should
first be directed to accomplish this end, as well
as to strengthen the banks of such tanks
as had been seriously damaged, even without
previously sanctioned estimates.

2nd That Estimates should there be
prepared for the improvements and repairs
of all tanks irrigating over 500 acres including
sufficiency of masonry escapes and irrigation
sluices.

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3rd That the tanks irrigating less than
500 acres more than 500 acres should be surveyed
and treated as a single unit.
4th The Executive Engineer did not consider
it expedient or possible to deal with the large
number of tanks irrigating less than 500 acres, as
the area was so small that irrigating them was
not profitable, and he proposed to permanently fix
them by use of a simple masonry for
where a substantial improvement was not available
and thus to take of the land to the present
height and extent.

5th That bearing in mind the large number
of the tanks in a thoroughly neglected state and
such a programme was far too lengthy to carry
out completely during the short time that the
estate was to remain under management.

6th That the policy of Mr. W. D. Dunsen was
followed under the same system of three
upplies of water to the tanks was provided by
the Government in the year of the same year, during
the course of the year, and of the, the same
water was changed.

7th That the Government and the staff were fully
engaged during the year in carrying out the
1st part of the Superintending Engineer's programme.

Year 1885-86

Breached in the last and space, the ground
in 1886 tank and in the two large irrigated
channels at a cost of Rs 10,000.

In the meanwhile sanction was obtained
for the employment of the necessary labour
and labour for the preparation of estimates
for the improvement of tanks irrigating over
500 acres and also in the tank part of the
superintending engineers programme.

The season ^{passed} was on the whole favourable
for cultivation, the rainfall being in the latter
part of the year being timely and sufficient
but unfortunately during a flood in the Gomti
one of the worst branches in the Bagmati valley
Channel near Appanur Mandir which had
been previously closed was opened but again
and there was a failure of water supply to
some tanks under it.

9. Mr. Harrington continued in charge
of the Division throughout the year 1886-87.
The strength of his establishment was increased
from 3 to 4 upper subordinates.

During this year also ordinary repairs
were undertaken and completed to 120 tanks
at a cost of Rs 115,000.

Now estimates for the improvement
of

of the largest irrigation works in the district.

2789 The Ramesh Tank
Bajajganj tank
Kalyan Tank
Bharu Kalam Tank

These contractors, but were
unfortunately owing to a difficulty in procuring
labour and in getting honest and intelligent
Contractors to come forward, but little progress was
made on them, before the rains set in, and were
stopped further operations, by flooding the tanks.

The expenditure was that only Rs 11230.
The total expenditure on irrigation works
being Rs 12350.

The cultivation season was not on the
whole a favourable one as the rains being
entirely the yield from the last cultivated
area indifferent. There were no serious damage
from flood, to irrigation works, although the
usual and unavoidable losses to minor tanks
occurred.

10. The beginning of the next year was
still found Mr. Harrington in charge of the
Division, but the Division had as a result
been reduced to the status of a sub-division and
notice of demand had been received on the
Executive Engineer. It had temporary establishment
this

These changes and the limitation of maintenance to which this service was reduced, naturally resulted in a great falling off in progress of work.

It was not until the month of May 1887 that Mr. Herremfrow was finally retained by the High Court and the change again raised to its status of a separate Division.

Mr. Gough remained in charge until February 1888, when he was relieved by me.

Soon after his assuming charge and at his representation that the work of the Division could not be efficiently performed with less than 6 upper subordinates, one more was assigned, thus raising the number to 5.

During the year 2 of these upper subordinates were changed.

Owing to the causes noted above, to the unsatisfactory behavior of Contractors and to the very early advent of rains, filling the tanks and rendering it difficult to obtain water and the necessity for most considerable labor to leave work in order to plough their dry lands, the progress of work was again indifferent.

Only Rs. 36, 17 were spent on the

improvements of large works, irrigating more than 500 acres and none of them had more than Great advance towards completion.

Of tanks irrigating less than 200 acres, 14 were put in hand and their repairs completed.

The total expenditure on irrigation work during the year being Rs. 1,9,61,22.

The seasons were again fairly good for cultivation, the rains being early & favourable.

No serious accidents occurred to irrigation works, there being no unmanageable floods.

either by local rain fall or by rivers.

Year 1888-89

(up to July 1889)

11th

I remained in charge of the Division throughout the year 1888-89 (having joined it in February 1888). As the minor Zemindar was to attain his majority in October 1889, it was arranged with the Manager of the Estate that no new works were to be put in hand after the 1st March 1889; and to enable the Division to wound up in time, it was ordered by the Chief Zemindar, that all active operations should cease on the 31st July 1889. The expenditure therefore between the 1st April and 31st July 1889 is comparatively and necessarily small and for the present purpose may be included as part of the year 1888-89.

The Executive staff reviewed of the same strength as in last year namely 3 upper subordinates.

The changes amongst these were very frequent. The services of one were dispensed with - two resigned - two went sick - one was transferred, making six changes in all. They were brought about for the most part by the nature of their temporary employment, by the knowledge of the early morning slip of the Dancer and by sickness. Nevertheless very good progress was made with work.

The four largest irrigation works in the Division were fully improved according to estimate except a portion of the work on the Kalang tank which tank however may be held now to be in an efficient order.

Improvements and repairs were also completed so (7) seven more tanks irrigating more than 500 acres as laid down by Colonel Mead.

Three tanks irrigating more than 200
but less than 500 acres were also thoroughly
improved under colonial Inland Revenue programme.

breaches were numerous, some covering several
 acres, but were being cut by rope, to prevent
 the water rising, so that crops which they are
 in the habit of planting in the tank beds. Prompt
 measures were taken, and except in the shallow
 bottom, where labor is not readily
 obtainable, all breaches were closed and no loss
 of crops resulted.

P.M. The operations of the Department
 for the month 1905, may be conveniently tabulated
 as follows:

Years	Expenses		Total
	Agricultural works	Repairs including emergency repairs	
1905-1906	739	1001.68	1008.68
1906-1907	11231	482.05	57535
1907-1908	21567	12075	127642
1908-1909	55061	32675	87636
Totals	99597	206,918	305,415

The results attained by the expenditure
 have may be conveniently shown thus:

2789

Description	Number of tanks repaired and ready for use	Number of tanks repaired and ready for use	Number of tanks repaired and ready for use	Number of tanks repaired and ready for use	Number of tanks repaired and ready for use	Number of tanks repaired and ready for use
Tanks irrigating more than 500 acres	11	14	"	55	55	"
Do less than 500 acres	3	101	"	104	104	"
Do more than 200 acres	5	231	255	236	760	272

It will here seen at a glance that only
 272 out of 922 tanks in the Estate have not
 received repairs of some kind since the inception
 of the P. & S.

It should also be borne in mind, as
 already stated above, that many of these 922 tanks
 have long ago fallen into ruin and decay, it
 may therefore be roughly ascertained, that nearly
 every existing tank in the Estate, has had
 some repairs carried out to it, and that the
 1st part of Colonel Macdonald's programme has been
 fully carried out.

Then as to the second part, it
 be remarked, that 11 out of the 25 tanks now
 irrigating are 500 acres have been fully repaired
 with necessary repairs and
 there are 14 more (11), which
 have

have good natural escapes then leaving 37
yet to be supplied with escapes. The kinds of
all, have however been repaired and with careful
attention breaches should not occur. Then
Insurador will be able to take up this work
and gradually provide them all with masonry
escapes.

As to sluices, only such of the tanks
as have or F.T. at a greater height than 1 foot
above the proposed sill level, need have partitions or
masonry sluices. There are not many few such in
the estate, & almost all have already been
provided; palm-leaf sluices will suffice for the
rest.

Considering the difficulty that the
Department has had to contend with in the
matter of materials and labor and the short
time that they have had for the preparation
and sanction of designs and estimate as
well as execution of works, I think that the
progress made with masonry works may
be considered fair.

It was not until 1857 that a
arrangement could be made for starting
such work and by the end of the
following month the

278 The masonry works were constructed
to do irrigation places
long masonry sluices were altered
improved into the masonry proposed
many old irrigation sluices were repaired
I should now mention such
scheme as may be considered useful or
profitable, but which there has not been
time sufficient to or opportunity to
accomplish.

(1) Improvement to the Regulator
Channel.

This is taken off from the Gundaroh
Khanath. It was excavated by a former
Insurador, and afterwards in 1857, when the
estate was under attachment it was repaired
by the Insurador Paraguram. From
that time until the year 1856 no repairs
whatsoever were carried out.

When a scheme was drawn up by
the Insurador in charge of the estate for
the repairs and improvements of the channel
amounting to Rs 50,000, applied to Rs 1,1,500
for the improvement of the channel
Channel being damaged and the bed
for the water out of the distribution and

Schemes to be
carried out
hereafter

and tanks. The improvements of the main channel consisted of widening its bed and the construction of head sluice by substantial masonry work not already provided.

An expenditure of Rs 11,781 was actually made against the estimate.

It was prepared without professional assistance and was not altogether the best or most economical manner of dealing with the scheme. The channel is still in a very inefficient state and requires further improvement, and it was proposed that this work should be taken up by the P. & D.

It is one of some magnitude and would require very careful consideration from a financial point of view. The preparation of the limits and the collection of such information as would be necessary to accompany an estimate for consideration and sanction of the Board of Works necessarily took a long time and they were not ready in time to offer any hope of the work being undertaken before the estimate was handed over to the Government.

Most of the information has been obtained and the details

12 P 12
2289 of the scheme have been discussed with the Superintending Engineer and has received his provisional sanction. Rough estimates were taken out showing that the cost of the project would be between 2-3 lacs. All the details and papers in connection will be handed over to the Estate management.

(2) The storage capacity of Channel

This also is a channel taking off from the Gandak some few miles higher up than the Bagmati country near the village of Trichuli.

This old channel is entirely silted up and the tanks under it fallen into disrepair.

This might be a paying work to take up; some information was collected by the Department but as there was little hope of its eventually being carried out in the time available, the Government was put on to other more immediately urgent duties.

(3) Providing sufficient supplies of water or sluice to the Gandak Dam at Ramati

This work is really the most important and necessary of all works in the Estate. It is necessary to consider it in connection with the scheme for improvement of the

and tanks. The Superintendents of the main
channel considered of increasing its bed and
the construction of buttresses to discharges
which were not already provided.

An expenditure of Rs 11,751 was
actually made against the estimate.

It was prepared without professional
assistance and was not altogether the best
or most economical manner of dealing with
the scheme. The channel is still in a very
efficient state and requires further improve-
ments, and it was proposed that this work
should be taken up by the P. & D.

It is one of some magnitude and
would require very careful consideration
from a financial point of view. The prepara-
tion of the plans and the collection of such
information as would be necessary to
accompany and substantiate for consideration
and sanction of the least of works necessarily
took a long time and they were not ready in
time to offer any hope of the work being
undertaken before the Estate was handed
over to the Government.

Most of the information has
been collected and the details

2289 of the scheme have been discussed with the
Superintending Engineer and has received his
provisional sanction. Rough estimates were
taken out showing that the cost of the project
would be between 2-3 lakhs. All the details and
and paper in connection with the hand over
to the Estate management.

(2) The Sarganacchunty Channel

This also is a channel taking off
from the Goudan some four miles higher up
than the Daganthe country near the village
of Tacholi.

This old channel is entirely silted
up and the tanks under it fallen into disuse.

This might be a paying work to take
up; some information was collected by the
Department but as there is a little hope of
its eventually being carried out in the time
available, the British Government has put on no
other more immediately urgent action.

(3) Regarding a sufficient surplus would
be shown to the Government Dam at Namati

This work is really the most
important and necessary of all works in
the Estate. It is necessary to consider it
in connection with the scheme for improvements
to

to the Ragunathacannery Channel.

The bed of the Gundur is entirely dammed across by an earthen dam making a junction with high ground at each extremity. The river water can discharge itself only down the Ragunathacannery Channel and over two surplus weirs each 150 feet in length. These discharges are utterly insufficient in time of flood, thus the earthen dam and the banks of the Channel are repeatedly & heavily breached. Designs and estimates have been drawn up and the work would have been undertaken last year but unfortunately it was necessary that certain points in connection with the Improvements to the Ragunathacannery Channel should first be settled, which caused delay.

(4) The alteration of the surplus weir in the left bank of the Vargai just before it empties itself into the Ramnad Tank.

This weir was intended to discharge the waters of the Vargai when the Ramnad tank had already received its full supply. It in no way does this, and almost every year a breach has to be cut in the river bank to get rid of the

2789 the surplus water at considerable cost. The weir is a substantial work and it can be rendered thoroughly efficient by lowering the crest and providing slabs with screw opening. Such a work would repay its cost in two or three years.

(5) Another work of great utility that should be incumbent on the Ramnad Estate is the provision of head sluices to all the channels that take off from the Vargai to supply tanks in the triangular portion of country comprised between the Vargai right bank, and the Madura Ramnad road from Permagudy to Ramnad, & the putting of the tanks in that area in good order. Whenever heavy local rains fall coincidently with heavy floods in the river, the flood water is entirely without control and the tanks suddenly breaching not only cause serious damage to the Ramnad tank but also to the Madura road, the only means of communication in the Ramnad area. Last year there were numerous breaches in the road caused in this way and traffic was stopped entirely for a considerable time.

(6) There are several other schemes which although they do not appertain to public

public works but are rather the duty of local
 Boards
 Unions or ~~Administration~~ might be carried out
 by the Minor Zamindar.

Ramnath has for ~~many~~ years
 enjoyed a reputation of being one of the most
 unsanitary towns of Southern India and the
~~cause~~ ^{source} of cholera. I do not think the reputation
 is undeserved. The town is filthy, there are
 large pools of filthy stagnant water lying
~~about the town~~ ^{about the town} which by evaporation become
 concentrated filth. The catchment of the two
 drinking water tanks, is used as the latrine
 of the town - all subsoil water is undrinkable
 being brackish.

By a channel little more than a mile
 long a good water supply could be obtained
 from the Ramnath Tank direct and the
 filthy pools of the town might be efficiently
 drained by an extension of the bend of the
 Chackaracottai Tank and excavation of
 necessary channels.

11.12 It would be possible to get a
 fair idea of the results accruing by the
 Court's management and by the expenditure
 on improvements to irrigation works, only
 by

Result of Court of
 Wards management

2281 by taking average of several years. It
 would be useless for instance to compare the
 four or five years with those of comparative
 prosperity. And again in the earlier
 years the water supply and rainfall
 were precarious, thus the fluctuations in
 the area under cultivation and the revenue
 were great. If we take averages of three
 years a fair comparison may possibly
 be made. A statement is appended for
 easy comparison showing the results of
 Court of Wards administration of the Estate.

Years	Revenue	Average revenue	Cultivated area in acres	Average area cultivated	Average value of malwarms per acre	Average cultivation per acre	Average	Remarks.
1873-74	195096	291,138	31258	37926	7.7	4-6-5	4-1-1 1/4	1. Kalum = 15 Mar Kals 1. Koralals 6 Madras acres
1874-75	301605		36460					
1875-76	378212		46,060					
1886-87	432,200	1,87462	48156	49391	9.9	5-11-0	5-11-0	
1887-88	513,526		19345					
1888-89	516,661		50673					
Difference between average of first three & last three years	195824			11465	2.2		1-9-6 1/2 or 14 1/4	Madras acres

It may be noted:-

(1st) that the total revenue from ^{land}

land has increased about 67 per cent.

(2nd) that the area under cultivation has increased by about 11,465 acres or 30 per cent.

(3rd) that the value of the Estate share of the crops brought up on the increased area cultivated, is alone about Rs 113,503, which accounts for all the increase of the revenue except Rs 22,321, which may be ascribed to better revenue collection and administration in harvesting operations under the *marum* system.

(4th) that the ^{demanded share off,} ~~yield~~ of an acre of land has increased from Rupees 7.7 to 9.9.

These very satisfactory results may be fairly assigned. —

(1st) to an improved state of the irrigation works, not only enabling the cultivator to put down a larger area of cultivation without risk of failure of his crops from a precarious water supply which he originally had, but, besides, adding to his supply of water being more plentiful and reliable enabling him to obtain a yield of 516 Madras measures of paddy off an acre of land whereas he originally got

228

but 366 $\frac{3}{4}$ measures.

(2nd) to improved arrangements for the distribution of water and closer supervision of the harvesting operations and so better collection of the land-lords (*melwarum*) fair share of the out-turn.

The area of the land that is commanded by the various tanks in the Estate is estimated at 80,271 acres; out of this 42,345 acres or 53% of the whole, was lying waste at the beginning of the administration. At present there are on an average but 30,880 acres or 38% remaining uncultivated and 49,391 acres are cultivated.

Now of the total cultivable area (80,271 acres), the following tanks command an area of 26,804.

Name of tank	Area acres	Actually cultivated acres.
Ramnad Tank	6648	2276
Rajasingamangalam Tank	8484	2749
Kalaru Tank	3645	1206
Anaikulam Tank	1850	640
Kannanur Tank	881	136
	21,508	7,007

Kannacottai Tank	21508	7007
Pullanzudiy Tank	657	334
Merranum Tank	815	230
Peryur Tank	1996	Not available
Trechuli Tank	1247	218
	581	182
	26804	7971

All of these have been put in thorough order by P. W. D. and supplied with proper escapes and sluices. The irrigated area under them should increase year by year and with ordinary care on their maintenance, no large expenditure on them should be necessary for some years.

A further area of 25,008 acres is commanded by the Ragoonatha canary ch. on the improvement of which the Govt of Wards spent a large sum prior to the P. W. D. incumbency. Its supply of water occasionally fails owing to breaches occurring in its right bank, sufficient length of surplus weir not having been constructed; still the area commanded by it may be considered fairly secure. Thus there are but 28,459 acres of the total ayacut of the Estate which are dependent on the minor raised tanks.

Probability of extension of wet cultivation

16P 16
2789 Although speaking generally of minor tanks (those irrigating less than 200 acres) they cannot be said to be in good repair, yet with ordinary attention to them and the major works alluded to above, the estate should be secure of the present area of wet cultivation.

15-17. As to the question whether the area under wet cultivation is likely to extend

There seems to me a possibility, but the greatest improbability of its so doing, as long as the Secundar remains devoid of communications as it now is.

The storage of water in some of the tanks especially those lately improved is sufficient for their ayacut but only a small portion of it is actually cultivated and there is ^{certainly} a possibility of further considerable extension. It is an established fact that the value of paddy has steadily ^{decreased as} fallen ~~since~~ the cultivated area has increased and this appears to be due to a want of communications with markets. In some parts the grain rots in the granaries before it can be got rid

rid of. It is not likely then that
cultivators will at present take up
more land. There is a rumour that a
line of coasting steamers is shortly to be
started and that they will call at
several ports in the Estate; if roads
were opened up to these ports no doubt
an impetus would be given to
Cultivation.

I have the honor to be
your most obedient servant

W. Dorr

1 May 39

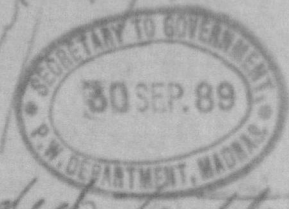
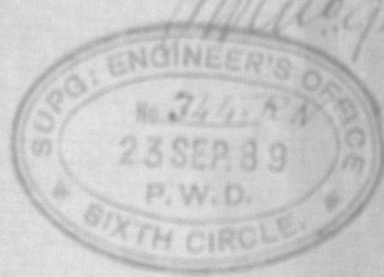
Executive Engineer

Ramnadon

2289

23

N^o 263 R



Forwarded to the
Chief Engineer D.P.W.
for transmission, if
necessary to the Court
of wards.

2. Mr. Jopp has
taken much pains
in collecting various
information & drawing
up the above report,
which will be found
most useful to his successors.

Adm. the Quarter
Supergr 6th Circle.

Camp Trichinopoly
24th September 1889
Desp 26th.

From

Mr. Jopp Esq.
Executive Engineer.

To

The Superintending Eng.
6th Circle.

Dated 16th } September 89.
or 19th }

Recd 30.

Dec 1986

Wm. Hone.

Administration of
Coral works in the
Lab. Submits a
Report on the

R.S.N. 263 R to E.W.
24.9.89
Gurr

C/ Wm

2789

P.W.D.

Endorsement

Letter from the Ex. Eng. Ramnad Division No 1936
of 16.9.89.
Endorsement thereon by the S.D. VI Circle No 263 R of 24.9.89.

The report is a good one, and if
Mr. Jopp does mean to let him
have the charge from the
beginning much more might
have been done. However, from
the report & the minutes it
appears to the R.D. I would
say that Mr. Jopp's report is
valuable & creditable to him.
It certainly produces the impression
that he is a good man.

Wm
3 Oct.

Forwarded, Thru
the Revenue Dept.
to the Court of Wards
for perusal and
return.

Wm
1.10.89

Recd 2.10.89

To the Rev. Dept.
with letter in original.

En 24

~~Hand~~

1870

~~Hand~~
from orders

No. 2789 of October 5, 1887

Communicated
to the Rev. Dep.

2. His report
is valuable, and
creditable to him.

Heard
4.10.87

Read
4.10.87

By
E. O. O.

To the Rev. Dep.
- S. S. D. C. D.
- Chief S. D. D.
2.1870

Handwritten notes at bottom left corner.

2789

19

Read 110 copies
25

Handwritten notes and numbers at bottom right of the right page.

Govt. of Madras.

PUBLIC WORKS.

5710/89

Date

Read

Encl

G.O. 5 Oct 1889 No. 2789u

Agricultural works

in the Ramnad State

Orders on
Report of Mr. Joseph

by Mr. [unclear], on state of the

~~2000~~

~~Revenue Dept~~

100
4
100
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(25)

5/10-

Oct 10

Govt. of Madras.

PUBLIC WORKS.

5/10/89

Date

Recd.

Encl.

G.O. 5 Oct 1889 No 27894

Agricultural works
= in the Rannam Estate
= Orders on
Report of Mr. Joseph,
by Mr. [unclear], on state of the
~~land in the~~
Rannam Estate

100
11 100
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(25)

5/10- Cw/10