No of ~~Pages~~ : 232
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Govt of Tamil Nadu

G.O. No 1369 PWD 31.5.1887

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 1st May 1886, No. 704 G.:—

In reply to your letter, No. 513 W., dated 25th February, I am directed to state that, while sanctioning the formation of a fourth tank division, the Government of India desires to be furnished with an abstract statement of the total expenditure incurred up to the end of 1885-86 against the special grant for the tank maintenance operations under the heads of—

"Establishment, Engineer,"
"Upper Subordinate,"
"Lower Subordinate and Petty,"
"Survey and Office Contingencies,"
"Works and Repairs."

This statement should be accompanied by a clear review of the work done in surveying, estimating, and construction and repairs, to the end of March 1886.

2. It is requested that sanction may be given to the entertainment of three additional temporary Engineers for the new division on Rs. 550, Rs. 450 and Rs. 300 a month. In accordance with Public Works Department, No. 703 G., of this date, I am to state that these salaries cannot be sanctioned without reference to the men it is proposed to employ. The number of temporary officers required for each tank division should therefore be reported, and the length of time for which they will probably be required. Applications for the appointment of individual officers can then be more readily considered.

ORDER—dated 31st May 1886, No. 1369 W., Public Works.

Communicated to the officers concerned.

2. The abstract statement of expenditure and the review called for in paragraph 1 will be submitted by the Chief Engineer for Irrigation with the least possible delay. On receipt of the information, the Government of India will be addressed with reference to paragraph 2 of their letter.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintendent of Works, Tank Maintenance Scheme.

Exd. A. Aubert.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of [1886] Madras.

PUBLIC WORKS.

Dated May. 31st.

Encl.

Read.

G.O., 31st May 1886, No. 1369 W.

MAY.

Tank Maintenance Scheme

Letter from the Government of India sanctioning the formation of a fourth tank division, with remarks, on the application for sanction of additional temporary Engineers for the division and calling for an abstract statement of total expenditure up to 1885-86 in the whole scheme, communicated to officers concerned; and the Chief Engineer [illegible] to submit the statement.

3rd August 1884, No. 1981 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 26th June 1884, No. 768 G.:—

Referring to your letter, No. 1306 W., dated 23rd May 1883, forwarding the Tank Maintenance Scheme, I am directed to remark that the work in connection with this scheme hardly seems of sufficient extent to warrant the continued employment of a Superintending Engineer, and apparently this view is shared by the Government of Madras, for it is understood that Lieutenant-Colonel Montgomerie has returned to his Circle on being relieved by Lieutenant-Colonel Pennycuick, Executive Engineer, 1st grade. Under these circumstances, the allowance of Rs. 100 per mensem, referred to in paragraph 2 of your letter, No. 862 W., dated 31st March 1884, should apparently cease from the date on which Lieutenant-Colonel Montgomerie made over charge to Lieutenant-Colonel Pennycuick.

Ordered—dated 3rd August 1884, No. 1981 W., Public Works.

Ordered that the Government of India be addressed.

(Here enter No. 1982 W., dated 3rd August 1884.)

(True Extract

(Signed) J. ST[illegible]

[illegible]-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Extract Extract
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of 1884 Madras.

PUBLIC WORKS.

Dated August, 1884.

Rect. Encl.

G.O., 13th Aug. 1884, No. 1931 W.

AUGUST.

Tank Maintenance Scheme

Ordered that the Government of India be addressed with regard to their decision that the appointment of a Superintendent of Works in connection with the — should cease from date of transfer of Lieutenant-Colonel Montgomerie to the I Circle.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

I am directed to acknowledge the receipt of your letter, No. 768 G., dated 26th June 1884, remarking that the work in connection with the Tank Maintenance Scheme hardly seems of sufficient extent to warrant the continued employment of a Superintending Engineer, and that apparently this view is shared by the Government of Madras.

2. In reply, I am directed to invite the attention of the Government of India to the proceedings of this Government forwarded under endorsement, No. 647 I., dated 12th July 1884, in which the scope of the operations to be undertaken by the Tank divisions is fully described; and to point out that an officer in the position of a Superintending Engineer was required for purposes of organisation, and that it is desirable to retain the services of such an officer until the divisions are in working order. Lieutenant-Colonel Pennycuick, who, prior to proceeding on furlough, had for some time been officiating as Superintending Engineer, was specially selected for the work of continuing the organisation of the Tank Maintenance Scheme; and this Government are strongly of opinion that he should rece ve the additional allowance of Rs. 100 per mensem as Superintendent of Works.

3. I am therefore to solicit a reconsiderat on of the decision conveyed in your letter under reply.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

OOTACAMUND,
13th August 1884.

Exd. E. Fernandez.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of {1884 Madras.

PUBLIC WORKS.

Dated August, 13th.

Encl.

Encl.

13th Aug. 1884, No. 1982 W.

AUGUST.

Tank Maintenance Scheme

Government of India requested to
a Superintendent of Works with an
tional allowance of Rs. 100 per mense
the — till the Tank divisions are in wo
order.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

READ—the following paper:—

No. 192 I.

Note by the Chief Engineer for Irrigation.

In applying to the Government of India for a renewal of the sanction for the temporary establishment employed on the Tank Maintenance Scheme, in accordance with the request contained in Mr. Walker's letter, No. 741 G., dated 21st May 1883, printed with proceedings of Madras Government, No. 1700 W., dated 16th June 1883, and in requesting sanction for the establishment necessary to start another Tank division during the ensuing year, it seems advisable to review briefly the original proposals made regarding establishment of the Tank Maintenance Scheme, and to note in what particulars these proposals have been modified.

2. In letter, No. 40 I., dated 20th January 1883, printed with proceedings of Madras Government, No. 143 I., dated 12th February 1883, the Government of India accepted the programme laid down in paragraph 14 of the Note by the Chief Engineer for Irrigation, dated 27th November 1882,* wherein it was estimated that the establishment of each Tank division would cost Rs. 32,000, and that an officer of experience, with a suitable establishment, would also be necessary to start the work of the Tank divisions until they could be finally handed over to the charge of the Superintending Engineers in whose circle they happened to be working.

* Forwarded to the Government of India, with proceedings of Madras Government, No. 3273 W., dated 11th December 1882.

3. Acting on this programme the grants and expenditure for establishment in 1883-84 were as follows:—

—	Original Grant.	Revised Grant.	Expenditure.
	Rs.	Rs.	Rs.
Tank division establishment	32,000	25,364	16,657
Superintending Engineer and his establishment	33,600	25,891	26,063
Total ...	65,600	51,255	42,720

The operations of the Tank division were confined to the Madura district, and from various causes, which have already been detailed, the expenditure on works was very small.

4. At the end of the official year 1883-84 a second Tank division was formed, and began work in the Chingleput district. The grants for temporary establishment for the year 1884-85 were as follows:—

	Rs.
No. 1 Tank division	32,000
No. 2 do.	32,000
Superintending Engineer and his establishment	36,630
Total ...	1,00,630

5. As settled in G.O., No. 646 I., dated 12th July 1884, the investigation and execution of works are now carried out by different agencies—the temporary establishment of the Tank Maintenance Scheme being employed solely in investigation, while the ordinary permanent establishment executes the works.

6. This arrangement, it is considered, is the only practicable solution of the problem of restoring the minor irrigation works of the presidency within a reasonable space of time, and is strictly analogous to the principle on which the Project divisions prepare schemes for works, which are eventually carried out by other agency, and the establishment charges of which are in no way comparable with expenditure on works. It, therefore, involves the charging to Imperial Funds of the cost of the establishment of these divisions, in addition to the contribution to Provincial Funds on account of establishment and general tools and plant at 23 per cent. and 1 per cent., respectively, on the expenditure incurred by the ordinary establishment on works of the Tank Maintenance Scheme.

7. At the end of the current year it will be necessary to form a third Tank division, in accordance with the original scheme sketched out. This division will work in the Kurnool district, and the necessary sanction for the establishment required for the three divisions should now be applied for. Experience, up to the present time, has shown that, in order to secure uniformity in the method of dealing with the different works, it is absolutely necessary that the operations should be under the control of a single officer, and should not be handed over to the charge of the Superintending Engineer of the circle, while the extension of the area over which the operations are taking place renders it impossible for them to be under the immediate control of the Chief Engineer for Irrigation. It, therefore, becomes necessary to continue the employment of a special officer of sufficient standing to exercise the powers of a Superintending Engineer, and it is accordingly proposed that an Executive Engineer, 4th grade, be sanctioned for the No. 3 Tank division, in place of one of the 3rd grade as sanctioned for No. 1 and No. 2 divisions, and that the saving thus effected be made available for the payment of a local allowance of Rs. 100 as the salary of the Superintendent of Works now in charge of the Tank Maintenance Scheme.

Chetpak,
15th December 1884.

(Signed) A. S. RUSSELL,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 20th December 1884, No. 3132 W., Public Works.

		Rs.
Local allowance to Superintendent of Works	...	100
2 Executive Engineers, at Rs. 650 each.		1,300
2 Assistant Engineers, at Rs. 450	,,	900
2 Sub-Engineers, at Rs. 300	,,	600
		2,900

The Government of India will be requested to renew the existing sanction for the temporary engineer establishment for the Tank Maintenance Scheme, as noted in the margin, and to accord sanction for the establishment for the No. 3 Tank division as follows:—

	Rs.
1 Executive Engineer	550
1 Assistant Engineer	450
1 Sub-Engineer	300
Total ...	1,300

2. Ordered that the following letter be sent:—

(Here enter No. 3133 W., dated 20th December 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintendent of Works, Tank Maintenance Scheme.
,, Examiner, Public Works Accounts.
,, Revenue Department.

Exd. W. H. French.

Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated December, 20th.

Read. *Encl.*

G.O., 20th Dec. 1884, No. 3132 W.

DECEMBER.

Temporary Engineer Establishment

Ordered that the Government of India requested to renew the existing sanction the — for the Tank Maintenance Scher

20TH DECEMBER 1884, No. 3133 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,
Secretary to the Government of Madras,
Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

In forwarding, herewith, a copy of proceedings of Madras Government, No. 3132 W., dated 20th December 1884, I am directed to request that the Government of India will be so good as to renew the existing sanction for the temporary engineering establishment, noted in the margin, for the Tank Maintenance Scheme for 1885-86, and will sanction the following temporary establishment, required for the No. 3 Tank division, to be formed in the Kurnool district early in the next official year:—

	Rs.
Local allowance for Superintendent of Works	100
2 Executive Engineers at Rs. 650 each	1,300
2 Assistant Engineers at Rs. 450 „	900
2 Sub-Engineers at Rs. 300 „	600
Total ..	2,900

	Rs.
1 Executive Engineer	550
1 Assistant Engineer	450
1 Sub-Engineer	300
Total ...	1,300

2. As it is considered very desirable that the services of the Superintendent of Works should be retained, I am to state that this Government attach great importance to the recommendations of the Chief Engineer for Irrigation on this head, which have accordingly been embodied in the scale of establishment now asked for.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
20th December 1884.

Exd. W. H. French.

Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of [1884] Madras.

PUBLIC WORKS.

Dated December, 20th.

Recd. *Encl.*

20th Dec. 1884, No. 3133 W.

DECEMBER.

Temporary Engineer Establishment

Requesting renewal of existing sanction for the — for the Tank Maintenance Scheme and for temporary establishment for Tank division to be formed in the district.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 11th February 1885, No. 229 G.:—

In reply to your letter No. 3133 W., dated 20th December 1884, I am directed to communicate the sanction of the Government of India to the temporary Engineer and upper subordinate establishment noted on the margin for Nos. I, II and III tank divisions for a period not exceeding one year, and to state that the salaries should be considered personal.

2	Tempy. Engrs. on Rs.	650	per month each.	
1	Do. Engr. on „	550	do.	
3	Do. Engrs. on „	450	do.	each.
3	Upper Subordinates „	300	do.	do.

2. I am also to sanction the continued employment, for another year, of a Superintendent of Works with an additional allowance of Rs. 100 per month for the supervision of the divisions referred to above, and to request that a report of the progress made up to date may be submitted on an early date for the information of the Secretary of State for India.

3. The names of the persons appointed and the dates of their joining their appointment should be reported.

ORDER—dated 9th March 1885, No. 543 W., Public Works.

Communicated to the officers concerned.

2. The Chief Engineer for Irrigation will submit the report called for in paragraph 2 of the letter from the Government of India.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Examiner, Public Works Accounts.
„ Superintendent of Works, Tank Maintenance Scheme.

Exd. A. Grubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of | 1885 | Madras.

PUBLIC WORKS.

Dated March, 9th.

Rec'd. Encl.

G.O., 9th March 1885, No. 543 W.

MARCH.

Temporary Engineer and Upper Subordinate Establishment

Letter from the Government of India sanctioning the — required for the Tank Maintenance Scheme, communicated officers concerned.

5TH MAY 1885, No. 421 I., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following letter from Lieutenant-Colonel J. PENNYCUICK, R.E., Superintendent of Works, Tank Maintenance Scheme, to the Chief Engineer for Irrigation, dated Chepâk, 16th April 1885, No. 799 T.:—

In reply to your No. 12 T., dated 20th ultimo, I have the honor to submit the documents margiually noted, with this report, for your information and submission to the Government of India.

3 Progress maps.
1 Copy of the memoirs of the Periyakulam minor basin.
1 Portfolio of plates to illustrate the above.
1 General irrigation map of the presidency.
1 Statement of drainage areas and rainfall.

2. The accompanying progress maps show the extent of the investigations completed and in progress; the former is indicated by a red wash and the latter by a yellow wash.

3. The areas over which tank maintenance operations extend at present are in the—

No. I TANK DIVISION.

Upper Vaigai River Basin.

		SQ. MILES.	
Periyakulam minor basin	...	192	
Butlagunda do.	...	208	
Suralyaur do.	...	504	
Talavaigai do.	...	256	
Andipatty do.	...	114	
			1,304

Amarávati River Basin.

Dindigul minor basin	...	432	
Palni do.	...	304	
Udamalpet do.	...	400	
Upper Amarávati do.	...	656	
			1,792

No. II TANK DIVISION.

Madras Drainage Basin.

Red Hills minor basin	...	337	
Kovelam do.	...	190	
Adayaur do.	...	192	
			719

No. III TANK DIVISION.

Kundaur River Basin.

Upper Kundaur minor basin	...	480	
Kallee minor basin	...	484	
			964

Total area under investigation ... 4,779

greater portion of the investigations of the Upper Vaigai river basin has viz., the whole of the Periyakulam minor basin, and all the rest,

with the exception of the Talavaigai, are well advanced, and estimates, amounting to Rs. 1,48,741, have been sanctioned as shown below:—

								Rs.
Periayakulam minor basin								
Butlagunda	do.	...	...	...	...	...	...	39,282
Suralyaur	do.	...	...	...	...	...	...	18,775
Talavaigai	do.	...	...	...	...	...	...	85,465
Andipatty	do.	...	...	...	...	...	...	*Nil*
		...	...	...	...	...	...	5,219

The floods of November last have done serious injury to many of the works in the Suraly valley, and additional work, the estimates for which are now under preparation, will be required to bring them into proper order.

5. The grouping of the works in the Talavaigai minor basin is in progress and the estimates for the works are shortly expected for sanction.

6. Almost the whole of the estimates in this division were sanctioned during the official year 1884-85.

7. The investigations of the Upper Vaigai river basin being nearly completed, a portion of the establishment has been removed to the Amarávati river basin, and the investigations of the Upper Amarávati, Dindigul, Palni, and Udamalpet minor basins are being carried out.

8. Some difficulty and delay have occurred for the want of reliable maps, as many of the maps of the Madras Survey Department were not ready at the time; the Ordinance maps had therefore to be used and verified on the ground.

9. The No. II Tank division, operating in the Madras drainage basin, is at present engaged in investigating the Red Hills, Kovelam and Adayaur minor basins, and estimates to the following amounts have been sanctioned in each case:—

								Rs.
Red Hills minor basin ...								43,972
Kovelam	do.	...	...	...	...	...	...	26,120
Adayaur	do.	...	...	...	...	...	...	*Nil*
						Total ...		70,092

10. The aggregate amount of estimates sanctioned in both divisions is Rs. 2,18,833; there are still a large number of estimates in the divisional offices under revision and in different stages of progress, which will be shortly submitted for sanction.

11. The investigations in the Madras drainage basin have been, to a considerable extent, retarded by the withdrawal of a portion of the establishment for emergent work in connection with the restoration of the Red Hills and Cholaveram tanks; but a more important source of delay is the system by which the establishment employed on these investigations is classed as "temporary" and filled, with but few exceptions, by men not on the regular staff of the department. The supposed economy of the employment of temporary establishments for permanent work (and a work estimated to last fifty years may fairly be called permanent) is altogether illusory, and the work cannot and will not be done satisfactorily until the divisions concerned are included in, and manned from, the permanent establishment of the department.

12. The No. III Tank division has just been organised and operations have been started in the Kundaur river basin, through which the Kurnool canal passes. The Upper Kundaur and Kallee minor basins have been taken up for the present.

13. My own office establishment is engaged in the preparation of minor basin maps required for starting operations. These maps are taken from the 1-inch "detail irrigation maps" under compilation in this office. Only those portions of the country in which tank maintenance operations are being carried out have been taken up.

No. I Tank Division.—Madura and Coimbatore.

No. II Tank Division.—Chingleput and North Arcot.

No. III Tank Division.—Kurnool and [illegible]

14. The detail irrigation map is a large work and will occupy many years to complete.

15. In addition to the above the establishment is engaged in checking estimates and in the preparation of the plates and the hydraulic and financial information for printing. Copies of these plates and memoirs are herewith sent; also a copy of the "general irrigation" map, which shows the whole of the river basins and other drainages in the presidency and their respective areas and the principal rainfall stations in each water-shed. This map has been carefully prepared and, I think, will be found generally useful. Besides the information given on the map, the areas of the basins have been tabulated, and the average rainfall for a period of ten years at each of the stations in the water-sheds has been calculated and is considered to be sufficient for all practical purposes connected with irrigation.

16. In my letter, No. 684 T., dated 31st March 1885, I have explained the difficulty of getting the plans and memoirs printed with sufficient rapidity, and made proposals for their execution in my own office.

ORDER—dated 5th May 1885, No. 421 I., Public Works.

Ordered that the following letter be sent:—

(Here enter No. 422 I., dated 5th May 1885.)

(True Extract.)

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

To the Superintendent of Works, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.
" Revenue Department.

Exd. E. Fernandez.
Spare Copies

IRRIGATION.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated May, 5th.

Recd. *Encl.*

G.O., 5th May 1885, No. 421 I.

MAY.

Tank Maintenance Scheme

Report of progress made up to date on the —.

PUBLIC WORKS DEPARTMENT.

Irrigation.

LETTER—from

COLONEL J. O. HASTED, R.E.,

Joint Secretary to the Government of Madras,

Public Works Department,

Irrigation Branch,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT,

(IRRIGATION).

SIR,

In reply to your letter, No. 229 G., dated 11th February 1885, I am directed to submit certain maps and plans showing the progress made up to date on the tank maintenance scheme. The progress maps (on tracing cloth) show the extent of the investigations completed and in progress; the former is indicated by a red wash and the latter by a yellow wash.

3 Progress maps.
1 Copy of the memoirs of the Periyakulam minor basin.
1 Portfolio of plates to illustrate the above.
1 General irrigation map of the Madras presidency.
1 Statement of drainage areas and rainfall.

The areas over which tank maintenance operations extend at present are in the—

No. I TANK DIVISION.

Upper Vaigai River Basin.

		SQ. MILES.	
Periyakulam minor basin		192	
Butlagunda do.		208	
Suralyaur do.		504	
Talavaigai do.		256	
Andipatty do.		114	
			1,304

Amarávati River Basin.

Dindigul minor basin		432	
Palni do.		304	
Udamalpet do.		400	
Upper Amarávati do.		656	
			1,792

No. II TANK DIVISION.

Madras Drainage Basin.

Red Hills minor basin		337	
Kovelam do.		190	
Adayaur do.		192	
			719

No. III TANK DIVISION.

Kundaur River Basin.

Upper Kundaur minor basin		480	
Kallee minor basin		484	
			964
Total area under investigation ...			4,779

2. Estimates, amounting to Rs. 1,48,741, have been sanctioned and will be carried out by the ordinary establishment.

3. The No. II Tank division, operating in the Madras drainage basin, is at present engaged in investigating the Red Hills, Kovelam and Adayaur minor basins, and estimates to the following amounts have been sanctioned in each case:—

	Rs.
Red Hills minor basin	43,972
Kovelam do.	26,120
Adayaur do.	*Nil*
Total ...	70,092

4. The aggregate amount of estimates sanctioned in the two divisions is therefore Rs. 2,18,833. A large number of estimates are in hand and will shortly be submitted for sanction.

5. The No. III Tank division has just been organised and operations have been started in the Kundaur river basin, through which the Kurnool canal passes.

6. Maps of the minor basins are also being prepared for starting operations, and some progress has been made in the detail irrigation map of the presidency, which, however, will take many years to complete. In addition to this, a large amount of statistical information is being collected and tabulated.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) J. O. HASTED, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

OOTACAMUND,
5th May 1885.

Exd. E. Fernandez.
Spare Copies

IRRIGATION.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated May, 5th

Read. *Encl.*

5th May 1885, No. 422 I.

MAY.

Tank Maintenance Scheme

The progress made up to date on the — reported to the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 170 I.

Note by the Chief Engineer for Irrigation.

The accompanying abstract statement, compiled from the detailed statements received from the Superintending Engineers, III, V, and VI Circles, and from the information contained in letter No. 962 I., dated 8th May 1885, from the Superintendent of Works, Tank Maintenance Scheme, shows the progress made in the investigation and restoration of tanks, and is submitted for the information of Government.

2. The presidency is divided into 103 drainage basins; of these, 4 have been sub-divided into 35 minor basins, the group maps of one minor basin have been completed, and those of four others are nearly so. Of 429 estimates, aggregating Rs. 2,33,814, entrusted to the ordinary divisions for execution, 78 estimates, amounting to Rs. 27,415, were worked out; 272 estimates, amounting to Rs. 1,73,359, were in progress, and the rest were not commenced at the end of July last.

3. It is only necessary to add that the preparatory work in starting tank divisions has taken up a great deal of time, and that the basins selected to begin work upon are probably some of the most troublesome to be dealt with.

CHEPÂK, (Signed) H. L. PRENDERGAST, Col., R.E.,
1st October 1885. Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

STATEMENT showing the progress made in investigating the requirements of tanks and in improving them.

Basins.	Minor basins.	Groups.	Progress made in investigation as reported by the Superintendent of Works, Tank Maintenance Scheme, in his letter No. 962 I., dated 8th May 1885.	Progress made in execution to end of July 1885.					
				Estimates received for execution.		Estimates worked out.		Estimates in progress.	
				Number.	Amount.	Number.	Amount.	Number.	Amount.
1	2	3	4	5	6	7	8	9	10
					Rs.		Rs.		Rs.
1. Upper Vaigai.	1. Periyakulam.	1. Varaganadi.	Group maps have been prepared and lithographed.	42	36,457	20	7,495	21	28,957
		2. Varattar.		14	3,684	9	2,294	1	939
	2. Buttlakunda.	Manjalaur ..	....	27	18,644	18	9,406	9	8,748
	3. Suruliyaur ..	1. Surulinadi ..	....	7	5,752	1	16	6	5,722
		2. Sultagangai.	....	66	56,563	10	3,977	48	44,340
		3. Teniaur ..	Group maps almost completed.	13	19,625	4	1,422	9	9,203
	4. Talavaigai ..	Talavaigai ..	....	..	..	..	..	..	..
	5. Anappatti ..	1. Nadakotta ..	....	10	5,209	..	..	10	5,209
		2. Talayathoodai	....	..	..	..	..	..	..
		3. Muvathundai.	....	..	..	..	..	..	..

Statement showing the progress made in investigating the requirements, &c., [illegible]

Series.	Minor basins.	Gauges.	Progress made in investigation prepared by the Superintendent of Works, Tank Maintenance Scheme, in his letter No. [illegible] dated 8th May 1885.	Progress made in progress to the end of May 1885. Estimates required for execution. Number.	Area.	Estimates worked out. Number.	Area.	Balance in progress. Number.	Area.
1	2	3	4	5	6	7	8	9	10
II. Amarávati.	1. Bindigal		Investigations just commenced and grouping in progress.	..	..	..	..	..	..
	2. Púni								
	3. Upper Amaravati.								
	4. Thondipet								
	5. Kangayam		Minor basin maps have been prepared and investigations not commenced.	..	..	..	..	..	..
	6. Dharapuram								
	7. Vellakoil								
	8. Nanjanjpet								
	9. Mulanur								
	10. Karur								
	11. Lower Cadamanur.			102	51,201	3	750	73	29,677
III. Madras	1. Kavalúr	1. Pallavaram. 2. Ayanam	Investigations in progress and group maps under preparation.	145	61,531	11	1,946	94	40,496
	2. Red Hills	1. Shadayan-kuppam.		3	113	1	50	1	68
	3. Adaiyar			..	..	..	..	30	..
	4. Chembarambákam		Minor basin maps have been prepared. Investigations not commenced.	..	..	..	..	..	..
	5. Cheyúr			..	..	..	..	..	..
	6. Cheiyar			..	..	..	..	..	..
	7. Palar round Madras			..	..	..	..	..	..
	8. Palaru and Arni, Eastern.			..	..	..	..	..	..
	9. Cortalaiyár			..	..	..	..	..	..
	10. Tirumanpadi			..	..	..	..	..	..
	11. Nagari		Investigations just commenced and grouping in progress.	..	..	..	..	..	..
IV. Kaveri	1. Upper Kaveri.			..	..	..	..	..	..
	2. Kaveri			..	..	..	..	..	..
	3. Bhavani			..	..	..	..	..	..
	4. Kalrayan		Detail irrigation maps under preparation.	..	..	..	..	..	..
	5. Noyan			..	..	..	..	..	..
	6. Lower Kaveri, Western.			..	..	..	..	..	..
	7. Lower Kaveri, Eastern			..	..	..	..	..	..
	8. Sarvel			..	..	..	..	..	..
Total—4	33			499	2,33,814	78	27,415	272	1,73,359

ORDER—dated 15th October 1885, No. 878 I., Public Works.

Ordered that a copy of these proceedings be forwarded to the Government of India for information, in continuation of letter No. 422 I., dated 5th May 1885.

(Here enter No. 879 I., dated 15th October 1885.)

(True Extract.)

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, III Circle.
" " " IV "
" " " V "
" " " VI "
" Superintendent of Works, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—dated 15th October 1885, No. 879 I.

Forwarded.

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Exd. J. Henricus.
Spare Copies

IRRIGATION.
ACCOUNT.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated October, 15th.

Read. *Encl.*

G.O., 15th Oct. 1885, No. 879 I.

OCTOBER.

Tanks

Forwarding statement showing progress made in the investigation and restoration of —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

From Major G. F. L. MARSHALL, R.E., Under Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 4th December 1885, No. 304 I.

With reference to your endorsement, No. 879 I., dated 15th October 1885, forwarding a statement of progress in the investigation and restoration of tanks in the Madras presidency, I am directed to inquire what amount of money has been expended on actual work of restoration exclusive of surveys and preparation of projects, each year since the grants were first made, and how much is intended to be similarly expended next year.

Office note to the Examiner, Public Works Accounts, dated 10th December 1885, No. 320.
Do. from the do. do. " 14th " " " 715.

No. 215 I.

Note by the Chief Engineer for Irrigation.

The subjoined statement affords the information required by the Government of India:—

	1883-84.	1884-85.	1885-86.			Grant for 1886-87.
			Outlay to end of October 1885.	Probable further outlay.	Total.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Original works	1,423	6,301	22,667	9,375	32,042	1,10,000
Repairs		40,557	63,366	44,634	1,08,000	2,60,000
Total	1,423	56,858	86,033	54,009	1,40,042	3,70,000

CHEPAUK, 22nd December 1885.

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Chief Engineer for Irrigation.

To the Ag. Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 26th December 1885, No. 1106 I., Public Works.

Ordered that the foregoing statement be forwarded to the Government of India.

(Here enter No. 1107 I., dated 26th December 1885.)

(True Extract.)

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy., to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Revenue Department.

Endorsement—dated 26th December 1885, No. 1107 I., Public Works.

Forwarded accordingly.

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Exd. E. Fernandez.
Spare Copies

IRRIGATION.
ACCOUNT.

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated December, 26th.

Encl.

Recd.

G.O., 26th Dec. 1885, No. 1107 I.

DECEMBER.

Tank Restoration Works

Forwarding statement of expenditure on — since the organisation of Tank divisions.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following letter from Colonel W. S. TREVOR, R.E., Secretary to the Government of India, Public Works Department (Account—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 1st February 1886, No. 11 A.I.;—

I am directed to acknowledge receipt of your letter, No. 2 I., dated 2nd ultimo, forwarding the budget estimates of the Irrigation Branch, Madras, for 1886-87, and note thereon by the Chief Engineer for Irrigation.

2. With regard to the observations* on the curtailment of the Imperial grant under 44. Irrigation and Navigation for 1886-87, I am directed to say that the Government of India regrets the necessity for the reduction of the allotment for that year to the sum provisionally sanctioned in Public Works Department resolution, No. 81 A.I., dated 6th November 1885 and, should funds become available hereafter, the desirability of increasing that grant will not be overlooked. There is little probability, however, of the allotment being materially, if at all, increased during the coming year, and no increase to the grant under this head should therefore be anticipated.

* Paragraph 20 of Chief Engineer's note.

3. Considering the improbability of additional funds being hereafter available, the Government of India is of opinion that it is not desirable to expend any large amount on the investigation of new projects while works already investigated cannot be commenced or pushed on vigorously from want of suitable allotments. It seems desirable, therefore, that early steps should be taken to ascertain approximately the funds considered essentially necessary for the maintenance and repairs of existing irrigation works throughout the province, and that, in the final estimate, full provision should be made for such amount; the assignments for new works, both major and minor, as well as the proposed outlay on the investigation of fresh projects being reduced to such an extent that the needful sum for maintenance and repairs can be made available.

ORDER—dated 13th February 1886, No. 146 I., Public Works.

Communicated to the officers concerned for information.

2. Superintending Engineers will report, at an early date, the amounts essentially required for repairs to irrigation and agricultural works in the divisions in their Circles in addition to those provided in the preliminary issue of the budget estimates

for 1886-87, and also to what extent the amounts provided therein for original works may be reduced. On receipt of this information, the extent to which the grant for investigation and execution of "Tank Maintenance Works" should be reduced will be considered.

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

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

Encl. E. Fernandez
Spare Copies

IRRIGATION.
ACCOUNT.

Govt. of [1886] Madras.

PUBLIC WORKS.

Dated February, 13th.

Read. *Encl.*

G.O., 13th Feb. 1886, No. 146 I.

FEBRUARY.

Irrigation Works

Orders on letter from the Government of India remarking on the observations made by the Chief Engineer for Irrigation in regard to the curtailment of the grant for — for 1886-87.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from Lieutenant-Colonel J. PENNYCUICK, R.E., Superintending Engineer, Tank Maintenance Scheme, to the Chief Engineer, Public Works Department, dated Chepâk, 24th February 1886, No. 494 T.—Through the Chief Engineer for Irrigation :—

I have the honor to request sanction to the formation, from the 1st April next, of a new Tank Maintenance division, with three sub-divisions, to be styled No. IV division, with its head-quarters, for the present, at Coimbatore, and to work in the Coimbatore district.

2. Proposals for the appointment of the establishment for this division have already been submitted; but, by an oversight, sanction to the formation of the division itself has never been asked for.

No. 24 E.W.

Forwarded to the Chief Engineer, Public Works Department.

CHEPÂK. (Signed) J. O. HASTED, Colonel, R.E.,
26th February 1886. Chief Engineer for Irrigation.

ORDER—dated 2nd March 1886, No. 537 W., Public Works.

Ordered to be forwarded for the sanction of the Government of India, in continuation of letter, No. 513 W., dated 25th February 1886.

(Here enter No. 538 W., dated 2nd March 1886.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies.

GENERAL.
ESTABLISHMENT.

Govt. of [1886] Madras.

PUBLIC WORKS.

Dated March, 2ad.

Read. *Encl.*

G.O., 2nd March 1886, No. 537 W.

MARCH.

Tank Maintenance Scheme

Letter from the Superintending Engineer, —, requesting sanction to the formation of a new division, with head-quarters at Coimbatore, to be styled No. IV division, ordered to be forwarded for the sanction of the Government of India.

29TH MARCH 1886, No. 847 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following papers :—

Telegram from the Secretary to the Government of India, Public Works Department, Calcutta, to the Secretary to the Government of Madras, Public Works Department, Madras, dated 24th March 1886.

'Your telegram, 19. No objection to formation of fourth Tank division if your financial position admits of it.

———

Office note from the Chief Engineer for Irrigation, dated 26th March 1886.

ORDER—dated 29th March 1886, No. 847 W., Public Works.

Communicated to the Superintending Engineer, Tank Maintenance Scheme, with advertence to G.O., No. 537 W., dated 2nd March 1886.

2. The formation of a fourth Tank division may be proceeded with.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated March, 29th.

Read. *Encl.*

G.O., 29th Mar. 1886, No. ~~857~~ W.

MARCH.

Fourth Tank Division.

Sanction of the Government of India to the formation of a — communicated to the Superintending Engineer, Tank Maintenance Scheme.

29

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following paper :—

No. 34 I.

Note by the Chief Engineer for Irrigation.

The sanction accorded by the Government of India in their letter, No. 229 G., dated 11th February 1885, printed with G.O., No. 543 W., dated 9th March 1885, to the temporary engineering establishment required for the Tank Maintenance Scheme will expire by the end of the current official year, and requires to be renewed for next year. Sanction to three Engineers, on Rs. 550, 450 and 350 per mensem, required to start another Tank division during the ensuing year, in accordance with the programme approved by the Government of India in their letter, No. 40 I., dated 20th January 1883, has also to be applied for. Tank maintenance operations extend at present over an area of 4,779 square miles in the Madura, Chingleput and Kurnool districts and that portion of the Coimbatore district within the Amarávati river minor basin. Up to the end of July 1885, 429 estimates, amounting to Rs. 2,33,814, were sanctioned, 78 estimates, amounting to Rs. 27,415, were prepared, and 272 estimates, amounting to Rs. 1,73,359, were under preparation, making in all 779 estimates, amounting to Rs. 4,34,588, while the probable expenditure on the execution of tank maintenance works to the end of 1886-87 is estimated at Rs. 5,67,825. In paragraph 3 of their letter, No. 11 A.I., dated 1st February 1886, printed with G.O., No. 146 I., dated 13th February 1886, the Government of India expressed an opinion that it is not desirable to expend any large amount on the investigation of new projects while works already investigated cannot be commenced or pushed on vigorously from want of adequate allotments, but as the Tank divisions deal with the restoration of existing tanks, and as sufficient number of estimates have to be prepared by the Tank divisions and sanctioned in time to admit of the tank maintenance works being carried out to the extent to which funds can be made available, it is considered undesirable that the formation of No. 4 Tank division should be deferred. This division will work in the Coimbatore district outside the Amarávati river minor basin which overlaps the boundary between the Madura and Coimbatore districts. The necessity for the employment of a special officer of sufficient standing, with the powers of a Superintending Engineer, to control the operations of the Tank divisions still continues.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer for Irrigation.

CHEPÁK,
22nd February 1886.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 25th February 1886, No. 512 W., Public Works.

The Government of India will be requested to renew the existing sanction of the temporary establishment for the Tank Maintenance Scheme, as noted in the margin, and to accord sanction to the establishment required for the No. 4 Tank division.

	Rs.
Local allowance to the Superintendent of Works ..	100
Two Engineers at Rs. 150 each	1,500
One Engineer	550
Three Engineers at Rs. 450 each	1,350
Three ,, ,, 300 ,, ...	900
Total ..	4,400

2. Ordered that the following letter be sent to the Government of India :—

(Here enter No. 513 W., dated 25th February 1886.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.
" Revenue Department.

Exd. E. Fernandez.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of (1886) Madras.

PUBLIC WORKS.

Dated February, 25th.

Encl.

Encl.

G.O., 25th Feb. 1886, No. 512 W.

FEBRUARY.

Temporary Establishment for the Tank Maintenance Scheme

Ordered that the Government of India be requested to renew the existing sanction of the — and to accord sanction to the establishment required for No. 4 Tank division.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,
Secretary to the Government of Madras,
Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

In forwarding a copy of the proceedings of Madras Government, No. 512 W., dated 25th February 1886, I am directed to request that the Government of India will be so good as to renew the existing sanction for the temporary engineering establishment for the Tank Maintenance Scheme, and to accord sanction to the entertainment of three temporary Engineers, on Rs. 550, 450 and 300 per mensem, required to start, early next year, another Tank division to work in the Coimbatore district outside the Amarávati river minor basin which overlaps the boundary between the Madura and Coimbatore districts.

2. As the necessity for submitting this application three months before the expiration of the existing sanction was lost sight of, I am to request that the sanction of the Government of India may be communicated by wire to save delay.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
25th February 1886.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated February, 25th.

Recd. Encl.

25th Feb. 1886, No. 513 W.

FEBRUARY.

Temporary Establishment for the Tank Maintenance Scheme

Requesting to renew the existing sanction for the — and to sanction the establishment required for the No. 4 Tank division.

23

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 12th February 1886, No. 241 G.:—

In reply to your letter, No. 266 W., dated 29th ultimo, I am directed to communicate the sanction of the Government of India to the continued employment, in No. II Tank division, of Mr. T. W. Scott, temporary Engineer, on Rs. 550 per mensem, for a further period not exceeding twelve months, with effect from the 23rd March 1886.

ORDER—dated 22nd February 1886, No. 439 W., Public Works.

Communicated to the Superintending Engineer, Tank Maintenance Scheme, and to the Examiner, Public Works Accounts, in continuation of G.O., No. 265 W., dated 29th January 1886.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Tank Maintenance Scheme.
" " Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies.

GENERAL
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

J W Scott

Dated February, 22nd.

Encl.

Read.

G.O., 22nd Feb. 1886, No. 439 W.

FEBRUARY.

Mr. T. W. Scott, Temporary Engineer

Communicating sanction of the Government of India to the continued employment of —, for a further period of twelve months.

9TH JUNE 1885, No. 1345 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 20th May 1885, No. 711 G. :—

In reply to your letter, No. 1018 W., dated 29th April 1885, I am directed to communicate the approval of the Government of India of the appointment of the upper subordinates named on the margin as temporary engineers, on salaries of Rs. 350 per mensem, for a period not exceeding twelve months, with effect from the 2nd May 1885.

Mr. T. T. Raghavachariyar, B.A., B.C.E.
" R. Vaidyanatha Aiyar, B.C.E.
" T. Subrahmanya Aiyar, B.A., B.C.E.

2. I am to request the submission of a statement of the temporary establishment showing their distribution as against the original sanction, with explanation of any change of nomenclature there may have been.

ORDER—dated 9th June 1885, No. 1345 W., Public Works.

Communicated to the officers concerned.

2. The statement called for in paragraph 2 will be submitted to the Government of India.

(Here enter No. 1346 W., dated 9th June 1885.)

(True Extract.)

(Signed) J. SHAW STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, I Circle.
" " " II "
" " " V "
" Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated June, 9th.

Encl.

Read.

G.O., 9th June 1885, No. 1345 W.

JUNE.

Temporary Engineer Establishment

Orders on letter from the Government of India approving of the appointment of certain upper subordinates as temporary engineers for one year, and requesting a statement of the — showing their distribution as against the original sanction.

25

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 19th March 1886, No. 489 G. :—

In reply to your letter, No. 624 W., dated 8th instant, I am directed to communicate the sanction of the Government of India to the continued employment of R. Vaidyanatha Aiyar, Sub-Engineer, 3rd grade, sub. *pro tem.*, as a temporary Engineer on a salary of Rs, 350 per mensem, for a further period, not exceeding twelve months, with effect from the 2nd May 1886.

2. I am to request that the work against which this sanction is to be noted may be reported at an early date.

ORDER—dated 29th March 1886, No. 849 W., Public Works.

Communicated to the Superintending Engineer, V Circle, and to the Examiner, Public Works Accounts, in continuation of G.O., No. 623 W., dated 8th March 1886.

2. Paragraph 2 of the letter will be separately disposed of.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated March, 29th.

Read. *Encl.*

G.O., 29th March 1886, No. 849 W.

MARCH.

R. Vaidyanatha Aiyar, Sub-Engineer

Sanction of the Government of India to the continued employment of —, as a temporary Engineer, for a further period not exceeding twelve months, communicated to the Superintending Engineer, V Circle, and to the Examiner, Public Works Accounts.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 19th March 1886, No. 489 G. :—

In reply to your letter, No. 624 W., dated 8th instant, I am directed to communicate the sanction of the Government of India to the continued employment of R. Vaidyanatha Aiyar, Sub-Engineer, 3rd grade, sub. *pro tem.*, as a temporary Engineer on a salary of Rs. 350 per mensem, for a further period, not exceeding twelve months, with effect from the 2nd May 1886.

2. I am to request that the work against which this sanction is to be noted may be reported at an early date.

ORDER—dated 29th March 1886, No. 849 W., Public Works.

Communicated to the Superintending Engineer, V Circle, and to the Examiner, Public Works Accounts, in continuation of G.O., No. 623 W., dated 8th March 1886.

2. Paragraph 2 of the letter will be separately disposed of.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated March, 29th.

Read. *Encl.*

G.O., 29th March 1886, No. 849 W.

MARCH.

R. Vaidyanatha Aiyar, Sub-Engineer

Sanction of the Government of India to the continued employment of —, as a temporary Engineer, for a further period not exceeding twelve months, communicated to the Superintending Engineer, V Circle, and to the Examiner, Public Works Accounts.

27

NOTE BY THE CHIEF ENGINEER FOR IRRIGATION.

The records of past years show that so long as we have managed the country the condition of the irrigation works, that is tanks and channels such as are now classified as irrigation works for which neither Capital nor Revenue Accounts are kept, has been considered unsatisfactory, and that it has on all sides been considered that larger sums than could be allotted from the revenue should be expended on their maintenance, and that considerable expenditure would be requisite to put them into an efficient state.

2. The subject seems to have been first brought to notice by Sir Arthur Cotton (then Captain A. Cotton) in a letter to the Board of Revenue, dated 13th December 1837, from which the following quotations are made :—

"The irrigation works in general are so far from being in good order that the revenue actually derived from them at present is by no means the full measure of their value.

"The average wet revenue of the Carnatic districts for five years up to Fasli 1244, omitting Tanjore, and adding 3 lakhs of rupees for Chingleput, amounted to Rs. 85 lakhs.

"The wet revenue of the Carnatic, including Tanjore, amounted to Rs. 118 lakhs."

If the irrigation works are put in good order Captain Cotton estimated that the revenue would rise from 85 to 120 lakhs, making total revenue including Tanjore 153 lakhs; he assumes the revenue to be 40 per cent. of the crop, and that the returns to revenue to Government roughly are 20 per cent. on outlay, from which he draws the following conclusions :—

(1.) The original cost of the irrigation works may be about 825 lakhs of rupees.
(2.) The annual value of the crop dependent on them, if in good order, would be about 413 lakhs.
(3.) The annual revenue to Government would be about 165 lakhs.
(4.) Present actual revenue 118 lakhs.
(5.) Present total value of annual crop dependent on them, including rent free lands, about 320 lakhs.

Captain Cotton believes that nearly all the tanks in the country and nearly all the channels also, excepting those of Tanjore and the very large ones of other districts, water less lands than they once did, many only one-fourth, and very great numbers from one-half to three-fourths; and he instances several districts in which there has been a considerable falling off of revenue, while "In Tanjore there has been an increase of nearly 40 per cent. of gross produce in thirty years."

He gives the following account of the expenditure on irrigation works :—

Average expenditure of last six years in Tank Department	Rs.	5,30,000
Total revenue dependent on the works at present ...	,,	1,18,00,000
Expenditure about 5 per cent. on revenue :—		
Revenue which would be derived from works if in good order	,,	1,65,00,000
Expenditure as at present below 4 per cent. on this revenue :—		
Total value of gross produce at present	Rs.	3,20,00,000
Expenditure at present on total annual amount of property about 2 per cent.		
Supposed original cost of works	Rs.	8,25,00,000
Annual expenditure less than ¾ per cent.		

He says :—

"In England canals and such works, in which water is retained, require an annual outlay of 3 to 4 per cent., or from four to six times as much as here allowed,

"As the works are so very generally in want of extensive repairs, I am satisfied that a sum double the amount of the present expenditure would be most economically laid out for some years; indeed, I feel sure that if it is desirable to bring the same extent of land under effective irrigation as has been so at times within the last thirty years, it cannot be done with less than an annual expenditure of that sum, viz., 12 lakhs of rupees, at the very least for some years to come.

"I know that there are still numberless works, which if put into an efficient state would most amply repay the outlay. I would further urge an extended expenditure, not only on the ground of policy, but also of justice, the lands that are watered by Government works, are bought and sold in dependence upon the faith of Government that it will keep up a vigilant attention to those works; there are at this moment multitudes of estates that are of one-fourth or one-half the value that they once were, owing to the decayed state of the irrigation works.

"Even in the last twenty years, omitting Tanjore, the land revenue of the watered districts was on the average of five years terminating with—

"Fasli	1214	214 lakhs.
"	1219	216 "
"	1222	203 "
"	1229	215 "

Since when it has regularly declined in fifteen years to 189¼ lakhs, being a falling off in that period of 26¼ lakhs per annum, more than four times the whole cost of the Tank Department at present.

"It thus appears that in most of the districts there has been an actual, and in many a very considerable falling off, even during the short period of which we have any returns; and as the irrigation has undoubtedly been better attended to for the last ten years than it was twenty years ago, we cannot be mistaken in concluding that it had been declining previous to the period of the returns; and when to this is added the consideration, that almost all the districts when they came under our charge had been in such a state of confusion for some time that all the public works were in a dilapidated state (and the comparison is made with their revenue while in that state) the sad effects of the neglect of the irrigation must be most palpable; for it is certain that instead of the revenue having declined, had the tanks, &c., been put into a state of repair, it would have very greatly increased.

"The expenditure upon the irrigation has certainly not exceeded one-third of what upon the strictest principles of economy it ought to have been."

3. In 1851 a Commission was appointed by Government to inquire into and report upon the system of Public Works in the Presidency. The Commissioners submitted an exhaustive Report in December 1852, quoting largely from Captain A. Cotton's letter above referred to, and printing it in an appendix to their report. They value capital invested in construction of Government works of irrigation at 1,560 lakhs, and state that the annual outlay on works on average of past ten years has been 7 lakhs. Therefore cost of repairs is less than half per cent. on original cost,
or less than 2 per cent. on gross yearly proceeds,
or 4½ per cent. on annual revenue derived by Government.

They state that in the twelve following irrigation districts:—

Bellary,	Salem,
Cuddapah,	Trichinopoly,
Nellore,	Tanjore,
North Arcot,	Coimbatore,
South Arcot,	Madura, and
Chingleput,	Tinnevelly,

2,682,260 acres, and
1,84,21,555 rupees.

In Fasli 1259 the ayacut being ... ... assessment ... ... 1,787,999 acres, assessment Rs. 1,12,89,352,

Cultivation in that, a good year, was 1,787,999 acres, leaving waste no less than 894,351 acres.

"In most districts it appears probable that the whole extent of the ayacut was formerly under cultivation though not all at the same time.

"Making allowance for all disabling causes by a deduction of even as much as one-third of the whole extent entered as irrigated, waste in above districts would amount to 1,262,666 acres."

Further on they state—

"In short all the works in the country, with a few exceptions, are in a state that may be called 'below par,' that is they are below their state of full efficiency, and incapble of effecting their proper amount of irrigation. The tanks are in want of sluices, or such as they have are out of order, or they have no calingulahs, or such as there are are too small or too high, and so the stability of the tank is in danger, or the bank is low or weak, and the ryots are afraid to store a full tank, or their channels of supply have been become choked up and no longer bring a full supply of water, and as to the irrigating channels many of them are in the state described * * * from the want of regulating works at their head; or they have become filled up by deposit, or the river has thrown up a bank in front of them and they get no water; or they have too few outlets for irrigation and the ryots cut through the bank; or the outlets are too large and a vast quantity of water is wasted. Such is unfortunately the description which now applies to a very large proportion of all the works of irrigation throughout the country, with the partial exception of the favored districts of Tanjore and a part of Trichinopoly."

The Committee drew up a list of the works undertaken by Government in the past fourteen years for the improvements of irrigation. Most of them are the larger channels in the districts which show a very considerable return on expenditure; the general results are —

There are thirty-nine works, original cost Rs. 3,22,278. Percentage of yearly net revenue given on first cost—

Thirteen works vary from 259⅔ per cent. to 77 9/16 per cent.
Twenty-one " " 47½ " to 7⅞ "
Two works are between 3 and 4 per cent.
Three works are unremunerative.

"It must never be forgotten that for every 100 rupees of revenue so sacrificed a further loss of fully 150 rupees is entailed on the ryots."

On the subject of proposed outlay they say—

"Revenue from land irrigated by Government works amounts to 135 lakhs yearly; add for Inam lands under works which Government are bound to maintain 15 lakhs; total 150 lakhs. The sum now expended annually on repairs is about 7 lakhs of rupees. This would probably be sufficient if the works were once brought into good order, but they are in general much out of repair, and a considerable expenditure is required to bring them to a proper point of efficiency so as to yield a maximum return. We would propose 15 lakhs yearly as the usual expenditure in maintaining existing works and bringing them into an efficient condition, including the furnishing them with proper sluices and calingulahs, improving their sources of supply and other minor and ordinary improvements; 15 lakhs of rupees steadily laid out every year on these objects, under able and judicious direction, would soon produce a marked effect. The proposed expenditure would be 10 per cent. on the present revenue from irrigation, but this rate would be gradually reduced as the effect of the improvement became apparent and as the whole number of works in efficient repair became larger year by year.

"The Native Princes who constructed the works of irrigation subjected every acre of land irrigated to a special cess for the purpose of keeping the works in repairs. After the assumption of the Government by the English, all the items making up the land revenue were consolidated into a single demand, for the most part a fixed sum in money per acre or cawny, the revenue in kind being commuted; these fees are therefore paid to Government on the express condition that the works shall be kept in good repair."

In addition to 15 lakhs to be expended yearly on maintenance and minor works, the Committee propose that 7½ lakhs at least should be annually devoted to the object of extending the benefits of irrigation.

"Thus the whole ordinary and usual sum proposed to be spent yearly on works of irrigation is 22½ lakhs.

"We have been brought to the opinion that the surplus revenue of this Presidency when fairly computed, *i.e.*, the surplus over its own expenditure or over the expenditure of the territories of which it receives the revenue, is much larger than appears under the present mode of making up the Imperial accounts.

"But whether the present surplus of revenue over expenditure be large or small, we would contend against the principle of making the accidental amount of that surplus, the measure of the expenditure on improvements morally certain to produce a large increase of revenue by the legitimate and really beneficial means of augmenting the comfort and the resources of the people."

The Committee recommend that the sum they have fixed for expenditure on irrigation works should be so expended without consideration of the current surplus revenue, that it should be, if necessary, raised by loan, it being the part of true wisdom to borrow money at 5 per cent. which will return directly 20 per cent.

4. In consequence of this report the Public Works Department was, in very much its present shape, organized and entrusted with the maintenance of all irrigation works, and under the new régime all help from the ryots, which under the name of Kudimaramut or customary labor had been enforced while the works were under the Revenue Department, ceased, and the cost of maintenance thrown upon the Government was necessarily enhanced. The new Department not having worked altogether satisfactorily a Committee was, after the lapse of some years, appointed to report on the subject. Their report was submitted in 1870, and in it they say:—

"Evidence shows that the works are not in that state of efficiency in which they require to be placed and that, treating the works as a whole, the expenditure of money on them has not been sufficient.

"Public Works Commissioners in 1851 state the average annual outlay on repairs of irrigation works was 7 lakhs, or 5 per cent. on the revenue then yielded by irrigated land. Adverting to the great increase which has since taken place in the cost of labor and materials, and having

in mind how much State expenditure on irrigation works was at that time supplemented by the co-operation of the ryots, we have no doubt that the average expenditure of late years represents an outturn of work especially of minor works, far smaller than that executed in former years.

"A percentage of the revenue from irrigation should be devoted to the maintenance of the works, to be treated as a first charge on the revenue. We recommend that this charge be fixed at 8 per cent. on the revenue, and that the sum so obtained be devoted entirely to the maintenance of such of the irrigation works of the several districts as are not otherwise provided for, including under the head of maintenance such minor improvements, the construction of sluices, &c., as may be found requisite for the safety of the works, or for increasing their usefulness.

"Eight per cent. on the revenue, taking the revenue on irrigated lands at 170 lakhs, would give an annual grant of Rs. 13,60,000 for the maintenance of existing works. This sum is less than the grant, viz., 14 lakhs, which for the last two or three years has been annually entered in the budget under the head of Agricultural Repairs, but it is considerably more than has actually been spent on irrigation repairs."

5. Major (now Colonel) Mullins, in a dissent from Commissioner's report, says,

"I concur entirely with the report of the majority in considering that the irrigation works generally are not in that condition of efficiency in which they require to be placed, as also in the opinion that the grants of money for irrigation repairs, have, for a series of years, been altogether inadequate.

"I am of opinion that it will be necessary to allow, for several years to come, a considerably larger outlay (than 8 per cent. on the revenue)."

6. Sir W. Robinson, in a minute attached to the report, says,

"The conviction is thus forced on one that, however faithfully the proposed assignment may in future be apportioned amongst the works needing repair and maintenance, an assignment of 8 per cent., or even a much larger proportion of the gross wet revenue, if spent on the extravagant system now followed, must fail to meet the urgent demands of the country within any reasonable period."

Sir W. Robinson in referring to "the extravagant system" contemplated more being done by the people themselves.

He does not consider that there was any obligation on the State to maintain single-handed the old existing communal agricultural works, or that the consolidated wet revenue demand is a special charge conditional on the supply of State water.

He recommended that minor irrigation works should be classed as grant-in-aid works, that 6¼ per cent. (one anna in the rupee) should be assigned as a Local Fund in the district to meet grants-in-aid not exceeding half the estimated cost, for the repair and improvement of any work. The cultivators under the work paying the rest and finding the labor as occasion requires.

7. The Department was after this reorganized, but the result as regards minor irrigation works has not been very satisfactory, no more money being available for them. The next enquiry into the state of these works was made by the Famine Commissioners in 1878 who state as follows:—

"Petty Irrigation Works.—The account given of the condition of these is by no means satisfactory. In former days they were to a great extent maintained by a system of contributed or statutory labor, the Government being held liable only for any considerable work of improvement or restoration, and the ordinary petty yearly repairs being done by the population interested in the irrigation. In 1856-57 the duty of initiating tank repairs was transferred from the Revenue officials to the re-organized Public Works Department without, however, the power which has been enjoyed by the Collector, of enforcing statutory labor. Since that time the ryots have taken less and less part in the maintenance and repair of tanks and channels. On the other hand, the Public Works Department, though spending considerable sums annually in the repair of particular works have not been able to carry out all the necessary restorations; and there are many works which have fallen out of order for want of proper supervision and timely repair.

"There is a general consent that the measures now adopted for the maintenance of the tanks in efficiency are wholly inadequate. The expenditure has been more liberal of late years; but still the Irrigation Department reckon that, in order to make the more important tanks safe in years of ample rainfall, an annual grant three times as great as that hitherto appropriated for this purpose, and a period of 20 years would be necessary. Such a delay in effecting a necessary improvement would be very bad economy. The security of the annual revenue of £700,000, which is dependent on these works, is a matter which the Government cannot be justified in overlooking; and any loss which Government sustains corresponds to far more serious damage inflicted on the agricultural class. The Government ought then, in our opinion, to frame a scheme for putting the tanks into order with as little delay as financial considerations and the arrangements of the administration will permit, and carry it out in a systematic and continuous method till this serious cause of preventible loss has been removed."

8. In an appendix to the Famine Commissioner's Report is a report by the Irrigation Committee appointed under them, in which certain recommendations for the treatment of minor irrigation works are made, which have been approved by Government and are now being carried out. Generally speaking the works are being divided into two classes:—

(1.) Those which irrigate more than 200 acres, which are called "Imperial."
(2.) Those which irrigate less than 200 acres, which are called "Minor."

All works however coming under the second head which from their position affect Government works of any consequence are classed under the first head.

Imperial works are to remain under the charge of the Public Works Department and minor works are temporarily placed under the charge of the Revenue Department, it being intended that subsequently they should be sub-divided into three classes, some of them being entirely handed over to the ryots and others maintained by the ryots in return for a certain remission of revenue. A Kudimaramut Bill has also, in accordance with the recommendations of the Committee, been prepared and submitted to Government, and an Irrigation Law has been drafted. Steps are thus being taken towards better management of the tanks and channels, but from all districts come complaints that the funds allotted for minor irrigation works are insufficient and that the works are generally in bad order.

9. It would thus appear that the condition of the irrigation works in the Presidency is much the same as when Captain A. Cotton reported on them in 1837, but from Statement I appended it appears that the expenditure on the works was considerably increased after 1866-67, the average expenditure of the five years ending—

1851-52 being ... ... Rs. 7,79,402
or 7·54 per cent. on the revenue.
For the five years ending 1871-72 being ... ... „ 14,12,870
or 12·34 per cent. on the revenue.
For the five years ending 1876-77 being ... ... „ 11,53,426
or 10·54 per cent. on the revenue.

The average revenue for these periods being—
Rs. 1,03,42,713
„ 1,14,50,543
„ 1,09,40,747

and the reports of late years show that latterly—
194 tanks * have been put in good order,
1,289 sluices * have been built,
1,139 weirs * have been constructed.

* From 1874-75 to 1881-82.

Statement II shows the grants that have been made for the past six years for Original Works and Repairs, and it will be seen that while the annual grant for repairs varies from a little over 6 lakhs to nearly 9 lakhs, from 2¼ to 3¼ lakhs were allotted annually for Original Works.

Statement III shows the expenditure on Agricultural Works, under which head are classed River Embankments, River Conservancy, Drainage, &c., for a series of years, and proves that while the improvement of tanks and channels have received attention, a considerable proportion of the available funds has been expended on these essential works.

Before the famine, steps were taken under the direction of the Chief Engineer for Irrigation to group the tanks and channels in all districts, that is, to ascertain the circumstances of each individual work with reference to those lying above and below it in each drainage basin, and to note the requirements. The progress made in this work is as follows:—

	Area.	Revenue.
Works grouped	392,697	18,94,654
Works to be grouped	2,413,021	70,92,836
	2,805,718	89,87,490

This necessary work was interrupted by the famine, and the subsequent reduction of establishment in the Department prevented it being again taken up, and latterly the time that would have been occupied on this work has been taken up in classifying the

works as Imperial and Minor. When this classification has been finally completed, which it is anticipated it will be very shortly, it is proposed to take up the subject of the future maintenance of minor irrigation works specially, and to this end the evidence taken before the last Committee appointed by the Madras Government to consider the subject has been abstracted and the opinions of selected officers are being collected. Until this is done the expression of my individual opinion would be premature, and it need only be said that the subject must ere long be definitely disposed of.

10. Meanwhile, although full enquiry into the circumstances of each individual work is necessary to allow of money being economically expended, there are many works whose requirements have been ascertained, but not yet attended to, and many minor works on which to prevent risk of loss to Government and the cultivators, repairs of a nature not requiring scientific superintendence, are emergently required, and on these works a larger annual grant than is now made can be usefully expended.

11. The work to be done must be classed under two heads.—

(1.) Bringing each work up to the standard of efficiency and providing proper weirs and sluices.

(2.) Maintenance of works already brought up to the standard.

The first of these will bear no relation to the revenue, in many cases it will mean simply restoration, but in the case of most works it will be a work of improvement; the majority of the smaller tanks have never been provided with efficient weirs and in very many instances water has been drawn from the tanks by cuts through the banks or by rough sluices of hollow trees which are a continued source of danger to the works. In these cases the work to be done would be classified as "Extensions and improvements."

Under the second head "Maintenance," which must be understood to mean ordinary repairs which the ryots cannot perform, the expenditure should, it is thought, be a certain percentage of the revenue, and here we have the opinions of the Committees and individuals above noted for guidance. Starting with that of Sir A. Cotton we have the statement that works in which water is retained require an annual outlay of 3 to 4 per cent. on the cost of the works. The Committee of 1852 state that 10 per cent. on the revenue should be expended on maintenance and improvement. The Committee of 1870 considered that 8 per cent. on the revenue should be expended on maintenance including minor improvements. Major (now Colonel) Mullins considered that a much larger outlay than 8 per cent. on the revenue would be required for many years and Sir W. Robinson proposed $6\frac{1}{4}$ per cent. (one anna in the rupee) on the revenue only as a grant-in-aid. If we suppose the total assessment, including second crop, to average 6 rupees per acre, 8 per cent. on the revenue would approximate to a charge of 8 annas per acre, and here perhaps may be a guide in settling the charge. The cost of maintenance on the principal systems of irrigation is as follows:—

Godávari Delta	$4\frac{1}{2}$ annas per acre.	Srivaikuntham Anicut	$11\frac{1}{2}$ annas per acre.
Kistna	8 " "	Pálár	$4\frac{1}{2}$ " "
Pennér Anicut	5 " "	Chembrambakam Tank	$3\frac{1}{4}$ " "

These works have the advantage of being concentrated, and under an efficient establishment, so that in the case of scattered works, many of which cannot be under the immediate eye of the permanent establishment, it does not appear unreasonable to allow a maintenance charge of 8 annas per acre, which on existing cultivation (say 2,500,000 acres) would amount to an annual grant of Rs. 12,50,000.

12. Returning now to the first head of proposed expenditure, "bringing each work up to the standard of efficiency," it is extremely difficult to estimate the cost of the work to be done, but taking the Report of Famine Commission, which quotes the opinion of the "Irrigation Department" as a guide, we find it is estimated that an expenditure of three times the annual grant hitherto appropriated will be necessary for twenty years. The annual expenditure (average of five years before the famine) was in round numbers Rs. 11,50,000, so that the proposed annual grant amounted to Rs. 34,50,000; this sum was of course to include the cost of maintenance, so that if we deduct 8 annas per acre for maintenance, the balance, Rs. 22,00,000, represents the sum which should be annually available for expenditure on "Restoration" or "Extensions and Improvements." In twenty years this would amount to 440 lakhs, or adding one-fourth for Establishment and Tools and Plant to 550 lakhs. In the Note by the Chief Engineer for Irrigation, printed with G.O., No. 685 I., 11th October 1881, copy

of which was forwarded to the Government of India, it is stated that 65 lakhs will be required to furnish tanks and channels with requisite masonry works and for minor miscellaneous improvements, but it may be noticed that this does not include the work that would be necessary to bring the tanks to a proper standard of efficiency.

13. As to the return to be expected from this expenditure, it is necessary to refer to a statement printed with letter No. 2696 W., dated 16th October 1882, from the Madras Government to the Government of India. Here it is shown that under the class of works now being treated of—

The ayacut was	Acres	5,190,000
The assessment was	Rs.	2,48,20,000

but that in consequence of the bad condition of the works the aggregate losses each year, in the opinion of the Revenue officers of Government, amount to not less than 40 lakhs. The ayacut is supposed to be the irrigable area under the work, but there are many cases where the ayacut includes land which in its present state cannot be irrigated and possibly never may be irrigated. It is true that if each work were brought up to its original irrigating capacity, though some of the ayacut might remain uncultivated, other waste lands not included in the ayacut might be irrigated, and it may be reasonable to set off the one against the other. Here then is the return to be expected from the outlay as given above, it amounts to 7·2 per cent.

14. The question now arises, how the money required can be expended, and it is necessary to call attention to the fact that to avoid loss by wasteful expenditure a considerable sum must be spent on "preliminary expenses." The grouping must be completed. As each group is worked out, and the circumstances of every individual tank in it ascertained, work can then be taken up without waiting for the grouping in each district or division to be completed, but the first thing to be done is to put on an establishment to deal with the grouping. The permanent establishment is not sufficiently strong to deal with it, and also to carry out works on any extended scale. The subject of the future management of minor irrigation works must be connected with the work of grouping, because the determination of what tanks should be abandoned, and what tanks can be handed over to the ryots without risk to other interests, depends on the investigation of the circumstances of each work.

The proposal that has been made to constitute tank divisions seems on the whole to be the best way of dealing with the subject, and it has this advantage that the working may be extended by the constitution of more divisions. It is in the first instance essential that work should be started on a proper footing, and though the tank divisions would work under the Superintending Engineers, it does not seem advisable, owing to the different number and condition of the works in each civil district, simply to give each Superintending Engineer a new division and let him commence work in his own way. An officer of some experience should be appointed to start the work, as at first the settlement of the question of the future management of the smaller tanks would claim considerable attention, but once the work was started on a proper footing and a decision come to as to the management of the smaller works, he might be withdrawn and the divisions left to the Superintending Engineer. It may also be desirable to appoint an Executive Engineer as Assistant to the Chief Engineer for Irrigation for a time. These would be special appointments, and would, with establishment, cost about Rs. 24,000 a year.

The cost of one tank division would be Rs. 32,000, and as considering the works are much scattered a large sum cannot be expended by each division in carrying out work, it is probable that $1\frac{1}{2}$ lakhs per annum would be the expenditure including establishment and tools and plant of each division. If the work is begun next year, one division might be started, and $1\frac{1}{2}$ lakhs would be required, the following year two divisions, and so on, as men were available, till at least one division would be working in each circle, and the expenditure would then be $9\frac{1}{4}$ lakhs or, as the special officers might by that time be withdrawn, to 9 lakhs. An annual expenditure of 10 lakhs would make the work last fifty-five years, and although tank divisions might be increased to almost any extent yet there seems no hope of bringing the works up to the proper standard of efficiency in a short time, and when we find twenty years spoken of as an unreasonable time to be occupied on it, it can only be supposed that the magnitude of the work has not been fully considered. If work is

taken up as proposed, the following is a rough forecast of the expenditure necessary in the next five years :—

	Improvements to Irrigation Works.	Lakhs of Rs.
1883-84	...	1·5
1884-85	...	3
1885-86	...	4·5
1886-87	...	7
1887-88	...	10

This expenditure is to be incurred solely on the work to be undertaken by the tank divisions, until they are working properly. Works of maintenance and improvement must be carried out, as they are at present, imperfectly, by the permanent establishment. In the fourth year probably all works of improvement will be taken up by the tank divisions, and then the budget should provide, under Ordinary Irrigation and Navigation Works, 7 lakhs for Improvements to Irrigation Works ; Maintenance at 8 annas per acre, (say) 12½ lakhs, and Agricultural Works 4 lakhs ; total 23½ lakhs—to be increased the following year to 28½ lakhs.

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Chief Engineer for Irrigation.

27th November 1882.

I.

STATEMENT showing the Total Area irrigated under, the Revenue derived from, and Outlay incurred on, Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept in all the Districts of the Madras Presidency for 35 years from 1847-48 to 1881-82.

Years.	Area irrigated.		Revenue.	Outlay.	Average for five years.					Remarks.
					Area irrigated.		Revenue.	Outlay.	Percentage of Outlay on Revenue.	
	Government.	Zemindari and Inam.			Government.	Zemindari and Inam.				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1847-48	14,70,536	..	1,05,34,173	10,30,546	..	..	..	..	..	
1848-49	15,22,315	..	1,00,94,515	7,35,465	..	..	..	..	..	
1849-50	14,80,308	..	95,38,470	6,14,143	..	..	..	..	..	
1850-51	15,52,009	..	1,02,42,763	6,03,060	..	..	..	..	..	
1851-52	15,58,714	..	1,13,03,646	9,13,796	15,16,776	..	1,03,42,713	7,79,402	7·54	
1852-53	17,14,197	..	1,20,87,102	..	..	..	..	..	..	
1853-54	15,94,979	..	1,19,19,669	..	..	..	..	..	..	
1854-55	16,16,077	..	1,17,26,498	..	..	..	..	..	..	
1855-56	16,07,113	..	1,27,37,307	11,06,337	..	..	..	..	..	
1856-57	16,77,076	..	1,26,59,048	11,95,244	16,41,888	..	1,22,25,925	..	..	
1857-58	15,60,510	..	1,26,52,542	9,34,017	..	..	..	..	..	
1858-59	17,35,405	..	1,43,80,514	13,50,960	..	..	..	..	..	
1859-60	17,75,760	..	1,17,44,407	11,40,355	..	..	..	..	..	
1860-61	17,55,558	..	1,11,88,920	8,06,887	..	..	..	..	..	
1861-62	18,32,719	..	1,17,32,628	6,74,706	17,31,990	..	1,23,39,802	9,80,185	7·94	
1862-63	19,53,249	..	1,21,97,313	7,70,795	..	..	..	..	..	
1863-64	19,35,007	..	1,17,57,392	5,76,304	..	..	..	..	..	
1864-65	18,38,901	..	1,11,41,000	8,62,184	..	..	..	..	..	
1865-66	20,19,648	..	1,17,35,505	6,61,042	..	..	..	..	..	
1866-67	21,02,641	..	1,20,36,978	8,00,886	19,15,889	..	1,17,74,439	7,82,242	6·22	
1867-68	18,86,179	..	1,10,39,761	* 17,18,916	..	..	..	..	..	* Includes famine expenditure in 1866-67 and 1867-68.
1868-69	19,56,063	..	1,14,71,294	15,72,795	..	..	..	..	..	
1869-70	19,63,278	..	1,14,63,203	13,15,604	..	..	..	..	..	
1870-71	20,42,968	..	1,19,95,310	13,15,194	..	..	..	..	..	
1871-72	22,99,555	4,39,985	1,12,83,150	11,41,843	20,29,608	..	1,14,50,543	14,12,870	12·34	
1872-73	24,46,645	3,33,400	1,17,27,801	11,72,302	..	..	..	..	..	
1873-74	23,93,862	2,49,363	1,10,36,160	12,30,853	..	..	..	..	..	
1874-75	21,57,302	9,26,782	1,33,80,398	11,51,985	..	..	..	..	..	
1875-76	22,94,096	7,94,344	1,10,57,875	10,71,212	..	..	..	..	..	
1876-77	18,92,533	7,19,019	75,01,503	11,40,777	22,36,887	6,04,581	1,09,40,747	11,53,426	10·54	
1877-78	24,01,710	7,19,336	1,17,89,730	11,07,772	..	..	..	..	..	
1878-79	25,17,670	7,78,363	1,19,92,215	12,61,896	..	..	..	..	..	
1879-80	25,13,870	7,37,866	1,20,01,671	7,30,815	..	..	..	..	..	Public Works Establishment was reduced.
1880-81	25,11,835	8,87,579	1,21,35,092	4,17,009	..	..	..	..	..	Value of work done from Famine funds on the Pálár anicut channels erroneously debited to this head in 1878-79 was written back during the year.

II.

Statement of Grants for Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept, from 1876-77 to 1881-82.

Districts.	1881-82.		1880-81.		1879-80.		1878-79.		1877-78.		1876-77.	
	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ganjam	5,000	30,000	5,000	10,000	4,000	20,000	4,000	18,826	4,500	17,000	3,000	29,000
Vizagapatam			2,500	5,000	2,000	11,000	2,000	11,800	1,800	16,500	2,000	19,000
Godávari	4,809	8,000	3,400	1,500	2,000	22,000	7,500	17,840	17,111	17,000	11,500	15,200
Kistna	500	4,100	500	3,000	3,000	19,000	2,000	8,126	10,500	8,000	3,500	6,200
Nellore	8,000	40,000	19,000	60,000	8,000	60,000	7,000	54,470	7,900	60,000	19,850	38,900
Bellary	10,000	..	..	..	..	..	7,000	13,000	7,900	50,000	8,000	60,000
Cuddapah	6,500	60,000	20,743	22,500	12,000	60,000	11,000	45,000	9,500	30,000	12,000	40,000
Kurnool	..	..	5,000	12,000	10,000	60,000	10,000	44,500	18,120	50,000	28,000	52,000
Chinglepat	27,297	40,000	47,347	75,000	14,500	71,000	14,500	85,218	48,840	89,030	52,942	87,900
North Arcot	11,000	53,000	15,000	63,000	14,000	70,000	14,000	70,320	15,000	97,000	20,000	86,500
South do.	42,000	90,000	10,000	85,000	12,000	80,000	12,000	80,219	17,000	92,519	42,000	1,06,000
Salem	40,000	20,000	25,000	..	8,000	40,000	8,000	47,396	20,500	64,000	20,000	53,000
Coimbatore	10,970	35,000	12,830	45,000	5,000	40,000	5,000	49,139	5,500	56,460	6,000	79,500
Tanjore	4,000	11,000	12,720	15,000	2,000	20,000	2,436	6,519	3,500	10,000	3,000	..
Trichinopoly	6,000	30,000	6,000	28,000	6,000	30,000	7,000	32,000	16,250	40,000	8,000	45,000
Madura	2,000	10,000	..	..	2,000	10,000	11,000	60,480	5,400	49,000	4,000	49,000
Tinnevelly	12,200	60,000	8,000	75,000	28,000	80,000	21,516	1,43,330	22,354	57,600	36,100	61,000
Reserve ..	36,500	1,33,900	39,000	97,000	8,000	60,000	34,261		54,274		41,500	..
Total ..	2,26,276	6,25,000	2,21,300	6,17,000	1,67,283	5,72,000	2,06,616	8,23,250	2,84,149	8,01,410	5,21,392	8,12,200

III.

Statement showing Outlay on Agricultural Works incurred from 1863-64 to 1881-82.

Districts.	1863-64.		1864-1865.		1865-66.		1866-67.		1868-69.		1875-76.		1876-77.		1877-78.		1878-79.		1879-80.		1880-81.		1881-82.	
	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ganjam ..	1,235	..	..	..	..	..	..	..	..	..	1,319	12,617	54	19,692	782	16,548	53	3,480	104	2,560	..	676	..	..
Vizagapatam ..	..	..	..	..	..	..	..	..	..	..	..	1,914	15	837	3	880	..	628	1	2,208	..	..	..	180
Godávari ..	..	..	..	..	..	..	..	..	..	..	42,734	40,393	29,602	46,019	15,952	26,551	..	21,935	..	22,575	32,486	21,118	73,881	24,694
Kistna	..	..	..	..	..	..	..	..	..	..	..	14,981	..	6,744	8,433	3,405	1,978	2,746	9,128	443	11,121	7,200	10,193	5,684
Nellore	..	..	1,575	..	3,177	..	415	..	..	..	4,498	4,999	45,999	3,005	15,481	100	4,373	2,046	10,449	184	5,357	131	1,483	804
Bellary	..	..	..	..	..	..	..	..	..	..	..	6,849	1,489	914	801	609	5,236	797	1,466	744	470	485	..	431
Cuddapah	..	..	..	..	..	..	..	..	..	..	..	..	89	..	170	200	18	..	..	..	..	..	..	..
Kurnool	..	..	..	..	..	..	..	..	..	..	28	..	..	..	..	..	..	..	..	..	..	..	..	..
Chinglepat	..	..	..	..	..	..	..	..	..	..	..	4,736	115	8,070	1,889	1,524	12	3,132	3,556	276	3,890	1,095	914	967
North Arcot	..	..	..	..	..	..	8,446	..	274	..	..	2,925	142	1,450	..	127	93	..	496	..	..	..	25	..
South do.	..	..	..	..	..	..	..	..	..	..	..	10,491	112	1,927	..	11,207	110	4,905	..	14,494	249	19,303	..	12,099
Salem	..	..	..	..	..	..	..	..	..	..	255	3,864	..	3,271	..	..	639	630	..	1,262	..	1,448	176	436
Coimbatore	..	..	2,310	..	..	..	3,500	..	..	..	42	5,861	106	4,167	..	402	102	2,856	2,333	7,272	1,858	6,150	501	8,306
Tanjore	..	..	..	..	..	..	..	..	..	..	3,350	1,14,216	1,312	61,413	759	60,657	..	51,483	969	52,562	1,002	68,355	1,335	68,844
Trichinopoly ..	..	..	..	..	..	..	..	..	..	..	..	30,551	2,515	56,561	6,657	88,330	15	36,014	628	15,396	2,015	19,408	795	30,537
Madura	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	366	..	..	..	511	..	..	..	..
Tinnevelly ..	..	..	..	..	..	..	..	..	..	..	..	4,269	..	3,703	..	471	..	29,153	7,060	5,025	5,503	5,135	17,228	3,000
Total ..	1,235	..	3,885	..	5,077	..	15,645	..	274	..	52,226	2,59,266	81,550	2,17,773	50,927	2,11,377	12,629	1,59,805	36,190	1,25,512	63,950	1,50,501	1,06,031	1,55,982

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

No. 60.

READ—the following letter from Major G. F. L. MARSHALL, R.E., Under Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 26th January 1883, No. 40 I. :—

In acknowledging the receipt of your letter, No. 3273 W., dated the 11th December 1882, on the subject of minor irrigation works in the Madras Presidency, I am directed, in reply, to state that the financial programme detailed in the 3rd paragraph of your letter is approved by the Government of India, and that grants under 33. Irrigation and Navigation, for the Madras Presidency, will be provided for the years 1883-84 to 1886-87 inclusive to the following extent :—

Rs.	19,78,300	1883-84
„	21,28,300	1884-85
„	22,78,300	1885-86
„	25,28,300	1886-87

2. It must be understood that these grants are intended to be final up to the year 1886-87 and to include all expenditure under both works and establishment.

3. I am to point out that, in order to ensure the fullest possible benefit being derived from this expenditure, it is essential that the Statute Labor question, the question of the extent to which the Public Works Department Agency should be superseded by that of the Collectors, also the question of the extent to which tanks should be repaired by the State, should one and all receive careful and full consideration; and I am to say that, in view to an early settlement of them, the Inspector-General of Irrigation will be deputed to Madras and may be expected to arrive there about the 25th instant, in order to discuss with the local officers these and the further subjects connected with irrigation which are still undisposed of.

No. 61.

ORDER—dated 12th February 1883, No. 143 I., Public Works.

Communicated to the officers concerned, with copy of note, dated 27th November 1882, by the Chief Engineer for Irrigation.

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To Superintending Engineers.
To the Chief Engineer for Irrigation.
„ Examiner, Public Works Accounts.
„ Revenue Department.
„ Board of Revenue.

Exd. A. Aubert.
Spare Copies

IRRIGATION.
ACCOUNT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated February, 12th.

Recd. *Encl.*

G.O., 12th Feb. 1883, No. 143 I.

FEBRUARY.

Minor Irrigation Works

Letter from the Government of India accepting the proposals of the Madras Government for dealing with —, communicated to the officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

READ—the following papers :—

From Lieutenant-Colonel P. MONTGOMERIE, R.E., in special charge of Tank Divisions, to the Chief Engineer for Irrigation, dated Chepâk, 30th March 1883, No. 3.

With reference to G.O., No. 743 W., dated 7th March 1883, appointing me for special duty in your office in connection with the work of the new Tank divisions authorized in Proceedings of Madras Government, No. 143 I., dated 12th February 1883, I have the honor to submit a statement of the establishment required to make up one Tank division, costing Rs. 32,000 per annum, as proposed in your note * on minor Irrigation works, dated 27th November 1882, and to request permission to appoint, temporarily, from the 1st April 1883, the draughtsmen and office establishments included therein, to enable me to put in hand the preparatory work required in connection with the professional investigations on which the Tank divisions have to be employed.

* Also a statement of the special establishment to be attached to your office, Rs. 33,600.

2. As you are aware, there is a vast quantity of information in the Revenue Survey office, connected with the districts in which these operations will be carried out, although unfortunately this information has not been arranged altogether in a manner suitable for our purpose. There is also a good deal of data with reference to the grouping of the minor irrigation works generally, in a more or less disconnected form, available in your office, and perhaps also in some of the district offices. And I need hardly point out that the more completely this information is utilized, preparatory to the field work in the districts being taken up, the less will be the delay in completing the professional investigation which is the fundamental work required in the practical treatment of the minor irrigation works of the presidency.

3. I propose carrying out these professional investigations somewhat on the system followed for the Mysore tank scheme, but the same detail will not be necessary if the information in the Revenue Survey office can be utilized. The detailed instructions for a systematic prosecution of these investigations will be forwarded to you, in due course, for approval; they will be based on the Irrigation circulars which have, from time to time, been issued from your office. And I am in hopes of being able to embody, in a more comprehensive manner, the substance of these circulars with other hydraulic data in the form of a Manual, for the use and guidance of the tank divisions or for the conservancy establishment that may supersede them in the future. This, however, must take time.

4. From the tenor of your remarks, in your note above referred to, it would appear that it is proposed to utilize the new Tank divisions not only in the work of investigation, estimating and registering, but also in the actual execution and supervision of work at the same time. If this be the intention, I would venture respectfully to point out that these absolutely necessary and essential investigations will

never be completed within a definite period: for it is very certain that, before the period of fifty-five years, which you allow will be necessary to complete the work, has elapsed, famines, wars and other distracting influences must be reckoned upon, and the collapse of the operations will be as complete as that of the Mysore scheme apparently was under the pressure of the last famine. Whereas, on the contrary, if the investigation and estimating is in an advanced state, the mere accident of a famine must advance rather than retard any scheme for actually carrying out the work.

5. Without asking you, therefore, to commit yourself to any scheme for the actual maintenance and repair of the minor irrigation works of the Madras presidency, which must necessarily be more of a revenue than a professional question, and which will depend, in a great measure, on the intentions of Government, with reference to the revival of Kudimaramut, the enforcement of an Irrigation Act, and the extent to which the Revenue Department will be required to carry out all necessary unskilled labor, by means of the cultivators themselves, I would most strongly recommend that, in the treatment of the subject generally, the principle of carrying out the professional investigations separately and distinctly from the actual execution of the work be strictly followed, at least for some time to come. Should this principle meet with approval, I shall attend to this portion of the scheme with the view to insuring the systematic examination and record of all the minor irrigation works thoughout the presidency within a definite period.

6. The importance and magnitude of these preliminary operations do not appear to be fully realized; and I would venture to draw your attention to the remarks of the late Colonel W. R. Johnson, Superintending Engineer, Mysore, who, in the 6th paragraph of his memorandum of the 14th February 1882, stated: "It may be as well here to give some idea of the amount of preliminary work this scheme entailed. ..... I pointed out that this work would be necessary before the restoration of the tanks could be commenced, and estimated that the establishment charges alone would probably amount to 50 per cent. of the total cost of the work." Captain Woodward, R.E., in his report on the working of the Ceylon Ordinance, dated 22nd August 1874, says with reference to preliminary operations: "The large tank of Bassawakulam .....intended for the irrigation of about 1,000 acres..... The extensive surveys required to ascertain the capabilities of this tank occupied two officers for eight months." And again: "The repairs of the Mahawewa Madawachiya, a tank..... to irrigate 300 acres..... The survey occupied one officer nearly five months."

In drawing up the Mysore tank scheme it was estimated that one individual could examine and dispose of 47 tanks in a year, but whether so much was actually accomplished is not clear. If, however, we take 50 minor irrigation works as the most which one individual can dispose of, it will take the entire strength of the six Tank divisions fifteen years to deal with the 50,000 minor irrigation works of Madras.

7. This investigation work is even more necessary for the treatment of the minor irrigation works than the revenue survey is for the settlement of the land revenue, and it must be carried out in as complete and systematic a manner as possible, whatever other arrangements are made for the execution of the work thereafter. And the only possible circumstances under which the carrying out of these investigations might be considered unnecessary would be in the event of the entire abandonment of all the minor irrigation works being decided upon. The abandonment of a few, or even of a considerable number, of them would not lessen the investigation work in the least; for, until the investigations have been carried out, it cannot possibly be decided which tanks may be abandoned.

8. As I understand that it is the wish of Government to commence operations in the Madura district as soon as practicable, I have written to the Superintendent of the Revenue Survey Department to put in hand at once the detailed irrigation maps required for that district, and to complete them so far as information is available in his office; and the Tank divisions, if appointed, will probably be in a position to commence work energetically in about a couple of months' time.

9. There are other localities for which information is much more complete than for Madura, and the collection of these data will also be proceeded with, if the temporary establishment now asked for is allowed. And as soon as I have some office establishment, I shall prepare and submit estimates for the maps to be prepared by the Revenue Survey Department, &c.

Enclosure.

Statement showing the proposed scale of special establishment required for improving tanks.

Present Scale.			Proposed Scale.					Increase.		Decrease.		Grounds of Proposition.
Number.	Designation.	Amount of Pay.	Number.	Designation.	Amount of Pay. Minimum.	Maximum.	Average.	Number.	Amount of Pay.	Number.	Amount of Pay.	
		Rs.			Rs.	Rs.	Rs.		Rs.		Rs.	
			1	Superintending Engineer, 3rd grade, staff and military pay as Major	..	..	1,341	1	1,341			
			1	Executive Engineer, 3rd grade.	..	..	650	1	650			
				Office Establishment.								
			1	Clerk, 2nd class, 1st grade ..	160	200	180	1	180			
			1	Do. 3rd do. 3rd do. ..	50	60	55	1	55			
			1	Do. 4th do. 2nd do. ..	30	40	35	1	35			
			1	Do. 4th do. 3rd do. ..	20	30	25	1	25			
			1	Draughtsman	80	100	90	1	90			
			1	Do.	50	70	60	1	60			
Nil.		..	1	Do.	35	50	42½	1	42½			
			1	Do.	35	50	42½	1	42½			
			1	Moochee	..	..	8	1	8			
			3	Messengers at Rs. 6 each ..	..	..	18	3	18			
			3	Lascars at Rs. 6 each ..	..	..	18	3	18			
							2,565	..	2,565			
				Travelling allowances	..	..	135	..	135			
				Contingencies	..	..	100	..	100			
				Total per mensem ..	..	..	2,800	..	2,800			
				Total per annum ..	..	..	33,600	..	33,600			
				Establishment for one Tank Division.								
			1	Executive Engineer, 3rd grade.	..	..	650	1	650			
			1	Assistant Engineer, 1st grade ..	..	..	450	1	450			
			1	Sub-Engineer, 2nd grade ..	..	..	300	1	300			
			1	Supervisor, 2nd grade ..	..	..	150	1	150			
			4	Overseers, 2nd grade	..	..	320	4	320			
							1,870	..	1,870			
				Office Establishment.								
			1	Clerk, 3rd class, 2nd grade ..	60	80	70	1	70			
			1	Do. 4th do. 1st do. ..	40	50	45	1	45			
			1	Do. 4th do. 2nd do. ..	30	40	35	1	35			
			1	Do. 4th do. 3rd do. ..	20	30	25	1	25			
			1	Do. 4th do. 3rd do. ..	20	30	25	1	25			
			1	Draughtsman, 1st class ..	50	70	60	1	60			
			1	Do. 3rd do. ..	20	30	25	1	25			
			1	Messenger	..	..	7	1	7			
			1	Do.	..	..	6	1	6			
			3	Lascars at Rs. 6 each	..	..	18	3	18			
							316	..	316			
				Sub-Divisional Office Establishment.								
			1	Clerk, 4th class, 3rd grade ..	20	30	25	1	25			
			1	Do. do. ..	20	30	25	1	25			
			1	Do. do. ..	20	30	25	1	25			
			3	Messengers at Rs. 6 each ..	..	..	18	3	18			
							93	..	93			
				Travelling allowances	..	..	287	..	287			
				Contingencies	..	..	100	..	100			
				Total per mensem ..	..	..	2,666	..	2,666			
				Total per annum ..	..	..	31,992	..	31,992			
				Or, say ..	..	..	32,000	..	32,000			
				Grand Total ..	..	..	65,600	..	65,600			

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
In Special Charge of Tank Divisions.

No. 26 E.W.

Note by the Acting Chief Engineer for Irrigation.

The list of establishment submitted by Lieutenant-Colonel Montgomerie is recommended for sanction. The scale is the same as laid down in the note submitted to the Honorable Major Baring, and, while the Superintending Engineer and Executive Engineer, with their office establishment, are intended to be temporary, the Tank division will, it is hoped, be made permanent. Permission has been given to the Superintending Engineer to employ temporarily such office establishment and upper subordinates as he requires to start the work, but I have no proposal to make for filling the appointments of Executive and Assistant Engineers, as I am aware that there is not a man whose services can be spared from the permanent staff of the department. At present I should only ask for the Executive Engineer for the Tank division, as the other Executive Engineer is not yet wanted. If officers are not available I can only suggest a reference being made to the Government of India, who may be able to supply them.

2. The arrangements to be made in starting the Tank divisions have been discussed with Lieutenant-Colonel Montgomerie, and his action thus far is approved. I am not prepared at present to lay down any rule regarding the agency by which the works estimated as necessary for the restoration of irrigation works are to be carried out. It has been fully realized that the work of investigation will occupy the special establishment employed for a very long time, and it was intended originally that the work estimated for should be carried out under this establishment. This need not be the invariable rule, but I think that, while the work of investigation is progressing in a district, the requirements of various groups will have been ascertained, and the establishment being on the spot, an upper subordinate can be detached to superintend the carrying out of the required work, which could be examined by one of the officers of the special establishment. It may be that some of the work could well be handed over to the Executive Engineer of the division, in cases where his subordinates were employed on work near at hand, but it must be remembered that at present Executive Engineers are unable to spend their ordinary allotments, and to throw more work on them would be to delay all. In other cases the Revenue Department might be willing to carry out work, and occasionally it may be that earthwork might be entrusted to the villagers themselves, but in these instances the work would have to be laid out and examined by an officer of the special establishment. I think it is advisable first to work out the requirements of a part of the Vigay basin, and then, with the maps and estimates prepared, for Lieutenant-Colonel Montgomerie to bring forward proposals for carrying out the works. The establishment now recommended for appointment will cost Rs. 65,600, and from the balance of the 1½ lakhs available, estimates for surveying, putting down bench mark stones, clearing tank bunds, emergently lengthening escapes, &c., will have to be sanctioned, so that, if, as I hope, a considerable part of the basin has been worked out before the north-east monsoon, there should be no difficulty in expending on the works the remainder of the grant.

Ootacamund,
11th April 1883.

(Signed) J. O. HASTED, Col., R.E.,
Ag. Chief Engineer for Irrigation.

To the Chief Engineer, Public Works Department.

Order—dated 16th April 1883, No. 1133 W., Public Works.

Ordered that the proposed scale of establishment be forwarded for the sanction of the Government of India. Meanwhile authority is granted for the entertainment of the office establishment required by Colonel Montgomerie.

(Here enter No. 1134 W., dated 16th April 1883.)

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.
" Superintending Engineer, Tank Divisions.
Exd. E. Fernandez.

PUBLIC WORKS DEPARTMENT.

Letter—from

Colonel R. H. SANKEY, C.B., R.E.,
Secretary to the Government of Madras,
Public Works Department,

To

The SECRETARY to the GOVERNMENT of INDIA,
Public Works Department.

Sir,

Adverting to your letter, No. 40 I., dated 26th January 1883, communicating the approval of the Government of India to the financial programme which has been prepared for dealing with the minor irrigation works of the Madras Presidency, I am now directed to forward, for sanction, a statement showing the scale of special establishment required for dealing systematically with the tank systems. The scale is the same as that laid down in the note by the Chief Engineer for Irrigation, copy of which accompanied my letter, No. 3273 W., dated 11th December 1882. The establishment of the Tank division should, in the opinion of this Government, form an addition to the permanent sanctioned scale, while the Superintending Engineer and the Executive Engineer attached to his office, with their establishment of clerks, are intended to be temporary only. The cost will be met from the grants sanctioned in your letter, No. 40 I., dated 26th January 1883, which are to cover expenditure both under Works and Establishment.

2. As regards the officers required to fill appointments as Executive and Assistant Engineers, I am to invite attention to my letter, No. 1132 W., of this day, in which it is explained that this Government are not in a position to provide suitable incumbents, and to request that the Government of India will, if possible, engage the services of officers with the requisite qualifications.

3. Should the Government of India be pleased to sanction a permanent increase in the strength of the establishment to meet the requirements, I am to express a hope that no transfer of a senior officer be made from another province, as looking to the unduly retarded promotion of the officers in this department and for other reasons His Excellency the Governor in Council would venture strongly to deprecate any such measure.

4. I am to add that the Superintending Engineer has been authorized to at once entertain his office establishment to admit of a commencement being made with the inquiry on which he is to be engaged, and to this proceeding I am to request the confirmation of the Government of India.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Government, P.W.D.

Fort St. George,
16th April 1883.

Exd. E. Fernandez.

37

LETTER—from

COLONEL R. H. SANKEY, C.B., R.E.,

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

In continuation of my letters quoted in the margin, in which the Government of India were requested to sanction additional staff for carrying on the Rushikulya project, and for the new Tank division, I am directed to bring to notice that, owing to the paucity of officers of the regular establishment, due for the most part, as already pointed out, to the insufficient provision for absentees, His Excellency the Governor in Council has, with much regret, been compelled to suspend the work in three out of the four Project divisions provided for in the last re-organization scheme in view chiefly to the preparation of projects suitable for famine relief, the investigations being left in an incomplete state. His Excellency in Council sees, I am to say, no immediate prospect of the resumption of this important work unless the relief already asked for, and the necessity for which was brought prominently under the notice of Colonel Brownlow on the occasion of his recent delegation to this presidency, is sanctioned at an early date by the Government of India.

No. 899 W., dated 20th March 1883.
No. 1134 W., dated 16th April „

2. I am accordingly to urge the very pressing need that exists for early action on the proposals which have already been laid before the Government of India.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Government, P.W.D.

FORT ST. GEORGE,
23rd April 1883.

Exd. E. Fernandez.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following papers:—

From G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 19th March 1883, No. 459 G.

With reference to paragraphs 5, 6, 7 and 8 of your letter, No. 3273 W., of the 11th December last, requesting sanction to the appointment of a special Superintending Engineer, for a period of one year, to start the work of tank restoration in the Madras Presidency, and to your telegram of 26th ultimo requesting authority to appoint Colonel Montgomerie to that post in lieu of Colonel Chrystie retired, I am directed to state that the Government of India is unable to authorize any increase, even temporarily, to the number of Superintending Engineers sanctioned for the Madras Presidency, but is pleased to sanction the appointment of a Superintendent of Works within the limits of the present sanctioned staff of Executive Engineers for the work referred to above.

2. The sanction of Her Majesty's Secretary of State to the grant of the usual allowance of Rs. 100 per mensem to the Superintendent of Works for the period of one year will be applied for.

From the same Officer, dated Simla, 4th April 1883, No. 502 G.

In reply to your telegram of 19th March 1883, pointing out the necessity for an additional temporary Superintending Engineer in place of a Superintendent of Works with local allowance of Rs. 100, as sanctioned by the Government of India in its No. 459, dated 19th March 1883, on the ground that the officer selected for the Tanks Scheme is one of the permanent Superintending Engineers, and that a temporary Superintending Engineer must be appointed in his place, I am directed to point out that if the Government of Madras consider it necessary to appoint Colonel Montgomerie to the Tanks Scheme, there is no objection to the local allowance of Rs. 100 sanctioned for the Superintendent of Works being given to the Executive Engineer who may be placed in charge of one of the regular Superintending Engineers' posts as a temporary measure, but I am to say that the Government of India is unable to sanction an additional Superintending Engineer.

Order—dated 19th April 1883, No. 1170 W., Public Works.

Ordered to be recorded.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Exd. A. Aubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated April, 19th.

Recd. *Encl.*

G.O., 19th April 1883, No. 1170 W.

APRIL.

Temporary Superintending Engineer

Refusal of the Government of India to sanction the appointment of a —, recorded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 21st May 1883, No. 741 G.:—

In reply to your letters, Nos. 1134 W. and 1212 W., of 16th and 23rd April 1883, I am directed to communicate sanction to the temporary establishment marginally noted, required for dealing systematically with the tank system for the period of one year, and to state that should it become necessary to retain the establishment in question for a longer period, application should be made for renewal of sanction three months before the expiry of the present sanction.

		Rs.
2 Executive Engineers	...	650 each.
1 Assistant Engineer	...	450
1 Sub-Engineer	...	300

2. As regards the appointment of a Superintending Engineer for this work, I am to remind you that a Superintendent of Works, and not a Superintending Engineer, has already been sanctioned by the Government of India in Public Works Department, No. 459 G., of 19th March 1883, and you were informed in Public Works Department letter, No. 502 G., of 4th April 1883, that the local Government was at liberty to employ one of its Superintending Engineers on this duty if it was considered necessary, filling up his place by a Superintendent of Works; no further orders are therefore required on this point.

3. The rest of the temporary establishment to which sanction is asked can be sanctioned by the Madras Government under Public Works Code, I, 88.

4. As regards appointment of officers to fill these posts, I am to refer you to paragraph 2 of Public Works Department letter, No. 742 G., of 21st May 1883, and to add that the present sanction must not be taken as affecting the question of the strength of the permanent establishment which is being separately considered.

ORDER—dated 16th June 1883, No. 1700 W., Public Works.

Communicated to officers concerned.

2. The Superintending Engineer will at the proper time report on the subject of paragraph 1 of the foregoing letter.

3. The question of the provision of the necessary Engineer Establishment for the project will be dealt with separately.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.

Exd. C. Howarth.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated August, 7th.

Read. *Entd.*

G.O., 7th Aug. 1883, No. 2162 W.

AUGUST.

Superintendent of Works

Letter from the Government of India communicating the sanction of the Secretary of State to the grant of an allowance of Rs. 100 monthly to the —, sanctioned in connection with the Tank Restoration Scheme, recorded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Establishment.

READ—the following papers:—

From Lieutenant-Colonel P. MONTGOMERIE, R.E., Superintending Engineer, Tank Maintenance Scheme, to the Chief Engineer for Irrigation, dated Chepauk, 17th November 1883, No. 518 T.

With reference to paragraph 2 of G.O., No. 1700 W., dated 16th June 1883, I have the honor to request that sanction may be obtained for the retention of the following temporary engineer establishment, viz.:—

	Rs.
2 Executive Engineers	650 each.
1 Assistant Engineer	450
1 Sub-Engineer	300

and that sanction may also be obtained for the entertainment of the following engineer establishment required for No. 2 Tank division:—

	Rs.
1 Executive Engineer	650
1 Assistant Engineer	450
1 Sub-Engineer	300

No. 144 I.

Submitted to Government with a recommendation that the sanction of the Government of India to the temporary establishment required for the Tank divisions next official year may be obtained.

2. As the establishment for the division at present employed is still incomplete, and much remains to be done to place the work on a proper footing, it is suggested that Colonel Montgomerie should continue in charge of the divisions for another year, and that the Government of India should be requested to renew the sanction conveyed in their letter, No. 459 G., dated 19th March 1883, to the appointment of a Superintendent of Works, with the understanding that this appointment will be in lieu of that of one of the two Executive Engineers sanctioned in Government of India letter, No. 741 G., dated 21st May 1883.

CHEPAUK,
4th December 1883.

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 7th January 1884, No. 11 I., Public Works.

The Government of India will be requested to sanction the establishment required for the Tank Maintenance Scheme for the next official year, and to permit the re-appointment of a Superintendent of Works in place of one of the Executive Engineers previously sanctioned.

2. The Superintending Engineer will apply for the sanction of Government to the temporary subordinate and office establishments required for next year.

3. Ordered that the following letter be sent to the Government of India :—

(Here enter No. 12 I., dated 7th January 1884.)

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Encl. E. Fernandez.
Spare Copies

IRRIGATION.
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS

Dated January, 7th.

Encl.

Encl.

G.O., 7th Jan. 1884, No. 11 I.

JANUARY.

Establishment

The Government of India to be requested to sanction the — for the Tank Maintenance Scheme for the next official year.

43

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Establishment.

LETTER—from

COLONEL J. O. HASTED, R.E.,

Acting Joint Secretary to the Government of Madras,

Public Works Department,

Irrigation Branch,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT,

(IRRIGATION.)

SIR,

In forwarding, herewith, a copy of Proceedings of Madras Government, No. 11 I., dated 7th January 1884, I am directed to request that sanction for the temporary establishment required for the Tank Maintenance Scheme may be renewed for another year. The present sanction is for a Superintendent of Works, two Executive Engineers, one Assistant Engineer and one Sub-Engineer, and I am to say that, as the work has not yet fairly been started, the re-appointment of the Superintendent of Works is considered essential, but that it is proposed he should take the place of one of the Executive Engineers, thus reducing the establishment already sanctioned by an Executive Engineer.

2. I am also to request that a fresh sanction may be accorded to the temporary establishment, noted in the margin, required for the No. 2 Tank division, which will be formed from the 1st March next in accordance with the scheme approved in your letter, No. 40 I., dated 26th January 1883.

				Rs.
1	Executive Engineer	...	...	650
1	Assistant Engineer	...	...	450
1	Sub-Engineer	...	...	300

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

FORT ST. GEORGE,
7th January 1884.

Exd. E. Fernandez.
Spare Copies

IRRIGATION.
ESTABLISHMENT.

Govt. of [1884] Madras.

PUBLIC WORKS.

Dated January, 7th.

Encl

Recd.

7th Jan. 1884, No. 12 I.

JANUARY.

Establishment

Requesting to renew for another year the sanction for the — required for the Tank Maintenance Scheme.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following letter from G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 11th February 1884, No. 195 G. :—

I am directed to acknowledge the receipt of your No. 12 I., dated 7th January 1884, applying for renewal of sanction to the establishment noted in the margin for the Tank Maintenance Scheme, and asking for further sanction to three temporary engineers on the same rate of pay for a second division.

	Rs.
Local allowance for Superintendent of Works	100
1 Temporary Engineer	650
1 Do.	450
1 Sub-Engineer	300

2. I am to remind you that it was stated in paragraph 5 of your No. 3273 W., dated 11th December 1882, that the additional Superintending Engineer, who was ultimately provided for the scheme by means of the local allowance of 100 rupees given to an Executive Engineer acting as Superintendent of Works, would be required probably for one year only. Accordingly the allowance was sanctioned by the Government of India, and confirmed by the Secretary of State, for one year. Before extending this sanction it is necessary that valid reasons for the extension should be given, and I am to request that a statement may be furnished showing the work already done and remaining to be done by Colonel Montgomerie, the officer who is in charge of the scheme.

3. In regard to the establishment for the first and second Tanks divisions, I am to say that the Government of India will willingly accord sanction to the entertainment of temporary engineers, within the limit mentioned by you, on the Madras Government submitting the names of competent men; but I am to point out that hitherto no such appointments, requiring the sanction of the Government of India, have been proposed for the Tanks, unless Mr. Wallnut, whose appointment was sanctioned for the Barur tank, is considered to belong to the Tanks division, and it is observed from the last distribution return that the division has been manned by members of the permanent establishment and temporary men for whose appointment the sanction of the Madras Government sufficed. Under these circumstances, the submission of the names of suitable engineers will be awaited, who may be utilised, after sanction, either in the Tanks division itself, or to set permanent officers free for employment in that division.

4. Finally, I am to state that the Government of India desires to impress upon the Government of Madras its preference to the actual improvement of the tanks of even one district, to the mere preparation of schemes in a large number of districts; and I am to request that this may be borne in mind both with regard to the extension of the appointment of Superintendent of Works and the plan of operations for the Tank scheme.

Order—dated 21st February 1884, No. 472 W., Public Works.

Communicated to the Chief Engineer for Irrigation for report on the subject of paragraph 2 of the letter from the Government of India, and for information and guidance as regards paragraph 4.

2. The Government of India will be addressed, with reference to paragraph 3, on receipt of the report now called for.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation
Superintending Engineer, Tank Maintenance Scheme

Esd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of (1884) Madras.

PUBLIC WORKS.

Dated February, 21st.

Encl.

Read.

G.O., 21st Feb. 1884, No. 472 W.

FEBRUARY.

Establishment for the Tank Maintenance Scheme

Remarks of the Government of India on application for renewal of sanction to the —, and asking for three temporary engineers for a second division, communicated to the Chief Engineer for Irrigation for report.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following paper :—

No. 65 I.

Note by the Acting Chief Engineer for Irrigation.

The Tank divisions were started with the object of grouping all the scattered works of irrigation throughout the Presidency, investigating the circumstances of each individual work, estimating for the work required to bring each up to the standard of efficiency, and for providing it with proper means of discharging surplus water and with efficient irrigation sluices, and of carrying out the work estimated for. The scheme, as sanctioned by the Government of India, provided for one division being employed the first year, and an additional one every subsequent year until six divisions were working, one in each circle.

2. The work was started in this official year under Lieutenant-Colonel Montgomerie, one division being appointed to work in the Madura district where it was believed the irrigation works were in greater need of improvement than elsewhere. There was of course a great deal of preliminary work to be done. The system on which the work was to be taken up, the forms to be adopted, the maps, plans, and sections to be prepared, were all discussed fully with Colonel Montgomerie, and some delay naturally occurred in getting work started in the country.

3. The work hitherto done will best be understood from the accompanying map, which is one of the Revenue Survey maps on which the divisions of the primary maps have been laid down. It was intended to make the greatest possible use of the Revenue Survey maps, and even in places where these maps have not yet been published, the Revenue Survey Department have obligingly placed at our disposal such maps as have been prepared. On these maps the main drainage basins are first laid down, and then divided into minor basins as appears most convenient. The outdoor parties then verify the basins and take up each work, obtaining from the Revenue Department full revenue details, working out the hydraulic details, and ascertaining the requirements of each ; finally preparing sections of each tank bank and channel, and plans of existing masonry works, and estimating for the work necessary to put each tank and channel into good order. These estimates are then sanctioned and sent out for execution under the Tank division ; it may be a question how the works can best be carried out, but the principle has been adopted that each divisional office shall work independently ; a portion of the established Public Works division is thus handed over to the Tank division which will, on completion of the works, give back the charge again. Complete estimates for one minor basin only have yet been prepared, and estimates to the amount of about Rs. 30,000, sanctioned ; and Colonel Montgomerie has submitted a full report with the plans and estimates of this basin, explaining the method in which the work has been started, and discussing the means by which the work may be most economically carried out, which will shortly be laid before Government.

4. Madura having been selected as the district in which the first Tank division should work, it was decided to locate the second division in the Madras district, where the tanks are very numerous, and the circumstances of the irrigation are somewhat different from those in Madura. The map shows clearly what work has been done,

although only one division has yet been sanctioned; the maps have been got in readiness for the second division, and some of the surveyors whose work was completed in Madura are now engaged under an officer in grouping and investigating in Madras, in fact starting the work, so that when the additional establishment is sanctioned, there may be no delay in preparatory work.

5. The two divisions will, during the year, work out the shaded portions of the maps, and it is hoped complete the execution of works over a great portion of the area; and grouping and investigation will be pushed on northward from Madura and southward from Madras.

6. The present idea is for the third division, which will be appointed in the commencement of 1885-86, to start work in Kurnool and work through the Ceded Districts, and the maps of this portion will be prepared before the end of the year, and if possible an officer with some surveyors detached to commence operations, so that the work may be taken up without any delay.

7. The officers engaged being new to the work, and it being very desirable that all should work on the same system, it is considered necessary that the services of the Superintending Engineer should be retained for another year. Whatever is decided should be done eventually, the work should be in full swing before any change is made.

Chepàk,
22nd March 1884.

(Signed) J. O. HASTED, *Colonel, R.E.,*
Acting Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Endorsement on the above.

Forwarded to the Secretary to Government, Public Works Department, with reference to G.O., No. 472 W., dated 21st February 1884.

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Order—dated 31st March 1884, No. 861 W., Public Works.

Ordered that the report submitted by the Chief Engineer for Irrigation be forwarded to the Government of India, and that sanction be requested to the renewal, for a further period of one year, of the sanction to a local allowance of Rs. 100 to an Executive Engineer acting as Superintendent of Works, who takes the place of the Superintending Engineer employed on the Tank Maintenance Scheme.

(Here enter No. 862 W., dated 31st March 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Revenue Department.

Exd. A. Aubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of 1884 Madras.

PUBLIC WORKS.

Dated March, 31st.

Rec'd.

Encl.

G.O., 31st March 1884, No. 861 W.

MARCH.

Tank Maintenance Scheme

Regarding the necessity for the continuance of Colonel Montgomerie's services in connection with the —, and for the renewal of the sanction of a local allowance to the Executive Engineer holding charge of a circle in his place.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Letter—from

Colonel J. SHAW-STEWART, R.E.,

Secretary to the Government of Madras,

Public Works Department.

To

The SECRETARY to the GOVERNMENT of INDIA,

Public Works Department,

Sir,

I am directed to acknowledge the receipt of your letter, No. 195 G., dated 11th February 1884, and, with reference to paragraph 2, to forward, for the information of the Government of India, the accompanying report by the Chief Engineer for Irrigation, showing the work already done and remaining to be done by Colonel Montgomerie in connection with the Tank Maintenance Scheme on which he is employed.

2. His Excellency the Governor in Council trusts that, on consideration of Colonel Hasted's report, the Government of India will see the necessity for the continuance, for another year at least, of Colonel Montgomerie's services on his special work, and will accordingly support the proposal of the Madras Government to extend the existing sanction of a local allowance of Rs. 100 per mensem to the Executive Engineer who replaces Colonel Montgomerie in the charge of a Superintending Engineer's circle.

3. I am to add that the Government of India will be separately addressed in regard to the entertainment of temporary Engineers for the Tank divisions.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Fort St. George,
31st March 1884.

Exd. A. Aubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of 1884 Madras.

PUBLIC WORKS.

Dated March, 31st.

Encl.

Read.

G.O., 31st March 1884, No. 862 W.

MARCH.

Tank Maintenance Scheme

Regarding the necessity for the continuance of Colonel Montgomerie's services in connection with the — and for the renewal of the sanction of a local allowance to the Executive Engineer holding charge of a [illegible] his place.

49

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following papers :—

From A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 30th April 1884, No. 512 G.

Referring to your letter, No. 862 W., dated 31st March 1884, regarding what has already been done and remains to be done by Colonel Montgomerie in connection with the Tank Maintenance Scheme on which he is employed, I am directed to observe that in the 3rd paragraph of Colonel Hasted's note, dated 22nd March 1884, submitted therewith, it is stated that "on these maps the main drainage basins are first laid down and then divided into minor basins as appears most convenient. The out-door parties then verify the basins and take up each work, obtaining from the Revenue Department full revenue details, working out the hydraulic details and ascertaining the requirements of each." With reference to this description of the work done I am to inquire whether it applies to the whole of the Madura district.

2. I am also to request that it may be stated what has been the actual strength of the establishment employed directly under the orders of Colonel Montgomerie.

OFFICIAL MEMORANDUM.

With reference to endorsement, No. 108 E., dated 8th instant, on letter from the Government of India, the undersigned has the honor to report that the Vigai river basin, in the Madura district, has been sub-divided, and the Upper Vigai basin has been grouped, all details worked out, and the actual work of restoration put in hand ; the rest of the Madura district has not yet been taken up.

2. Enclosed is a statement furnished by the Examiner, Public Works Accounts, showing the strength of the establishment employed under Colonel Montgomerie during last official year.

OOTACAMUND,
17th May 1884.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer for Irrigation.

To the Secretary to Government, Public Works Department.

Office Note from the Examiner, Public Works Accounts, dated 14th May 1884, No. 105.

Herewith the required statement showing the actual strength of the establishment employed directly under the orders of the Superintending Engineer, Tank Maintenance Scheme, during the past year 1883-84.

Statement showing the actual strength of the Establishment employed directly under the orders of the Superintending Engineer during the year 1883-84.

Months.	Office Establishment.																																Cost.			
	Engineer Establishment.			Upper Subordinate Establishment.				Pay.	Drafting.																								Salary.	Travelling allowance.	Contingencies.	Total cost.
	Superintending Engineer.	Executive Engineer.	Assistant Engineer.	Sub-Engineer.	Supervisors.	Overseers.	Surveyors.	Lascars.	II Class, 1st Grade, 160—200.	II Class, 2nd Grade, 120—160.	II Class, 3rd Grade, 100—120.	III Class, 1st Grade, 80—100.	III Class, 2nd Grade, 60—80.	IV Class, 1st Grade, 40—60.	IV Class, 2nd Grade, 30—40.	IV Class, 3rd Grade, 20—30.	V Class, 1st Grade, 15—20.	V Class, 2nd Grade, 10—15.	1st Class, 25—30.	2nd Class, 25—20.	3rd Class, 20—20.	Special, 80—100.	Surveyors.	Maistries.	Accountants, 5th Grade.										
March 1883	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
April "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
May "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
June "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
July "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
August "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
September "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
October "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
November "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
December "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
January 1884	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007
February "	1	4	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,797	1,797	105	2,007

GENERAL.
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated May, 23rd.

Recd. *Encl.*

G.O., 23rd May 1884, No. 1306 W.

MAY.

Tank Maintenance Scheme

Furnishing information with reference to work done in the Madura district in connection with the — and as to the actual strength of the establishment employed directly under orders of the Superintending Engineer in charge of the scheme.

Temporary Divisions.	Sanctioned Establishment.		Name of officer sanctioned against appointments in column 2.	Salary actually drawn.	Present posting.
1	2		3	4	5
		Rs.		Rs.	*Divisions.*
Godávari, Central.	1 Executive Engineer	.. 800	Mr. H. Wilks	800	Negapatam.
	1 Assistant do.	.. 350	T. T. Ragavachariyar, B.C.E. ..	350	Vizagapatam.
Rushikulya ..	1 Executive do.	.. 650	W. Venkatareddi	450	Rushikulya.
	1 Assistant do.	.. 450	Mr. J. D. Legge	450	Godávari, East.
Wards' Estate, 1 Circle	1 Do. do.	.. 350	G. Venkatarau Puntulu	350	Do. West.
Gudivada ..	1 Do. do.	.. 450	S. Venkataramayya Puntulu, B.C.E.	350	Do. East.
Barur	1 Executive do.	.. 550	T. Subrahmanya Aiyar, B.A., B.C.E.	350	Kistna, East.
Canvery and Vennár Regulators.	1 Assistant do.	.. 450	Mr. W. A. Mathews, B.C.E. ..	350	Do. West.
Wards' Estate, VI Circle.	1 Executive do.	.. 550	Mr. J. Cormac	450	West Coast.
Tank No. I ..	1 Do. do.	.. 550	Mr. H. C. Berlie	450	South Arcot.
Tank No. II ..	1 Do. do.	.. 550	Mr. W. Harington	550	Ramnad.
Tank No. III ..	1 Do. do.	.. 650	Mr. P. Mahony	350	Tank I.
Tank No. IV ..	1 Assistant do.	.. 450	Mr. C. Lowry	350	Madura.
	1 Executive do.	.. 650	Mr. T. W. Scott	550	Tank II.
	1 Assistant do.	.. 450	R. Vaidyanatha Aiyar, B.C.E. ..	350	Chingleput.
	1 Executive do.	.. 650	Mr. E. F. Handcock	450	Tank III.
	1 Assistant do.	.. 450	Mr. H. Frankland	350	Kurnool.
	1 Executive do.	.. 550	S. Krishnama Chariyar, B.C.E. ..	350	Tanjore.
	1 Assistant do.	.. 450	Mr. L. P. DeCloscts	300	Ganjam.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Letter—from

Colonel J. SHAW-STEWART, R.E.,

Secretary to the Government of Madras,

Public Works Department,

To

The SECRETARY to the GOVERNMENT of INDIA,

Public Works Department.

Sir,

I am directed to acknowledge the receipt of your letter, No. 703 G., dated 1st May 1886, on the subject of the employment of temporary engineers in the Madras Public Works Department, and, in reply, to submit the following observations for the consideration of the Government of India.

2. After repeated representations from this Government as to the absolute necessity that existed for increasing the strength of the engineering staff of this presidency, the Government of India, in their letters, Nos. 983 G., dated 16th July 1883, and 1254 G., dated 20th September 1883, undertook to gradually increase the permanent Madras establishment, and eventually to provide nine engineers for the maintenance of irrigation tanks. In your letter, No. 265 G., dated 16th February 1883, transferring certain officers from the India list to that of Madras, the Government of India deprecated the proposal to obtain extra temporary engineers from England; and suggested that, if more men were wanted, it should first be ascertained whether suitable persons could not be obtained locally for appointment as temporary engineers. In paragraph 5 of this office letter, No. 697 W., dated 3rd March 1883, it was pointed out that there were on our subordinate lists many men of education and experience whom this Government would not hesitate to employ temporarily as Assistant Engineers, and, apparently acting on this suggestion, the Government of India issued their resolution, No. 1146 G., dated 23rd August 1883, in which the policy of giving such posts to experienced upper subordinates of the permanent establishment, in preference to outsiders, was advocated. Subsequently, these views were reiterated in your letter, No. 37 G., dated 8th January 1884, in which it was declared that the large impetus which had been given to the operations of the Public Works Department rendered the prompt enlargement of the staff of engineers a matter of obvious and paramount necessity, and, as the readiest means of obtaining such enlargement, it was suggested that posts as temporary engineers should be given to properly qualified upper subordinates. It was then laid down that it would be better to utilise these subordinates on the duties of engineers on works to which they had been accustomed, instead of transferring them to a new sphere of duties; the object being secured by appointing them temporary engineers to carry on duties ordinarily performed by engineers of the permanent establishment, the latter thus becoming available for transfer to new works.

3. I am to say that the policy thus suggested by the Government of India has since been steadily pursued by this Government, with great advantage to the public service. Qualified upper subordinates, with the sanction of the Government of India,

have been from time to time appointed temporary engineers; and, as a rule, they have been posted to duties ordinarily performed by Assistant Engineers of the regular establishment; while the engineer officers of the permanent staff thus set free have been employed in the execution or investigation of new projects.

4. To show that this Government have all along acted under the authority of the Government of India, I am directed to invite attention to paragraph 3 of your letter, No. 195 G., dated 11th February 1884, in which it was stated that the services of the temporary engineers sanctioned for the Tank divisions might be utilised either in those divisions themselves, or to set permanent officers free for employment in those divisions. Also to my letter, No. 917 W., dated 3rd April 1884, from which the following extract is given for ready reference:—

"His Excellency the Governor in Council does not understand that it is the intention of the Government of India to insist on the employment of those officers in any particular division; but that the work to be done shall be intrusted to officers most competent to carry it on, whether those officers are on the temporary or permanent establishment. Any other arrangement would, His Excellency the Governor in Council is convinced, be productive of the greatest inconvenience; especially when, as at present, it is not always possible to obtain temporary engineers with the special qualifications requisite for elaborating important projects.

"The temporary divisions have thus, in a great measure, been officered by selections from the permanent establishment, the temporary engineers specially sanctioned replacing them in permanent divisions. The allocation of temporary engineers in the accompanying statement is made with a view of exhibiting what may be regarded as the sanctioned, as compared with the existing, arrangements; column 5 showing the division in which each officer is actually employed.

"Should these arrangements be formally approved, a basis for future working will have been established sufficient to satisfy the requirement of audit; while the Government will be free to officer the temporary divisions by those best qualified for the duties to be performed in each case."

5. These proposals were approved by the Government of India, *vide* your telegram of 2nd May 1884, and they have since guided the Government of Madras in allocating the duties to be performed by temporary engineers.

6. It would now appear from your letter, No. 703 G., dated 1st May 1886, that the Government of India desire to reverse the arrangements which were made with their approval, and which have been found to work most satisfactorily; and that temporary engineers must hereafter be employed solely on the special work for which their appointments are sanctioned. If such be the intentions of the Government of India, I am directed to state that it will be impossible to abide by them without detriment to the public service, and I am earnestly to request that the Government of India may be moved to make no change in the procedure recommended in my letter, No. 917 W., dated 3rd April 1884, and approved in your telegram of 2nd May 1884.

7. With advertence to paragraph 3 of your letter under reply, I am to state that this Government were not aware that a half-yearly statement of temporary engineers was required for submission to the Secretary of State, through the Government of India in the Finance Department; but I am to observe that complete statements of the temporary engineers employed in Madras have from time to time been forwarded to the Government of India with applications for sanction to new appointments, and that hitherto no exception has been taken to those statements. A statement is now submitted with this letter, giving the names of all temporary engineers in this presidency whose employment has been sanctioned by the Government of India, or for whose employment sanction has been requested. The temporary divisions or projects against which their names nominally stand, and the work on which they are now actually employed, are shown; and I am to express a hope that this will meet the requirements of paragraph 6 of your letter under reply. In future a similar statement will be submitted at the end of each half-year.

8. With respect to your paragraphs 4 and 5, I am desired to say that the rate of pay recommended in each case is invariably fixed after full consideration of the qualifications of the person nominated for a temporary engineership. In future no such appointments will be made without the previous sanction of the Government of India. With respect to transfers, I am to state that, if it be found necessary to transfer a temporary officer's name from the temporary division or project for which his employment was nominally sanctioned, the previous sanction of the Government of India to the measure will be applied for; but, as already stated, this Government consider that their action should remain unfettered so far as regards the actual employment of the temporary engineer.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Fort St. George,
31st May 1886.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Sobt. of {1886} Madras.

PUBLIC WORKS.

Dated May, 31st.

Recd.

31st May 1886, No. 1368 W.

MAY.

Temporary Engineers

Regarding the employment of — in the Madras Public Works Department.

SUPERINTENDING ENGINEER'S OFFICE,
5TH CIRCLE, MADRAS,
Chepauk, 5th March 1886.

No. 4944

From

THE SUPERINTENDING ENGINEER,
5TH CIRCLE.

To

THE Chief Engineer
P.W.D.

SIR,

Enclosures.

I have the honor to recommend that, under Code para 192 cl Clause III (S.O. No 37 1883) sanction may be given to the retention of the Services of K. Vaidyanatha Aiyar B.A.C.E. as Temporary Assistant Engineer on Rs 350 per mensem for a further period of 12 months from the 2nd May 1886. The previous sanction given in G.O. No 1345 W dated 9th June 1885, will expire by the 1st May 1886.

I have the honor to be
Sir
Your most Obed.t Serv.t

Lewis Pender
Lt. R.E.
Supt. Engr. 5th Circle

From

The Superintending Engineer,

5th Circle,

To

The Chief Engineer,
P.W.D.

Dated 5th March 1886.
Recd.

Enclosures 1

No. 4944

R. Vydianatha Aiyar
B.E.C— Recommends the
retention of the services of—
as temporary Asst Engineer
for a further period of 12 months.

P.W. Department

Proceedings of the Madras Government

Under date the

Read the following:—

Letter from the S.E. V
Circle No. 4944 of 5th March 86

Ordered that
the Government of India
be addressed.

To

The Secretary to the
Government of India
P.W. Dept.

Sir,

With reference to
your letter No. 2710 G dy
20th May 1885. I am directed
-ed to state that
the sanctions to the

S.E. V circle
Ex: P.W. Secretd
Dated 9-3-86.

appointment of K.
Vaidyanatha Aiyar, B.C.E.,
as temporary Engineer
on Rs 350 per mensem,
will expire on the 1st
May 1886, and to re-
-quest that the
Government of India
may be moved to
accord renewed sanc-
-tion to his employ-
-ment for a further
period of 12 months.

L
6/3/86

W
7.3.86

Dated 8-3-86.

There are three
temporary Sur Engrs
Bdr in charge of
divisions
Mr Pyne
C.M. Smith
S. Subbaraja Chariar
The two former have
lately been posted
to Tanjore & Bdr is most
advisable to move
them as soon.
The latter cannot be
spared in charge of Mdu
Canal Sur as Mr
T.W. Pettit should be
his Asst Engr.
Col. Pennycuick reports
that Mr Pettit is
fully competent to

W
8/3

13/4/3.

appointment of R

All communications should be addressed to the Secretary.

No. 1489 G.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

GENERAL.

To

The Secretary to the Government of Madras
Public Works Department

Fort William, 19th March 1886

Sir,

In reply to your letter dated 8th instant, I am directed to communicate the sanction of the Government of India to the continued employment of R Vaidyanatha Aiyar, Sub Engineer 3rd grade Sub pro tem, as a temporary Engineer on a salary of Rupees 350 per mensem, for a further period not exceeding twelve months, with effect from the 5 May 1886.

2 I am to request that the work against which this sanction is to be noted may be reported at an early date.

I have the honor to be,
Sir
your most obedt servant

W B Simpson
Under Secy to the Govt of

To.

appointment A. A. G.

Feb 2295

Hdqrs 623-4w. 8.3.86.
1345W. 9.6.86.

H
30:3

Genl
Sickel

No 849 Way 29. March 86.

Communicated to
the Supty: Engineer
V Circle and to the
Examiner Fy. accounts,
in continuation of G.O.
No 623, Dy 8 March
1886.

Para. 2 of the letter
will be separately dis-
posed of.

To A.G. I Circle
To Ex: Fy accts.

Sd/ illegible
29/3/86

395

Govt. of Madras. 1886.

PUBLIC WORKS.

5031/85

Date

Ent.

Rec.

G.O. 29th March 1886, No. 869.

R. Vaidyanatha Aiyar
Exn Engineer

Sanction to the
Govt of India to the
Contd employt of
— as a temp. Engineer
for a further period
not exceeding twelve
months, Commd to the
Chief Civil Exn
Engr Ootr

5031/3

No. 337 D.

PUBLIC WORKS DEPARTMENT.

To

The Secy to Govt

Ootacamund, July 5th 188 .

No. 1369 W dated 31st May 1886.

Reporting submission
of an abstract of expenditure
incurred upto the end
of 1885-86 against the
special grant to the
Tank Restoration Fund
under certain heads

THE undersigned has the honor to invite attention to the { Order / ~~Memo.~~ } noted on the margin, and to request that the reply may be expedited.

(Sd) [illegible]
Col., R.E.,

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

~~Under date the~~ 60

Read the following

From N. Pierre de Closets Esqre: C.E. &c
23rd April 1853

Order thereon No 1327 Dated 8th May 53

Mr L. P. de closets is appointed a Temporary Assistant Engineer on probation with a Commencing Salary of Rs 200/ per mensem. Mr de Closets will be posted to the Tank Division, and will report himself to the Superintending Engineer, Colonel Montgomerie CB at Madras.

2. The appointment carries with it no claim to pension, or to any ~~Assistee~~ allowances beyond those conditionally given to temporary employes under Sections 129 (1) and 136 (2) of the Civil Leave Code, 5th Edition.

3. The appointment will hold good for a period not exceeding twelve months. If required for a further period, renewed sanction must be applied for three months before

before the expiry of the term for which sanction has been given.

4. This sanction has been registered as Provincial No 4 1883/84 and classified as Establishment Temporary.

[True Extract]

C. Hume. Major R.E.
Under Secretary to Govt. P.W.D.

CHIEF ENGINEER FOR IRRIG.

R3628

27/4/83

To
Mr L. B. de Lacoste
Supt. Engr. Tank Div.
Chief Engr. for Irrign.
Examined. P.W. Acct.

E&S

[illegible] of Corps Composed
[illegible] steady and reliable
[illegible] strong constitutions and
accustomed to the Inclemencies
I have no doubt that
if his services were accepted
on probation they would
be found useful.

Our Family since your
Creation is one of Engineers
[illegible] aptitude for the profession
of Military and I have
a hope that you may
[illegible] the favourable terms
by you.

I have the honor
to be Sir
Your Obedient
Obt Servt
[illegible]
Lieutenant

Paymaster Rl
Madras

Forwarded that Major Ryrie 28th Regt. His Excellent
Head Qrs. to wish should appointment as a Temporary
Asstt Engineer on probation. Should required Vacancies
he might be posted to the Tank Division.

Adjt Genl Col Stf.
actg Chief Engineer & Tank

27th April 1853.

Q. would I think be desirable to
give this youth a trial in the
manner Suggested by Colonel Cullen
Like an Officer can be formed
as to what he is worth it will
not be necessary to offer more than
a two probationary pay Lieuts 150
& 200 Rs per mensem

Approved
Madras 28/4/1853

No 1327 W Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT

Under date the 8th May/53.

Read the following

From A. Sierres de Closet Esqre CE (dated 25th April 1853)

Mr L. S. de Closet.

is appointed a Temporary Assistant Engineer on probation with a commencing salary of Rs 200-/ per mensem - Mr de Closet will be posted to the South Division, and will report himself to the Supdg Engr, Colonel Montgomerie RE, at Madras.

2. The appointment carries with it no claim to pension,

4th pr E dated 25th May 1853

E. I. .. .. ..

H.E. the Governor to whom I have shown this also approves, but I should like to hear his opinion as to the pay to be granted considering the charge of the Assistant & the fact that the Gentn will be first to pass examines at first starting Islands Engineering was then 200 Rs to the Subaltern raised could he prove himself deserving & trustworthy Assistant ?

1/5/53

Ltt 3g-4
Cas 2014 H 30/4

D.U.C. No 20

Ltr to C & Secretary

Rec'd 30/4/53

Entered for Copying

28/4/53

Mr.

3d proposal would apply very well 250 Rs I would give 200 Rs, rising in probation. the two had some Engineering training & knows the language, to be applied to himself

Ltr
2/5/53

Seems

Orders of Council

Ltt

4/5/53

5/6 Ltr. 22/6

or to any absentee allowances beyond those conditionally given to temporary employés under Sections 87 (1) and 136 (2) of the Civil Leave Code, 5th Edition.

3. The appointment will hold good for a period not Exceeding twelve months. If required for a further period, renewed sanction must be applied for three months before the Expiry of the term for which sanction has been given.

4. This sanction has been registered as Sanction No. 1327 W of 1883/84 and classified as Establishment Temporary.

Mr. L. P. de Closets Supply Engr. Tank Division
Chief Engr. for Irrigation
Examiner P.W. Accts.

Endd. to Secy. P.W. Dept.

A No 84 W 11.1.84
" 621 W 11.3.84
Despatch No 13 622 W 11.3.84
A No 1438 W 9.6.84
" 1516 W 16.6.84
560 C 8.3.84
B No 845 W 15.3.84
628 C 15.3.84
A and No 1108 W 12.4.84
909 C 7.5.84
B No 1327 W 8.5.84
910 C 11.5.84
A No 1455 W 19.5.84
B No 1517 W 30.5.84
1304 C 7.6.84.

In G.O. No. 1327 W. dated 8th. May 1883.

KEEP WITH Genl. No.

dated 18

A.O. C No. 435

[Exr. Wks. Form No. 111.]

GOVT. OF MADRAS. 1883 P. W. DEPT.

EXAMINER, P. W. ACCOUNTS.

Madras, 23rd May 1883

OFFICE NOTE No. 202.

To

W.

It is presumed that the appointment of Mr. L. P. deClosets as a temporary Asst. Engineer on a salary of Rs. 200 per mensem, is against the provision for an Asst. Engineer 1st. Grade applied for on account of the Tank Project Scheme, and if so, please state whether the previous sanction of the Government of India to the appointment has been obtained in accordance with the ruling conveyed in para 5 rule II of Government of India P.W. Department Resolution No. 528-43 C. dated 6th April 1882 communicated with G.O. No. 1438 W. dated 9th. June 1882.

2. Please also state whether the conditions prescribed by the Government of India Resolution quoted, have been fulfilled in every respect as regards the appointment of Mr Pogson as

temporary Asst. Engineer on Rs. 200
per mensem, intimated to this office
in Chief Engineer's (P.W. Department)
memo No. 940 C. dated 11th. May 1883.

3. The necessary appropriation
of funds to meet the pay of the
two temporary Asst. Engineers is
also awaited.

C.

23/5

R.P. 1883-93-23

No 1239 P.W.C.W. 640

GOVT. OF MADRAS. } 188 . { P.W. DEPT.

SECRETARY.

CHEPAUK, 29th May 1883.

Rec'd 1/6/83

OFFICE NOTE.

To C.

With reference to this matter
& the appointment of Mr. de Closets
the sanction of Govt does not
appear to me to be necessary.
It seems to me that reference
is only required when appointments
(temporary) on salaries over Rs 250
are proposed. Please look into
the case again & let me know
your views. —

C.
24/5.

No. 237 dt. 1st June 1883.

To W.

The appointment of Mr. deClosets
although on a commencing pay of
Rs. 200 per mensem is apparently
against the provision for an Asst.
Engineer 1st. Grade applied for on
account of the Tank Project Scheme,
and therefore his appointment falls
under para 192 A. of the P.W. Code.

C.

31/5

R. No. 238 of 7th June/83

Madras
7th June/83

No. 13048

To C

India has sanctioned a temporary Asst. Engineer on Rs. 450. we have appointed Mr. Declosets an Asst. Engr. for the Tank scheme on Rs. 200 on probation to start - His salary to be increased afterwards if he gives satisfaction - It does not seem necessary to report this or to ask for sanction to the appointment

[illegible]

716

[illegible]

R. No. 281 of 11th June/83

Rec'd 11/6/83

TO.

W.

AS POINTED OUT IN MY OFFICE NOTE NO 202 DATED 26RD MAY 1883 THIS GOVERNMENT COULD ONLY APPOINT MR DECLOSETS IF GOVERNMENT OF INDIA HAD NO MEN TO SPARE, AND HAD GIVEN THIS GOVERNMENT THE AUTHORITY TO APPOINT MEN LOCALLY.

2. MR DECLOSETS APPOINTMENT IS AGAINST THE SANCTION OF AN ASSISTANT ENGINEER ON RS 450-0-0 FOR THE TANK SCHEME AND HIS APPOINTMENT COMES UNDER PARA 192 A, OF THE PUBLIC WORKS CODE.

C.

[illegible]

[illegible]

No 1758W Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 22d June/83

Read the following

Office note from the Examiner P. W. accounts } No 202 a/23d May 1883

Do — Do — Do — Do — No 123 a/29th —

Do from — Do — Do — No 237 a/1st June/83

Do — Do — Do — Do — No 1301, 2a/7th June/83

Do — from — Do — Do — No 281 a/11th June/83

Ordered that the Government of India be addressed.

A.E. No 1759W dy 22d June/83

To the Secy to Govt of India P. W. D.

Sir,

In continuation of my letter No 845W dated 15th March 1883 I am directed

To the Secy P.W.D.

accepts 23/6/83.

directed to report that
against the sanction
accorded in your letter
No. 741 G dated 2nd May
1882 to the temporary
establishment required
for the Tank divisions
in this Presidency His
Excellency the Governor
in Council has required
Mr. L. P. deRozets a
Assistant Engineer
on a salary of Rs 200.
per mensem, and to request
the confirmation of the
Government of India
to this appointment,
which will take rank
respects subject to the
conditions of S.O. No 168
of 6th. June 1882.

&c.
C. W. 19074
18-7-83

C.S.
14/8.

Ref. Draft

B Nos 1758 1759 dtd 22-6-

Rec'd 18/8/83

Rec'd 18/8/83

No 4351/1600

No 1304 dtd 7th June/83

C.

India has sanctioned a temporary Assist. Engineer on Rs. 450. in lieu of Mr. deRozets an Assist Engr. for the Tank scheme on Rs. 200 on probation as to speak. His salary to commence after he gives satisfactory proofs of his qualifications. It does not seem necessary to report this or to ask for sanction to the appointment.

C.S.
6/6

another
note copy
for office
7/6

Dft 4/6

Despd 23/8/83 Simla

G.O. 1327 W d/8-5-83
" 1517 W d/30-5-83
" 1455 W d/19-5-83
No 960 C d/11-5-83
" 1096 C d/7-8-83
G.O. 1165 W d/13-4-83
No 625 C d/15-3-83
G.O. 545 W d/20-
No 560 C d/8-3-83
G.O. 1510 W d/16-6-82
" 1455 W d/9-6-82
Ref. 15. W d/11-8-82
632
G.O. 621 W d/11-do
" 86 W d/31-1-82

1878 Pitt 18/8. 5288 1814 67

4881.

To Secy 68

The C. etile consider that the de Closets appt. should be confirmed by the Govt. of India —

It is evident that W & I in fixing his pay at Rs 200, considered that a reference to India would not be necessary.

It would be as well perhaps to submit the whole correspondence to W for orders?

Cy
11/6.

S.C.C.O.

Draft letter to India reporting that [illegible] the Secretary of State [illegible] appointment of Asst Engrs on salary of Rs 250 per mensem to [illegible] to be appointed in India to [illegible] Letter to India to [illegible] appointment in future of that amount for Rs 250.

CL
13/6

+ Govt of India letter No 741 dy 21-5-83, rec'd 5/8/83.

4600

Para 192A distinctly provides for "the employment of temporary Officers on salaries of pay higher than Rs 250 per mensem" Nothing is said about the Grade of the temporary Officers, & the deputation has not been appointed to the 7th Grade of Asst Engrs. His appt. only holds good for 12 months & if he be kept re-engaged on higher pay, it will apparently be time enough then to call the previous sanction of the Govt of India.

CL
2/6

presented in the

4357

Ord.

Appin note from the C, No 202 of 23.5.93.

Submitted for orders with reference to the remarks relative to the appt of the deClosets —

The previous sanction of the Govt of India was not asked for in this case, because apparently it was not considered necessary, the pay of the appt. being less than Rs 250 per mensem — vide the Govt of India Resolution printed with P. G. No 1438 A dy 9th June 1882.

The conditions premised in the

S.A.W.

Has not "India" much to write about in the Public interest attaching to the appointment of Surgeon ? One of their own letters this subject of the letter.

C.C. 7/6

Dy W

The G. of I. letter has since been received to your — for it the appt. of an Asst. Surgn 1st grade on Rs 450 per mensem during is sanctioned other appts. among

Perhaps it would be as well to report to G. of I. that against this sanction Dr deCloseets has been appointed on Rs 200 per mensem ?

C.C.
7/6.

1A/8. 8.

Attt 1A/8.

same Resolution have been fulfilled in every respect as regards the appointment of Mr A.L. Pagson, with the exception of imposing him in writing of the temporary nature of his employment.

A draft order, which will remedy this oversight, is submitted for approval.

The sanction of the G. of I. to Mr Pagson's appointment was communicated to the C in Sp. No 1453 W dy 19 June 1883.

C.
26/5/83

He was informed.

I do not find the draft order on the file - but I was informed that the draft was issued by D.W. circular (Sp. 1517 W & 30.5.83)

C.

All communications should be addressed to the Secretary.

No. 953 G.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

GENERAL.

To

The Secretary to the
Government of Madras.
Public Works Department.

Simla, the 7th July 1883.

Sir,

In reply to your letter No 1959 S. dated 22nd June, I am directed to point out that as Mr de Clerck has been appointed on a salary which is less than Rs 250 per mensem his appointment does not need the sanction of the Govt of India, if the necessary provision has been made in the Budget Estimate for the current official year.

I have the honor to be,
Sir,
Your most Obedient Servant,

G H Walters

Offg. Under Secy. to the Govt of India.

S.W.C. No 5933

Rec'd 14/7/83

No 1987 Way 18th July/83

Communicated by the Exr. P.W. accts with reference to P.G. No 1758W of 22nd June 1883

Provision has been made for Mr. De Closets pay in G.O. No 1641 W of 12th June 1883

CJ.
15/7

15/7

Exr. P.W. Accts

Dated in English

1933

No. 220 T

Office of Superintending Engineer,
Tank Maintenance Scheme,
10th February 1884.
Contt 12 - 2.

From

The Superintending Engineer,
Tank Maintenance Scheme,

To

The Chief Engineer
P.W. Department

Enclosures.

Sir,

With reference to paragraph 3 of G. O. No 1327 W. dated 8th May 1883 I have the honor to request that you will be so good as to obtain sanction for the retention of the services of Temporary Assistant Engineer Mr. L. P. De Closets in the Tank Maintenance Scheme.

I have the honor to be
Sir
Your most obedient Servant
Lt Col R.E.
Superintending Engineer
Tank Maintenance Scheme

Form No. 22.

No. 4435 PUCLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 19th January 1884

READ the following :—

Letter from the Supg Engr Tank Maintenance Scheme } No. 220 Dated 10th Febry

The sanction accorded vide G.O. 1327 W dated 8th May 1883 to Mr L. P. De Clerets as temporary assistant engineer from Amrut to be extended for a further period of twelve months, on the same terms and conditions.

2. This sanction has been registered as Provincial No. 78 of 1883-84, and classified as Establishment, Imperial

To Mr L P de Clerets
The Supg Engr, T. M. Scheme
" Chief Engineer for Irrign
" Examiner, P. Works

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from Lieutenant-Colonel P. MONTGOMERIE, R.E., Superintending Engineer, Tank Maintenance Scheme, to the Chief Engineer, Public Works Department, dated Chepâk, 14th February 1884, No. 259 T.—Through the Chief Engineer for Irrigation :—

On the recommendation of Mr. Target, the Executive Engineer in charge of No. 1 Tank division, I have the honor to request you will be so good as to obtain the sanction of Government to increase the salary of Mr. deClosets, Temporary Assistant Engineer, No. 1. Tank division, from Rs. 200 to Rs. 300 per mensem, which is the minimum pay at present drawn by other Temporary Assistant Engineers, other than those in the Railway branch of the service.

No. 21 E.W.

Endorsement on the above.

Forwarded to the Chief Engineer, Public Works Department. It is understood, though it is not so stated here, that the Superintending Engineer is satisfied with Mr. deClosets' work, and under these circumstances the increase of pay is recommended.

CHATRAPUR,
25th February 1884.

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Chief Engineer for Irrigation.

ORDER—dated 11th March 1884, No. 657 W., Public Works.

Ordered that the sanction of the Government of India be requested to the proposed increase of pay to Mr. deClosets, with effect from the 14th May 1884, or after the completion of twelve months' service.

(Here enter No. 658 W., dated 11th March 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, Tank Maintenance Scheme.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated March, 11*th*.

Recd. *Encl.*

G.O., 11th March 1884, No. 657 W.

MARCH.

Mr. L. P. deClosets, Temporary Engineer

Ordered that the sanction of the Government of India be requested to the proposed increase of pay to —.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,
Secretary to the Government of Madras,
Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

Mr. L. P. deClosets was appointed a Temporary Engineer, on probation, on a salary of Rs. 200 per mensem, with effect from the 8th May 1883, and has filled one of the appointments sanctioned by the Government of India, in their letter, No. 741 G., dated 21st May 1883, for the Tank Maintenance divisions. Mr. deClosets will thus shortly complete twelve months' service. On the recommendation of the Superintending Engineer under whom he has been working, and of the Chief Engineer for Irrigation, I am directed to request that the sanction of the Government of India may be accorded to Mr. deClosets' pay being raised to Rs. 300 per mensem, the increase to have effect from the 14th May 1884.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
11th March 1884.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of 1884 Madras.

PUBLIC WORKS.

Dated March, 11th.

Recd. *Encl.*

11th March 1884, No. 658 W.

MARCH.

Mr. L. P. deClosets, Temporary Engineer

Requesting sanction to increase the pay of — from Rs. 200 to Rs. 300 per mensem from 14th May 1884.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 9th April 1884, No. 386 G.:—

In reply to your letter, No. 658 W., dated 11th March 1884, I am directed to communicate the sanction of the Government of India to the appointment of Mr. L. P. deClosets, for employment in the Tank Maintenance divisions, as a temporary engineer, on a salary of Rs. 300 per month, for a period of twelve months, with effect from the 14th May 1884, subject to the conditions for the employment of temporary engineers as laid down in Public Works Code, chapter I, paragraph 88A, rule IV; that is to say, he will be on the footing of a monthly servant, and must understand that his appointment carries absolutely no claim to pension or to any absentee allowances beyond those conditionally given by the rules of the Civil Leave Code to temporary employés, and he will have to sign a declaration that this is clearly understood by him.

2. I am to request, should it be necessary to retain Mr. deClosets' services beyond the period for which sanction is now accorded, that application for the same may be made three months prior to expiry of this sanction.

ORDER—dated 19th April 1884, No. 1013 W., Public Works.

Communicated to the officers concerned, with reference to G.O., No. 657 W., dated 11th March 1884.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.WD.

To the Examiner, Public Works Accounts.
" Superintending Engineer, Tank Maintenance.
" Chief Engineer for Irrigation.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated April, 19*th*.

Recd. *Encl.*

G.O., 19th April 1884, No. 1013 W.

APRIL.

Mr. L. P. deClosets

The sanction of the Government of India to the employment of — as temporary engineer in the Tank Scheme for another year, communicated to officers concerned.

OFFICE OF THE SUPT. OF WORKS,
TANK MAINTENANCE SCHEME,
Chepauk 14 January 1885.

No. 707

From

THE SUPERINTENDENT OF WORKS,
TANK MAINTENANCE SCHEME,

To

THE Chief Engineer
P.W. Department

Enclosures.

Sir,

With reference to paragh. of Government of India, letter No. 3864, dated 9th April 1884, printed with Pcdl. G, No 1013 W, Dated 19th April 1884. I have the honor to request you will be so good as to obtain sanction for the retention of the services of Temporary Assistant Engineer, Mr. L. P. deCloset for a further period of 12 months in the Tank Maintenance Scheme.

I have the honor to be
Sir
Your most obedt Servt

Lieut Colonel
Supt of Works
T.M. Scheme

Encd CC

1013 W. 57 19/4/04

657/658 W. 57 11/3/04

1884.

From

THE SUPERINTENDENT OF WORKS,

Tank Maintenance Scheme,

To

THE *Chief Engineer*
Public Works Deptt

15 JAN 85

No. *7017*

Dated } *14 January 1885*

Despatched

Received

ENCLOSURE.

Subject.

Requests to obtain sanction for the retention of the services of Temporary Assistant Engineer Mr. L. P. Le Clerc for a further period of 12 months, in the Tank Maintenance Scheme.

P. W. Dept.

No. 47 W. of 1885

To, The Secy. to the Govt. of India
P. W. Deptt.

Sir,

Adverting to your letter No. 386 G dtd 9th April 1884, communicating the sanction of the Government of India to the temporary appointment of Mr. L. P. de Clerc, for employment in the Tank Maintenance division, as an Assistant Engineer on Rs 300 per mensem, for a period of twelve months, I am directed to inform you that the sanction so accorded will expire on the afternoon of the 13th May

1885, and to request that it may be renewed for a further period of 12 months, the work on which Mr. de Closets is employed not having been brought to a close.

CJ.

15/5

10/1/85

Exd

Exd

Exd

GENERAL.
ESTABLISHMENT.

Govt. of (1885) Madras.

PUBLIC WORKS.

Dated February, 3rd.

Recd. *Encl.*

G.O., 3rd Feb. 1885, No. 259 W.

FEBRUARY.

Mr. L. P. deClosets, Temporary Engineer

Sanction of the Government of India to the continued employment of — for another year in the tank maintenance division, communicated to the officers concerned.

No. 626 M

FROM,

THE SUPERINTENDING ENGINEER
FIRST CIRCLE.

TO,

THE CHIEF ENGINEER
PUBLIC WORKS DEPARTMENT.

DWLAISHVARAM, 11th April 1886.

SIR,

I have the honor to request the sanction of Government for the retention of the Service of Mr. L. P. Declosets temporary Assistant Engineer for a further period of 12 months to 15 May 1886.

I have the honor to be
Sir
Your most obedt Servt.

Major R.E.
Superintending Engineer
1st Circle

G.C. No 259 N 3. 2. 85.

FROM,

THE SUPERINTENDING ENGINEER
FIRST CIRCLE.

(15)

TO,

THE CHIEF ENGINEER
PUBLIC WORKS DEPARTMENT.

DATED 14th April 1886
DESPATCHED 14th
RECEIVED 20th

No. 526 N

ENCLOSURES. Nil

Mr L. P. Dieloscts
Temporary Assist.
-ant Engineer.
Requests retention
of the services of—
for a further period
of 12 months.

C

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

To

The Secretary to the
Govt. of India

Sir,

Adverting to your
letter No 155 G dated 28th
January 1885, Communicat
the sanction of the Gov
of India to the Conti
employment of Mr L. P
De Closets as a temporar
Apt. Engineer on Rs 300
per mensem for a peri
of twelve months, I am
directed to inform you

that the sanction accorded will expire on the afternoon of the 13th May 1886, and to request that it may be renewed for a further period of 12 months.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

READ—the following letter from G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 8th January 1884, No. 37 G. :—

The large impetus which has recently been given to the operations of the Public Works Department by the sanction of several new projects, especially railways, and by the necessity which has arisen for numerous surveys with a view to railway extensions adequate to the rapidly developing needs of the country, has rendered the prompt enlargement of the staff of Engineers and Assistant Engineers a matter of obvious and paramount necessity.

2. This enlargement has, to a limited extent, been obtained by the temporary entertainment of outsiders, but this source of supply is neither adequate nor altogether satisfactory. With a view to meeting the difficulty, the desirability of appointing upper subordinates as temporary Engineers was explained in Public Works Department Resolution No. 1146 G., dated 23rd August 1883, and recommendations were asked for on behalf of upper subordinates fitted for these appointments. A number of these recommendations have been received, and the manner of utilising the services of the subordinates so recommended to the best advantage has been under consideration.

3. It occurs to the Government of India that it would be better, in the first instance at any rate, to utilise these subordinates on the duties of Engineers within their own provinces, or on the works to which they have been accustomed, instead of transferring them to a new sphere of duties. This would be secured by appointing them temporary Engineers to carry on the duties now performed by the Engineers of the permanent establishment, the latter becoming by this means available for transfer to new works, especially railways, for which Engineers are at present much required.

4. The principal difficulty in carrying out this proposal would, it is thought, be in providing men to carry on the duties of the upper subordinates selected for such promotion. This might, however, be met by bringing forward the second rank of good upper subordinates to fill the places of the first rank of selected men, their places being again filled by the best lower subordinates, who would be temporarily promoted to the upper subordinate class, the places of these lower subordinates being filled by temporary appointments.

5. The effect, so far as promotion is concerned, I am to explain, would be as follows. The permanent upper subordinate would become a temporary Engineer on higher pay than he at present draws, to be sanctioned in each case by the Government of India on the recommendation of the local Government. Substantive *pro tempore* promotions from grade to grade would then be made for the subordinate promoted. The Engineers deputed to other works would continue to draw the pay of their grades, but would receive the advantage of any permanent or temporary promotion to which they might become eligible on their own lists while on deputation. No promotions would be made in the permanent Engineer establishment in consequence of their deputation.

6. I am to request that after careful consideration it may be reported whether in His Excellency's opinion there will be any difficulty in carrying out the above proposals; and if not, how many Engineers could be placed at the disposal of the Government of India by appointing upper subordinates to carry on their duties. On the receipt of such information the Government of India would be in a position to call for the services of the officers indicated, as from time to time they were required.

Order—dated 23rd January 1884, No. 210 W., Public Works.

Recorded and communicated to the Examiner, Public Works Accounts.

2. With respect to paragraph 6 of the letter, the Government of India will be informed that, pending decision on the question * now before that Government as to the percentage to be allowed for non-effectives, no definite reply can be given as to the number of Engineers that can be made available for special duty, by appointing upper subordinates to replace them. At present, no officers of the Engineer establishment can be spared, the numbers being insufficient for the requirements of the department, and temporary officers having, with the aid of the Government of India, to be engaged to assist the regular establishment.

* Letter No. 3423 W., dated 30th November 1883.

(Here enter No. 211 W., dated 23rd January 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Examiner, Public Works Accounts.
„ Chief Engineer for Irrigation.

Endorsement—dated 23rd January 1884, No. 211 W., Public Works.

Copy of the above forwarded to the Government of India with advertence to their letter, dated 8th January 1884, No. 37 G.

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. J. Henricus.
Spare Copies

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—again the following papers:—

From the Secretary to the Government of Madras, Public Works Department, to the Secretary to the Government of India, Public Works Department, dated 10th March 1884, No. 654 W.

I am directed to invite the consideration of the Government of India to the difficulty experienced in finding competent temporary Executive Engineers for three of the authorised temporary posts which have not as yet been filled.

2. It is essential that fully qualified officers, experienced in the irrigation and acquainted with the vernaculars of Southern India, should be posted to these important charges; and as suitable engineers have not been found for the same, I am to urge that sanction be accorded to this Government to nominate, to those three temporary posts, selected Assistant Engineers of the permanent establishment, with temporary rank as Executive Engineers, 4th grade.

From the Secretary to the Government of Madras, Public Works Department, to the Secretary to the Government of India, Public Works Department, dated 3rd April 1884, No. 917 W.

Adverting to paragraph 2 of your letter, No. 018 G., dated 18th March 1884, I am directed to forward, herewith, a statement showing the temporary divisions which have been constituted in this Presidency; proposals regarding which have, from time to time, been laid before the Government of India, as will be seen on reference to the correspondence quoted in the margin. The names of the temporary officers, with rates of pay specially sanctioned by the Government of India, for carrying on the work of these divisions, are also included.

Letter to the Government of India, No. 2592 W., dated 4th October 1882.
Letter to the Government of India, No. 1132 W., dated 16th April 1883.
Letter to the Government of India, No. 2675 W., dated 24th September 1883.
Letter to the Government of India, No. 12 I., dated 7th January 1884.

2. His Excellency the Governor in Council does not understand that it is the intention of the Government of India to insist on the employment of these officers in any particular division; but that the work to be done shall be entrusted to officers most competent to carry it on, whether those officers are on the temporary or permanent establishment. Any other arrangement would, His Excellency the Governor in Council is convinced, be productive of the greatest inconvenience; especially when, as at present, it is not always possible to obtain temporary engineers with the special qualifications requisite for elaborating important projects.

3. The temporary divisions have thus, in great measure, been officered by selections from the permanent establishment, the temporary engineers specially sanctioned replacing them in permanent divisions. The allocation of temporary engineers in

the accompanying statement is made with a view of exhibiting what may be regarded as the sanctioned, as compared with the existing, arrangements ; column 5 showing the division in which each officer is actually employed.

4. Should these arrangements be formally approved, a basis for future working will have been established sufficient to satisfy the requirements of audit ; while the Government will be free to officer the temporary divisions by those best qualified for the duties to be performed in each case.

5. I am to request the early sanction of the Government of India to these proposals.

6. Application for formal sanction to fill up the appointments still open will be made as soon as suitable officers can be found.

ENCLOSURE.

Temporary Engineer Establishment.

Temporary Division.	Name of officer sanctioned by the Government of India.	Salary.	Reference to Sanction.	Present Posting.	Remarks.
1	2	3	4	5	6
Godávari Central 1 E.E., Rs. 800	Mr. H. Wilks,.	Rs. 800 0 0	Letter, No. 1383 G., dated 20th October 1883 ; G.O., No. 3269 W., dated 16th November 1883.	Nagapatam division.	Permanent division.
Do. 1 A.E., 350	,, A. Cruse ..	350 0 0	Letter, No. 579 G., dated 21st April 1883 ; G.O., No. 1314 W., dated 5th May 1883.	West Godávari.	Do.
Rushikulya 1 E.E., 650	,, J. Tritsch ..	650 0 0	Letter, No. 1578 G., dated 14th December 1883 ; G.O., No. 3588 W., dated 22nd December 1883.	C. Project ..	Do.
Do. 1 A.E., 450	,, W. Mathews.	360 0 0	Letter, No. 23 G., dated 7th January 1884 ; G.O., No. 99 W., dated 14th January 1884.	East Godávari.	Do.
Do. 1 A.E., 350	,, A. Pogson.	300 0 0	Letter, No. 680 G., dated 7th May 1883 ; G.O., No. 1455 W., dated 10th May 1883.	B. Project.	Do.
....	....	....	....	....	....
Gudivada 1 E.E., 550 Do. 1 A.E., 450	,, J. Lafrenais.	350 0 0	Letter No. 1428 G., dated 30th October 1883 ; G.O., No. 3177 W., dated 10th November 1883.	Rushikulya.	Temporary division.
....	....	....	....	....	....
Barur 1 E.E., 550	....	....	....	....	....
Cauvery and Vennar Regulators. 1 E.E., 550 Tank No. 1 1 E.E., 550	,, R. Walnutt.	772 14 8	Letter, No. 288 G., dated 5th March 1884 ; G.O., No. 667 W., dated 12th March 1884.	No. 1 Tank.	Temporary division.
Do. 1 A.E., 450	,, L. deCloseta.	200 0 0	G.O., No. 443 W., dated 19th March 1884.	Do.	Do.
....	....	....	....	....	....
Tank No. 2 1 E.E., 650 Do. 1 A.E., 450	....	....	....	....	....

READ—also the following:—

Telegram from the Secretary to the Government of India, Public Works Department, Simla, to the Secretary to Government of Madras, Public Works Department, dated 2nd May 1884.

Your No. 654 W., dated 10th March 1884. Proposal to nominate three selected Assistant Engineers of permanent establishments for three of the authorised temporary

posts, which have not as yet been filled, with temporary rank of Executive Engineers, 4th grade, sanctioned for one year ; proposals in paragraphs 2 and 3 of letter, No. 917 W., dated 3rd April 1884, also approved.

ORDER—dated 7th May 1884, No. 1155 W., Public Works.

Recorded.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of (1884) Madras.

PUBLIC WORKS.

Dated May, 7th.

Read. *Encl.*

G.O., 7th May 1884, No. 1155 W.

MAY.

Temporary Executive Engineerships

Telegram from the Government of India, sanctioning the proposal to fill up three of the authorised — by selections from the Assistant Engineers of the permanent establishment, and approving of the policy of this Government in the employment of temporary officers on the work they are best suited for, whether in the temporary or the permanent

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 11th February 1885, No. 229 G. :—

In reply to your letter No. 3133 W., dated 20th December 1884, I am directed to communicate the sanction of the Government of India to the temporary Engineer and upper subordinate establishment noted on the margin for Nos. I, II and III tank divisions for a period not exceeding one year, and to state that the salaries should be considered personal.

2	Tempy. Engrs. on	Rs. 650	per month	each.
1	Do. Engr. on	„ 550	do.	
3	Do. Engrs. on	„ 450	do.	each.
3	Upper Subordinates	„ 300	do.	do.

2. I am also to sanction the continued employment, for another year, of a Superintendent of Works with an additional allowance of Rs. 100 per month for the supervision of the divisions referred to above, and to request that a report of the progress made up to date may be submitted on an early date for the information of the Secretary of State for India.

3. The names of the persons appointed and the dates of their joining their appointment should be reported.

ORDER—dated 9th March 1885, No. 543 W., Public Works.

Communicated to the officers concerned.

2. The Chief Engineer for Irrigation will submit the report called for in paragraph 2 of the letter from the Government of India.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Examiner, Public Works Accounts.
„ Superintendent of Works, Tank Maintenance Scheme.

Exd. A. Grubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated March, 9th.

Read. *Encl.*

G.O., 9th March 1885, No. 543 W.

MARCH.

Temporary Engineer and Upper Subordinate Establishment

Letter from the Government of India sanctioning the — required for the Tank Maintenance Scheme, communicated to the officers concerned.

TEMPORARY ENGINEER ESTABLISHMENT.

Temporary divisions.		Name of officer sanctioned by the Government of India.	Salary.	Reference to sanction.	Present posting.
1		2	3	4	5
	Rs.		Rs. A. P.		
Godávari Central.	1 EE ... 800	Mr. H. Wilks ...	800 0 0	G.O., dated 7th May 1884, No. 1155 W.	Negapatam division.
	1 AE ... 350	Mr. C. Lowry ...	350 0 0		West Godávari.
Rushikulya	1 EE ... 650	.....	...		...
	1 AE ... 450	Mr. W. Mathews.	350 0 0		East Godávari.
	1 AE ... 350	G. Venkata Rau Pantulu.	350 0 0		West Godávari.
Gudiváda.	1 EE ... 550	Mr. J. E. Paul ..	550 0 0		Do.
	1 AE ... 450	Mr. J. Lafrenais.	350 0 0		*Rushikulya.*
Barur ...	1 EE ... 550	Mr. A. Pogson ..	300 0 0		B. Project.
Cauvery and Vennar Regulators.					
	1 EE ... 550	Mr. W. Jopp ...	550 0 0		*Central Godávari.*
Tank No. I.	1 EE ... 650	Mr. T. W. Scott.	450 0 0		No. I Tank.
	1 AE ... 450	Mr. L. D'Closets.	300 0 0		No. I do.
Tank No. II.	1 EE ... 650	Mr. C. J. Ussher.	550 0 0		No. II do.
	1 AE ... 450	Sub-Conductor J. Cormac.	450 0 0		Red Hills Tank.
Tank No. III.	1 EE ... 550	.....	...	Government of India letter No. 229 G., dated 11th February 1885.	
	1 AE .. 450	.....	...		
Ramnad, division.	1 EE ... 550	.....	...	Government of India letter No. 1389 G., dated 3rd December 1884.	
Wards' estates, I Circle.	1 AE ... 450	Mr. E. F. Handcock.	450 0 0	Do.	Wards' estates I Circle.

89

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—again the following papers :—

G.O., dated 7th May 1884, No. 1155 W.
,, ,, 9th March 1885, ,, 543 W.

ORDER—dated 11th March 1885, No. 577 W., Public Works.

Under the sanctions of the Government of India, recorded in the proceedings read above, the following temporary appointments are made for a period of one year on the usual conditions :—

Mr. T. W. Scott, to be Temporary Assistant Engineer on Rs. 450 per mensem and to be employed under the Superintendent of Works, Tank Maintenance Scheme.

G. Venkata Rau Pantulu, Sub-Engineer, 3rd grade, to be Temporary Assistant Engineer on Rs. 350 per mensem and to be employed under the Superintending Engineer, I Circle.

2. These appointments will count against the sanctioned temporary posts shown in the annexed statement.

3. Should it be necessary to reappoint these officers for a further period, the Superintending Engineer and the Superintendent of Works will apply for renewed sanction three months before the expiry of the present sanction.

4. The dates on which these officers enter upon their duties should be reported for communication to the Government of India.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintending Engineer, I Circle.
,, Superintendent of Works, Tank Maintenance Scheme.
,, Examiner, Public Works Accounts.

Exd. A. Grubert.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of 1885 Madras

PUBLIC WORKS.

Dated March, 11th.

Encl.

Read.

G.O., 11th March 1885, No. 577 W.

MARCH.

Messrs. Scott and Venkata Rau Pantulu

Orders appointing — temporary Assistant Engineers.

No. 544 G

All communications should be addressed to the Secretary.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

GENERAL.

To

The Secretary to the Government of Madras
Public Works Department

Simla, 9th April 1885

Sir,

I am directed to invite your attention to para 3 of Public Works Department letter No. 229 G dated 11th February 1885, and to request that the names of the persons appointed to the temporary posts sanctioned for Nos. I. II and III Tank Divisions may be reported to this office without delay, with the dates on which they may have joined their appointments.

I have the honor to be,
Sir,
your most obedt servant

W. Hampson

Under Secy to the Govt of India

343. Hrs/9-3-15

With reference to G.O. No. 577 dated 11th inst. communicated to me I declare that I consider my appointment does not carry any claim to pension and that I am on the footing of a Monthly servant.

J. Wmckworth Scott.

Madura
30 March 1885

Assistant Engineer
Md Irrk Divn

" 543. Kal/9-3-85

OFFICE OF THE SUPT. OF WORKS,
TANK MAINTENANCE SCHEME,
Chepauk 13th April 1885.

No. 762

From

THE SUPERINTENDENT OF WORKS,
TANK MAINTENANCE SCHEME,

To

THE Chief Engineer
Public Work Department

Enclosures.

SIR,

With reference to G.O. No. 577 dated 11-3-85 I have the honor to forward herewith the required declaration from Mr. T.W. Scott Temporary assistant Engineer, and to inform you that Mr. Scott joined his appointment in the No. 1 Tank Division at Madura on the forenoon of the 23 March 1885.

I have the honorable
Sir
Your Most Obt. Servant

Lt. Colonel R.E.
Superintendent of Works T.M.S.

Compd
13/4

O.S. 504
Date: 17-4-85

1885.

(5)

From

THE SUPERINTENDENT OF WORKS,

Tank Maintenance Scheme,

To

THE

No.

Dated

Despatched

Received

ENCLOSURE.

Subject.

Forwards the required declaration from Mr. T. W. Scott, Temporary Assistant Engineer No. I. Tank Division and states that he joined his appointment on the forenoon of the 25th March 1885.

6

O.S. 50/4
Date: 17/4/85

94

TEMPORARY ENGINEER ESTABLISHMENT.

Temporary divisions.		Name of officer sanctioned by the Government of India.	Salary.	Reference to sanction.	Present posting.
1		2	3	4	5
	Rs.		Rs. A. P.		
Godávari Central.	1 EE ... 800	Mr. H. Wilks ...	800 0 0	G.O., dated 7th May 1884, No. 1155 W.	Negapatam division.
	1 AE ... 350	Mr. C. Lowry ...	350 0 0		West Godávari.
Rushikulya	1 EE ... 650	.....	...		...
	1 AE ... 400	Mr. W. Mathews.	350 0 0		East Godávari.
	1 AE ... 350	G. Venkata Rau Pantulu.	350 0 0		West Godávari.
Gudiváda.	1 EE ... 550	Mr. J. E. Paul ..	550 0 0		Do.
	1 AE ... 450	Mr. J. Lafrenais.	350 0 0		*Rushikulya.*
Barur ...	1 EE ... 550	Mr. A. Pogson ..	300 0 0		B. Project.
CAUVERY AND VENNAR REGULATORS.					
	1 EE ... 550	Mr. W. Jopp ...	550 0 0		*Central Godávari.*
Tank No. I.	1 EE ... 650	Mr. T. W. Scott.	450 0 0		No. I Tank.
	1 AE ... 450	Mr. L. D'Closets.	300 0 0		No. I do.
Tank No. II.	1 EE ... 650	Mr. C. J. Ussher.	550 0 0		No. II do.
	1 AE ... 450	Sub-Conductor J. Cormac.	450 0 0		Red Hills Tank.
Tank No. III.	1 EE ... 550	.....	...	Government of India letter No. 229 G., dated 11th February 1885.	
	1 AE .. 450	.....	...		
Ramnad, division.	1 EE ... 550	.....	...	Government of India letter No. 1389 G., dated 3rd December 1884.	
Wards' estates, I Circle.	1 AE ... 450	Mr. E. F. Handcock.	450 0 0	Do.	Wards' estates I Circle.

* These three officers remain to Asst. Engrs. 1st grade on the 1st May 1885.

B/ Ec. 2705 95'

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

Read the following

Letter from the Govt of India H.E. No. 514 G of 9th April 1905
" " " S. W. T. Inv. Scheme - - 762 & 13. " "

Ordered that the
Govt. of India be addressed
(H.E. No. of)
To
The Secy to the Govt
of India P. W. Dept

Sir

In reply to your letter No. 514 G dated 9th April 1905, I am directed to report that Mr. J. S. Scott, a retired Asstt. Engineer of the Bombay P. W. D. has been appointed on the usual conditions, for a period of 12 months,

as

as temporary Asstt. Engineer on a salary of Rs 450 per mensem.

2. Mr Scott joined his appointment in No I Sauk division on the forenoon of the 23rd March 1885.

3. It has not been found possible to obtain the services of a suitable temporary Executive Engineer for charge of the No IV Sauk division, and it has therefore been necessary to detach for the purpose, from the permanent establishment, Mr J. Trail, Executive Engineer 4th grade, who joined the division on the forenoon of the 19th March 1885.

4. The accompanying Statement exhibits the sanctioned temporary posts and the appointments made to them.

CS.
17.4.85

Correct Statement
24/4/85

20.4.85

Cs

OFFICE OF THE SUPTG. ENGINEER,
TANK MAINTENANCE SCHEME,
Chepák, 25th January 1886.

No. 1975

From

THE SUPERINTENDING ENGINEER,
TANK MAINTENANCE SCHEME,

91

To

THE *Chief Engineer*
P.W. Department

Enclosures.

SIR,

With reference to para 3 of G.O. No. 5774 dated 11th March 85 I have the honor to request sanction to the retention of the services of temporary Engineer, Mr. J.W. Scott, for a further period of 12 months in the Tank Maintenance Scheme on a salary of Rupees 550 per mensem.

It is observed that by G.O. No. 34 W. of 6th January 1886 the Government of India have increased

Mr.

Mr Scotts pay from Rupees 450 to Rs550

Karachee the 1st

Sir

Your most obedt servt

Signed

Supt Engineer

J. M. Schunck

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

Read the following

From the Supt Engineer
Tank Maintenance
Scheme

H E No 197 T. d/25th January 1886

Ordered that the Government of India be addressed

H. E No. 26 W d/ Jany/86

To The Secretary to the Government of India P W Depte

Sir

Referring to your letter No 1921 G. dated 31st Decr 1885, I am

Regret that the Services of Temporary Engineer Mr. F. W. Scott may be retained in the T. M. Scheme for another year. Stating that his salary has been increased from Rs 450 to 550.

S.E T. M. Scheme
S. E. Tank Scheme
Exr. P. W. Dept
Despd 29-1-86

...elled to state that
...sanction to the ap
...pointment of Mr. T. W.
Scott as temporary
Engineer on Rs. 550
per mensem will expire
on the 23d March 1886,
and to request that
the Government of
India may be moved
to accord renewed sanction
to his employment for
a further period of 12
months.

27/1/86

25.1.86

29-1-86

No. 2/1404

No. 2, Tank Division Office,
TANK MAINTENANCE SCHEME,
St. Thomas' Mount, 11 December 1885.

FROM

THE EXECUTIVE ENGINEER,
No. 2, TANK DIVISION.

TO

The SUPERINTENDING ~~OF WORKS~~ Engineer,
TANK MAINTENANCE SCHEME,
MADRAS.

Sir,

With reference to the Notification in Fort Saint George Gazette dated 4th November 1885 granting me furlough from 1st February 1886 with one months subsidiary leave, I have the honor to request that arrangements may be made for my relief soon after the Xmas holidays.

I have the honor to be,
Sir,
Your most obedient Servant,

Executive Engineer, No. 2 Tank Division.

No 3126/K

Chepauk 15th Decr 1885

Submitted to the Chief Engineer
P.W. Department for disposal

If it be practicable I should
be glad to see Mr Scott placed in
charge of the Division.

Lieut Col R.E.

Superintending Engineer
Tank Restoration Scheme

Dec 1885

2nd 16/12/85

£70 4/3/4/85
91
5234 9/3/85
577 31/3/85
1554 7/1/86

66/

No 10857

Note

The following Executive
Engineers, temporary, are not
in charge of Divisions and
one of them might be
selected for the charge of the
No II Tank Division.

C. M. Smith ..... Tanjore Dt
I. Subraraiyachariar ... Combatore "

He services Mr Norris, Executive
Engr might also be available
for transfer at the end of
this month, or he might be
allowed to hold both
Tank No II & Red Hill Tank
Divn

11.12
E

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

Read the following

From the S.E. Tank Maintce Scheme (No. 3126 Tdf Dec 15 '85)

The Govt. Engineer has communicated that Mr. J.W. Scott has proceeded in charge of the No II Tank division on his return from departure on furlough & is approved.

2. Ordered that the Govt of India be requested to increase the pay of Mr. J.W. Scott Temporary Engineer from Rs 450/- to Rs 550/- with effect from the date he takes charge of the No II Tank Division.

(No.)

To,

The Secy: to the G.of I. P.W.D.

Sir,

Mr. J.W. Scott was appointed a temporary Engineer on a salary of Rs 450 per mensem with effect from the 28 March 1885, and has filled one of the appointments on Rs 450/- per mensem sanctioned by the Govt

* Vide this office letter dy 971 W dy 21 April 1885

of India in their letter No 219 G
dated 11th February 1885 for the
Tank Maintenance Division.

Owing to the intended
departure on 21 months furlough
of Mr C J. Hosher, Ex Engineer
4th grade, temporarily in charge
of No II Tank Division, it is
intended to place Mr Scott
in charge of that Division,
and I am therefore directed
to request that the sanction
of the Govt of India may
be accorded to Mr Scott's
pay being raised to Rs 550
per mensem in consideration
of the heavier work and
responsibility that will
thus devolve on him, & pro-
vided he is found fully qualified.

Ls
18/12/85

Ill
18/12

No 3069 W. 103

P. W. Department

Proceedings of the Madras Government

Under date the
December 19. 1885
Read the following:

from the Supty: Engineers
Tank Maintenance Scheme W.6. No 3126 Ja/15 Dec 85.

The Supty: Engr's
recommendation that Mr
J. W. Scott be placed in
charge of the No II Tank
division on Mr Hosher's
departure on furlough, is
approved.

2. The Government of
India will be requested
to increase Mr Scott's
salary from Rs 450 to Rs 550

per mensem, with effect
from the date he takes
charge of the Division.

3070 W.
(P.C. No. [redacted] May 19 Decr/15)

S.S. 7-11-Scheme
Gair 10 W

To

The Secretary to the
Government of India
P. W. Dept.

Sir,

Mr. J. W. Scott was
appointed a temporary
Engineer with effect from
the 23rd March 1855, and
has filled one of the
appointments on Rs 450/
per mensem sanctioned
by the Government of India
in your letter No 229 G
dated 11th February 15 for the
Tank Maintenance Divi-

* Vide this office letter
No 971 W dated 24th Apl.

2. Owing to the in-
tended departure on 21
months furlough of Mr.
C.J. Fisher, Executive
Engineer 4th grade, temply,
in charge of No II Tank
Division, it is intended to
place Mr. Scott in charge
of that Division, and I am
directed to request that
the sanction of the Govt.
of India may be accorded
to his pay being raised to
Rs 550 per mensem in con-
sideration of the heavier
work and responsibility
that will then devolve
on him, and for so
is reported to
qualified.

Cu

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 31st December 1885, No. 1921 G. :—

In reply to your letter, No. 3070 W., dated 19th December 1885, I am directed to communicate the sanction of the Government of India to the pay of Mr. T. W. Scott, temporary Engineer, being raised from Rs. 450 to Rs. 550 a-month, with effect from the date on which he may be placed in charge of No. II Tank division, on Mr. Ussher, Executive Engineer, going on furlough.

ORDER—dated 6th January 1886, No. 34 W., Public Works.

Communicated to the Superintending Engineer, Tank Maintenance Scheme, and to the Examiner, Public Works Accounts, with advertence to G.O., No. 3069 W., dated 19th December 1885.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.
" Chief Engineer for Irrigation.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of [1886] Madras.

PUBLIC WORKS.

Dated January, 6th.

Read

Read

G.O., 6th Jan. 1886, No. 34 W.

JANUARY.

Mr. T. W. Scott, Temporary Engineer

Letter from the Government of India sanctioning increase of salary to —, communicated to the officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 12th February 1886, No. 241 G.:—

In reply to your letter, No. 266 W., dated 29th ultimo, I am directed to communicate the sanction of the Government of India to the continued employment, in No. II Tank division, of Mr. T. W. Scott, temporary Engineer, on Rs. 550 per mensem, for a further period not exceeding twelve months, with effect from the 23rd March 1886.

ORDER—dated 22nd February 1886, No. 439 W., Public Works.

Communicated to the Superintending Engineer, Tank Maintenance Scheme, and to the Examiner, Public Works Accounts, in continuation of G.O., No. 265 W., dated 29th January 1886.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintending Engineer, Tank Maintenance Scheme.
„ Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies.

GENERAL.
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated February, 22nd.

Recd. *Entd.*

G.O., 22nd Feb. 1886, No. 439 W.

FEBRUARY.

Mr. T. W. Scott, Temporary Engineer

Communicating sanction of the Government of India to the continued employment of —, for a further period of twelve months.

All communications should be addressed to the Secretary.

No. 241 G

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

GENERAL.

107

To

The Secretary to the Government of Madras
Public Works Department.

Fort William, 12th February 1886.

Sir,

In reply to your letter No 266 W. dated 29th ultimo, I am directed to communicate the sanction of the Government of India to the continued employment, in No II Tank Division of Mr T W. Scott, temporary Engineer on Rs per mensem, for a further period, not exceeding twelve months, with effect from the 23rd March 1886.

I have the honor to be
Sir
Your most obedt servant

W. Campbell
Under Secy to the Govt of Ind

108

266-6 W. 29-1-86.
34 W. 6-1-86.
356 9.10 W. 19-12-83.
9 10-1 W. 26-4-83.
5-11 W. 11-3-85.
5 1/2 W. 9-5-86.
1155 W. 7-5-84.
211 W. 23-1-84.

Copy

A 2-439 W dy 22-July/86

Communicated to the
Supply & Engr: Tank. Expen-
diture Sheet & to the
Finance Scheme & to the
Examnr. P.W. Accounts, in
continuation of C.O. No 265 W
dy 29 January 1886.

17/2/86

To S.E. I.P. Scheme

12560.

Govt. of Madras. 1886

PUBLIC WORKS.

Read

Recd

G.O. 22 July 1886. No. 4890

Mr. J. W. Fischer
Supdg. Engineer

Commg: Sanctions of the Govt of India to the Contr. employment of — for a further period of twelve months.

60
3

Paper

1/2.

11th December 1882, No. 3272 W., Public Works.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

No. 67.

Read—the following paper :—

Note by the Chief Engineer for Irrigation, dated 27th November 1882.

No. 68.

Order—dated 11th December 1882, No. 3272 W., Public Works.

Ordered that the following letter be addressed to the Government of India :—

(Here enter No. 3273 W., dated 11th December 1882.)

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation, with copy of letter.

Exd. J. W. Fischer.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1882} Madras

PUBLIC WORKS.

Dated December, 11th.

Read. *Encl.*

G.O., 11th Dec. 1882, No. 3272 W.

DECEMBER.

Nos. 67-68.

Minor Irrigation Works of the Madras Presidency.

Proposals for dealing in a comprehensive manner with the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following papers :—

From G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 19th March 1883, No. 459 G.

With reference to paragraphs 5, 6, 7 and 8 of your letter, No. 3273 W., of the 11th December last, requesting sanction to the appointment of a special Superintending Engineer, for a period of one year, to start the work of tank restoration in the Madras Presidency, and to your telegram of 26th ultimo requesting authority to appoint Colonel Montgomerie to that post in lieu of Colonel Chrystie retired, I am directed to state that the Government of India is unable to authorize any increase, even temporarily, to the number of Superintending Engineers sanctioned for the Madras Presidency, but is pleased to sanction the appointment of a Superintendent of Works within the limits of the present sanctioned staff of Executive Engineers for the work referred to above.

2. The sanction of Her Majesty's Secretary of State to the grant of the usual allowance of Rs. 100 per mensem to the Superintendent of Works for the period of one year will be applied for.

From the same Officer, dated Simla, 4th April 1883, No. 502 G.

In reply to your telegram of 19th March 1883, pointing out the necessity for an additional temporary Superintending Engineer in place of a Superintendent of Works with local allowance of Rs. 100, as sanctioned by the Government of India in its No. 459, dated 19th March 1883, on the ground that the officer selected for the Tanks Scheme is one of the permanent Superintending Engineers, and that a temporary Superintending Engineer must be appointed in his place, I am directed to point out that if the Government of Madras consider it necessary to appoint Colonel Montgomerie to the Tanks Scheme, there is no objection to the local allowance of Rs. 100 sanctioned for the Superintendent of Works being given to the Executive Engineer who may be placed in charge of one of the regular Superintending Engineers' posts as a temporary measure, but I am to say that the Government of India is unable to sanction an additional Superintending Engineer.

ORDER—dated 19th April 1883, No. 1170 W., Public Works.

Ordered to be recorded.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Exd. A. Aubert.
Spare Copies

GENERAL ESTABLISHMENT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated April, 19th.

Recd. *Encl.*

G.O., 19th April 1883, No. 1170 W.

APRIL.

Temporary Superintending Engineer

Refusal of the Government of India to sanction the appointment of a — recorded.

16TH JUNE 1883, No. 1700 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 21st May 1883, No. 741 G.:—

In reply to your letters, Nos. 1134 W. and 1212 W., of 16th and 23rd April 1883, I am directed to communicate sanction to the temporary establishment marginally noted, required for dealing systematically with the tank system for the period of one year, and to state that should it become necessary to retain the establishment in question for a longer period, application should be made for renewal of sanction three months before the expiry of the present sanction.

		Rs.
2 Executive Engineers	...	650 each.
1 Assistant Engineer	...	450
1 Sub-Engineer	...	300

2. As regards the appointment of a Superintending Engineer for this work, I am to remind you that a Superintendent of Works, and not a Superintending Engineer, has already been sanctioned by the Government of India in Public Works Department, No. 459 G., of 19th March 1883, and you were informed in Public Works Department letter, No. 502 G., of 4th April 1883, that the local Government was at liberty to employ one of its Superintending Engineers on this duty if it was considered necessary, filling up his place by a Superintendent of Works; no further orders are therefore required on this point.

3. The rest of the temporary establishment to which sanction is asked can be sanctioned by the Madras Government under Public Works Code, I, 88.

4. As regards appointment of officers to fill these posts, I am to refer you to paragraph 2 of Public Works Department letter, No. 742 G., of 21st May 1883, and to add that the present sanction must not be taken as affecting the question of the strength of the permanent establishment which is being separately considered.

ORDER—dated 16th June 1883, No. 1700 W., Public Works.

Communicated to officers concerned.

2. The Superintending Engineer will at the proper time report on the subject of paragraph 1 of the foregoing letter.

3. The question of the provision of the necessary Engineer Establishment for the project will be dealt with separately.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.

Exd. C. Howarth.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated June, 1614.

Recd. *Encl.*

G.O., 16th June 1883, No. 1700 W.

JUNE.

Tank Systems

Temporary establishment of one Assis and two Executive Engineers and a S. Engineer for dealing systematically with th —. The sanction of the Government of India to the entertainment of a —, communicated, with remarks, to officers concerned.

7TH AUGUST 1883, No. 2162 W., PUBLIC WORKS.

112

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

READ—the following letter from G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 27th July 1883, No. 1046 G.:—

Referring to paragraph 2 of Public Works Department letter, No. 459 G., dated 19th March 1883, I am directed to state that the Right Honorable the Secretary of State for India has sanctioned the grant of an allowance of Rs. 100 per mensem, for the period of one year, for the Superintendent of Works appointed to start the work of tank restoration in the Madras Presidency.

ORDER—dated 7th August 1883, No. 2162 W., Public Works.

Recorded with reference to G.O., No. 1170 W., dated 19th April 1883.

(True Extract.)

(Signed) R. H. SANKEY, Major-General, R.E.,
Secretary to Govt., P.W.D.

To the Examiner, Public Works Accounts.

Exd. A. F. Goodall.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated August, 7th.

Recd. *Encl.*

G.O., 7th Aug. 1883, No. 2162 W.

AUGUST.

Superintendent of Works

Letter from the Government of India communicating the sanction of the Secretary of State to the grant of an allowance of Rs. 100 *monthly to the* —, sanctioned in connection with the Tank Restoration Scheme, recorded.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 11th February 1884, No. 195 G. :—

I am directed to acknowledge the receipt of your No. 12 I., dated 7th January 1884, applying for renewal of sanction to the establishment noted in the margin for the Tank Maintenance Scheme, and asking for further sanction to three temporary engineers on the same rate of pay for a second division.

	Rs.
Local allowance for Superintendent of Works	100
1 Temporary Engineer	650
1 Do.	450
1 Sub-Engineer	300

2. I am to remind you that it was stated in paragraph 5 of your No. 3273 W., dated 11th December 1882, that the additional Superintending Engineer, who was ultimately provided for the scheme by means of the local allowance of 100 rupees given to an Executive Engineer acting as Superintendent of Works, would be required probably for one year only. Accordingly the allowance was sanctioned by the Government of India, and confirmed by the Secretary of State, for one year. Before extending this sanction it is necessary that valid reasons for the extension should be given, and I am to request that a statement may be furnished showing the work already done and remaining to be done by Colonel Montgomerie, the officer who is in charge of the scheme.

3. In regard to the establishment for the first and second Tanks divisions, I am to say that the Government of India will willingly accord sanction to the entertainment of temporary engineers, within the limit mentioned by you, on the Madras Government submitting the names of competent men; but I am to point out that hitherto no such appointments, requiring the sanction of the Government of India, have been proposed for the Tanks, unless Mr. Wallnut, whose appointment was sanctioned for the Barur tank, is considered to belong to the Tanks division, and it is observed from the last distribution return that the division has been manned by members of the permanent establishment and temporary men for whose appointment the sanction of the Madras Government sufficed. Under these circumstances, the submission of the names of suitable engineers will be awaited, who may be utilised, after sanction, either in the Tanks division itself, or to set permanent officers free for employment in that division.

4. Finally, I am to state that the Government of India desires to impress upon the Government of Madras its preference to the actual improvement of the tanks of even one district, to the mere preparation of schemes in a large number of districts; and I am to request that this may be borne in mind both with regard to the extension of the appointment of Superintendent of Works and the plan of operations for the Tank scheme.

Order—dated 21st February 1884, No. 472 W., Public Works.

Communicated to the Chief Engineer for Irrigation for report on the subject of paragraph 2 of the letter from the Government of India, and for information and guidance as regards paragraph 4.

2. The Government of India will be addressed, with reference to paragraph 3, on receipt of the report now called for.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated February, 21st.

Read. *Encl.*

G.O., 21st Feb. 1884, No. 472 W.

FEBRUARY.

Establishment for the Tank Maintenance Scheme

Remarks of the Government of India on application for renewal of sanction to the —, and asking for three temporary engineers for a second division, communicated to the Chief Engineer for Irrigation for report.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following paper :—

No. 65 I.

Note by the Acting Chief Engineer for Irrigation.

The Tank divisions were started with the object of grouping all the scattered works of irrigation throughout the Presidency, investigating the circumstances of each individual work, estimating for the work required to bring each up to the standard of efficiency, and for providing it with proper means of discharging surplus water and with efficient irrigation sluices, and of carrying out the work estimated for. The scheme, as sanctioned by the Government of India, provided for one division being employed the first year, and an additional one every subsequent year until six divisions were working, one in each circle.

2. The work was started in this official year under Lieutenant-Colonel Montgomerie, one division being appointed to work in the Madura district where it was believed the irrigation works were in greater need of improvement than elsewhere. There was of course a great deal of preliminary work to be done. The system on which the work was to be taken up, the forms to be adopted, the maps, plans, and sections to be prepared, were all discussed fully with Colonel Montgomerie, and some delay naturally occurred in getting work started in the country.

3. The work hitherto done will best be understood from the accompanying map, which is one of the Revenue Survey maps on which the divisions of the primary maps have been laid down. It was intended to make the greatest possible use of the Revenue Survey maps, and even in places where these maps have not yet been published, the Revenue Survey Department have obligingly placed at our disposal such maps as have been prepared. On these maps the main drainage basins are first laid down, and then divided into minor basins as appears most convenient. The outdoor parties then verify the basins and take up each work, obtaining from the Revenue Department full revenue details, working out the hydraulic details, and ascertaining the requirements of each ; finally preparing sections of each tank bank and channel, and plans of existing masonry works, and estimating for the work necessary to put each tank and channel into good order. These estimates are then sanctioned and sent out for execution under the Tank division ; it may be a question how the works can best be carried out, but the principle has been adopted that each divisional office shall work independently ; a portion of the established Public Works division is thus handed over to the Tank division which will, on completion of the works, give back the charge again. Complete estimates for one minor basin only have yet been prepared, and estimates to the amount of about Rs. 30,000, sanctioned ; and Colonel Montgomerie has submitted a full report with the plans and estimates of this basin, explaining the method in which the work has been started, and discussing the means by which the work may be most economically carried out, which will shortly be laid before Government.

4. Madura having been selected as the district in which the first Tank division should work, it was decided to locate the second division in the Madras district, where the tanks are very numerous, and the circumstances of the irrigation are somewhat different from those in Madura. The map shows clearly what work has been done,

although only one division has yet been sanctioned; the maps have been got in readiness for the second division, and some of the surveyors whose work was completed in Madura are now engaged under an officer in grouping and investigating in Madras, in fact starting the work, so that when the additional establishment is sanctioned, there may be no delay in preparatory work.

5. The two divisions will, during the year, work out the shaded portions of the maps, and it is hoped complete the execution of works over a great portion of the area; and grouping and investigation will be pushed on northward from Madura and southward from Madras.

6. The present idea is for the third division, which will be appointed in the commencement of 1885-86, to start work in Kurnool and work through the Ceded Districts, and the maps of this portion will be prepared before the end of the year, and if possible an officer with some surveyors detached to commence operations, so that the work may be taken up without any delay.

7. The officers engaged being new to the work, and it being very desirable that all should work on the same system, it is considered necessary that the services of the Superintending Engineer should be retained for another year. Whatever is decided should be done eventually, the work should be in full swing before any change is made.

Chepak,
22nd March 1884.

(Signed) J. O. HASTED, Colonel, R.E.,
Acting Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Endorsement on the above.

Forwarded to the Secretary to Government, Public Works Department, with reference to G.O., No. 472 W., dated 21st February 1884.

(Signed) J. O. HASTED, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Order—dated 31st March 1884, No. 861 W., Public Works.

Ordered that the report submitted by the Chief Engineer for Irrigation be forwarded to the Government of India, and that sanction be requested to the renewal, for a further period of one year, of the sanction to a local allowance of Rs. 100 to an Executive Engineer acting as Superintendent of Works, who takes the place of the Superintending Engineer employed on the Tank Maintenance Scheme.

(Here enter No. 862 W., dated 31st March 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Revenue Department.

Exd. A. Aubert.
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GENERAL.
ESTABLISHMENT.

Govt. of Madras. 1884.

PUBLIC WORKS.

Dated March, 31*st.*

Recd. *Encl.*

G.O., 31st March 1884, No. 861 W.

MARCH.

Tank Maintenance Scheme

Regarding the necessity for the continuance of Colonel Montgomerie's services in connection with the —, and for the renewal of the sanction of a local allowance to the Executive Engineer holding charge of a circle in his place.

31st March 1884, No. 862 W., Public Works.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Letter—from
Colonel J. SHAW-STEWART, R.E.,
Secretary to the Government of Madras,
Public Works Department,

To
The SECRETARY to the GOVERNMENT of INDIA,
Public Works Department,

Sir,

I am directed to acknowledge the receipt of your letter, No. 195 G., dated 11th February 1884, and, with reference to paragraph 2, to forward, for the information of the Government of India, the accompanying report by the Chief Engineer for Irrigation, showing the work already done and remaining to be done by Colonel Montgomerie in connection with the Tank Maintenance Scheme on which he is employed.

2. His Excellency the Governor in Council trusts that, on consideration of Colonel Hasted's report, the Government of India will see the necessity for the continuance, for another year at least, of Colonel Montgomerie's services on his special work, and will accordingly support the proposal of the Madras Government to extend the existing sanction of a local allowance of Rs. 100 per mensem to the Executive Engineer who replaces Colonel Montgomerie in the charge of a Superintending Engineer's circle.

3. I am to add that the Government of India will be separately addressed in regard to the entertainment of temporary Engineers for the Tank divisions.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Fort St. George,
31st March 1884.

Exd. A. Aubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of 1884 Madras.

PUBLIC WORKS.

Dated March, 31*st.*

Read. *Ex*

G.O., 31st March 1884, No. 862 W.

MARCH.

Tank Maintenance Scheme

Regarding the necessity for the continuance of Colonel Montgomerie's services in connection with the — and for the renewal of the sanction of a local allowance to the Executive Engineer holding charge of a circle in his place.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

READ—the following papers :—

From A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 30th April 1884, No. 512 G.

Referring to your letter, No. 862 W., dated 31st March 1884, regarding what has already been done and remains to be done by Colonel Montgomerie in connection with the Tank Maintenance Scheme on which he is employed, I am directed to observe that in the 3rd paragraph of Colonel Hasted's note, dated 22nd March 1884, submitted therewith, it is stated that "on these maps the main drainage basins are first laid down and then divided into minor basins as appears most convenient. The out-door parties then verify the basins and take up each work, obtaining from the Revenue Department full revenue details, working out the hydraulic details and ascertaining the requirements of each." With reference to this description of the work done I am to inquire whether it applies to the whole of the Madura district.

2. I am also to request that it may be stated what has been the actual strength of the establishment employed directly under the orders of Colonel Montgomerie.

OFFICIAL MEMORANDUM.

With reference to endorsement, No. 108 E., dated 8th instant, on letter from the Government of India, the undersigned has the honor to report that the Vigai river basin, in the Madura district, has been sub-divided, and the Upper Vigai basin has been grouped, all details worked out, and the actual work of restoration put in hand, the rest of the Madura district has not yet been taken up.

2. Enclosed is a statement furnished by the Examiner, Public Works Accounts, showing the strength of the establishment employed under Colonel Montgomerie during last official year.

OOTACAMUND,
17th May 1884.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer for Irrigation.

To the Secretary to Government, Public Works Department.

Office Note from the Examiner, Public Works Accounts, dated 14th May 1884, No. 105.

Herewith the required statement showing the actual strength of the establishment employed directly under the orders of the Superintending Engineer, Tank Maintenance Scheme, during the past year 1883-84.

STATEMENT showing the actual strength of the Establishment employed directly under the orders of the Superintending Engineer during the year 1883-84.

Months.	Office Establishment.																																Cost.			
	Engineer Establishment.			Upper Subordinate Establishment.				Petty.	Clerks.												Draftsmen.								Accountants, all Grade.	Blacksmiths.	Messengers.	Peons.	Total cost.	Contingencies.	Travelling allowance.	Salary.
	Superintending Engineer.	Executive Engineer.	Assistant Engineer.	Sub-Engineer.	Supervisors.	Overseers.	Surveyors.	Lascars.	II Class, 1st Grade, 160—200.	II Class, 2nd Grade, 120—160.	II Class, 3rd Grade, 100—120.	III Class, 1st Grade, 80—100.	III Class, 2nd Grade, 60—80.	III Class, 3rd Grade, 50—60.	IV Class, 1st Grade, 40—50.	IV Class, 2nd Grade, 30—40.	IV Class, 3rd Grade, 20—30.	V Class, 1st Grade, 15—20.	V Class, 2nd Grade, 10—15.	1st Class, 30—70.	2nd Class, 35—50.	3rd Class, 20—30.	Special, 80—100.										
March 1883	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
April "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
May "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
June "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
July "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
August "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
September "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
October "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
November "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
December "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
January 1884	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											
February "	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											

Superintending Engineer, Tank Maintenance Scheme.

No. 1 Tank Division.

March 1883																																			
April "																																			
May "																																			
June "																																			
July "																																			
August "																																			
September "																																			
October "																																			
November "																																			
December "																																			
January 1884																																			
February "																																			

(Signed) D. C. GORDON,
Examiner, Public Works Accounts.

MADRAS,
14th May 1884.

ORDER—dated 23rd May 1884, No. 1305 W., Public Works.

Ordered that the information supplied by the Chief Engineer for Irrigation be forwarded to the Government of India.

(Here enter No. 1306 W., dated 23rd May 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent of Works, Tank Maintenance Scheme.
„ Chief Engineer for Irrigation.

ENDORSEMENT—dated 23rd May 1884, No. 1306 W., Public Works.

Copy of the above forwarded to the Government of India with reference to their letter, No. 512 G., dated 30th April 1884.

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of 1884 Madras.

PUBLIC WORKS.

Dated May, 23rd.

Recd. *Encl.*

G.O., 23rd May 1884. No. 1306 W.

MAY.

Tank Maintenance Scheme

Furnishing information with reference to work done in the Madura district in connection with the — and as to the actual strength of the establishment employed directly under orders of the Superintending Engineer in charge of the scheme.

SCHEME

FOR THE

REPAIR AND CONSERVANCY OF THE MINOR IRRIGATION WORKS

IN THE

MADRAS PRESIDENCY.

By Lieut.-Colonel P. MONTGOMERIE, R.E.

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SCHEME

FOR THE

REPAIR AND CONSERVANCY OF THE MINOR IRRIGATION WORKS IN THE MADRAS PRESIDENCY.

By Lieut.-Colonel P. MONTGOMERIE, R.E.

PREFATORY REMARKS.

1. In dealing with the question of the management of Minor Irrigation works, it will be most convenient to consider it under the two heads into which the subject naturally divides itself, viz. :—

Natural divisions of the subject.

I. Their professional treatment.
II. Their conservancy.

The former of these can only be performed by duly qualified Engineers, and the latter cannot be accomplished without the intervention of the department to which the collection of the revenue and the granting of remissions is entrusted; and both operations, although separate and distinct, cannot be intelligently conducted except under one head, whether it be a collective body or one individual.

I. Professional treatment.
II. Conservancy.

PART I.

The Professional Treatment of Minor Irrigation Works.

The Revenue and Capitalized Value of Minor Irrigation Works.

2. The following figures, which have been extracted from the general administration report of the Madras Presidency for 1882-83 and from the irrigation revenue accounts compiled in the Office of the Director of Revenue Settlement and Agriculture, indicate the relative importance of the minor systems of irrigation, usually termed "Minor irrigation works," and the other sources of land revenue in the presidency.

Analysis of the land revenue accounts of Madras, 1882-83.

During the year the area of Government and inam lands which were cultivated in the presidency amounted to 21,474,685 acres; of this area, 4,727,657 acres were irrigated. The area of zemindari lands which were cultivated during the year was 1,419,990 acres, of which 215,111 acres were irrigated; and the total area under cultivation was 22,894,675 acres, of which 4,942,768 acres were irrigated; and, excluding Nilgiris, South Canara and Malabar districts, where there are no artificial works of irrigation, the total area dependent upon irrigation works was 4,313,846 acres.

Total Cultivation.

Statement, page vii of the General Administration Report for 1882-83.

Statement, printed in Proceedings of the Madras Government, No. 782 I., dated 25th September 1883.

The total land revenue, assessed on Government and inam lands throughout the presidency, was Rs. 5,46,45,017, and the peishcush, or permanently settled revenue, was Rs. 51,31,879, making a total of Rs. 5,97,76,896; of this, Rs. 2,00,85,218 was the portion dependent upon irrigation in all the districts except Nilgiris, South Canara and Malabar.

Total Revenue.

Statement, page vii, General Administration Report, 1882-83.

Mr. Wilson's figures.

Page 16, Departmental Chapter of do.

From these figures it will be seen that while the irrigated area is a little more than one-fifth of the entire area cultivated, the revenue dependent upon irrigation works alone is a little more than one-third of the total land revenue of the presidency.

Revenue from works for which Capital and Revenue Accounts are kept.

3. This revenue dependent on irrigation works includes the following :—

Productive Public Works.

	Area Irrigated.	Revenue.	Total.	
	ACRES.	Rs.	Rs.	
Godávari delta ...	504,213	22,45,014	...	P.M.G., No. 715 I., of 4th Sept. 1883.
Kistna do. ...	261,158	11,83,645	...	" " 762 I., of 14th " "
Pennér anicut ...	63,653	2,99,452	...	" " 725 I., of 5th " "
Kurnool canal ...	14,903	59,255	...	" " 1031 I., of 13th Dec. "
Cauvery delta ...	892,871	41,01,753	...	" " 715 I., of 4th Sept. "
Srivaikuntham anicut ...	19,546	1,96,815	...	" " 725 I., of 5th " "
Total ...	1,756,344	...	80,85,934	

Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.

	Area Irrigated.	Revenue.	Total.	
	ACRES.	Rs.	Rs.	
Chembrambakam tank ...	12,763	65,901	...	P.M.G., No. 725, of 5th Sept. 1883.
Pálár anicut ...	66,212	2,36,335	...	
Pelandorai anicut ...	3,386	14,434	...	
Madras water-supply and irrigation extension project	7,435	29,793	...	P.M.G., No. 762 I., of 14th Sept. 1883.
	89,796	...	3,96,463	
Total ...	1,846,140	...	84,82,401	

Deducting the above amounts from the total revenue dependent on irrigation works, the difference, or Rs. 1,16,02,807, is the revenue dependent on the minor irrigation works. This amount is nearly one-fifth of the entire land revenue of the presidency, and is 36 per cent. greater than the revenue derived from the whole of the important systems for which capital and revenue accounts are kept.

Revenue dependent on the Minor Irrigation Works.

4. This revenue, dependent on the minor irrigation works, is divided between "land" and "water" as follows :—

Capitalized value of the Minor Irrigation Works.

	Rs.
Land assessment	31,96,581
Water or irrigation revenue ...	84,06,226
Total ...	1,16,02,807

Director of Revenue Settlement's Accounts.

The total expenditure incurred during the year on Irrigation and Navigation works for which neither Capital nor Revenue Accounts are kept was Rs. 12,27,897. The collection charges in the Civil Department at 7·2 per cent. on this irrigation revenue amounts to Rs. 6,05,250, so that the net irrigation revenue for the past year from these minor irrigation works amounted to Rs. 65,73,079, and the capitalized value of these works at 25 years' purchase of the net revenue would amount to Rs. 16,43,26,975 or about 16½ millions sterling.

Page 146 of Departmental Chapter of General Administration Report, 1882-83.

5. Regarding this valuable property, which yields nearly three-fifths of the whole of the revenue from the irrigation works of Madras, and which has been in the possession of the British for nearly a century, there is at this present moment hardly any detailed information, either revenue or professional, recorded in a systematic manner and which is absolutely necessary for its intelligent administration.

Want of detailed information, revenue and professional.

Without detailed data, extending over a series of years, it is not possible to judge of the accuracy or otherwise of the crude opinions which are occasionally hazarded regarding the deterioration of the works and the annual loss of revenue which might be avoided if the works themselves were maintained at some undefined standard of efficiency.

6. That the majority of the minor irrigation works of Madras must have deteriorated may be assumed from the fact that while, as a rule, the expenditure incurred by Government has, under the existing regime, been necessarily confined to the more important tanks and to those works, which, owing to their neglected state, have more easily been damaged by heavy floods, the majority of the works which have not yet arrived at this stage of dilapidation have hardly been touched, either by the Government or by the cultivators for years; but the extent to which this deterioration has advanced cannot be ascertained without technical data, which must be collected by the professional department.

Technical data to be collected by the Public Works Department.

7. On the other hand the avoidable loss of revenue through the neglected state of the works cannot be arrived at by a comparison of the ayacut areas with the actual areas irrigated, for the former merely represent the maximum areas, which in the most favorable years of rainfall it is supposed might be brought under irrigation and in many cases include lands which never can or will be irrigated. To determine the actual capabilities for irrigation of each source of supply, revenue details extending over a series of years, with explanations of the causes of remissions, are necessary; and no attempt has yet been made by the revenue authorities to furnish this important data.

Revenue details to be furnished by the Revenue Department.

8. The want of the detailed information and data being the cause of the misapprehension which exists in regard to the Minor Irrigation works of the Madras Presidency, it is considered that with a clearer view of the actual conditions, capabilities and circumstances of the works, the administrative reforms necessary for their proper management will suggest themselves. With this view the Upper Vaigai river basin in the Madura district has been selected as a suitable tract of country for complete investigation in order to illustrate the subject, because—

Upper Vaigai basin selected to illustrate the condition of Minor Irrigation works generally.

1*st*. The Madura district is reputed to be the most neglected district in the Presidency in regard to the conservancy of its irrigation works.

2*nd*. The water-supply of the Upper Vaigai basin being more certain and abundant than the local supplies available in most of the other districts, the capabilities for improvement are more likely to exist in this tract of country than elsewhere, and the fluctuations of revenue owing to the uncertainty of local rainfall is reduced to a minimum.

The actual circumstances of irrigation works of course vary for each locality, but it is thought that an examination of the circumstances of the works in the Upper Vaigai basin, which are all old native works, will set at rest the vexed question regarding the

efficiency of native irrigation works generally to perform the duties for which they were originally designed.

The Professional Investigation of Minor Irrigation Works.

9. Before referring to these special investigations, it will be convenient here to explain the method which has been adopted, and the principles which must guide the professional investigations of the minor irrigation works generally, and which have to be carried out for the whole of the Madras Presidency, before it can be possible to place their administration on a proper footing.

Method and general principle to be explained.

The attempts which have hitherto been made to divide these works into separate and distinct units (estimated at some 50,000 works) and to place them in different categories according to the areas of irrigation under each, with a view to conserving them under separate arrangements, must naturally lead to failure; for not only is it wrong in principle and contrary to the very elements of the art of irrigation, which require all irrigation works dependent on the same source of supply to be treated as a whole, but, as has been pointed out by experienced revenue officials, it would be manifestly unjust to the cultivators who hold lands under all classes of works on equal terms.

Classification of Minor Irrigation works with reference only to areas irrigated unsuitable.

10. The professional investigations must therefore be carried out solely with reference to the water-supply available, and in a comprehensive and systematic manner for all works dependent on the same source. With this object the catchment basins of each main river in the Madras Presidency in which the irrigation works are situated have been carefully indicated on the Ordnance Survey sheets (scale 4 miles to the inch) so as to form a Primary Index to the Irrigation. A list of these main river basins are given in Appendix A. These main river basins will be further sub-divided into convenient minor basins, the drainage of each being separate and distinct. The detailed investigations of each minor basin can then be taken up as a whole and all the irrigation works contained in them arranged into groups, sub-groups and isolated works in accordance with the irrigation professional circulars.

Systematic investigation with reference to sources of supply necessary.

Appendix (A).

11. The detailed investigations of each minor basin will include:—

Detailed investigations to include.

1st. The preparation of a group irrigation map (scale, 1 inch to a mile) which will comprise the whole of the minor basin showing the numbering of the works in each group and the catchment areas of each individual work.

Group map; scale, 1 inch to a mile.

2nd. The preparation of detailed irrigation maps (scale, 4 inches to a mile) showing the position, etc., of all works in a sub-group or series of sub-groups as may be most convenient. As a rule these maps may be prepared by reducing the village maps when sufficiently intelligible, and on the clear margins of these maps will be entered detailed sketches drawn to scale of each important masonry work, with longitudinal sections of the bunds of all of the tanks, showing the standard levels to be maintained for—

Detailed maps, 4 inches to a mile.

(*a*) Level of the top of the bund.
(*b*) Maximum water level.
(*c*) Full supply level.

3rd. A statement of financial details of each of the irrigation works in the minor basins arranged according to the grouping decided upon. This statement will show the average revenue and remissions for five years, with explanations of the causes of remissions, the anticipated increase of revenue, and the estimated cost of bringing up each irrigation work to the standard of efficiency.

Statement of financial details.

4th. A group abstract of hydraulic details of each work in the minor basin, prepared according to the grouping decided upon.

Abstract of hydraulic details.

5th. A descriptive memoir of each irrigation work in the minor basin showing the hydraulic details separately for each work.

Descriptive memoirs.

6th. A separate estimate for each sub-group or isolated work showing the work necessary to bring them up to the standard of efficiency.

Estimate by sub-groups.

12. It is proposed that all the maps should be lithographed and the descriptive memoirs printed and bound up by main river basins for future reference and guidance. The cost of their publication, it will be seen from the estimate given in Appendix (C), will amount to only 3·27 per cent. of the revenue or ·16 per cent. of the capitalized value of the works.

Proposed publication of descriptive memoirs with maps.

Appendix (C).

Special Investigation of the Periyakulam Minor Basin.

13. To facilitate the investigations of the Upper Vaigai river basin, which comprises all lands draining into the Vaigai river above the Perria-Ani situated about 24 miles above the Town of Madura: this tract of country has been sub-divided into the following five minor basins, the drainage of each of which is separate and distinct.

Minor Basins of the Upper Vaigai river basin.

Name of Minor Basins.	Limit and Extent.	Area in square miles.
Andiputy Basin.	Al lands draining into the Vaigai river on the right bank between its junction with the Surulyaur river and Perria Ani.	
Tulla Vaigai Basin.	All lands draining into the Vaigai or irrigated from it above its junction with the Surulyaur river and including the Tadicherie river irrigation.	
Surulyaur Basin.	All lands draining into the Surulyaur river above its junction with the Vaigai river.	
Periyakulam Basin.	All lands draining into the Vaigai river, on the left bank between its junction with the Surulyaur river and the Batlagoondu basin.	
Batlagoondu Basin.	All lands draining into the Vaigai river on its left bank between the Periyakulam basin and the Perria Ani.	

14. As the circumstances of the irrigation works in each of these minor basins is almost precisely similar, the Periyakulam minor basin has been selected as a specimen of the whole. A list of the plans and documents connected with the investigations of the minor basin which are submitted with this report are given in Appendix (B).

Periyakulum Minor Basin selected as a specimen.

Appendix (B).

15. In deciding the standard of efficiency for each of the irrigation works in the Periyakulam Minor basin, the general principles enunciated in Proceedings of the Madras Government, No. 284 I., dated 5th May 1880, have been adhered to, and these are, as regards the smaller tanks, to utilize the existing surplus arrangements, whether permanent or temporary, for the discharge of flood waters, and to secure the

Standard of efficiency of tanks.

Waste weirs.	Surplus sluices.
Calingulahs.	Bye-washes.
Taubagies.	Manual breaches.
Open vents.	

safety of the works by fixing an efficient level for the top of the bunds above the maximum water level.

16. The old-fashioned plan of fixing the levels of the top of the bund above maximum water level in accordance with the breadth of the water-spread opposite and sloping it down to the bye-washes and mamul breaches at the flanks of the bund have been followed—*vide* the longitudinal sections of the bunds shown on the detailed irrigation maps. The following are the standard heights of bund for each class of tank which has been decided upon, the top width in each case being the same as the height above maximum water level.

Level of top of bund to depend on the water-spread in front.

Standard heights of opened tank bunds.

Class of Bund.	Breadth of Water spread from Bund.	Top of Bund above Maximum Water Level.
1st-class		
2nd do.	From 1,500 to 900 feet	6′ to 4½′
3rd do.	Do. 900 to 300 „	4½′ to 3′
Special...	Under 300 feet	3′
	Over 1,500 „	3′ and more.

17. As regards the standard of efficiency for the river channels, the existing anicuts and other masonry works are to be placed in thorough order, but no attempt has been made to provide head-sluices and other permanent masonry works unless the want of them has been the cause of repeated damage and loss of revenue. As a rule, the cultivators prefer open heads to their channels (when of moderate dimensions), as it enables them to secure the maximum benefit from ordinary floods and they have been accustomed to successfully manipulate the flow in their own fashion from time immemorial.

Standard of efficiency of channels.

18. Of course in the larger river channels, such as the Kalingarayen and Thadapully channels in the Coimbatore district, the Cauvery channels in the Trichinopoly district, and the other works which have been selected, as of sufficient importance to require a continuous record of expenditure, permanent masonry works are probably necessary, and if so, must be provided by Government; but in moderate sized channels, such as most of those in the Vaigai basin, they are not absolutely necessary and need not be provided unless especially desired by the cultivators themselves, in which case there would be no hardship whatever in requiring the cultivators to provide half the cost of the improvements either in money or labor, for the cultivators would secure much greater benefit from them than the Government, and it seems advisable that this principle be accepted and acted upon as a rule by Government.

General principles for constructing masonry works for channels.

19. In drawing up the scheme for the improvement of the Periyakulam minor basin the revenue details contained in the financial statement have been obtained direct from the Curnams of the villages, and these figures were subsequently verified by the Collector of the District—*vide* his letter, No. 4002, dated 1st November 1883, and which is given as Appendix (D) to this report. The ultimate extent of irrigation proposed under each work after it has been brought up to the standard of efficiency has been arrived at after consulting the cultivators themselves and may be accepted as sufficient, seeing that the cultivators are the most interested parties.

Preparation of financial statement, Periyakulam minor basin.

Appendix (D).

Proposed ultimate irrigation ascertained from cultivators.

Result of the Special Investigations of the Periyakulam Minor Basin.

20. From an examination of the statement of financial details which accompanies the special investigations of the Periyakulam minor basin, it will be observed that there are only seven tanks for which remissions of importance have been made;

Remissions under tanks.

these are works Nos. 10, 12, 51, 52, 59, 61 and 62. Of these, Nos. 10 and 12 are not to be restored for the reasons given in the Collector's letter; appendix (D) and the others, it is hoped, will be brought up to an efficient state when the improvements proposed have been carried out.

21. The following analysis of the statement of financial details will give a general idea of the present condition of the irrigation works in the minor basin:—

Analysis of financial statement.

Revenue Details.

		Rs.	Rs.
Actual collections.	Assessment	40,176	
	Less remissions	1,426	
			38,750
Total ayacut assessments			43,861
		Difference ...	5,111

From this it would appear that if the full ayacut assessments were collected, the revenue would be increased by nearly 14 per cent; but as

	Acres.
The average existing irrigation	7,756
And ultimate anticipated irrigation	7,951
The anticipated increase ...	195

	Rs.
The anticipated increase of revenue from this at 4 Rs. per acre would be	780
Average remissions being	1,420
The total anticipated increase of revenue ...	2,200;

from which it will be seen that the probable increase of revenue will not be 6 per cent. of the existing gross revenue.

Proposed Expenditure.

The outlay proposed to secure the standard of efficiency amounts to Rs. 36,000. This is a little less than one year's gross revenue and is 115 per cent. of the anticipated net revenue due to irrigation, and the expected increase of revenue, viz., Rs. 2,200, would yield 6 per cent. on the proposed outlay.

22. Although it is evident from the detailed maps and sections that most of the tanks in the minor basin are considerably below par in the matter of their earthworks, a reference to the financial statement would indicate that so far as the loss of revenue to Government (through remissions attributable to the condition of the works) is concerned, the irrigation works themselves, in spite of the deterioration of the earthworks, are of sufficiently good design to fulfil the purposes for which they were originally constructed and to secure a handsome revenue to the State.

Tank bunds below par.

Sufficiency of general design.

23. No doubt the remarkable immunity from destructive breaches which the tanks in this minor basin would seem to enjoy is attributable in a considerable measure to the watchfulness of the cultivators in regulating the water stored. The chief incentive to this watchfulness on the part of the cultivators is no doubt the valuable and perennial nature of the water-supply which enables second-crop cultivation to be extensively carried out. But probably the fact that the bunds of the tanks are at present so little above the full supply level also acts very materially on the self-interest of the cultivators and prevents them from storing too great a supply in their tanks.

Regulation of water by the cultivators.

24. As regards the anicuts and river channels in this minor basin, some of the anicuts require considerable repairs to be carried out not only to prevent the destruction of the works but to secure the cultivation under the channels. These repairs have been estimated for and are shown in the statement of financial details. The channels themselves are generally in fair working order, and the clearances are principally effected by the cultivators.

Condition of anicuts and river channels.

25. The results of the professional investigation of the Minor Irrigation works in the Periyakulam minor basin may be summed up as follows :—

Summary of results.

1*st*. The work required to secure the standard of efficiency consists principally in the earthwork of the tank bunds, which are considerably below par, and in general repairs to the anicuts and other masonry works.

2*nd*. The estimated cost of the work required amounts to about one year's gross revenue.

3*rd*. The expected increase of revenue that will be secured is 6 per cent. on the proposed outlay.

4*th*. The anticipated increase of revenue is a little less than 6 per cent. of the present gross revenue and is not the difference between the ayacuts and the existing average cultivation, which would be 14 per cent.

5*th*. That the design of the works is sufficient for the purposes for which they were originally constructed ; and even in their present deteriorated condition they are capable of securing a handsome revenue to the State.

6*th*. That the regulation of the water in the minor irrigation works may be safely left in the hands of the cultivators whose self-interests are concerned ; and

7*th*. That the safety of the irrigation tanks generally will best be secured by raising the bunds in their centres to a sufficient height above maximum water level and generally sloping them down to the flanks where the surplus arrangements are usually situated, and by permanently deciding the position, level and extent of each surplus work whether permanent or temporary.

The Extension and Improvement of Minor Irrigation Works.

26. That there is considerable diversity of opinion regarding the practicability of permanently increasing the revenue under the majority of the minor irrigation works may be seen by a comparison of the opinions on the subject which have been expressed by the two most eminent hydraulic Engineers that have been connected with Madras Irrigation and which are as follows :—

Diversity of opinions.

Sir A. Cotton, R.E. ; the late Colonel Anderson, R.E.

Sir A. Cotton.

"But I must here observe that the Irrigation works in general are so far from being in good order that the revenue actually derived from them at present is by no means the full measure of their value ..... I think that in any tank district the revenue is now much below what it would be if the works were in good order, so far from what I can judge from what I have seen of the multitude of tanks and channels that now only produce $\frac{2}{3}$, $\frac{1}{2}$ or even $\frac{1}{4}$ of the ayacut revenue."

The late Colonel Anderson.

"In every part of the Madras Presidency there are a number of rain-fed tanks, the revenue derived from which may be liable to undergo extraordinary fluctuations, owing to the uncertainty and insufficiency of the supply; the cultivation then becomes a lottery."

(Madras Civil Engineering Paper, No. VI., Notes on Canals and Rivers—Report to Board of Revenue, dated 13th December 1837, by Captain A. Cotton.)

Sir A. Cotton however qualifies his opinion in the following terms :—

"I believe that if a question was asked respecting the grounds on which the present annual expenditure has been fixed, there is no person whatever who could assign any reason for it, whether derived from the annual accounts of property dependent upon the works, or from the

experience of past years showing how far the sums expended had been sufficient to prevent the revenue from falling off. No annual statement showing the increase or decrease of nunjay revenue with reports showing how far the increase or diminution was owing to the state of the irrigation works, how far to the failure of rains, how far to the state of assessments, are ever prepared ; so that this most important subject is never brought into a clear point of view."

27. It is now several years since Sir A. Cotton expressed the above opinions, and it would be prudent, before deciding upon any comprehensive scheme for the general improvement and extension of minor irrigation works with the idea of permanently increasing the revenue under them, to examine the actual results of the schemes which have been carried out within late years.

The results of schemes executed.

From the Madras Irrigation Administration report for 1882-83 it will be seen that the improvements to the Chembrambaukam tank have resulted in a return of 1·12 per cent. on the capital charges.

Chembrambaukam tank.

The Pálár Anicut System has yielded only 27 per cent., and the financial results of the Pelandorai Anicut have been a loss of Rs. 56,191 including interest charges.

Pálár Anicut System.

Pelandorai Anicut.

From the statement given in Appendix (E) to this report it will be seen that the expenditure on the Mysore Tank Scheme up to 1879 amounted to Rs. 9,38,282, exclusive of survey establishments and tools and plant, and has yielded an increase of revenue giving a return of 2·4 per cent. on the outlay, only during the most favorable season.

Appendix (E) Mysore Tank Scheme.

28. It must also be borne in mind that the Minor Irrigation works of the Madras Presidency (which are nearly all old native works) are the results of long and often dear-bought practical experience, and that in most districts nearly every available site for the minor storage and distribution of the existing local supply has been utilized to the extent which practical experience has shown to be advisable. And with the knowledge of the actual results of the attempts which have been made within late years to enlarge or extend these minor works, it is evident that a scheme for the general extension and enlargement of them throughout the Presidency will not be a financial success.

Minor Irrigation Works of Madras, the result of long experience.

29. The results of the special investigations of the Periyakulam Minor Basin would seem to indicate that all that is necessary or advisable is to bring the minor irrigation works up to the standard of efficiency laid down in the Proceedings of the Madras Government, No. 284 I., dated 5th May 1880, and this would cost for works similarly situated to those in Upper Vaigai basin about one year's average revenue or considerably less than the approximate estimate given by the Acting Chief Engineer for Irrigation in the 12th paragraph of his memorandum, dated the 12th November 1882. This is a point however which cannot be definitely settled without detailed examinations of some other localities ; and it is not improbable that the estimate given by the Acting Chief Engineer for Irrigation may not be too much for those localities where the irrigation is chiefly under tanks of considerable size and importance.

One year's revenue sufficient for Periyakulam Minor Basin.

30. All proposals for the extension and improvement of irrigation should, it is thought, be considered separately and independently of the general scheme for the maintenance and conservancy of the existing minor irrigation works, and should be confined principally to the regulation and improvement of the supply from the more important local streams such as the Barúr, Marandahully and Kistnagherry reservoir schemes in the Salem district, and the Sangam Project in the Nellore district, or to the utilization of the supply from the permanent sources such as the Periar Project in Madura, and the Bhavání Project in the Coimbatore district.

Proposals for extensions and improvements to be independent of tank maintenance scheme.

PART II.

The Conservancy of Minor Irrigation Works.

General Remarks on the Existing Arrangements.

31. The circumstances of the numerous minor irrigation works of the Madras Presidency are such that any scheme for their efficient conservancy must be considered in connection with the execution of the work required to bring them up to a fair standard of efficiency.

Conservancy and execution of general repairs to be considered together.

The admission made by the Acting Chief Engineer for Irrigation in his note of the 27th November 1882 that it must take 55 years to bring the works up to the proper standard of efficiency is tantamount to admitting that the work never can or will be done by the present Public Works Department, even with the assistance of five extra tank divisions. If this were really the case, it would be better for the interests of the country, as well as for the reputation of the Public Works Department, for that department to retire from the tank districts and abdicate in favor of an efficient conservancy department forming part and parcel of the Revenue administration. But the difficulties (so far as the Public Works Department are concerned) which have prevented it from efficiently carrying out the duties of conservancy are more imaginary than real, and may almost entirely be attributed to the supposed impossibility of separating the duties of its establishment between "Irrigation" and "General Work" and the further division of labor of the Irrigation Branch between conservancy and construction.

Separation of duties in the Public Works Department necessary for efficient conservancy.

This part of the subject, when once divested of the technicalities and departmental prejudices which have too long been allowed to surround it, becomes a matter almost entirely of administrative reform. The reform must however be carried out simultaneously in the Revenue and Public Works Departments.

32. It is well known to every one who has any experience of the rural districts of Madras in which these minor irrigation works are situated that any scheme for their maintenance and repair which does not invoke the influence of the Collectors and their subordinates, or ignores the labor of the cultivator as a prime factor of the scheme, will be practically useless.

Labor of the cultivator a prime factor in conservancy.

This is what the late Colonel Anderson said on the subject in 1862:—

"291. In the Madras Presidency, on the other hand, all works however small, and all repairs of irrigation works estimated to cost over 25 rupees are carried out under the supervision of the officers of the Department of Public Works. How this system came originally into operation, I would not attempt to explain. It will be allowed, I imagine, by all parties that it has great drawbacks. The question is not whether the work can be done best by the Revenue authorities or by the Department of Public Works, but whether it could not be done by the ryots themselves. There is no doubt that it is not any difficulty of construction that would stand in their way; but the difficulty of doing anything contrary to 'Mamul.' But when so much is said and written about educating and improving the natives, one would think that any effort of the kind would not be of much good, if they did not teach the natives first of all to help themselves. If there is one thing more than another in which they have an interest, it is the maintenance of their irrigation works, without which their land is useless.

The late Colonel Anderson's opinion.

"292. If the thousands of petty tanks and channels in the presidency were repaired by the ryots, both they and the Government would be gainers. The latter could well afford to reduce the revenue by the average cost of the annual repairs, less the charge for superintendence; while the ryots could of course execute the work cheaper than could be done by the department, to say nothing of the benefit they would derive by learning to exert themselves."

And Colonel Mullins, R.E., who has held the post of Chief Engineer for Irrigation during nearly three whole lustra and who has probably more experience of the minor irrigation works of Madras than any other member of the department, has admitted the necessity for assigning to the villagers themselves the work required for the maintenance of their minor works, for the following reasons:—

Admission by Colonel Mullins, R.E.

Chief Engineer's (for Irrigation) Memo., No. 111 of May 1880.

Proceedings of the Madras Government, Revenue Department, No. 547, dated 31st March 1881.

1*st*. The Public Works Department in the days of greatest expansion could not deal with a tithe of the minor irrigation works.

2*nd*. There never has been a State machinery which has done or could do the work needed to secure the efficiency of those works; and

3*rd*. No Government department can deal with them except in the way of general control.

33. From the estimates for the work required to secure the standard of efficiency of the irrigation works in the Periyakulam minor basin, it will be seen that earthwork and rough stone work form the bulk of it. This is precisely the description of work which the interested cultivators can perform more satisfactorily than any one else, and which they must be induced to take up of their own free will if possible. This desirable end will, it is considered, be accomplished as soon as the Kudimaramut Bill has been passed into law; for with the Kudimaramut Bill in one hand and the general repair estimates in the other there can be very little doubt which alternative the ryot will select.

Unskilled labor forms the bulk of the work required.

Moral effect of the Kudimaramut Bill in securing the labor of the cultivators for general repairs.

34. The Collector's Department is the only one which can possibly enforce the Kudimaramut Act, but it is Utopian to believe that without the assistance and advice of a duly trained Conservancy Department, the Collector can give effect to the Act or be certain that the general repairs are satisfactorily carried out. The proposals which have lately been made to give the Collector a small percentage of the grants made to him is not sufficient for the purpose, and must ultimately end in a waste both of time and money.

Collector's Department incapable for enforcing Kudimaramut or carrying out general repairs without a Conservancy Establishment.

35. The Public Works Department, if allowed free access to the revenue records as has been courteously permitted by the Collector of Madura, are perfectly capable of attending to the professional treatment of all minor irrigation works including the construction of all masonry works that may be required; and it is now only necessary to consider the administrative reforms which must be carried out both in the Public Works and Revenue Departments in order to secure the efficient maintenance and conservancy of the works.

Public Works Department can carry out professional investigation and construction work.

Administrative Reforms.

36. The essential reform which has to be made in the Public Works Department (at least in the Irrigation Branch) is the entire separation of the duties of conservancy from that of professional investigation and construction in all ranks below that of Executive Engineer. This principle is invariably followed on all railways and in every properly administered public work or private property; and it is believed that the necessary changes could be effected without in any way dislocating the department or by making any material changes in the manner and constitution of the existing Superintending Engineers' charges or by increasing the numbers of the executive divisions now allowed to the presidency. The proposed separation would of course not be carried out in those districts in which the large delta schemes are at present under construction. For it will be time enough after these projects have been fully completed to arrange for their conservancy.

Separation of conservancy from investigation, an essential reform in the Public Works Department.

Godâvari, Kistna, Nellore and Tanjore.

37. There should be conservancy establishments for each collectorate, which must be distributed according to the sources of water-supply by minor basins; and the local heads of these conservancy establishments will have to be entrusted with magisterial powers to give effect to the important Acts which are about to be enacted by the legislature, viz:—

Separate Conservancy Establishments for each Collectorate.

Conservancy Engineers to have magisterial powers and assist Collectors in giving effect to the law.

The Kudimaramut Act,
The Rivers Conservancy Act, and
The Irrigation Act.

This would virtually place the Conservancy Engineer in the position of Assistant to the Collector, although for the purposes of discipline and account he would be under an Executive Engineer.

38. To form a nucleus for the Conservancy Establishments it will be necessary to re-arrange and amalgamate the following existing divisions into "General" and "Irrigation," respectively, the "Irrigation" divisions being arranged according to river basins, and the "General" divisions according to districts.

Eight existing divisions to be made Irrigation to form the nucleus of the Conservancy Establishments.

Districts and existing Divisions.	Amalgamated Divisions.		River basins to be comprised in Irrigation Divisions.
	General.	Irrigation.	
Ganjam	1	1	All basins north of the Godávari.
Visagapatam			
Bellary	—		
Cuddapah			
Kurnool	1	2	To be settled hereafter.
Coimbatore			
Salem	1	1	Cauvery above the Amarávati and Pooniar above hills.
North Arcot			
Chingleput	1	2	Pálár and Madras drainage basins.
South Arcot			
Trichinopoly			Cheyár and drainages south to Coleroon.
Madura			
Tinnevelly	1	2	Amarávati and Cauvery.
			Pallaur, Vagai and all south.
	5	8	

39. The eight proposed Irrigation divisions would permanently take the place of the Tank divisions, and it is believed that when the Tank divisions have completed the professional investigations the Irrigation divisions, with the assistance of the conservancy establishments will be in a position to carry out all the work estimated for, as well as the periodical repairs which in future should be carried out more regularly and systematically than is done at present. The portion of the establishment of the Irrigation divisions not employed on conservancy would be utilised in preparing the estimates for the periodical repairs, and in executing the more important masonry works.

The eight Irrigation divisions to take the place of the Tank divisions.

40. In regard to the five General divisions proposed, it is considered that, with the improved means of communication afforded by railways, &c., and if the limit of repairs to be carried out by the department is extended from Rs. 1,000 to Rs. 2,000, as is the case in the Bombay presidency (or, for the matter of that, entirely abolished) and fewer new works were put in hand at one time, the establishment of the five General divisions would probably be in a position to perform the particular work required of them in a more satisfactory manner than can be done under the present system.

The five General divisions will be more efficient than the existing divisions.

41. The only changes in the Superintending Engineers' charges which the above proposals would entail would be to place the whole of the Amarávati river basin under the Superintending Engineer, VI Circle, and the North Arcot district, comprising the Upper Pálár basin, under the Superintending Engineer, III Circle. The necessity for these changes are self-evident when we take into consideration the sources of supply.

Slight alterations in Superintending Engineers' Circles.

42. The reforms which should be carried out by the Revenue Department are—

Revenue taluk boundaries to be re-arranged.

To make the boundaries of the taluks conterminous as far as possible with the minor basins. It will be seen from the primary index to irrigation on which the taluks of the Madura district have been projected that it was evidently the intention when these taluks were formed that their boundaries should be the water-sheds of the basins forming the water-supply of the minor irrigation works, and it is considered that, with the more accurate maps that are now available, there will be no difficulty in re-arranging the taluks so as to agree with the proposed conservancy changes.

Taluks to be conterminous with minor basins and conservancy charges.

43. Arrangements must also be made to keep the Irrigation Engineers punctually informed of the state of the irrigation in their divisions by annual returns furnished to them by the Collectors, showing the remissions which have been granted and the precise cause of these remissions. This can easily be done by filling in the forms in which the financial details of the minor basins are now being collected by the Tank divisions.

Revenue returns to be punctually furnished to Irrigation Engineers.

44. An Irrigation Conservancy Code, defining the duties of all connected with the irrigation, must be drawn up.

Irrigation Conservancy Code to be drawn up.

45. And to prevent friction and ensure the Code being duly enforced, it will be necessary for the Irrigation Chief Engineer to be an *ex officio* Member of the Board of Revenue, and for an Engineer permanently attached to the Board as Irrigation Secretary. This officer need not be above the rank of Executive Engineer but until the scheme is in working order he ought to be a Superintending Engineer of the first class.

Chief Engineer for Irrigation to be an *ex officio* Member of the Revenue Board.

An Engineer to be Irrigation Secretary to Revenue Board.

Brief summary of the administrative reforms required.

46. The administrative reforms necessary to secure the maintenance and conservancy of the minor irrigation works are summed up briefly as follows:—

1*st*. The more intimate association of the Revenue and Public Works officials connected with the conservancy of the minor irrigation works, without which the interests both of the Government and the ryots must suffer.

2*nd*. The entire separation in the Irrigation Branch of the Public Works Department of the duties of conservancy from that of professional investigation and construction for all ranks below that of Executive Engineer, except in those districts in which the deltaic schemes are still under construction.

3*rd*. One or more conservancy sub-divisions, according to the size and importance of the district, to be attached to each Collectorate to supervise the execution of general repairs and to assist the Collector in enforcing—

(*a*) The Kudimaramut Act,
(*b*) The Rivers Conservancy Act, and
(*c*) The Madras Irrigation Act;

but which will be under an Executive Engineer for purposes of discipline and account.

4*th*. To enable the separation between conservancy and construction to be effected, and in order to create a nucleus for the formation of a duly qualified conservancy establishment, the existing divisions of the thirteen Tank districts to be re-arranged and amalgamated into eight Irrigation and five General divisions, respectively, the Irrigation divisions being arranged according to river basins and the General divisions according to districts.

5*th*. An intermediary grade between the Engineers and Upper Subordinates be introduced into the Public Works Department, to have the title Irrigation Conservator, and to which the subordinate officials of t Revenue Department will be eligible on their passing a qualifyi examination.

6*th*. The local Irrigation Conservators (who will be sub-divisional officers the Irrigation Executive Engineers) to be entrusted with magister powers for the purposes of carrying out the conditions of the la They will thus become virtually the Assistants to the Collectors a will be intimately associated with him in the Irrigation Administrati of the district.

7*th*. A conservancy charge will comprise one or more river basins or grou of taluks, whichever is most convenient, with an overseer to each tal or group of minor basins, and a tank inspector to each minor basin part of a minor basin.

8*th*. To prevent the General divisions from being hampered by petty detai the limits of the repair estimates to be carried out by them to extended from Rs. 1,000 to Rs. 2,000, as is the case in the Bomb presidency; and fewer new works to be put in hand at one tim This with the improved means of communication afforded by railway &c., will secure the efficiency of these divisions.

9*th*. The boundaries of revenue taluks to be made conterminous with those the conservancy charges which have to be arranged according to t sources of water-supply by minor basins. The original taluk boun aries were manifestly intended to have been taken along the water-she when practicable; and there will probably be little difficulty in carr ing out this essential reform with the assistance of the more accura maps which are now available.

10*th*. Complete revenue return for each minor basin showing the remissio with explanations of the precise causes of these remissions to be furnish punctually by the Collector to the Irrigation Engineers.

11*th*. An Irrigation Conservancy Code defining the duties of all connect with the irrigation to be drawn up.

12*th*. And to prevent friction and ensure the Code being duly enforced th Chief Engineer for Irrigation must be made an *ex officio* Member of th Board of Revenue, and an Engineer must be permanently attached the Board as Irrigation Secretary.

Suggested reforms will secure efficiency of conservancy establishments and reduce friction between Revenue and Public Works Department subordinates.

47. These reforms are suggested wit the view of—

1*st*. Securing the necessary discipline and professional training of the conserv ancy establishments which cannot be done outside of the Public Work Department; and

2*nd*. Reducing to a minimum the friction which cannot altogether be avoide between the subordinate officials of the Revenue and Conservanc establishments by making the latter more intimately associated wit the Revenue Administration of the districts.

And it is believed that if these reforms are fairly and honestly carried out, th maintenance and conservancy of the numerous minor irrigation works of the Madra presidency will be placed on a more efficient footing than has hitherto been possible

Proposed scheme the logical conclusion of employment of Tank divisions.

48. The scheme now submitted is merely the carrying out to its logical conclu sions the "Tank Maintenance Scheme sketched by the Acting Chief Engineer The strength of the present Tank division are very much below those that were employed in the Mysore scheme, especially in the number of Assistant Engineers, as will be seen from the printed report of the Mysore

Government, No. 102 A.G., dated 9th August 1875, and unless the Madras Tank divisions are considerably strengthened they cannot possibly cope with work entailed by execution as well as investigation. Even if their duties are confined to the professional investigation alone, it will take these five divisions about fifteen years to complete the investigation of the presidency. But if they are strengthened by the eight Irrigation divisions in the manner now suggested, there is every reason to believe that the management of the minor irrigation works of Madras may be placed on a proper footing in about six or seven years after the changes have been duly effected. For not only would the necessary professional investigations be materially accelerated, but the execution of the work required to secure the standard of efficiency will be carried out by the conservancy establishments without let or hindrance in the only manner which experience has shown to be practicable, viz., through the intervention of the cultivators interested in the irrigation works. And the only limit to the time required to bring the works up to a fair standard of efficiency will be the provision of the necessary funds.

CHEPÂK,
5th March 1884.

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Superintending Engineer, Tank Maintenance Scheme.

APPENDIX A.

List of River Basins forming the Primary Index to the Irrigation of the Madras Presidency. The Approximate Areas of the Basins are taken from the Ordnance Survey Sheets.

Name of River Basin.	Limits of Drainage.	Areas in Square Miles.	Districts.
Upper Támbraparni basin.	All lands draining into the Támbraparni river above the Srivaikuntham anicut.	1,955	Tinnevelly.
Lower Támbraparni basin.	All lands draining into the Támbraparni river and its delta below the Srivaikuntham anicut.	475	Do.
Vaippar basin ...	All lands draining into the Vaippar river above Putur, 5 miles from the sea.	1,935	Madura and Tinnevelly.
Minor drainages into Gulf of Manar.	All lands draining into the sea south of the Támbraparni basins.	800	
	Between Támbraparni and Vaippar basins.	340	Tinnevelly and Madura.
Upper Goondaur basin.	And between the Goondaur and Vaippar basins.	235	
	All lands draining into the Goondaur river on left bank above main bifurcation at Kamuti on right bank above Ellapur channel head.	915	Madura.
Lower Goondaur basin.	All lands between the northern branch of the Goondaur and the Vaippar river on the south.	490	Do.
Upper Vaigai basin ...	All lands draining into Vaigai river above the Periya Ani near Natchikulam.	1,405	Do.
	All lands draining into left bank of Vaigai between the Periya Ani and Mana Madura and all lands draining into or from its right bank below the Periya Ani and bordered on the east by the Vaigavati.	1,135	Do.
Lower Vaigai basin ...	All lands east of the Vaigavati and between the Cotta Currayaur and the north branch of the Goondaur.	915	Do.
Panlaur basin ..	All lands above the junction of the Panlaur and the Tiruminimmoot.	655	Do.
Pudukóta Vellar basin.	All drainage above main bifurcation of the Vellar near Aruntangi.	565	Trichinopoly, Pudukóta, Tanjore.
Icunney-aur basin ...	All drainages of the Icunney-aur down to sea.	625	Do.
Minor drainages into Bay of Bengal, south of Icunney-aur basin. The delta of the Cauvery river.	All drainages between Icunney-aur and Vaigai basins except those already specified.	1,950	Madura and Tanjore.
	All lands commanded by the waters of the Cauvery and Coleroon rivers below the Grand anicut regulators :—Bounded on the south by a portion of the Vennaur river, the Aganda Cauvery channel, the Vadavur channel, the Kunnaun-aur and Paminiar river ending at mouth of Korayar river, and bounded on the north by the Coleroon river.	2,370	Trichinopoly and Tanjore.

List of River Basins forming the Primary Index to the Irrigation of the Madras Presidency—*cont.*

Name of River Basin.	Limits of Drainage.	Areas in Square Miles.	Districts.
Minor drainages into Cauvery and its delta on the south.	Between the towns of Trichinopoly and Tanjore.	320	Trichinopoly and Tanjore.
Minor drainages east of Tanjore.	Between Icunney-aur basin and delta.	360	.....
Minor drainages into the Coleroon river on the north.	Between the Upper and Lower Coleroon anicut.	1,095	Trichinopoly.
Minor drainages between Coleroon and Vellaur rivers.	Below Lower Coleroon anicut and below Ghatiatope anicut.	425	.....
Drainages into the Wyacondan channel.	Between the head of the Wyacondan channel and the town of Trichinopoly.	645	Pudukota, Madura and Trichinopoly.
Amarávati basin ...	All lands draining into the Amarávati river above South Indian Railway.	3,550	Madura and Coimbatore.
Noyel basin	All lands draining into the Noyel river above the Madras Railway, South-West Line.	1,355	Coimbatore.
Bhaváni basin ...	All lands draining into Bhaváni river above the Kalingaroyen anicut.	2,480	Malabar, Nilgiris and Coimbatore.
Umbathnahully basin.	All lands draining into the Umbathnahully river.	650	Coimbatore.
Tadakarrai basin ...	All lands draining into the Tadakarrai river.	350	Do.
Honhully basin ...	All lands draining into the Honhully river.	730	Mysore and Coimbatore.
Cubbany basin ...	.....	2,725	Malabar.
Letchman Teert basin.	.....	765	Mysore.
Talla Cauvery basin ...	.....	1,245	Do.
Hennawutty basin ...	.....	2,135	Do.
Shimsha basin ...	.....	3,330	Do.
Arkavutty basin ...	.....	1,605	Do.
Chinna-aur river or Sunada Ruvnara Nuddy basin.	All lands draining into the Chinnaaur river.	576	Salem.
Toppur Mullah basin.	All lands draining into the Toppúr river.	415	Do.
Omalur Mullay basin.	All lands draining into the Omalúr river.	470	Do.
Thirumanimathar basin.	All lands draining into the Thirumanimathur river.	835	Do.
Minor drainages into the Cauvery right bank.	All minor drainages into the Cauvery right bank above the Wyacondan head-sluice.	1,865	Coimbatore.
Minor drainages in the Cauvery left bank.	All minor drainages into the Cauvery left bank above the Upper Coleroon anicut.	2,600	Salem and Trichinopoly.
Upper Cauvery basin.	Total area drained by the Cauvery river above the Upper Coleroon anicut on left bank and above the Wyacondan head-sluice on the right bank.	27,705	Malabar, Wynaad, Nilgiris, &c.
Vellar basin	All lands draining into the Vellaur river above the Ghatiatope anicut.	2,823	Trichinopoly, Salem and South Arcot.
Ponniar basin ...	All lands draining into the Ponniar river above the Tirukoilúr anicut.	5,137	Mysore, Salem and South Arcot.

List of River Basins forming the Primary Index to the Irrigation of the Madras Presidency—*cont.*

Name of River Basin.	Limits of Drainage.	Areas in Square Miles.	Districts.
Minor drainages between Vellar and Cheyár basins.	All lands draining into the sea between Vellar and Cheyár basins.	3,102	South Arcot.
Upper Pálár basin ...	All lands draining into the Pálár river above the Pálár anicut near Arcot excepting lands commanded by Eastern Poinay anicut channels.	4,314	Mysore, Salem and North Arcot.
Cheyár basin ...	All lands draining into the Cheyár river and into Pálár right bank below Pálár anicut.	2,298	North Arcot and Chingleput.
Madras drainage basin.	All lands between the Kortalayár and Pálár rivers below the Poinay anicut and all lands draining into the Kortalayár above the Thamarapauk anicut.	2,704	North Arcot, Chingleput and Madras.
Minor drainages into the Pulicat lake.	All lands draining into the Pulicat lake between the Kortalayár and the Swarnamukhi river.	1,873	Chingleput and Nellore.
Swarnamukhi basin ...	All lands draining into the Swarnamukhi.	1,282	Nellore.
Kundleroo or Venkatagiri river basin.	All lands draining into the Kundleroo river above Kolikoodroo, 14 miles from the sea.	1,076	Do.
Cheyár basin ...	All lands draining into the Cheyár above its junction with the Pennér river.	3,151	Cuddapah.
Pápaghni	All lands draining into the Pápaghni river above its junction with the Pennér river.	2,609	Bellary and Cuddapah.
Chitrávati basin ...	All lands draining into the Chitrávati above its junction with the Pennér river.	2,488	Cuddapah and Anantapur.
Upper Pennér basin...	All lands draining into the Pennér above its junction with the Chitravati.	5,131	Mysore, Bellary and Anantapur.
Kundu basin ...	All lands draining into the Kundu river above its junction with the Pennér river.	3,362	Kurnool and Cuddapah.
Sagiler basin ...	All lands draining into the Sagiler above its junction with the Pennér river.	1,234	Cuddapah.
Minor drainages into right bank, Pennér.	All minor drainages into the right bank, Pennér, above the Sangam anicut.	1,006	Bellary, Cuddapah and Nellore.
Minor drainages into left bank, Pennér.	All minor drainages into the left bank of Pennér above the Sangam anicut.	301	Cuddapah and Nellore.
The Penuér basin ...	All lands draining into the Pennér above the Sangam anicut.	1,257	Nellore, &c.
Lower Pennér basin ...	The delta of the Pennér river between the Kandukúr and Zoovaldma rivers and all lands draining into it below the Sangam anicut.	966	Nellore.
Muniyar basin ...	All lands draining into the Muniyar river.	1,395	Do.
Mushi basin ...	All lands draining into the Pálár and Mushi rivers.	1,787	Do.

List of River Basins forming the Primary Index to the Irrigation of the Madras Presidency—*cont.*

Name of River Basin.	Limits of Drainage.	Areas in Square Miles.	Districts.
Gundlakamma basin...	All lands draining into the Gundlakamma river.	3,225	Kurnool, Kistna and Nellore.
Minor drainages into the sea, Nellore district.	All minor drainages between the Gundlakamma and the Swarnamukhi rivers.	794	Nellore.
Hindri basin ...	All lands draining into the Hindri above its junction with Tungabhadra.	1,380	Kurnool.
Vedavati basin ...	All lands draining into the Vedavati above its junction with the Tungabhadra.	8,804	Mysore and Bellary.
Chinna Haggari basin.	All lands draining into the Chinna Haggari above its junction with the Tungabhadra.	1,241	Do. do.
Tungabhadra basin ...	All lands draining into the Tungabhadra above the Sunkasala anicut.	16,036	Bellary and Kurnool.
Kistna basin ...	All lands draining into the Kistna above the Bezváda anicut.	97,050 —*vide* G.O., No. 723 I., of 24th February 1881.	Madras presidency, Bombay presidency, &c.
Godávari basin ...	All lands draining into the Kistna above the Dowlaishweram anicut.	115,570 —*vide* G.O., No. 28 I., of 11th January 1881.	Madras presidency, Central Provinces, &c.
Delta of the Godávari and Kistna rivers.	All lands under the Godávari and Kistna anicuts east of the Sámalkót, Ellore and Commamur canals.	4,850	Godávari and Kistna.
Minor drainages into delta south of the Kistna river.	.....	...	Kistna.
Minor drainages into the delta between the Godávari and Kistna rivers.	.....	...	Godávari.
Minor drainages into the delta north of the Godávari river.	.....	...	Do.
Minor drainages into the sea north of the Godávari delta.	All minor drainages into the sea between the Verala and the Godávari delta.	...	Do.
Basin of the Varagha and Surada rivers.	.....	1,246	...
Nangolia basin ...	.....	3,314	Jeypore Zemindary and Vizagapatam.
Vamsadhava basin ...	.....	3,947	Ganjam.
Minor drainages into the sea between the Súráda and Nangolia rivers.	.....	1,991	...
Mahanuddy basin ...	All drainage above its mouth at Ganjam.	2,993	Ganjam.
Minor drainages into the sea between the Mahanuddy and Vamsadhava rivers.	.....	1,505	Do.
Minor drainages into the Chilka lake.	.....	...	Do.

5th March 1884.

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Superintending Engineer, Tank Maintenance Scheme.

APPENDIX B.

List of Plans and Documents connected with the Professional Investigation of the Periyakulam Minor Basin.

Number.	Plate No.	Description.	Remarks.
		Plans.	
1	...	Map of Primary Index to Irrigation showing the sources of supply available by River Basins in Madura and part of Coimbatore districts.	Not to be lithographed.
2	I	Group Irrigation Map of the Periyakulam Minor Basin, showing the catchment areas affecting groups, sub-groups and individual works.	To be lithographed.
3	II	Detail Irrigation Map of the Tamaraikulam sub-group of the Varagha Naddi group.	
4	III	Detail Irrigation Map of the Kollar Alagaparai Anicut Channel, Kumbakarai Channel and Kukalar Anicut Channel sub-groups of the Varagha Naddi group.	
5	IV	Detail Irrigation Map of the Nandiapuram, Melmangalam, Kilmangalam and Gullapuram Anicut Channel sub-groups of the Varagha Naddi group.	
6	V	Details of Masonry Works to accompany the Plate No. IV.	
7	VI	Detail Irrigation Map of the Seekodai and Varattar sub-groups of the Varattar group.	
		Documents.	
8	...	Statement showing the Hydraulic Details of Irrigation Works of the Varagha Naddi and Varattar groups of the Periyakulam Minor Basin.	To be published.
9	...	Statement showing the Financial Details of Irrigation Works of the Varagha Naddi and Varattar groups of the Periyakulam Minor Basin.	
10	...	Descriptive Memoirs of the Minor Irrigation Works in the Periyakulam Minor Basin.	

5th March 1884.

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Superintending Engineer, Tank Maintenance Scheme.

APPENDIX C.

Estimate of the probable Cost of publishing 50 Copies of Descriptive Memoirs of the Irrigation Works with Maps for the Periyakulam Minor Basin.

	Rs.
Average Annual Assessment	40,000
Net Irrigation Revenue	32,000
Capitalised Value of Works at 25 years' purchase of Net Revenue ..	8,00,000

Number.	Measurement in inches. Length.	Breadth.	Depth.	Contents.	Particulars.	Rate.	Per.	Amount.	Total.
					Plate I.	Rs. A. P.		Rs. A. P.	Rs. A. P.
1	30″	22″	..	6·60	Squares of drawing with details, &c., complete.	10 0 0	100 sqr. inches	66 0 0	
..	..	..	..	50	Sheets of drawing paper 30″ × 22″ ..	1 0 0	Sheet.	50 0 0	
..	..	..	..	..	Printing charges, &c., complete	..	..	14 0 0	130 0 0
					Plate II.				
1	40″	26½″	..	10·60	Squares of drawing with details, &c. ..	10 0 0	Square.	106 0 0	
..	..	..	..	80	Sheets of drawing paper 40″ × 26½″ ..	1 8 0	Sheet.	75 0 0	
..	..	..	..	..	Printing charges, &c., complete	..	..	19 0 0	200 0 0
					Plate III.				
1	55″	22″	..	12·10	Squares of drawing with details	10 0 0	Square.	121 0 0	
..	..	..	..	50	Sheets of drawing paper	1 8 0	Sheet.	75 0 0	
..	..	..	..	..	Printing charges, &c., complete	..	..	19 0 0	215 0 0
					Plate IV.				
1	42½	22″	..	9·35	Squares of drawing with details	10 0 0	Square.	93 8 0	
..	..	..	..	80	Sheets of drawing paper	1 8 0	Sheet.	75 0 0	
..	..	..	..	..	Printing charges, &c.	..	..	16 8 0	185 0 0
					Plate V.				
1	55″	22″	..	7·70	Squares of drawing with details	10 0 0	Square.	77 0 0	
..	..	..	..	50	Sheets of drawing paper	1 0 0	Sheet.	50 0 0	
..	..	..	..	..	Printing charges, &c.	..	..	13 0 0	140 0 0
					Plate VI.				
1	30″	22″	..	6·60	Same as plate No. I	..	..	..	130 0 0
					Total for 6 Plates ..	..	..	..	1000 0 0
					Printing Memoirs.				
..	..	..	..	..	For printing 35 pages pica with outer margins, foolscap size.	2 0 0	Page	190 0 0	
..	..	..	..	..	For printing 22 pages full tabular in brevier.	5 0 0	Do.	110 0 0	
..	..	..	..	..	Printing one title page	..	..	1 8 0	
..	..	..	..	..	Do. two pages of contents	2 0 0	Do.	4 0 0	
..	..	..	..	..	Contingencies	..	..	4 8 0	310 0 0
					Total Estimate ..	..	..	..	1310 0 0

N.B.—The cost of publishing the professional investigations of Minor Irrigation Works may therefore be taken at 3·27 per cent. of the Revenue or ·16 per cent. of the capitalised value of the works.

5th March 1884.

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Superintending Engineer, Tank Maintenance Scheme.

From C. S. CROLE, Esq., Acting Collector of Madura, to the Superintending Engineer, Tank Division, dated Madura, 1st November 1883, No. 4002.

In returning the sketch map and the statement of the irrigable lands in the Varahanadi group of the Periyakulam minor basin that accompanied your letter, No. 365 A., dated 22nd September 1883, I have the honor to state that the figures entered in your statement tally with the total figures in the taluk accounts though in the former the total ayacut under one work, as per Revenue accounts, has been divided and entered under different channels.

2. The marginally noted works mentioned in your statement have been repaired by the ryots at their own cost, and manjatirva is paid for the lands under them.

3. Your statement shows that No. 10 Uppankulam in the Vadagarai village has an ayacut of 27·05 acres, assessed at Rs. 107-7-7; but this work having become silted up long ago, the lands under it have not been included in the group under reference. I herewith forward a statement both on new works and repairs attached to the Revenue Department. As to the other works mentioned in your statement, I am unable to furnish the required information and request that the Public Works Department may be addressed on the subject.

No. 8, Tankarigudhagan Kanmoi.
" 12, Vadagarai Odakulam.
" 13, Do. Mangudhakulam.
" 13, Do. Chellikulam.
" 84, Narasan tank.

APPENDIX D.

STATEMENT showing the amount expended on Maramat of certain Irrigation Works in the Periyakulam Taluk (Periyakulam Minor Basin).

Village.	Number of the Irrigation Work.	Name of the Irrigation Work.	New Work or Repair.	Date of execution of the Work.	Amount expended on Maramat.	Remarks.
1	2	3	4	5	6	7
Kaikilangulam ..	34	Chinnapillangulam ..	Repair ..	1877-78 ..	Rs. A. P. 28 4 7	This maramat was conducted by the Revenue Department as famine relief work.
Do. ..	45	Kaikilangulam ..	Do. ..	1877-78 ..	220 15 9	
Do. ..	46	Vérapandyakanga-lam.	Do. ..	1877-78 ..	614 5 3	
					463 0 1	
			Total ..		1,328 4 4	
Tambirat Kaikilangulam ..	2	Periyakulam ..	Repair ..	1880-81 ..	237 5 0	This maramat was conducted during the years 1880-81, 1881-82, by the Revenue Department.
Do. ..	42	Kaikilangulam channel.	New work. ..	1881-82 ..	616 2 7	
			Total ..	1881-82 ..	46 2 1	
Kallapuram Kilammangulam ..	62	Sirukulam ..	Repair ..	1883-84 ..	398 12 8	The estimate has been submitted for maramat of these two tanks and the work is now going on.
	52	Pottakulam ..	Do. ..	1883-84 ..	529 13 0	
					643 10 3	
			Total ..		1,172 7 3	
			Grand Total ..		3,209 0 5	

MADURA,
2nd November 1883.

(Signed) E. G. RICKETTS,
for Acting Collector.

From Captain H. M. KENSINGTON, R.E., Secretary to the Government of Mysore, Public Works Department, to the Superintending Engineer, Tank Maintenance Scheme, Bangalore.

Dated 13th February 1884.

I have the honor to return the abstract statement received with your letter, No. 108, dated 24th January 1884, filled in so as to show the actual expenditure incurred up to 31st March 1879 in the special restoration of tanks in the Bangalore and Kolar divisions. Column 8 has not been filled in, as the revenue of the tanks which depends upon the season fluctuates every year, and it is therefore not possible to state the actual increase in revenue accurately. Column 8 has not been filled in, as the revenue of the tanks which depends upon the season fluctuates every year, and it is therefore not possible to state the actual increase in revenue accurately. Of the four years for which the figures in columns 4 to 7 are given, the first three, viz., 1875-76 to 1877-78, were famine years, and before tanks were dealt with, when the seasons were favorable, would not, therefore, be fair to compare the average revenue for five years 1878-79 the only favorable year, and it would not, therefore, be fair to compare the average revenue for five years with the figures in column 2, which represent the average revenue for the same number of years before tanks were dealt with, when the seasons were favorable, would not, therefore, be fair to compare the average revenue for five years with the figures in column 2, which represent the average revenue for the same number of years before tanks were dealt with, when the seasons were probably favorable.

2. It will be seen that the total expenditure shown in the abstract for the years dealt with, whereas the former abstract included only the sanctions which were completely for repair to afford relief to the distressed population.

Re. 5,69,667, differs from that shown in abstract No. 1 of 1879 by Rs. 1,28,468. This discrepancy is due to the latter abstract including only the sanctions which were completely

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APPENDIX E.

KOLAR DISTRICT.

Statement showing Revenue originally promised on account of Tanks in the Kolar district and that actually realised after completion compared with the actual expenditure incurred up to 31st March 1879.

Description.	Revenue (as given in the Financial Statement).		Revenue actually realised as per Tank Register during				Increase of Revenue secured.	Actual Expenditure up to 31st March 1879 exclusive of Survey Establishment and Tools and Plant	Increase of Revenue per cent. of Expenditure.	Remarks.
	Realised before the tanks were dealt with.	Anticipated subsequent to restoration.	1875-76.	1876-77.	1877-78.	1878-79.				
1	2	3	4	5	6	7	8	9	10	11
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Ramsagar No. I Sub Series	1,265	2,540	1,026	1,145	1,245	1,360	..	18,886	..	
,, II ,, ...	2,579	5,569	2,277	1,995	2,169	3,025	..	31,306	..	
,, III ,, ...	1,151	2,435	722	776	879	885	..	15,557	..	
,, IV ,, ...	1,393	1,798	259	326	318	838	..	14,641	..	
,, V ,, ...	1,850	4,551	580	845	939	2,020	..	27,321	..	
,, VI ,, ...	2,584	6,758	2,751	2,764	2,902	5,635	..	28,022	..	
,, VII ,, ...	7,832	11,707	7,378	5,442	8,836	13,381	..	1,03,258	..	
,, VIII ,, ...	5,952	7,696	4,857	3,567	5,107	11,435	..	46,460	..	
,, IX ,, ...	1,056	2,103	807	330	669	1,865	..	16,353	..	
,, X ,, ...	704	1,021	458	439	426	651	..	2,235	..	
,, XII ,, ...	510	2,120	510	498	120	800	..	8,393	..	
,, XIII ,, ...	856	1,517	264	209	551	1,475	..	714	..	
,, XV ,, ...	1,757	7,015	3,666	634	1,598	381	..	45,849	..	
,, XVII ,, ...	1,803	1,415	844	892	728	826	..	4,783	..	
,, XVIII ,, ...	88	200	63	62	67	146	..	2,073	..	
,, XXI ,, ...	117	424	78	104	124	151	..	9,962	..	
,, XXII ,, ...	955	2,570	852	727	534	548	..	10,167	..	
,, XXIII ,, ...	2,148	3,551	1,551	1,484	1,522	2,053	..	27,160	..	
,, XXIV ,, ...	3,135	6,716	1,926	2,368	2,461	3,622	..	26,984	..	
,, XXV ,, ...	2,174	6,010	1,960	1,792	2,009	3,368	..	30,611	..	
Pálár minor series No. I Sarvareddy valley ..	262	630	328	464	541	446	..	4,016	..	
Do. outlying chains No. II Sundrapally valley.	1,210	1,695	1,681	1,255	947	1,689	..	12,606	..	
Do. Maderi valley No. III	816	1,799	638	..	1,004	1,869	..	7,228	..	
Kolar Holali tank	1,000	..	..	..	610	592	..	26,015	..	
Betamungala Dodkeri	2,837	3,050	2,953	2,953	2,918	2,510	..	14,963	..	
Ramsagar tank	2,920	5,765	2,513	1,671	2,527	4,056	..	26,912	..	
Sidlaghat Arsekeri tank	192	523	222	237	433	474	..	6,292	..	
Grand Total ..	49,146	91,178 — 49,146	41,670	32,979	38,184	66,095	16,949	5,69,667	2·97	
Net anticipated increase of Revenue ..		42,032								

	1878-79	
	Increase Revenue.	Expenditure.
	Rs.	Rs.
Bangalore district.	6,751	3,68,615
Kolar district ..	16,949	5,69,667
Total ..	23,700	9,38,282

Total Increase of Revenue per cent. of Expenditure 2·41 per cent. in 1878-79.

Accompaniment to letter, No. 561, dated 13th February 1884, from the Secretary to the Government of Mysore, Public Works Department.

(True Copy.)

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Superintending Engineer, Tank Maintenance Scheme.

APPENDIX E.

Statement showing Revenue promised and that realised annually from Tanks since their completion compared with the actual expenditure incurred up to 31st March 1879.

BANGALORE DISTRICT.

Description.	Revenue realised as per Taluk Account.	Anticipated.	Revenue given in Form No. III, as per Tank Register kept in the Collector's Office since the Restoration of Tanks.		Increase of Revenue secured.	Actual Expenditure up to 31st March 1879 exclusive of Survey Establishment and Tools and Plant.	Increase of Revenue per cent. of Expenditure.	Remarks
			1876-77.	1878-79.				
1	2	3	4	5	6	7	10	11
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
I.—Hassenghatta Series—								
Arakellagay Sub-Series	2,751	7,166	2,979	7,855		26,560		Increase Extent Land
Jannenkey do.	2,196	6,325	1,702	5,668		25,750		Rs.
Nagulkeri do.	6,344	7,168	2,437	6,812		8,155		Bangalore dis. 6,731 1,66,611
Kollatam do.	2,429	6,508	1,471	3,161		63,856		Kolar district 10,049 2,62,667
Kacole do.	1,695½	3,695	2,145	3,664		36,691		Total .. 23,780 9,38,278
Hasenghatta do.	13,640	16,321	265	10,261		56,544		
II.—Kadenly Series	6,844	15,667	5,167	10,383		17,011		Total increase of Revenue per cent of Expenditure 2·41 per cent. to 1878-79.
III.—Minor series of cuttings chains on the left bank of Arkavati below Harrenghatti series	811	2,182	1,205	957		4,270		
IV.—Hoskote series	4,909	7,542	1,078	8,241		23,153		
Grand Total ..	40,543	72,554	27,191	47,253	6,731	3,68,615	1·83	
		45,012						
Not anticipated increase of Revenue ..		27,302						

Accompaniment to letter, No. 561, dated 13th February 1884, from the Secretary to the Government of Mysore, Public Works Department.

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Superintending Engineer, Tank Maintenance Scheme.

(True Copy)

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers:—

G.O., dated 21st January 1884, No. 288, Revenue.

From Lieutenant-Colonel P. MONTGOMERIE, R.E., Superintending Engineer, Tank Maintenance Scheme, to the Chief Engineer for Irrigation, dated Chepâk, 5th March 1884, No. 409 T.

I have the honor to submit, for the orders of Government, the investigations of the Periyakulam Minor Basin, which has been selected to illustrate the condition and circumstances of the minor irrigation works of the Madras Presidency, together with a scheme for the more efficient repair and conservancy of minor irrigation works, generally based on the results of these investigations.

1 *Résumé.*
1 Scheme for the repair and conservancy of minor irrigation works.
1 Descriptive memoir of minor irrigation works.
1 Portfolio containing plans, &c.

2. The scheme now submitted is practically the carrying out to their logical conclusions the proposals for tank divisions sketched in your memorandum of the 27th November 1882, by making them permanent and efficient institutions, incorporated with the regular Public Works department, as was the case in the Mysore tank scheme, from which, I presume, your suggestions were originally taken. This will necessitate the amalgamating and re-arranging the thirteen existing divisions of the tank districts into "Irrigation" and "General," respectively, and the entire separation, in the new "Irrigation divisions," of the duties of the investigation and projection, from that of pure conservancy and the execution of repairs.

3. Some such scheme as that now proposed will be necessary in order to give effect to the important enactments connected with the conservancy of irrigation works, which are at present under the consideration of the legislature, and the fact that the minor irrigation works of the Presidency, under the present *regime*, cannot possibly be brought up to a proper standard of efficiency, even with the aid of five extra tank divisions, under 55 years, as admitted by you, clearly shows that the whole question is essentially one of conservancy, necessitating administrative reforms both in the departments of Revenue and Public Works.

The Kudimaramat Act.
The Rivers Conservancy Act.
The Madras Irrigation Act.

4. The authorised strength of the present Madras tank divisions is insufficient to enable them to cope with the execution of the repairs as well as the carrying out of the professional investigations; and to enable them to do this in anything like a satisfactory manner they must be increased to at least the strength allowed for the Mysore tank divisions, which, you will observe from the printed report marginally noted, gives three Assistant Engineers, instead of only one allowed in Madras, and also 18 surveyors, besides the regular subordinate grades for each tank division. But before recommending Government to authorise such an increase to the

Mysore Government letter, No. 102 A.G., dated 9th August 1875, to Government of India.

strength of the temporary divisions, which after all would not affect the general q
tion of the conservancy of the works, I would most respectfully suggest the adv
bility of incorporating the temporary divisions with the permanent establishmen
the manner proposed in the accompanying scheme. By this arrangement there wo
be some prospect that the estimates for the repairs required to bring the works up
the standard of efficiency would be carried out in a definite period. And the ex
temporary establishment would then be free to complete the investigations, which
essentially necessary, before any satisfactory progress can be made in the conserva
of the works.

5. It will be admitted by every one who has had practical experience of the ru
districts of Madras in which the minor irrigation works are situated that, from
very nature and circumstances of the case, no Department of Public Works, howe
constituted, can *alone* deal with the conservancy of the works, and that any scheme
conservancy, which does not invoke the influence of the Collector, or ignores
labor of the cultivator as a prime factor in the scheme, must be practically useless
In order to secure the co-operation of the Revenue authorities I have suggested
utilisation of a portion of the subordinate establishment of the permanent Tank
rather irrigation divisions as a separate conservancy branch to assist the Collectors
carrying out the repairs and in giving effect to the law; and I see no reason why t
essential reform could not be carried out without hampering the action of the Pub
Works Department: for it would in no way alter its existing strength and organisati
and would principally consist in defining the duties of its subordinate membe
instead of permitting them to be employed on any and every description of wo
indiscriminately as at present. The extra cost entailed by the tank inspectors wou
be more than covered by the increase of revenue anticipated, which it is estimated w
be about 6 per cent.

6. Should it be found impracticable to form a separate conservancy branch of t
Irrigation Department to co-operate with the Collectors in the execution of the repa
and the conservancy of the works, I have no hesitation in saying that it would be
the interests of the country generally as well as for the reputation of the Public Wor
Department for that department to retire from the tank districts so far as the
vancy of the minor irrigation works is concerned and to place the subordinate establis
part of the work and the supervision of the operations of the Collectors.

7. From appendix (C) it will be seen that the cost of publishing the results
the professional investigations will amount to only 3·27 per cent. of the revenue or
·16 per cent. of the capitalised value of the works. By whatever agency the exec
tion of repairs and conservancy is to be carried out in future, investigations into th
condition and circumstances of the works are essential, and it is very necessary the
the data collected should be permanently recorded for future reference and guidance.

8. In the accompanying statement is a *résumé* of the more important point
brought out by the present inquiry, with an outline of the administrative reform
proposed. These proposals are very similar to those which I had the honor to subm
to the Famine Commission, at their request, in February 1879, and the further inquir
into the subject has only confirmed my opinion as to their necessity.

ENCLOSURE.

RESUME of an inquiry into the actual condition and circumstances of the minor irrigation work
of the Madras Presidency, with proposals for their more efficient repair and manage
ment, by Lieutenant-Colonel P. Montgomerie, R.E.

Part I. Professional Treatment of Minor Irrigation Works.—The gross revenue from the
minor systems of irrigation, usually known as the minor irrigation works of the Madras Presi-
dency, during the year 1882-83, amounted to Rs. 116,02,807, and, deducting the land assessment,

the actual working expenses during the year in the Public Works Department, and the collection charges in the Civil department, at 7·2 per cent. on the irrigation revenue; the net irrigation revenue from these works amounted to Rs. 65,73,079, and the capitalised value of this net revenue at 25 years' purchase would amount to Rs. 16,43,26,975, or to about 16¼ millions sterling which may be assumed as the value to the State of the minor irrigation works.

2. This revenue from the minor irrigation works is 36 per cent. greater than the revenue from the whole of the large deltaic systems and other important works for which Capital and Revenue accounts are kept, and is three-fifths of the entire revenue derived from irrigation works in the presidency.

3. Owing to the dual management of the minor irrigation works in force in Madras the systematic and comprehensive record of irrigation data, both revenue and technical, which is essential for intelligent administration, has been impossible; and, as a consequence, there is very considerable misapprehension as to the actual condition and circumstances of the works. Sir A. Cotton considered they ought to produce from 50 to 75 per cent. more revenue, and some even now hope that they might yield 16 per cent. more if they were placed in a thorough state of repair.

Letter to Revenue Board, dated 13th December 1837, paragraph ( )

4. It has been considered that the complete investigation of a specific tract of country embracing all the irrigation works depending on the same source of supply would illustrate the condition and circumstances of the minor irrigation works generally, and with this view the Upper Vaigai river basin in the Madura district has been selected; because—

1*st*. The Madura district is reputed to be the most neglected district in the presidency in regard to the conservancy of its irrigation works; and

2*nd*. The water-supply of the Upper Vaigai river basin being more constant and abundant than the local supplies available in most of the other districts, the capabilities for improvement are more likely to exist in this tract of country than elsewhere; and the fluctuations of revenue owing to the uncertainty of local rainfall is reduced to a minimum.

5. Complete investigations of the Periyakulam minor basin, which is a sub-division of the Upper Vaigai river basin, and affords a fair sample of the irrigation works, are now submitted, and the following are the main points brought to light by the inquiry—

(*a*) That the standard of efficiency laid down in Proceedings, Madras Government, No. 284 I., dated 5th May 1880, is sufficient to ensure the general safety of the works, and that, although the irrigation works in the Periyakulam minor (especially in the matter of earthworks) are considerably below this standard, their general design is sufficiently good to enable them to fulfil the purposes for which they were originally constructed, judging from the remissions of revenue which have been made.

(*b*) That the work required to secure this standard of efficiency consists principally of earthwork and general repairs to the anicuts and other masonry works.

(*c*) That the estimated cost of the work required amounts to about one year's gross revenue.

(*d*) That the expected increase of revenue that will be secured is 6 per cent. on the proposed outlay.

(*e*) That the anticipated increase of revenue is a little less than 6 per cent. of the present gross revenue, and is not the difference between the aycuts and the existing average cultivation which would be 14 per cent.

The inquiry into the condition of the irrigation works of this minor basin would further indicate—

(*f*) That all irrigation works dependent on the same source of supply must be treated as a whole; and that the number of isolated works having an independent source of supply are so small, at least in the southern districts, that there would be nothing gained by omitting them from the general investigations;

(*g*) That all the irrigation works in a minor basin must be under one and the same conservancy establishment; and that to place these works in different categories according to the areas of irrigation under each with a view to conserving them under different rules would be unjust to the cultivators and quite unnecessary if the works were under the charge of a distinct conservancy establishment co-operating with the Revenue authorities;

(*h*) That the regulation of the water in the minor irrigation tanks may be safely left in the hands of the cultivators whose self-interests are concerned; and that the safety of the tanks will best be secured by raising the bunds in their centres to a safe height above M.W.L. and gradually sloping them down to the flanks where the surplus arrangements are usually situated; and by permanently deciding the position, level and extent of each surplus work whether permanent or temporary; and

(*k*) With regard to the minor river-channels such as most of those to be found in the Upper Vaigai basin, which have been successfully regulated by the cultivators from time

immemorial, the provision of head-sluices and other costly masonry works are unnecessary unless the want of them has been the cause of repeated damage and loss of revenue. And further, should the cultivators, who would generally derive the principal advantages from such accessories to their irrigation, be desirous for their construction, there would be no hardship in requiring them to provide half the costs either in money or in labor.

6. With reference to the general question of materially extending and improving existing minor irrigation works with the idea of permanently increasing the revenue, the results of those schemes which have been carried out within late years seem to indicate that any attempt to improve the works so as to increase the irrigating capacity beyond that which past experience has shown to be practicable is not likely to be a financial success.

The improvements to the Chembrambakam tank have resulted in a return of 1·12 per cent. on the capital charges.

The Pálár anicut system has yielded only ·27 per cent.

The financial results of the Pelandorai anicut have been a loss of Rs. 56,191 including interest charges.

And the Mysore tank scheme has yielded an increase of revenue giving a return of 2·4 per cent. on the outlay only during the most favorable season—*vide* Appendix (E).

7. All proposals for the extension and improvement of irrigation, it is therefore thought, should be considered separately and independently of the general scheme for the repair and conservancy of the existing minor irrigation works; and they should be confined principally to the regulation and improvement of the supply from the more important local streams, such as the Berár, Marandahalli and Kistnagiri reservoir projects in the Salem district, and the Sangam project in the Nellore district. Or to the utilisation of the supply from the permanent sources such as the Periyar project in the Madura district and the Bhavání project in the Coimbatore district.

8. *Part II. The Conservancy of Minor Irrigation Works.*—The nature and circumstances of the minor irrigation works in the Madras Presidency are such that the execution of the work required to bring them up to the standard of efficiency must be considered in connection with the conservancy of the works; and this duty cannot be economically carried out by the same establishment which is employed on the professional investigations.

The former must be conducted by a permanent conservancy establishment co-operating with the revenue officials; and the latter will be performed by an establishment which for the most part need only be temporary.

9. It has been admitted by every one who has had experience of the rural districts of Madras in which the minor irrigation works are situated that any scheme for the repair and conservancy of the works which does not invoke the influence of the Collector and his subordinates, or ignores the labour of the cultivator as a prime factor in the scheme, must be practically useless. The bulk of the work required consists of earthwork and rough stone work such as the ryot is perfectly acquainted with. The question, therefore, of the conservancy of the minor irrigation works, when once divested of the technicalities and departmental prejudices which have too long been allowed to surround it, becomes a matter principally of administrative reform. The reform must, however, be carried out simultaneously in the departments of Revenue and Public Works.

10. The administrative reforms necessary to secure the repair and conservancy of the minor irrigation works are summed up briefly as follows:—

1*st*. The more intimate association of the Revenue and Public Works officials connected with the conservancy of the minor irrigation works without which the interests both of the Government and the ryot must suffer.

2*nd*. The entire separation in the irrigation branch of the Public Works Department of the duties of conservancy from that of professional investigation and construction, for all ranks below that of Executive Engineer, except in those districts in which the large deltaic schemes are still under construction.

3*rd*. One or more conservancy sub-divisions according to the size and importance of the districts to be attached to each Collectorate; to supervise the execution of general repairs and to assist the Collector in enforcing
(*a*) The Kudimaramat Act;
(*b*) The Rivers Conservancy Act; and
(*c*) The Madras Irrigation Act,
but which will be under an Executive Engineer for purposes of discipline and account.

4*th*. To enable the separation between conservancy and construction to be effected, and in order to create a nucleus for the formation of a duly qualified conservancy establishment, the existing divisions of the thirteen tank districts to be re-arranged and amalgamated as follows into eight irrigation and five general divisions respectively. The irrigation divisions to be arranged according to river basins and the general divisions according to districts:—

Existing divisions and districts to be comprised in general divisions.	Amalgamated Divisions.		River basins to be comprised in irrigation divisions.
	General.	Irrigation.	
Ganjam	1	1	All basins north of the Godávari
Vizagapatam			
Bellary	1	2	To be settled hereafter.
Cuddapah			
Kurnool			
Coimbatore	1	1	Cauvery above the Amarávati and Pooniar above hills.
Salem			
North Arcot	1	2	Pálár and Madras drainage basin.
Chinglepat			Cheyar and drainages south to Coleroon.
South Arcot			
Trichinopoly	1	2	Amarávati and Cauvery.
Madura			Pallaur Vaigai and all south.
Tinnevelly			
	5	8	

5*th*. An intermediary grade between that of Engineer and upper subordinate to be introduced into the Public Works Department, to have the title of "Irrigation Conservator" and to which the subordinate officials of the Revenue Department will be eligible on their passing a qualifying examination;

6*th*. The local "Irrigation Conservators" (who will be sub-divisional officers of the Irrigation Executive Engineer) to be entrusted with magisterial powers for the purpose of carrying out the condition of the law. They will thus become virtually the assistants of the Collector and will be intimately associated with him in the irrigation administration of the district;

7*th*. A conservancy charge or sub-division will comprise one or more river basins or groups of taluks, whichever is most convenient, with an overseer to each taluk or group of minor basins and a tank inspector to each minor basin or part of a minor basin;

8*th*. To prevent the general divisions from being hampered by petty details, the limits of the repair estimates to be carried out by them to be extended from Rs. 1,000 to Rs. 3,000 as is the case in the Bombay Presidency, and fewer new works to be put in hand at one time. This, with the improved means of communication afforded by railways, &c., will, it is believed, secure the efficiency of these divisions;

9*th*. The boundaries of revenue taluks to be made conterminus, as far as practicable, with those of the conservancy charges which have to be arranged according to the sources of water-supply by minor basins. The original taluk boundaries were manifestly intended to have been taken along the water-sheds where practicable; and there will probably be little difficulty in carrying out this essential reform with the assistance of the more accurate maps which are now available;

10*th*. Complete Revenue returns for each minor basin showing the remissions with explanations of the precise causes of these remissions to be furnished punctually by the Collectors to the Irrigation Engineers;

11*th*. An Irrigation Conservancy Code defining the duties of all connected with the Irrigation to be drawn up; and

12*th*. To prevent friction and ensure the code being duly enforced, the Chief Engineer for Irrigation must be made an *ex officio* Member of the Board of Revenue, and an Engineer must be permanently attached to the Board as Irrigation Secretary.

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Suptg. Engr., Tank Maintenance Scheme.

5th March 1884.

No. 122 I.

Note by the Chief Engineer for Irrigation.

Colonel Montgomerie has, with the above letter, submitted the result of the complete investigation of the circumstances of the irrigation works in one minor basin, that is, a separate portion of one of the main river basins, in Madura, worked at by the Tank division.

2. In November 1882, when the Honorable Major Baring visited Madras, a scheme was brought forward for dealing systematically with the irrigation tanks and channels in the Presidency, other than those for which Capital and Revenue Accounts are kept, with a view to bringing each work into an efficient state, and subsequently the Government of India sanctioned the temporary appointment of a Superintendent of Works, and one (so called) tank division to commence the work.

3. It was decided to take up first the Madura district where irrigation works of this class were much in need of repair and there was a fair water-supply. In the first instance a map was prepared to show all the main river basins in the Presidency and then the upper Vaigai basin being the one selected for operations, a group Irrigation map, scale 1 inch = 1 mile, was prepared showing the minor basins with groups and sub-groups into which the main basin was naturally divided, each work in the minor basin being numbered and the catchment areas of each being worked out. Next a detailed irrigation map for all groups in the minor basin, scale 4 inches = 1 mile, was prepared, showing the position of each work in the group with longitudinal sections of all tank banks and detailed sketches of all masonry works, showing work to be done to put each tank and channel into repair. Statements of Financial and Hydraulic details of each work were prepared, with a descriptive memoir of each, and the estimates for repair of each were worked out in detail.

4. It is not necessary here to detail further the arrangements made for the investigation of these irrigation works which have been explained by Colonel Montgomerie. Every advantage has been taken of the experience gained in carrying out work of a similar nature in Mysore, and all details have been fully discussed with Colonel Montgomerie, and it is believed that nothing better suited to the circumstances of this Presidency can be suggested. The works are correctly grouped, their positions ascertained, their present circumstances and requirements laid down on paper and the latter estimated for. All Financial and Hydraulic particulars are permanently recorded, and a memoir of each work is prepared giving information as to standard levels, [illegible] discharge, storage and irrigation details, &c., &c.

5. It has been proposed by Colonel Montgomerie that the maps should be lithographed and the descriptive memoirs printed and bound up by main river basins. He appends an estimate of the cost of so doing for one minor basin, the net irrigation revenue derived from which amounts to Rs. 32,000, amounting to Rs. 1,310 or 3·27 per cent. of the revenue. The estimate is of course approximate, but it is a guide to the expenditure necessary to maintain a complete record of each work, and it is recommended, in order that a permanent record may be maintained, that Colonel Montgomerie's proposal may be sanctioned.

6. The results of the investigation of this minor basin are briefly as follows:—

The works, both earth and masonry, are generally in much need of repairs, and require an expenditure of about one year's gross revenue to put them into good order.

The expected increase of revenue is 6 per cent. on estimated cost of repairs.

The full ayacut cannot be cultivated by the works as designed; if it could be, the increase of revenue would be 14 per cent. on cost of repairs.

7. It would not be fair to judge of the probable increase of revenue in the whole Presidency, from the result of the investigations on so limited an area; it has generally been supposed that were the works in an efficient state the whole ayacut area would be cultivated, and the loss of revenue consequent on the neglect to put the works into good order was therefore assumed to be the difference between the actual collections and those that would be made if the whole ayacut were cultivated. In a former note on the subject it was stated that in many cases the whole ayacut area could not be cultivated under any circumstances, but there was no certainty about it. The increase now estimated has been arrived at after consulting the cultivators who must be the best judges of what they can undertake, and possibly may be too low, but it is not safe to calculate on more, and if the result is disappointing, it is yet satisfactory to find that the return on proposed outlay is remunerative.

8. Colonel Montgomerie has compared these results with those actually attained in other places, and has selected the following works for comparison:—

1. The Chembrambaukam tank.
2. The Pálár anicut system.
3. The Pelandorai anicut.

This comparison is altogether valueless for the following reasons:—

The Chembrambaukam tank was the subject of a great mistake.

The Pálár anicut is built across a river which is very uncertain and in some years carries no flood-water whatever.

The Pelandorai anicut is an incomplete work.

A more legitimate comparison is made further on with the Mysore tank scheme, where it is shown that the expenditure up to 1879 had, in the most favorable season, yielded a return of only 2·4 per cent.; but here again the results of the year after the famine have been compared, which is hardly fair. The comparison can only justly be made between the actuals of some years after completion of works. It may, however, be said that there can be no question of the advisability of spending money on repairs which will return 6 per cent., and further that if a direct return of only 2 per cent. could be secured it would be good policy to spend a year's revenue.

9. In paragraph 13 of his "scheme" Colonel Montgomerie refers to proposals for extensions and improvements which, he says, should be considered separately from the "Tank Maintenance Scheme." This term is hardly applicable here; the work the Tank divisions are engaged on is the restoration of the irrigation works, it is not intended to comprise any extensions, and the improvements it should provide for are the provision of efficient escapes and sluices where there are none, or only inefficient ones. It would manifestly be impossible to combine extensions with restoration without delaying the work almost indefinitely.

10. The work before us is to put every tank and channel into a state of efficiency. These works are for the most part well designed and suited for their intended duty. They were constructed very many years ago under Native Government, and in course of time have of necessity greatly deteriorated. Under British Government, and in considerable amount of money has been expended in repairing and restoring the works, and till of late this was done by taking up such works as were reported by the Revenue authorities to be most in need of repair and dealing with them individually. Of late years an attempt has been made to group the works and deal systematically with each group, but with the available establishment it has been impossible to deal with more than a small proportion of the works. As civilisation has advanced, the wants of the ryots have been brought more prominently forward, and the louder demand for more to be done by Government has led to the supposition that the irrigation works formerly were well maintained and latterly have been almost entirely neglected. There cannot be a more mistaken notion; an intimate acquaintance with the irrigation districts of the presidency for twenty-eight years justifies the assertion that more has been done during late years than has been done at any period during British rule, and probably at any time since the construction of the works. As much has been done as could be done, and the work now undertaken is not, as it would appear to be assumed, to make good the shortcomings of this or that department which has been struggling shorthanded with the monster, but to repair the deterioration from a long course of years and to bring every work to the standard of its original or best irrigating capacity.

11. In the note originally submitted on this subject, it was suggested that six Tank divisions should eventually be formed, and it was intended that these divisions should not only group the works and estimate for their requirements, but also carry out the works estimated for. Colonel Montgomerie has stated that any scheme for the conservancy of the irrigation works must be considered in connection with the execution of the work required to bring them up to a fair standard of efficiency, and has, in considerable detail, worked out such a scheme involving radical changes in the constitution of the Public Works Department. It seems unnecessary here to discuss the details of this scheme, or to say more than that it is not generally approved; but a careful consideration of all that has been written on the subject has led to the conclusion that it may be well to abandon the original intention and to restrict the Tank division to grouping and preparation of estimates, leaving the work to be carried out by the ordinary divisions within which they lie. It may be that by throwing this work on the

ordinary divisions other irrigation repairs, which the divisions are estimating for and carrying out, will be retarded; but these very works will in time come under the operation of the Tank division, and it is more satisfactory for the works of a district to be attended to systematically. The Tank divisions would thus progress much more rapidly than was originally contemplated, and should they get on so far ahead that the ordinary divisions could not grapple with the works laid out for them, they might temporarily be reduced and the ordinary divisions strengthened proportionately.

12. The subject of the conservancy of the works after they have been brought up to the standard of efficiency is now forced on our consideration. The works in one minor basin will shortly be put in repair, and if conservancy is not attended to they will immediately begin to deteriorate.' This has been brought forward by Mr. Crole, who, in his letter, No. 507, dated 22nd October 1883, printed with G.O., Revenue Department, No. 288, dated 21st January 1884, sketches out a scheme which generally agrees with that which Colonel Montgomerie has submitted; this will be noticed further on. The first point is to arrive at a definition of conservancy.

13. There are, it appears, two classes of repairs which the works will always require. Supposing that a tank has had its bank brought to proper section throughout, its revetment packed to slope and raised to sufficient height, the bank slopes dressed, turfed, planted with grass, or gravelled, its waste weir made of sufficient length and its sluices put into working order, deterioration begins by rain-water gullying the slope, waves during strong wind damaging the revetment, cattle pulling out the grass, trees taking root in the masonry, &c. To check this, in the first instance, only "petty repair" is necessary. As the rain passes over, the gullies should be filled; as the wind subsides, the loose stones in the revetment should be repacked; the grass pulled out by the cattle should be replaced, and the trees and shrubs establishing themselves on the masonry works should be pulled out by the roots; this is "petty repair." It may be said that once a work has been put into repair, the execution of these "petty repairs" will be all that is needed to maintain it, and this is the view taken by the Irrigation Committee whose report will be found in appendix V to the Famine Committee Report, but it is considered that more will be required; that after the lapse of some years, in spite of petty repairs having been regularly carried out, the works will generally have deteriorated, the tank bank will have become washed down by almost imperceptible degrees, the revetment will have to some extent subsided, the brick or stone of the masonry works will have decayed, and something more than petty repair will be required to bring the work up to the standard of efficiency once more. This may be called "ordinary repair" which would be required probably once in 10 to 15 years. Petty repair, which is conservancy, should, it is thought, be carried out by the cultivator, ordinary repairs by the State.

14. Petty repair is, in fact, the work which, it has always been maintained, should be done by kudimaramut; and it was hoped that the Kudimaramut Bill would have given power to enforce its execution. There are, say, 50,000 irrigation works scattered throughout the presidency, and during the monsoon, or in times of heavy rain, the tank and channel banks must suffer; a gully is formed and rapidly becomes a wide and deep gap in the bank, the water gets behind the revetment and down come several stones, a sudden flood throws a deposit in front of a sluice or across the head of a channel, and this happens in a day or in a few hours. However strong the department entrusted with the maintenance of these works may be, it is evidently quite impossible for its officers to attend immediately to even a tithe of the cases where a few hours' work, possibly not so much, is needed to avert disaster. At this very time, too, it must be remembered, heavy rains are driving the laborer out of the fields, and the laborers are actually in their houses but a few hundred yards, it may be, from the spot where a few annas' worth of labor is sorely needed. It is no more possible for the State to undertake to fill gullies, replace stones in revetments, &c., than it is for a large landowner in England to stop gaps in fences, repair gates, &c. Petty repairs must be, and always have been, the duty of the tenant. Here as a tank or channel supplies the lands of many ryots, it is of course difficult to apportion the labor, but it is hoped that the old village system is not yet quite a thing of the past, and that this might be settled by a panchayet of the principal ryots.

15. It is understood, however, that the Kudimaramut Bill will shortly be withdrawn, and that no means are to be adopted of enforcing the execution of petty repairs. The help of the cultivators in the conservancy of the works must be sought for in some other way. There is already a good deal done in some places by them, and in some districts a voluntary cess has been collected for the execution of trifling repairs. If this system could be extended, if the cultivators could be induced to contribute a small percentage on their assessment and this money was expended on the village works by village labor, under the direction of the principal ryots, conservancy might be attended to. It is the best way of making a cess take the place of kudimaramut, and as regards the objections usually raised to an additional cess, the remark made by the Honorable Mr. Sullivan, in suggesting a substitute for the Kudimaramut Bill, may be quoted. He says: "It merely represents the value of the labor which would otherwise have to be contributed gratis, and as it does not go to swell the land revenue, but is expended on the objects for which and in the locality where it is raised, the people do not regard it as an addition to the regular fiscal burden."

16. The remarks made by Colonel Montgomerie in paragraph 32 of his scheme are very much to the point. The labor of the cultivator must be a prime factor in conservancy and it must be invoked by the Collector. When once the minor irrigation works in a district or taluk have been put in good order, no professional agency is required to supervise conservancy. The cultivators are quite capable of doing all that is needed, and the tahsildar or other subordinate of the Collector is able to see whether it has been done. This was contemplated in G.O., No. 284 I., dated 5th May 1880, which contains the orders under which the irrigation works have been classed as Imperial and Minor, and the principle on which it was then intended that minor works should be maintained and repaired was that the villagers should in all cases do the work and should receive remissions or grants-in-aid as payment for work done. It was never contemplated that the work should be measured up and paid for by the yard. The money was to be given as a grant-in-aid to the villagers; no expensive establishment was to be kept up, but inspectors were to be appointed under the Collectors who would report whether the works were receiving due attention. This scheme, however, has never been fairly tried. Lists of the works were prepared, and it was settled between the Collector and the Superintending Engineer what works were to be classed as Imperial; these lists were sent to this office, examined, and, with some alterations, approved. Money was placed at the Collectors' disposal, and forthwith, with one accord, the Collectors applied for establishments to estimate, lay out, measure up and pay for the work done. No attempt seems to have been made to carry out repairs by means of the villagers, giving them remissions or grants-in-aid as required.

17. There is much that is good in the schemes sketched by Colonel Montgomerie and Mr. Crole, but it is thought that they will fail in attempting to carry out all conservancy and repairs by paid labor working under an establishment. No establishment can undertake petty repairs at the right moment; it cannot attend to hundreds of works at the same time, cannot put in the "stitch in time" which will save so many subsequent stitches; only the villagers can do that.

18. As regards the division of irrigation works between Imperial and Minor, it must be remembered that that already made under the instructions conveyed in G.O., No. 284 I., dated 5th May 1880, is not considered to be final. The proper and final division must be those works which require professional superintendence should be classed as Imperial and be attended to by Public Works Department; all others should be Minor, and these might be sub-divided into those which can be entirely handed over to the villagers and those which can be maintained by the villagers acting under the Revenue Department. If the investigations now in progress under the Tank divisions were completed, it would be a simple matter to classify the works in this way; but until they are completed, it does not seem practicable to do more than classify by acreage; this division approximately shows the works that require professional superintendence, and those works which do not are handed over to the Revenue Department, and until they can be restored must be kept as efficient as possible by ordinary repairs, such as can be executed under the direction of a maistry. It would manifestly be a waste of money to pay an Engineer officer to assist the Collector in looking after such work,

and if it be said that a highly paid officer is necessary to prevent waste of money, the reply is, give the money as Government formerly directed as a grant-in-aid to the villagers, interest them in the work, and it will be rarely that a complaint is made of not enough to show for the expenditure.

19. The treatment of minor irrigation works is a subject regarding which there has been a vast amount of discussion, and a very great diversity of opinion. The Government have laid down certain lines on which to work, and there seems to be no good and sufficient reasons for a radical change in the constitution of the Public Works Department because these lines (which have not been adhered to) have not at present led to the happiest results. We start with the works generally out of repair, and we knock on the head the old custom of the ryots attending to petty repairs, and expect to find a royal road out of our difficulties. The expectation will never be realised, and time is only wasted in trying change after change. The general principles on which we ought, it is thought, to work, and which are in effect very nearly those we are working on, are—

1. Conservancy and ordinary repair is the work of the villagers under the Revenue Department aided by remissions or grants-in-aid.
2. Imperial works are those which need professional treatment. All other works are Minor and may be taken charge of by the Revenue Department, a considerable proportion being handed over entirely to the villagers, as has already been done in the Cuddapah sub-division.

20. The rules to be laid down consequently are as follows:—

1. The Tank divisions will be employed in grouping and estimating for restoration of irrigation works.
2. The Public Works ordinary divisions will carry out the work to be done.
3. The present classification of the works will be revised on the completion of each minor basin, and the Government will be asked to finally settle which are Imperial and Minor, and which of the latter class can be handed over to the villagers.
4. In the ungrouped basins the present classifications to be adhered to, or modified by agreement between Revenue and Public Works Departments and approved by Government.
5. The conservancy and repair of Imperial works to rest with the Public Works Department, and that of Minor works with the Revenue Department.
6. No new work of any kind to be undertaken by the Revenue Department.

21. It has been said that the system of working by means of remissions and grants-in-aid will never answer; all that is asked is that a fair trial should be given to it, and if kudimaramut is now to be regarded as a thing of the past, there are stronger reasons for trying it, than there were in 1880. If the Revenue Department cannot work in this way, the alternative is, to use an old term, a Maramut establishment under the Collector, hand over all the smaller works, as far as possible, to the villagers, and leave restoration entirely to the Public Works Department, who should have nothing to do with any work which does not require professional treatment. The Local Self-Government Committee recommended that the repair of minor irrigation works should be transferred to the taluk boards; it was thought that as only a limited number of works could be repaired yearly with the available funds, the taluk boards would be in a position to decide where the money could be expended to the best advantage, and that if they undertook the repairs themselves it would strengthen their establishments and enable them to employ competent men for the supervision of both tank and road works. It may be too soon to take any further step in the matter, but the proposal is worthy of consideration, and when the boards have become settled institutions, a transfer of works might be experimentally made.

22. One other point requires notice. It may be said that the transfer of minor works to the Collector is throwing work on an officer already overworked, but Mr. Crole has stated that if the Collector were given a conservancy establishment, economy, efficiency, increased revenue and substantial improvement on the national wealth of the district must ensue; and he proposes a very extensive establishment to work under

him, the Superintending Engineer having professional supervision. If all works requiring professional treatment are retained in charge of the professional department, this supervision will not be necessary, and the subordinate establishments, which would suffice to superintend the simple repairs left to the Collector, might work under the tahsildars.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer for Irrigation.

10th April 1884.

Order—dated 12th July 1884, No. 646 I., Public Works.

When it is stated that the revenue dependent on irrigation works "for which neither Capital nor Revenue accounts are kept" is 36 per cent. greater than that derived from the whole of the large delta systems and other works for which Capital and Revenue accounts are kept, and amounts to three-fifths of the entire irrigation revenue of the presidency, the importance of maintaining them in a state of efficiency comes prominently forward both in the interests of the State and of the people. Although it may be conceded that they have not been wholly neglected, it is certain that they have not, for a long series of years, received anything like the attention which their importance deserves.

2. The investigations of the conditions of a typical series of these irrigation works in the Madura district shows—

(1) That the works have deteriorated to an extent which will require an expenditure of one year's gross revenue to bring them up to the standard of efficiency;

(2) That, without taking into account the probability of the whole area commanded being brought under irrigation by the restoration of the works, the anticipated increase of revenue in consequence of this expenditure is nearly 6 per cent. on the gross revenue, or estimated outlay;

and it has been clearly shown by Colonel Montgomerie, in the able report submitted by him, that what has been done in this typical instance can, and should, be done for the whole presidency.

3. These figures are encouraging, and place beyond doubt the expediency of pushing forward, as rapidly as financial considerations will allow, the task of restoring every tank and channel to a state of thorough efficiency.

4. This is the first time that this important question has been systematically and scientifically treated. The result of the work done is that there is now, in connection with these works, a permanent and scientific record for the area dealt with, such as is furnished by the Revenue Survey Department in connection with the cultivated area. The nature of this record is described in paragraph 3 of the note by the Chief Engineer for Irrigation, and it will be found of infinite value to both the Revenue and Public Works Departments. The Government are decidedly of opinion that all the maps should be lithographed and the descriptive memoirs printed and bound up by main river basins as suggested by Colonel Montgomerie.

5. The objects to be arrived at are to bring every work to the standard of efficiency, and to maintain it in this state; and it appears to the Government that these objects can be attained without recourse being had to the measures recommended by Colonel Montgomerie, which, as pointed out by the Chief Engineer for Irrigation, would involve a radical change in the constitution of the Public Works Department.

6. It was originally intended that the officers of the so-called Tank divisions should not only prepare the way for the work of restoration by the necessary professional investigation, but should themselves carry it out. It clearly appears that this would be a waste of power, and that the work of investigation would thereby be indefinitely delayed. The proposal that the officers of the Tank division should confine their attention to the preparation of the irrigation record and the plans and estimates for the works, and the execution of the works should be handed over to the ordinary staff of the department, is therefore approved.

7. As the investigations proceed it will be a simple matter to decide which of the works are of such importance as to require professional supervision in future; these works, which will be styled Imperial Works, will remain in charge of the Public Works Department, and all other works, to be styled Minor Irrigation Works, will be placed in charge of the Revenue Department. The lists, which, it is understood, have already been prepared under instructions conveyed in G.O., No. 284 I., dated 5th May 1880, will therefore need revision as the investigation of each minor basin is completed, and the revised lists prepared by Superintending Engineers in communication with Collectors will be submitted for the approval of Government. The question of handing over the smaller works entirely to the villagers can be considered hereafter.

8. The rules proposed by the Chief Engineer for Irrigation in paragraph 20 of his note are generally approved. The Public Works Department, on taking up for restoration the works in any minor basin, will assume entire charge of them, and retain it until the work of restoration is completed, when they (with the exception of those works selected as Imperial) will be handed over to the Revenue authorities, who will be responsible for their conservancy; and under recent arrangements for furnishing Collectors with funds for minor irrigation repairs, and for providing them with an establishment to supervise expenditure, they should be able to undertake the duty.

9. The question of conservancy establishments required for the maintenance of minor irrigation works will be referred to the Revenue Department for discussion with the Board of Revenue, and it will be considered in that department what steps should be taken towards recording and utilising the "customary labor," or cess in lieu thereof, which may be in force in the locality.

10. Ordered that a copy of these proceedings be forwarded to the Government of India.

(Here enter No. 647 I., dated 12th July 1884.)

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To Superintending Engineers.
To the Chief Engineer for Irrigation.
" Superintendent of Works, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—dated 12th July 1884, No. 647 I., Public Works.

Forwarded.

(Signed) J. O. HASTED, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Exd. E. Fernandez.
Spare Copies.

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IRRIGATION.

Govt. of (1884) Madras.

PUBLIC WORKS.

Dated July, 12th.

Read. *Encl.*

G.O., 12th July 1884, No. 647 I.

JULY.

Minor Irrigation Works

Copy of orders on Lieut-Colonel. P. Montgomerie's scheme for the repair and conservancy of the — in the Madras presidency, forwarded to the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 26th June 1884, No. 768 G.:—

Referring to your letter, No. 1306 W., dated 23rd May 1884, regarding the Tank Maintenance Scheme, I am directed to remark that the work in connection with this scheme hardly seems of sufficient extent to warrant the continued employment of a Superintending Engineer, and apparently this view is shared by the Government of Madras, for it is understood that Lieutenant-Colonel Montgomerie has returned to his Circle on being relieved by Lieutenant-Colonel Pennycuick, Executive Engineer, 1st grade. Under these circumstances, the allowance of Rs. 100 per mensem, referred to in paragraph 2 of your letter, No. 862 W., dated 31st March 1884, should apparently cease from the date on which Lieutenant-Colonel Montgomerie made over charge to Lieutenant-Colonel Pennycuick.

ORDER—dated 13th August 1884, No. 1981 W., Public Works.

Ordered that the Government of India be addressed.

(Here enter No. 1982 W., dated 13th August 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

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GENERAL
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated August, 1884.

Recd. *Encl.*

G.O., 13th Aug. 1884, No. 1981 W.

AUGUST.

Tank Maintenance Scheme

Ordered that the Government of India be
ddressed with regard to their decision that
he appointment of a Superintendent of Works
connection with the — should cease from
te of transfer of Lieutenant-Colonel P.
Montgomerie to the I Cir

13TH AUGUST 1884, No. 1982 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

I am directed to acknowledge the receipt of your letter, No. 768 G., dated 26th June 1884, remarking that the work in connection with the Tank Maintenance Scheme hardly seems of sufficient extent to warrant the continued employment of a Superintending Engineer, and that apparently this view is shared by the Government of Madras.

2. In reply, I am directed to invite the attention of the Government of India to the proceedings of this Government forwarded under endorsement, No. 647 I., dated 12th July 1884, in which the scope of the operations to be undertaken by the Tank divisions is fully described; and to point out that an officer in the position of a Superintending Engineer was required for purposes of organisation, and that it is desirable to retain the services of such an officer until the divisions are in working order. Lieutenant-Colonel Pennycuick, who, prior to proceeding on furlough, had for some time been officiating as Superintending Engineer, was specially selected for the work of continuing the organisation of the Tank Maintenance Scheme; and this Government are strongly of opinion that he should receive the additional allowance of Rs. 100 per mensem as Superintendent of Works.

3. I am therefore to solicit a reconsideration of the decision conveyed in your letter under reply.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

OOTACAMUND,
13th August 1884.

Exd. E. Fernandez.
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GENERAL
ESTABLISHMENT.

Govt. of Madras.
1884

PUBLIC WORKS.

...ated August, 1884.

Encl.

...ent.

13th Aug. 1884. No. 1982 W.

AUGUST.

Tank Maintenance Scheme

Government of India requested to allow Superintendent of Works with an additional allowance of Rs. 100 per mensem for ... till the Tank divisions are in working order.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General Establishment.

READ—the following paper:—

No. 192 I.

Note by the Chief Engineer for Irrigation.

In applying to the Government of India for a renewal of the sanction for the temporary establishment employed on the Tank Maintenance Scheme, in accordance with the request contained in Mr. Walker's letter, No. 741 G., dated 21st May 1883, printed with proceedings of Madras Government, No. 1700 W., dated 16th June 1883, and in requesting sanction for the establishment necessary to start another Tank division during the ensuing year, it seems advisable to review briefly the original proposals made regarding establishment of the Tank Maintenance Scheme, and to note in what particulars these proposals have been modified.

2. In letter, No. 40 I., dated 20th January 1883, printed with proceedings of Madras Government, No. 143 I., dated 12th February 1883, the Government of India accepted the programme laid down in paragraph 14 of the Note by the Chief Engineer for Irrigation, dated 27th November 1882,* wherein it was estimated that the establishment of each Tank division would cost Rs. 32,000, and that an officer of experience, with a suitable establishment, would also be necessary to start the work of the Tank divisions until they could be finally handed over to the charge of the Superintending Engineers in whose circle they happened to be working.

* Forwarded to the Government of India, with proceedings of Madras Government, No. 3273 W., dated 11th December 1882.

3. Acting on this programme the grants and expenditure for establishment in 1883-84 were as follows:—

	Original Grant.	Revised Grant.	Expenditure.
	Rs.	Rs.	Rs.
Tank division establishment	32,000	25,364	16,657
Superintending Engineer and his establishment.	33,600	25,891	26,063
Total ...	65,600	51,255	42,720

The operations of the Tank division were confined to the Madura district, and from various causes, which have already been detailed, the expenditure on works was very small.

		Rs.
1 Executive Engineer		550
1 Assistant Engineer		450
1 Sub-Engineer		300
	Total ...	1,300

2. Ordered that the following letter be sent:—

(Here enter No. 3133 W., dated 20th December 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintendent of Works, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.
" Revenue Department.
"

Exd. W. H. French.

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GENERAL.
ESTABLISHMENT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated December, 20th.

Read. *Encl.*

G.O., 20th Dec. 1884, No. 3132 W.

DECEMBER.

Temporary Engineer Establishment

Ordered that the Government of India be requested to renew the existing sanction for the — for the Tank Maintenance Scheme.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,
Secretary to the Government of Madras,
Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

In forwarding, herewith, a copy of proceedings of Madras Government, No. 3132 W., dated 20th December 1884, I am directed to request that the Government of India will be so good as to renew the existing sanction for the temporary engineering establishment, noted in the margin, for the Tank Maintenance Scheme for 1885-86, and will sanction the following temporary establishment, required for the No. 3 Tank division, to be formed in the Kurnool district early in the next official year:—

	Rs.
Local allowance for Superintendent of Works	100
2 Executive Engineers at Rs. 650 each	1,300
2 Assistant Engineers at Rs. 450 ,,	900
2 Sub-Engineers at Rs. 300 ,,	600
Total ...	2,900

	Rs.
1 Executive Engineer	550
1 Assistant Engineer	450
1 Sub-Engineer	300
Total ...	1,300

2. As it is considered very desirable that the services of the Superintendent of Works should be retained, I am to state that this Government attach great importance to the recommendations of the Chief Engineer for Irrigation on this head, which have accordingly been embodied in the scale of establishment now asked for.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
20th December 1884.

Exd. W. H. French.

Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of [1884] Madras.

PUBLIC WORKS.

Dated December, 20th.

Encl.

Read.

20th Dec. 1884, No. 3133 W.

DECEMBER.

Temporary Engineer Establishment

Requesting renewal of existing sanc[tion] for the — for the Tank Maintenance Schem[e] nd for temporary establishment for No. [1] ank division to be formed in the K[istna]

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 11th February 1885, No. 229 G. :—

In reply to your letter No. 3133 W., dated 20th December 1884, I am directed to communicate the sanction of the Government of India to the temporary Engineer and upper subordinate establishment noted on the margin for Nos. I, II and III tank divisions for a period not exceeding one year, and to state that the salaries should be considered personal.

2	Tempy. Engrs. on	Rs. 650	per month	each.
1	Do. Engr. on	„ 550	do.	
3	Do. Engrs. on	„ 450	do.	each.
3	Upper Subordinates	„ 300	do.	do.

2. I am also to sanction the continued employment, for another year, of a Superintendent of Works with an additional allowance of Rs. 100 per month for the supervision of the divisions referred to above, and to request that a report of the progress made up to date may be submitted on an early date for the information of the Secretary of State for India.

3. The names of the persons appointed and the dates of their joining their appointment should be reported.

ORDER—dated 9th March 1885, No. 543 W., Public Works.

Communicated to the officers concerned.

2. The Chief Engineer for Irrigation will submit the report called for in paragraph 2 of the letter from the Government of India.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Examiner, Public Works Accounts.
„ Superintendent of Works, Tank Maintenance Scheme.

Exd. A. Grubert.
Spare Copies

GENERAL ESTABLISHMENT.

Govt. of | 1885 | Madras.

PUBLIC WORKS.

Dated March, 9th.

Read.

Encl.

G.O., 9th March 1885, No. 543 W.

MARCH.

Temporary Engineer and Upper Subordinate Establishment

Letter from the Government of India sanctioning the — required for the Tank Maintenance Scheme, communicated to the officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following letter from Lieutenant-Colonel J. PENNYCUICK, R.E., Superintendent of Works, Tank Maintenance Scheme, to the Chief Engineer for Irrigation, dated Chepâk, 16th April 1885, No. 799 T.:—

In reply to your No. 12 T., dated 20th ultimo, I have the honor to submit the documents marginally noted, with this report, for your information and submission to the Government of India.

3 Progress maps.
1 Copy of the memoirs of the Periyakulam minor basin.
1 Portfolio of plates to illustrate the above.
1 General irrigation map of the presidency.
1 Statement of drainage areas and rainfall.

2. The accompanying progress maps show the extent of the investigations completed and in progress; the former is indicated by a red wash and the latter by a yellow wash.

3. The areas over which tank maintenance operations extend at present are in the—

		SQ. MILES.	
No. I TANK DIVISION.			
Upper Vaigai River Basin.			
Periyakulam minor basin		192	
Butlagunda do.		208	
Suralyaur do.		504	
Talavaigai do.		256	
Andipatty do.		114	
			1,304
Amaravati River Basin.			
Dindigul minor basin		32	
Palni do.		304	
Udamalpet do.		400	
Upper Amarávati do.		656	
			1,792
No. II TANK DIVISION.			
Madras Drainage Basin.			
Red Hills minor basin		337	
Kovelam do.		190	
Adayaur do.		192	
			719
No. III TANK DIVISION.			
Kundaur River Basin.			
Upper Kundaur minor basin		480	
Kallee minor basin		484	
			964
Total area under investigation			4,779

4. The greater portion of the investigations of the Upper Vaigai river basin has been completed, viz., the whole of the Periyakulam minor basin, and all the rest

with the exception of the Talavaigai, are well advanced, and estimates, amounting to Rs. 1,48,741, have been sanctioned as shown below:—

		Rs.
Periyakulam minor basin	... ...	30,282
Hottagunda do.	... ...	18,775
Suruliyar do.	... ...	85,465
Talavaigai do.	... ...	5,219
Andipatty do.	... ...	[illegible]

The floods of November last have done serious injury to many of the works in the Suruly valley, and additional work, the estimates for which are now under preparation, will be required to bring them into proper order.

5. The grouping of the works in the Talavaigai minor basin is in progress and the estimates for the works are shortly expected for sanction.

6. Almost the whole of the estimates in this division were sanctioned during the official year 1884-85.

7. The investigations of the Upper Vaigai river basin being nearly completed, a portion of the establishment has been removed to the Amarávati river basin, and the investigations of the Upper Amarávati, Dindigul, Palni, and Udumalpet minor basins are being carried out.

8. Some difficulty and delay have occurred for the want of reliable maps, as many of the maps of the Madras Survey Department were not ready at the time; the Ordnance maps had therefore to be used and verified on the ground.

9. The No. II Tank division, operating in the Madras drainage basin, is at present engaged in investigating the Red Hills, Koveram and Adayaur minor basins and estimates to the following amounts have been sanctioned in each case:—

		Rs.
Red Hills minor basin ...		
Kovelam do.	... ...	43,972
Adayaur do.	... ...	26,120
	... ...	*Nil*
	Total ...	70,092

10. The aggregate amount of estimates sanctioned in both divisions is Rs. 2,18,833; there are still a large number of estimates in the divisional offices under revision and in different stages of progress, which will be shortly submitted for sanction.

11. The investigations in the Madras drainage basin have been, to a considerable extent, retarded by the withdrawal of a portion of the establishment for emergent work in connection with the restoration of the Red Hills and Chulavaram tanks; but a more important source of delay is the system by which the establishment employed on these investigations is classed as "temporary" and filled, with but few exceptions, by men not on the regular staff of the department. The supposed economy of the employment of temporary establishments for permanent work (and a work estimated to last fifty years may fairly be called permanent) is altogether illusory, and the work cannot and will not be done satisfactorily until the divisions concerned are included in, and manned from, the permanent establishment of the department.

12. The No. III Tank division has just been organised and operations have been started in the Kundaur river basin, through which the Kurnool canal passes. The Upper Kundaur and Kallee minor basins have been taken up for the present.

13. My own office establishment is engaged in the preparation of minor basin maps required for starting operations. These maps are taken from the 1-inch "detail irrigation maps" under compilation in this office. Only those portions of the country in which tank maintenance operations are being carried out have been taken up and projected, and it embraces the following districts for the present:—

No. I Tank Division.—Madura and Coimbatore.

No. II Tank Division.—Chingleput and North Arcot.

No. III Tank Division.—Kurnool and Cuddapah.

14. The detail irrigation map is a large work and will occupy many years to complete.

15. In addition to the above the establishment is engaged in checking estimates and in the preparation of the plates and the hydraulic and financial information for printing. Copies of these plates and memoirs are herewith sent; also a copy of the "general irrigation" map, which shows the whole of the river basins and other drainages in the presidency and their respective areas and the principal rainfall stations in each water-shed. This map has been carefully prepared and, I think, will be found generally useful. Besides the information given on the map, the areas of the basins have been tabulated, and the average rainfall for a period of ten years at each of the stations in the water-sheds has been calculated and is considered to be sufficient for all practical purposes connected with irrigation.

16. In my letter, No. 684 T., dated 31st March 1885, I have explained the difficulty of getting the plans and memoirs printed with sufficient rapidity, and made proposals for their execution in my own office.

ORDER—dated 5th May 1885, No. 421 I., Public Works.

Ordered that the following letter be sent:—

(Here enter No. 422 I., dated 5th May 1885.)

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Superintendent of Works, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.
" Revenue Department.

Exd. E. Fernandez.
Spare Copies

IRRIGATION.

Govt. of | 1885 | Madras.

PUBLIC WORKS.

Dated May, 5th.

Read.

Encl.

G.O., 5th May 1885, No. 421 I.

MAY.

Tank Maintenance Scheme

Report of progress made up to date on the —.

PUBLIC WORKS DEPARTMENT.

Irrigation.

LETTER—from

COLONEL J. O. HASTED, R.E.,

Joint Secretary to the Government of Madras,

Public Works Department,

Irrigation Branch.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT,

(IRRIGATION).

SIR,

In reply to your letter, No. 229 G., dated 11th February 1885, I am directed to submit certain maps and plans showing the progress made up to date on the tank maintenance scheme. The progress maps (on tracing cloth) show the extent of the investigations completed and in progress; the former is indicated by a red wash and the latter by a yellow wash.

3 Progress maps.
1 Copy of the memoirs of the Periyakulam minor basin.
1 Portfolio of plates to illustrate the above.
1 General irrigation map of the Madras presidency.
1 Statement of drainage areas and rainfall.

The areas over which tank maintenance operations extend at present are in the—

No. I TANK DIVISION.

Upper Vaigai River Basin.

	SQ. MILES.	
Periyakulam minor basin	192	
Butlagunda do.	208	
Suralyaur do.	504	
Talavaigai do.	256	
Andipatty do.	114	
	——	1,304

Amarávati River Basin.

Dindigul minor basin	432	
Palni do.	304	
Udamalpet do.	400	
Upper Amarávati do.	656	
	——	1,792

No. II TANK DIVISION.

Madras Drainage Basin.

Red Hills minor basin	337	
Kovelam do.	190	
Adayaur do.	192	
	——	719

No. III TANK DIVISION.

Kundaur River Basin.

Upper Kundaur minor basin	480	
Kallee minor basin	484	
	——	964
Total area under investigation ...		4,779

2. Estimates, amounting to Rs. 1,48,741, have been sanctioned and will be carried out by the ordinary establishment.

3. The No. II Tank division, operating in the Madras drainage basin, is at present engaged in investigating the Red Hills, Kovelam and Adayaur minor basins, and estimates to the following amounts have been sanctioned in each case:—

	Rs.
Red Hills minor basin	43,972
Kovelam do.	26,120
Adayaur do.	*Nil*
Total ...	70,092

4. The aggregate amount of estimates sanctioned in the two divisions is therefore Rs. 2,18,833. A large number of estimates are in hand and will shortly be submitted for sanction.

5. The No. III Tank division has just been organised and operations have been started in the Kundaur river basin, through which the Kurnool canal passes.

6. Maps of the minor basins are also being prepared for starting operations, and some progress has been made in the detail irrigation map of the presidency, which, however, will take many years to complete. In addition to this, a large amount of statistical information is being collected and tabulated.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) J. O. HASTED, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

OOTACAMUND,
5th May 1885.

Exd. E. Fernandez.
Spare Copies

IRRIGATION.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated May, 5th

Read. *Encl.*

5th May 1885, No. 422 I.

MAY.

Tank Maintenance Scheme

The progress made up to date on the — reported to the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 170 I.

Note by the Chief Engineer for Irrigation.

The accompanying abstract statement, compiled from the detailed statements received from the Superintending Engineers, III, V, and VI Circles, and from the information contained in letter No. 962 I., dated 8th May 1885, from the Superintendent of Works, Tank Maintenance Scheme, shows the progress made in the investigation and restoration of tanks, and is submitted for the information of Government.

2. The presidency is divided into 103 drainage basins; of these, 4 have been sub-divided into 35 minor basins, the group maps of one minor basin have been completed, and those of four others are nearly so. Of 429 estimates, aggregating Rs. 2,33,814, entrusted to the ordinary divisions for execution, 78 estimates, amounting to Rs. 27,415, were worked out; 272 estimates, amounting to Rs. 1,73,359, were in progress, and the rest were not commenced at the end of July last.

3. It is only necessary to add that the preparatory work in starting tank divisions has taken up a great deal of time, and that the basins selected to begin work upon are probably some of the most troublesome to be dealt with.

CHEPÁK, (Signed) H. L. PRENDERGAST, Col., R.E.,
1st October 1885. Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

STATEMENT showing the progress made in investigating the requirements of tanks and in improving them.

Basins.	Minor basins.	Groups.	Progress made in investigation as reported by the Superintendent of Works, Tank Maintenance Scheme, in his letter No. 962 T., dated 8th May 1885.	Progress made in execution to end of July 1885.					
				Estimates received for execution.		Estimates worked out.		Estimates in progress.	
				Number.	Amount.	Number.	Amount.	Number.	Amount.
1	2	3	4	5	6	7	8	9	10
					Rs.		Rs.		Rs.
1. Upper Vaigai.	1. Periyakulam.	1. Varaganadi.	Group maps have been prepared and lithographed.	42	36,457	20	7,495	21	28,957
		2. Varattar.		18	3,684	9	2,294	1	939
	2. Butlakanda.	Manjalsar ..	....	27	18,644	18	9,406	9	8,748
	3. Suruliyaur ..	1. Surulinadi ..	....	7	5,752	1	15	6	5,722
		2. Suliagangai.	.....	68	56,563	10	3,977	48	44,340
		3. Teniaur ..		13	10,626	4	1,422	9	9,203
	4. Talavaigai ..	Talavaigai ..	Group maps almost completed.	..	..	..	..	..	..
	5. Andippatti ..	1. Nedakotta ..	....	10	5,209	..	..	10	5,209
		2. Talayathoodai	....	..	..	..	..	..	..
		3. Muvathundai	....	..	..	..	..	..	..

Statement showing the progress made in investigating the requirements, &c.—*cont.*

Basins.	Minor basins.	Groups.	Progress made in investigation as reported by the Superintendent of Works, Tank Maintenance Scheme, in his letter No. 962 T., dated 8th May 1885.	Progress made in execution to end of July 1885.					
				Estimates received for execution.		Estimates worked out.		Estimates in progress.	
				Number.	Amount.	Number.	Amount.	Number.	Amount.
1	2	3	4	5	6	7	8	9	10
II. Amarávati.	1. Dindigul ..	....	Investigations just commenced and grouping in progress.	..	..	..	..	..	..
	2. Palni ..	....							
	3. Upper Amaravati.	....							
	4. Udumalpet ..	....							
	5. Kanguyanr.	....							
	6. Dharápuram.	....							
	7. Nalatangi ..	....	Minor basin maps have been prepared and investigations not commenced.	..	..	..	..	..	..
	8. Nanganjanr.	....							
	9. Mulanur ..	....							
	10. Karúr ..	....							
	11. Lower Cudavanaur.	....							
III. Madras ..	1. Kovalanr ..	1. Pallanram.	Investigations in progress and group maps under preparation.	102	35,201	3	780	75	29,877
	2. Red Hills ..	2. Agaram ..		145	61,331	11	1,946	94	40,496
	3. Adayanr ..	1. Shadayankuppam.							68
	4. Chingleput ..	2. Ambattúr ..	Investigations just commenced and grouping in progress.	2	119	..	..	..	..
	5. Conjeveram.	....		..	..	..	..	..	..
	6. Chembrambakam.	....		..	..	..	..	..	..
	7. Palár anicut, Northern.	....	Minor basin maps have been prepared. Investigations not commenced.	1	30	1	30	..	..
	8. Poiney anicut, Eastern.	....		..	..	..	..	..	..
	9. Tiruluni ..	....		..	..	..	..	..	..
	10. Tamarapauk.	....		..	..	..	..	..	..
	11. Naguri ..	....		..	..	..	..	..	..
IV. Kundanr.	1. Upper Kundaur.	....	Investigations just commenced and grouping in progress.	..	..	..	..	..	..
	2. Kanlen ..	....		..	..	..	..	..	..
	3. Sarnaur ..	....							
	4. Koilkuntla ..	....							
	5. Nasum ..	....							
	6. Lower Kundaur, Western.	....	Detail irrigation maps under preparation.	..	..	..	..	..	..
	7. Lower Kundaur, Eastern.	....							
	8. Sirvel ..	....							
Total—4 ..	35			429	2,33,814	78	27,415	272	1,73,369

ORDER—dated 15th October 1885, No. 878 I., Public Works.

Ordered that a copy of these proceedings be forwarded to the Government of India for information, in continuation of letter No. 422 I., dated 5th May 1885.

(Here enter No. 879 I., dated 15th October 1885.)

(True Extract.)

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, III Circle.
" " " IV "
" " " V "
" " " VI "
" Superintendent of Works, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—dated 15th October 1885, No. 879 I.

Forwarded.

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Exd. J. Henricus.
Spare Copies

IRRIGATION.
ACCOUNT.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated October, 15th.

Read. *Encl.*

G.O., 15th Oct. 1885, No. 879 I.

OCTOBER.

Tanks

Forwarding statement showing progress made in the investigation and restoration of

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From Major G. F. L. MARSHALL, R.E., Under Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 4th December 1885, No. 304 I.

With reference to your endorsement, No. 879 I., dated 15th October 1885, forwarding a statement of progress in the investigation and restoration of tanks in the Madras presidency, I am directed to inquire what amount of money has been expended on actual work of restoration exclusive of surveys and preparation of projects each year since the grants were first made, and how much is intended to be similarly expended next year.

Office note to the Examiner, Public Works Accounts, dated 10th December 1885, No. 320.
Do. from the do. do. „ 14th „ „ „ 715.

No. 215 I.

Note by the Chief Engineer for Irrigation.

The subjoined statement affords the information required by the Government of India :—

—	1883-84.	1884-85.	1885-86.			Grant for 1886-87.
			Outlay to end of October 1885.	Probable further outlay.	Total.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Original works	..	6,301	22,667	9,375	32,042	1,10,000
Repairs	1,425	49,557	63,366	44,634	1,08,000	2,60,000
Total ..	1,425	55,858	86,033	54,009	1,40,042	3,70,000

CHEPÂK, (Signed) H. L. PRENDERGAST, Colonel, R.E.,
22nd December 1885. Ag. Chief Engineer for Irrigation.

To the Ag. Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 26th December 1885, No. 1106 I., Public Works.

Ordered that the foregoing statement be forwarded to the Government of India.

(Here enter No. 1107 I., dated 26th December 1885.)

(True Extract.)

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy., to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Revenue Department.

ENDORSEMENT—dated 26th December 1885, No. 1107 I., Public Works.

Forwarded accordingly.

(Signed) H. L. PRENDERGAST, Colonel, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Exd. E. Fernandez.
Spare Copies

84 1941

IRRIGATION.
ACCOUNT.

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated December, 26th.

Encl.

Read.

G.O., 26th Dec. 1885, No. 1107 I.

DECEMBER.

Tank Restoration Works

Forwarding statement of expenditure on — since the organisation of Tank divisions.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following letter from Colonel W. S. TREVOR, R.E., Secretary to the Government of India, Public Works Department (Account—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 1st February 1886, No. 11 A.I. :—

I am directed to acknowledge receipt of your letter, No. 2 I., dated 2nd ultimo, forwarding the budget estimates of the Irrigation Branch, Madras, for 1886-87, and note thereon by the Chief Engineer for Irrigation.

2. With regard to the observations * on the curtailment of the Imperial grant under 44. Irrigation and Navigation for 1886-87, I am directed to say that the Government of India regrets the necessity for the reduction of the allotment for that year to the sum provisionally sanctioned in Public Works Department resolution, No. 81 A.I., dated 6th November 1881, and should funds become available hereafter, the desirability of increasing that grant will not be overlooked. There is little probability, however, of the allotment being materially, if at all, increased during the coming year, and no increase to the grant under this head should therefore be anticipated.

* Paragraph 20 of Chief Engineer's note.

3. Considering the improbability of additional funds being hereafter available, the Government of India is of opinion that it is not desirable to expend any large amount on the investigation of new projects while works already investigated cannot be commenced or pushed on vigorously from want of suitable allotments. It seems desirable, therefore, that early steps should be taken to ascertain approximately the funds considered essentially necessary for the maintenance and repairs of existing irrigation works throughout the province, and that, in the final estimate, full provision should be made for such amount; the assignments for new works, both major and minor, as well as the proposed outlay on the investigation of fresh projects being reduced to such an extent that the needful sum for maintenance and repairs can be made available.

ORDER—dated 13th February 1886, No. 146 I., Public Works.

Communicated to the officers concerned for information.

2. Superintending Engineers will report, at an early date, the amounts essentially required for repairs to irrigation and agricultural works in the divisions in their Circles in addition to those provided in the preliminary issue of the budget estimates

for 1886-87, and also to what extent the amounts provided therein for original works may be reduced. On receipt of this information, the extent to which the grant for investigation and execution of "Tank Maintenance Works" should be reduced will be considered.

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

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

Exd. E. Fernandez.
Spare Copies

IRRIGATION.
ACCOUNT.

Govt. of [1886] Madras.

PUBLIC WORKS.

Dated February, 1886.

Read. *Encl.*

G.O., 13th Feb. 1886, No. 146 I.

FEBRUARY.

Irrigation Works

Orders on letter from the Government of India remarking on the observations made by the Chief Engineer for Irrigation in regard to the curtailment of the grant for — for 1886-87.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following paper :—

No. 34 I.

Note by the Chief Engineer for Irrigation.

The sanction accorded by the Government of India in their letter, No. 229 G., dated 11th February 1885, printed with G.O., No. 543 W., dated 9th March 1885, to the temporary engineering establishment required for the Tank Maintenance Scheme will expire by the end of the current official year, and requires to be renewed for next year. Sanction to three Engineers, on Rs. 550, 450 and 350 per mensem, required to start another Tank division during the ensuing year, in accordance with the programme approved by the Government of India in their letter, No. 40 I., dated 20th January 1883, has also to be applied for. Tank maintenance operations extend at present over an area of 4,779 square miles in the Madura, Chingleput and Kurnool districts and that portion of the Coimbatore district within the Amarávati river minor basin. Up to the end of July 1885, 429 estimates, amounting to Rs. 2,33,814, were sanctioned, 78 estimates, amounting to Rs. 27,415, were prepared, and 272 estimates, amounting to Rs. 1,73,359, were under preparation, making in all 779 estimates, amounting to Rs. 4,34,588, while the probable expenditure on the execution of tank maintenance works to the end of 1886-87 is estimated at Rs. 5,67,325. In paragraph 3 of their letter, No. 11 A.I., dated 1st February 1886, printed with G.O., No. 146 I., dated 13th February 1886, the Government of India expressed an opinion that it is not desirable to expend any large amount on the investigation of new projects while works already investigated cannot be commenced or pushed on vigorously from want of adequate allotments, but as the Tank divisions deal with the restoration of existing tanks, and as sufficient number of estimates have to be prepared by the Tank divisions and sanctioned in time to admit of the tank maintenance works being carried out to the extent to which funds can be made available, it is considered undesirable that the formation of No. 4 Tank division should be deferred. This division will work in the Coimbatore district outside the Amarávati river minor basin which overlaps the boundary between the Madura and Coimbatore districts. The necessity for the employment of a special officer of sufficient standing, with the powers of a Superintending Engineer, to control the operations of the Tank divisions still continues.

CHEPÁK,
22nd February 1886.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 25th February 1886, No. 512 W., Public Works.

The Government of India will be requested to renew the existing sanction of the temporary establishment for the Tank Maintenance Scheme, as noted in the margin, and to accord sanction to the establishment required for the No. 4 Tank division.

Local allowance to the Superintendent of Works ..	50
Two Engineers at Rs. 450 each	900
One Engineer	1,200
Three Engineers at Rs. 410 each	450
Three ,, ,, ,, 350 ,, ...	1,230
	900
Total ..	4,730

2. Ordered that the following letter be sent to the Government of India :—

(Here enter No. 513 W., dated 25th February 1886.)

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.
" Revenue Department.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated February, 25th.

Read. *Encl.*

G.O., 25th Feb. 1886, No. 512 W.

1356 / FEBRUARY.

Temporary Establishment for the Tank Maintenance Scheme

Ordered that the Government of India be requested to renew the existing sanction of the — and to accord sanction to the establishment required for No. 4 Tank division.

160

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from
COLONEL J. SHAW-STEWART, R.E.,
Secretary to the Government of Madras,
Public Works Department,

To
THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

In forwarding a copy of the proceedings of Madras Government, No. 512 W., dated 25th February 1886, I am directed to request that the Government of India will be so good as to renew the existing sanction for the temporary engineering establishment for the Tank Maintenance Scheme, and to accord sanction to the entertainment of three temporary Engineers, on Rs. 550, 450 and 300 per mensem, required to start, early next year, another Tank division to work in the Coimbatore district outside the Amarávati river minor basin which overlaps the boundary between the Madura and Coimbatore districts.

2. As the necessity for submitting this application three months before the expiration of the existing sanction was lost sight of, I am to request that the sanction of the Government of India may be communicated by wire to save delay.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
25th February 1886.

Exd. E. Fernandez.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of [1886] Madras.

PUBLIC WORKS.

Dated February, 25th.

Read. Encl.

25th Feb. 1886, No. 513 W.

FEBRUARY.

Temporary Establishment for the Tank Maintenance Scheme

Requesting to renew the existing sanctio for the — and to sanction the establishm required for the No. 4 Tank division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from Lieutenant-Colonel J. PENNYCUICK, R.E., Superintending Engineer, Tank Maintenance Scheme, to the Chief Engineer, Public Works Department, dated Chepâk, 24th February 1886, No. 494 T.—
Through the Chief Engineer for Irrigation :—

I have the honor to request sanction to the formation, from the 1st April next, of a new Tank Maintenance division, with three sub-divisions, to be styled No. IV division, with its head-quarters, for the present, at Coimbatore, and to work in the Coimbatore district.

2. Proposals for the appointment of the establishment for this division have already been submitted; but, by an oversight, sanction to the formation of the division itself has never been asked for.

No. 24 E.W.

Forwarded to the Chief Engineer, Public Works Department.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer for Irrigation.

CHEPÂK.
26th February 1886.

ORDER—dated 2nd March 1886, No. 537 W., Public Works.

Ordered to be forwarded for the sanction of the Government of India, in continuation of letter, No. 513 W., dated 25th February 1886.

(Here enter No. 538 W., dated 2nd March 1886.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Tank Maintenance Scheme.
" Examiner, Public Works Accounts.

ENDORSEMENT—dated 2nd March 1886, No. 538 W., Public Works.

Forwarded.

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. E. Fernandez.
Spare Copies.

GENERAL.
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated March, 2nd.

Read. *Encl.*

G.O., 2nd March 1886, No. 538 W.

MARCH.

Tank Maintenance Scheme

Forwarding, for sanction, letter from the Superintending Engineer, —, requesting sanction to the formation of a new division, to be styled No. IV division, with headquarters at Coimbatore.

29TH MARCH 1886, No. 847 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following papers:—

Telegram from the Secretary to the Government of India, Public Works Department, Calcutta, to the Secretary to the Government of Madras, Public Works Department, Madras, dated 24th March 1886.

Your telegram, 19. No objection to formation of fourth Tank division if your financial position admits of it.

Office note from the Chief Engineer for Irrigation, dated 26th March 1886.

ORDER—dated 29th March 1886, No. 847 W., Public Works.

Communicated to the Superintending Engineer, Tank Maintenance Scheme, with advertence to G.O., No. 537 W., dated 2nd March 1886.

2. The formation of a fourth Tank division may be proceeded with.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Tank Maintenance Scheme.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated March, 29th.

Read. *Encl.*

847

G.O., 29th Mar. 1886, No:

MARCH.

Fourth Tank Division

Sanction of the Government of India to the formation of a — communicated to the Superintending Engineer, Tank Maintenance Scheme.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 1st May 1886, No. 704 G.:—

In reply to your letter, No. 513 W., dated 25th February, I am directed to state that, while sanctioning the formation of a fourth tank division, the Government of India desires to be furnished with an abstract statement of the total expenditure incurred up to the end of 1885-86 against the special grant for the tank maintenance operations under the heads of —

"Establishment, Engineer,"
"Upper Subordinate,"
"Lower Subordinate and Petty,"
"Survey and Office Contingencies,"
"Works and Repairs."

This statement should be accompanied by a clear review of the work done in surveying, estimating, and construction and repairs, to the end of March 1886.

2. It is requested that sanction may be given to the entertainment of three additional temporary Engineers for the new division on Rs. 550, Rs. 450 and Rs. 300 a month. In accordance with Public Works Department, No. 703 G., of this date, I am to state that these salaries cannot be sanctioned without reference to the men it is proposed to employ. The number of temporary officers required for each tank division should therefore be reported, and the length of time for which they will probably be required. Applications for the appointment of individual officers can then be more readily considered.

Order—dated 31st May 1886, No. 1369 W., Public Works.

Communicated to the officers concerned.

2. The abstract statement of expenditure and the review called for in paragraph 1 will be submitted by the Chief Engineer for Irrigation with the least possible delay. On receipt of the information, the Government of India will be addressed with reference to paragraph 2 of their letter.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintendent of Works, Tank Maintenance Scheme.

Encl. A. Aubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of 1886 Madras.

PUBLIC WORKS.

Dated May, 31st.

Read. Encl.

G.O., 31st May 1886, No. 1369 W.

MAY.

Tank Maintenance Scheme

Letter from the Government of India sanctioning the formation of a fourth tank division, with remarks on the application for sanction of additional temporary Engineers for the division and calling for an abstract statement of total expenditure up to 1886-87 on the whole scheme, communicated to officers concerned; and the Chief Engineer for Irrigation to submit the statement.

All communications should be addressed to the Secretary.

No. 704 G.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

GENERAL.

To

The Secretary to the Government of Madras
Public Works Department

Simla, 1st May 1886.

Sir,

In reply to your letter No. 513 T.
dated 25th February, I am directed to
that while sanctioning the formation
a fourth Tank Division, the Govern
desires to be furnished with an abstr
statement of the total expenditure in
up to the end of 1885-86 against the
grant for the Tank maintenance
under the heads of-

"Establishment Engineer"
"Upper Subordinate"
"Lower Subordinate"
"Survey and Office contingencies"
"Works and Repairs."

This statement should be accompanied
by a clear review of the work done in
surveying, estimating, and construction
and Repairs to the end of March 1886

No 1367

PUBLIC WORKS DE

PROCEEDINGS OF THE MADRAS GOVERNMENT.

31st May 1858

READ the following

Letter from the Govt of India. No 1 dtd 704 G. of 1st May 58.

Communicates
the officers concerned
2. The abstract state
ment of expenditure a
the review called for in
para 1 will be submitted
by the Chief Engineer
Irrigation with the
possible delay on receipt
tion, The Govt of India
will be ~~requested~~ and
with reference to para
of their letter

To The Chief Engr for Irrigation
" Supdt of Works Dindigul

Under cover to the Govt Secretary

Govt. of Madras. 1886.

PUBLIC WORKS.

Rail Cess

1369 W