1) number of pages - 17 12
2) Dated Repair - 11-3-8
3) Initials of the Referencer -

P. W. D.

G.O. No. 2935 - W.

Dated - 5-11-1887.

Sub

2935
1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following letter from W. HUGHES, Esq., Executive Engineer, Madura Division, to the Superintending Engineer, VI Circle, dated 3rd October 1887, No. 490 S.E.:—

I have the honor to bring to your notice that, while the expenditure in Madura is more than in most 1st-class divisions, the grants for this year being about Rs. 3,00,000 for works, the office establishment is only that allowed for a 2nd-class division. Of the four clerks two are fully employed in assisting the accountant,* leaving only two to deal with an onerous mass of correspondence. The accountant and clerks work on an average some nine hours a day, including nearly all Sundays and holidays. I am also temporarily without a storekeeper. It appears to me, under the circumstances, impossible to expect the members of the office to endure this strain for very long without some one getting knocked up, and if such a misfortune happens, a rapid accumulation of arrears will be inevitable. It would be an advantage also and facilitate the despatch of correspondence if I could take a clerk into camp with me. At present I cannot do so. For all these reasons I beg that you will let me have at least one good clerk in addition to the present staff.

In the office of the South sub-division, I am informed that the clerks work 12 hours a day. Only one clerk is allowed by Government, but some of the subordinate clerks are called in to assist. The sub-division officer informs me that the records prior to the last year and-a-half are in the greatest confusion, and as there are a great many old accounts to settle and old references to be looked up, much current work is unavoidably in arrears; and if even all arrears could be cleared off, there would still be more to do than one man can manage. Besides, the present sub-divison clerk is reported to be slow and inefficient, though willing. I should be much obliged if you can let me have an active and capable man in his place and sanction the employment of a temporary clerk on Rs. 15 for nine months.

* The average number of vouchers to be checked and forwarded to the Examiner has recently been 220 and there are 18 work vouchers for major works to be prepared.

No. 677 M.D.

Submitted to the Chief Engineer, Public Works Department, with a request that, under the circumstances explained in the above letter, he would be good enough to sanction the entertainment of two temporary clerks on Rs. 30 and 20 for the Madura division and the Periyakulam or South sub-division offices, respectively.

2. A proposition statement showing the required temporary hands is enclosed.

3. It is undoubtedly true that the work in the Madura division is heavier than that of any other in the circle, and the present Executive Engineer and the Sub-Engineer in charge of the Periyakulam sub-division are doing their best to remedy the shortcomings of their predecessors.

4. I am satisfied, by personal knowledge, that the establishment asked for is wanted.

5. The vacancy in the post of storekeeper referred to in the first paragraph of the above letter has been filled up.

THECKADY, 14th October 1887. (Signed) J. PENNYCUICK, Lieut.-Col., R.E., Superintending Engineer, VI Circle.

ORDER—dated 5th November 1887, No. 2935 W., Public Works.

The entertainment of two clerks on Rs. 30 and 20 is sanctioned for six months as proposed.

2. This sanction has been registered as Provincial No. 38 W. of 1887-88, and classified as Establishment, Temporary.

(True Extract.)

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

To the Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts, with one statement.

Exd. A. Aubert.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated November, 5th.

Read. *Encl.*

G.O., 5th Nov. 1887, No. 2935 W.

NOVEMBER.

Establishment

The entertainment of a clerk on Rs. 30 for the Madura division and one on Rs. 20 for the Peiryakulam sub-division for six months, sanctioned.

-3-

APPENDIX A.

TERRITORIAL LIMITS OF CIRCLES.

Circles.

No. 1.—To comprise the Districts of Ganjam, Vizagapatam, Gódávari, and Kistna, with Head Quarters at Dowlaishwaram.

„ 2.— „ the Districts of Nellore, Cuddapah, Kurnool, and Bellary, with Head Quarters at Bellary.

„ 3.— „ the Districts of Chingleput, North and South Arcot, with the Presidency, the Military Cantonment of Bangalore, and the Buckingham Canal, with Head Quarters at Madras.

„ 4.— „ the Districts of Salem, Coimbatore, Nilgiri, Malabar, and Canara, with Head Quarters at Coimbatore.

„ 5.— „ the Districts of Trichinopoly Tánjore, Madura, and Tinnevelly, with Head Quarters at Trichinopoly.

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

APPENDIX B.

List of P.W.D. Divisions.

		Class.
	1st Circle.	
1.	Ganjam	II.
2.	Vizagapatam	II.
3.	Gódávari, Eastern and Centre Delta	I.
4.	Gódávari, Western Delta	I.
5.	Rájahmundry	II.
6.	Kistna, Eastern Delta	I.
7.	Kistna, Western do.	I.
8.	Guntoor	III.
	2nd Circle.	
9.	Nellore	I.
10.	Ongole	III.
11.	Cuddapah	III.
12.	Madhanapalle	III
13.	Kurnool	II
14.	Bellary	I
15.	Anantapur	III
	3rd Circle.	
16.	Presidency	Special.
17.	Consulting Architect	do.
18.	Bangalore	III
19.	Chingleput	I.
20.	Vellore	I.
21.	Chittúr	III.
22.	Cuddalore	I.
23.	Tindivanam	III.
24.	Buckingham Canal	III.
	4th Circle.	
25.	Salem	III.
26.	Oosoor	III.
27.	Coimbatore	II.
28.	Perundurai	III.
29.	Calicut	II.
30.	Wynád	II.
31.	Nílgiri	II.
32.	Canara	III.
	5th Circle.	
33.	Trichinopoly	II.
34.	Tánjore	I.
35.	Negapatam	I.
36.	Dindigul	III.
37.	Madura	III.
38.	Tinnevelly	II.
39.	Sátúr	III.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

Ootacamund,
18th September 1878.

APPENDIX C.

No. 1.

Executive Branch.

General Abstract of Office Establishment.

Offices.		Appendix C.	Amount. Rs. A. P.	Total. Rs. A. P.
Chief Engineer and Secretary, including Lithographic Establishment		No. 2	43,002 0 0	43,002 0 0
Chief Engineer for Irrigation		„ 3	10,416 0 0	10,416 0 0
Five Superintending Engineers, at	Rs. 4,962	„ 4	24,810 0 0	24,810 0 0
Eleven 1st-Class Executive Divisions, at	„ 3,276	„ 5	36,036 0 0	
Ten 2nd-Class Executive Divisions, at	„ 3,036	„ 6	30,360 0 0	
Sixteen 3rd-Class Executive Divisions, at	„ 2,646	„ 7	42,336 0 0	
Consulting Architect		„ 8	3,036 0 0	
Presidency Engineer		„ 9	6,168 0 0	
Fifty Sub-divisional Offices, at	Rs. 372	„ 10	18,600 0 0	1,36,536 0 0
Grand Total				2,14,764 0 0

Ootacamund,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 2.

OFFICE ESTABLISHMENT.

Chief Engineer and Secretary.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs. A. P.	Rs. A. P.
1	Chief Assistant	...	...	...	...	550	550 0 0	
1	Clerk...	I	1st	300	400	350	350 0 0	
1	Do.	„	3rd	200	250	225	225 0 0	
2	Do.	II	2nd	120	160	140	280 0 0	
1	Do.	III	1st	80	100	90	90 0 0	
3	Do.	„	2nd	60	80	70	210 0 0	
6	Do.	„	3rd	50	60	55	330 0 0	
2	Do.	IV	1st	40	50	45	90 0 0	
2	Do.	„	2nd	30	40	35	70 0 0	
5	Do.	„	3rd	20	30	25	125 0 0	
24								2,320 0 0
2	Draughtsmen	1st	...	50	70	60	120 0 0	
1	Do.	2nd	...	35	50	42½	42 8 0	
3								162 8 0
3	Muchies or Duftries.	...	...	...	...	10 to 15	37 0 0	
2	Duffadars or Head Messengers	...	...	...	...	9 to 10	19 0 0	
11	Messengers	...	...	...	...	7	77 0 0	
16								133 0 0
	Total Office Establishment	...	...	...	...	...	...	2,615 8 0
	Lithographic Establishment (See detail given below)	...	...	...	...	968	968 0 0	
	Total Monthly charge.	...	..	...	...	...	...	968 0 0
	Annual Charge	...	...	...	...	...	...	3,583 8 0
							...	43,002 0 0

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P.W. Accounts.

Detail of Lithographic Establishment.

		Salary.
		Rs.
1	Superintendent and Manager	250
4	Draughtsmen, 1st Grade, Rs. 70 to 120	360
2	Do. 2nd „ „ 40 each	80
7	Do. 3rd „ „ 10 to 30	141
15	Pressmen, 5 to 20	134
1	Sweeper	3
	Total ...	968

5

APPENDIX C.

No. 3.

OFFICE ESTABLISHMENT.

Chief Engineer and Joint Secretary, Irrigation Branch.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs.	Rs.
2	Clerks	II	2nd	120	160	140	280	
1	Do.	III	2nd	60	80	70	70	
1	Do.	„	3rd	50	60	55	55	
3	Do.	IV	2nd	30	40	35	105	
4	Do.	„	3rd	20	30	25	100	
11								610
2	Draughtsmen	1st	...	50	70	60	120	
2	Do.	2nd	...	35	50	42½	85	
4								205
3	Muchies or Duftries ...	...	...	...	...	8 to 10	26	
4	Messengers	...	...	...	...	6 to 7	27	
7								53
	Total Monthly charge...	...	...	...	...	...	...	868
	Annual Charge ...	...	...	...	...	...	...	10,416

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 4.

OFFICE ESTABLISHMENT.

Superintending Engineer.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs. A. P.	Rs. A. P.
1	Clerk	II	3rd	100	120	110	110 0 0	
1	Do.	III	2nd	60	80	70	70 0 0	
1	Do.	IV	1st	40	50	45	45 0 0	
1	Do.	,,	2nd	30	40	35	35 0 0	
1	Do.	,,	3rd	20	30	25	25 0 0	
5								285 0 0
1	Draughtsman.	1st	...	50	70	60	60 0 0	
1	Do. ...	2nd	...	35	50	42½	42 8 0	
2								102 8 0
1	Messenger ...	...	...	...	...	8	8 0 0	
3	Do. ...	...	...	...	...	6	18 0 0	
4								26 0 0
	Total Monthly charge.	...	...	...	...	...	...	413 8 0
	Annual Charge.	...	...	...	...	...	...	4,962 0 0
	For five Superintending Engineers Offices.	...	...	...	...	...	...	24,810 0 0

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

-6-

APPENDIX C.

No. 5.

OFFICE ESTABLISHMENT.

Executive Engineer, 1st-Class Division.

No.	Description.	Class.	Grade.	Salary. Maximum.	Salary. Minimum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs.	Rs.
1	Clerk	III.	2nd	60	80	70	70	
1	Do.	IV.	1st	40	50	45	45	
1	Do.	,,	2nd	30	40	35	35	
1	Do.	,,	3rd	20	30	25	25	
4								175
1	Draughtsman	1st	...	50	70	60	60	
1	Do.	3rd	...	20	30	25	25	
2								85
1	Messenger	...	...	...	...	7	7	
1	Do.	...	...	...	...	6	6	
2								13
	Total Monthly charge ...	...	...	...	...	...	...	273
	Annual Charge ...	...	...	...	...	...	...	3,276
	For eleven 1st-Class Divisional Offices ...	...	...	...	...	...	...	36,036

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 6.

OFFICE ESTABLISHMENT.

Executive Engineer, 2nd-Class Division.

No.	Description.	Class.	Grade.	Salary. Maximum.	Salary. Minimum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs.	Rs.
1	Clerk	III	2nd	60	80	70	70	
1	Do.	IV	2nd	30	40	35	35	
2	Do.	,,	3rd	20	30	25	50	
4								155
1	Draughtsman	1st	...	50	70	60	60	
1	Do.	3rd	...	20	30	25	25	
2								85
1	Messenger			...	...	7	7	
1	Do.			...	...	6	6	
2								13
	Total Monthly charge ...	...	...	...	...	...	...	253
	Annual Charge ...	...	...	...	...	...	...	3,036
	For ten 2nd-Class Divisional Offices	...	...	...	...	...	...	30,360

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

7.

APPENDIX C.

No. 7.

OFFICE ESTABLISHMENT.

Executive Engineer, 3rd-Class Division.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs. A. P.	Rs. A. P.
1	Clerk ...	III.	3rd	50	60	55	55 0 0	
1	Do. ...	IV.	2nd	30	40	35	35 0 0	
2	Do. ...	,,	3rd	20	30	25	50 0 0	
4								140 0 0
1	Draughtsman .	2nd	...	35	50	42½	42 8 0	
1	Do. ...	3rd	...	20	30	25	25 0 0	
2								67 8 0
1	Messenger					7	7 0 0	
1	Do.					6	6 0 0	
2								13 0 0
	Total Monthly Charge ...	...	...	...	...	...	...	220 8 0
	Annual charge. ...	...	...	...	...	...	...	2,646 0 0
	For sixteen 3rd-class Divisional Offices. ...	...	...	...	...	...	...	42,336 0 0

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 8.

OFFICE ESTABLISHMENT.

Consulting Architect to Government.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs.	Rs.
1	Clerk	IV.	1st	40	50	45	45	45
1	Draughtsman and Estimator.	Special	...	...	...	145	145	
2	Do. do. ...	3rd	...	20	30	25	50	195
3								
1	Messenger	...	...	...	...	7	7	
1	Do.	...	...	...	...	6	6	13
2								
	Total Monthly Charge...	...	...	...	...	...	...	253
	Annual Charge ...	...	...	...	...	...	...	3,036

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt, P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

8.

APPENDIX C.

No. 9.

OFFICE ESTABLISHMENT.

Executive Engineer, Presidency.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Clerks.			Rs.	Rs.	Rs.	Rs.	Rs.
1	Clerk	III	2nd	60	80	70	70	
1	Do.	„	3rd	50	60	55	55	
1	Do.	IV	1st	40	50	45	45	
2	Do.	„	2nd	30	40	35	70	
2	Do.	„	3rd	20	30	25	50	290
7								
2	Draughtsmen	1st	...	50	70	60	120	
2	Do.	2nd	...	35	50	42½	85	205
4								
1	Messenger	...	...	...	...	7	7	
2	Do.	...	...	...	...	6	12	19
3								
	Total Monthly Charge...	...	...	...	...	...	...	514
	Annual Charge	...	...	...	...	...	...	6,168

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 10.

OFFICE ESTABLISHMENT.

Sub-Divisional Officer.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
		IV	3rd	Rs. 20	Rs. 30	Rs. 25	Rs. 25	Rs.
1	Clerk.					6	6	25
1	Messenger	...	...	...	...			6
	Total Monthly Charge...	...	...	...	...	...	...	31
	Annual Charge ...	...	...	...	...	...	...	372
	For 50 Sub-divisional Offices	...	...	...	...	...	...	18,600

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P.W. Accounts.

-9-

APPENDIX C.

No. 11.

Petty Establishment.

Particulars.	No.	Annual Cost.
Lascars.		
5 Superintending Engineers, each four men, at Rs. 6	20	Rs. 1,440
38 Divisional Officers, each three men, do.	114	8,208
Consulting Architect, two men, do.	2	144
50 Sub-Divisional Officers, each three men, do.	150	10,800
226 Detached Officers, each one* man, do.	226	16,272
Examiner's Office, three men, do.	3	216
Total Lascars ...	515	37,080
Petty Establishment.—Present Charges, Budget 1878-79	...	50,565
Grand Total, Petty Establishment	...	87,645

* Two to be allowed whenever the Superintending Engineer considers it necessary, under any peculiar circumstances of the case.

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 12.

Abstract Distribution Statement of Office Establishments, excluding the Office Establishments of the Secretariat, and those for Sub-Divisional Officers.

Circles.	Number of Divisions.	Clerks.								Draughtsmen.					Messengers.			
		II Class, 3rd Grade, 100—120.	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.	Total.		Special on 145.	1st Class, 50—70.	2nd Class, 35—50.	3rd Class, 20—30.	Total.	At Rupees 8.	At Rupees 7.	At Rupees 6.	Total.
1st Circle	8	1	8	1	5	9	13	37		...	8	2	8	18	1	8	11	20
2nd do.	7	1	4	4	3	8	13	33		...	4	5	7	16	1	7	10	18
3rd do.	9*	1	5	5	6	10	14	41		1	6	7	9	23	1	9	13	23
4th do.	8	1	5	4	1	9	17	37		...	5	5	8	18	1	8	11	20
5th do.	7	1	5	3	3	8	13	33		...	5	4	7	16	1	7	10	18
Total ...	39	5	27	17	18	44	70	181		1	28	23	39	91	5	39	55	99
Average Cost ... Monthly		550	1,890	935	810	1,540	1,750	7,475		145	1,680	977½	975	3,777½	40	273	330	643
Average Cost ... Annual		6,600	22,680	11,220	9,720	18,480	21,000	89,700		1,740	20,160	11,730	11,700	45,330	480	3,276	3,960	7,716

* Including Consulting Architect.

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

14

No. 13.

FIRST CIRCLE.

Distribution Statement of Office Establishment.

Offices.	Class of Division.	Clerks.							Draughtsmen.				Messengers.			
		II Class, 3rd Grade, 100—120.	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.	Total.	1st Class, 50—70.	2nd Class, 35—50.	3rd Class, 20—30.	Total.	At Rupees 8.	At Rupees 7.	At Rupees 6.	Total.
Superintending Engineer's Office ...	...	1	1	...	1	1	1	5	1	1	...	2	1	...	3	4
Ganjam Division	2nd Class	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Vizagapatam do.	2nd „	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Gódávari, E. and C. Delta Division..	1st „	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Do. Western Delta do.	1st „	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Rájahmundry do.	2nd „	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Kistna E. Delta do.	1st „	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Do. W. Delta do.	1st „	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Guntoor do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
*Total ...	...	1	8	1	5	9	13	37	8	2	8	18	1	8	11	20

* This forms the sanctioned scale of Office Establishment for the Circle, within which the Superintending Engineer has power to transfer from one Office to another according to the exigencies of the Service, (See P. W. Code I., ii., 18), all such transfers being advised to the Examiner.

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

15

APPENDIX C.

No. 14.

SECOND CIRCLE.

Distribution Statement of Office Establishment.

Offices.	Class of Division.	Clerks.							Draughtsmen.				Messengers.			
		II Class, 3rd Grade, 100—120.	I 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.	Total.	1st Class, 50—70.	2nd Class, 35—50.	3rd Class, 20—30.	Total.	At Rupees 8.	At Rupees 7.	At Rupees 6.	Total.
Superintending Engineer's Office.	...	1	1	...	1	1	1	5	1	1	...	2	1	...	3	4
Nellore Division	1st Class.	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Ongole do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Cuddapah do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Madhanapalle do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Kurnool do.	2nd „	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Bellary do.	1st „	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Anantapur do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
* Total ...	...	1	4	4	3	8	13	33	4	5	7	16	1	7	10	18

* This forms the sanctioned scale of Office Establishment for the Circle, within which the Superintending Engineer has power to transfer from one Office to another, according to the exigencies of the service (See P.W.D. I. ii. 18)—all such transfers being advised to the Examiner.

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 15.

THIRD CIRCLE.

Distribution Statement of Office Establishment.

Offices.	Class of Division.	Clerks.							Draughtsmen.					Messengers.			
		II Class, 3rd Grade, 100—120.	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.	Total.	Special on 145.	1st Class, 50—70.	2nd Class, 35—50.	3rd Class, 20—30.	Total.	At Rupees 8.	At Rupees 7.	At Rupees 6.	Total.
Superintending Engineer's Office.	...	1	1	...	1	1	1	5	...	1	1	...	2	1	...	3	4
Presidency Division...	Special.	...	1	1	1	2	2	7	...	2	2	...	4	...	1	2	3
Consulting Architect	Do.	...	...	...	1	...	...	1	1	...	...	2	3	...	1	1	2
Bangalore Division	3rd Class.	...	...	1	...	1	2	4	...	...	1	1	2	...	1	1	2
Chingleput do.	1st „	...	1	...	1	1	1	4	...	1	...	1	2	...	1	1	2
Vellore do.	1st „	...	1	...	1	1	1	4	...	1	...	1	2	...	1	1	2
Chittúr do.	3rd „	...	...	1	...	1	2	4	...	...	1	1	2	...	1	1	2
Cuddalore do.	1st „	...	1	...	1	1	1	4	...	1	...	1	2	...	1	1	2
Tindivanam do.	3rd „	...	...	1	...	1	2	4	...	...	1	1	2	...	1	1	2
Buckingham Canal	3rd „	...	...	1	...	1	2	4	...	...	1	1	2	...	1	1	2
* Total...	...	1	5	5	6	10	14	41	1	6	7	9	23	1	9	13	23

* This (excluding the Office Establishment of the Consulting Architect which is not subject to transfer) forms the sanctioned scale of Office Establishment for the Circle, within which the Superintending Engineer has power to transfer from one Office to another, according to the exigencies of the service (See P.W.D. Code, I, ii., 18)—all such transfers being advised to the Examiner.

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 16.

FOURTH CIRCLE.

Distribution Statement of Office Establishment.

Offices.	Class of Division.	Clerks.							Draughtsmen.				Messengers.			
		II Class, 3rd Grade, 100—120.	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.	Total.	1st Class, 50—70.	2nd Class, 35—50.	3rd Class, 20—30.	Total.	At Rupees 8.	At Rupees 7.	At Rupees 6.	Total.
Superintending Engineer's Office. ...	...	1	1	...	1	1	1	5	1	1	...	2	1	...	3	4
Salem Division	3rd Class.	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Oosoor do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Coimbatore do.	2nd „	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Perundurai do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Calicut do.	2nd „	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Wynád do.	2nd „	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Nilgiri do.	2nd „	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Canara do.	3rd „	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
* Total...	...	1	5	4	1	9	17	37	5	5	8	18	1	8	11	20

* This forms the sanctioned scale of Office Establishment for the Circle, within which the Superintending Engineer has power to transfer from one Office to another according to the exigencies of the service (see P.W.D. Code, I, ii., 18)—all such transfers being advised to the Examiner.

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX C.

No. 17.

FIFTH CIRCLE.

Distribution Statement of Office Establishment.

Offices.	Class of Division.	Clerks.							Draughtsmen.				Messengers.			
		II Class, 3rd Grade, 100—120.	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.	Total.	1st Class, 50—70.	2nd Class, 35—50.	3rd Class, 20—30.	Total.	At Rupees 8.	At Rupees 7.	At Rupees 6.	Total.
Superintending Engineer's Office.	...	1	1	...	1	1	1	5	1	1	...	2	1	...	3	4
Trichinopoly Division	2nd Class	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Tánjore do.	1st do.	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Negapatam do.	1st do.	...	1	...	1	1	1	4	1	...	1	2	...	1	1	2
Dindigul do.	3rd do.	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Madura do.	3rd do.	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
Tinnevelly do.	2nd do.	...	1	...	...	1	2	4	1	...	1	2	...	1	1	2
Sátúr do.	3rd do.	...	...	1	...	1	2	4	...	1	1	2	...	1	1	2
* Total ...	...	1	5	3	3	8	13	33	5	4	7	16	1	7	10	18

* This forms the sanctioned scale of Office Establishment for the Circle, within which the Superintending Engineer has power to transfer from one office to another according to the exigencies of the service (See P.W.D. Code I., ii. 18)—all such transfers being advised to the Examiner.

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX D.

No. 1.

ACCOUNTANTS.

Provincial Scale of Establishment.

No.	Description.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Accountants.		RS.	RS.	RS.	RS. A. P.	RS.
2	Accountants	1st	350	450	400	800 0 0	
3	Do.	2nd	250	340	295	885 0 0	
10	Do.	3rd	160	240	200	2,000 0 0	
20	Do.	4th	80	150	115	2,300 0 0	
35	Do.	5th	40	75	57½	2,012 8 0	
70	Total Monthly Charge...	...	...	...	...	...	7,997½
	Annual Charge	...	...	...	...	...	95,970
	NOTE.—Of above, the following will probably be for Divisional Offices						
6	Accountants	3rd	160	240	200	1,200 0 0	
16	Do.	4th	80	150	115	1,840 0 0	
17	Do.	5th	40	75	57½	977 8 0	
39	Total Monthly Charge ...	...	...	...	...	4,017 8 0	
	Annual Charge...	...	...	...	...	48,210 0 0	

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P.W. Accounts.

19

APPENDIX D.

No. 2.

OFFICE ESTABLISHMENT.

Examiner.

No.	Description.	Class.	Grade.	Salary. Minimum.	Salary. Maximum.	Salary. Average.	Amount.	Total.
	Clerks.			RS.	RS.	RS.	RS.	RS.
1	Clerk (Head Clerk) ...	II	3rd	100	120	110	110	
1	Do.	III	1st	80	100	90	90	
2	Do.	,,	3rd	50	60	55	110	
8	Do.	IV	1st	40	50	45	360	
8	Do.	,,	2nd	30	40	35	280	
6	Do.	,,	3rd	20	30	25	150	
5	Do. (Apprentices) ...	,,	...	...	...	10 to 20	70	1,170
81	Menial Servants	...	...	...	...	...	102½	102½
	Total Monthly Charge...	...	...	...	...	...	...	1,272½
	Annual Charge	...	...	...	...	...	...	15,270

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

ACCOUNTS BRANCH.

Abstract of Accountant and Office Establishment.

				RS. A. P.	RS.
65	Accountants, as per Appendix D, No. 1...			95,970 0 0	95,970
31	Clerks,	do.	No. 2	14,040 0 0	
	Menial Servants,	do.	do.	1,230 0 0	15,270
96			Total...		1,11,240

APPENDIX E.

Comparative Statement of Public Works Establishments, existing and proposed.

PRESENT.					PROPOSED.					DIFFERENCE.		
No.	Description.	Each Class or Grade.	Annual Cost.	Total.	No.	Description.	Each Class or Grade.	Annual Cost.	Total.	Increase.	Decrease.	Remarks.
	Engineer Establishment.					*Engineer Establishment.*						
		Rs.	Rs.	Rs.			Rs.	Rs.	Rs.	Rs.	Rs.	
1	Chief Engineer, 1st Class, at 2,500	30,000			1	Chief Engineer, 1st Class, at 2,500	30,000					
1	Do. 2nd „ at 2,000	24,000			1	Do. 2nd „ at 2,000	24,000					
2	Military and other Allowances ...	6,576	60,576		2	Military and other Allowances ...	6,576	60,576				
2	Supg. Engrs., 1st Grade, at 1,600	38,400			2	Supg. Engrs., 1st Grade, at 1,600	38,400					
2	Do. 2nd „ at 1,350	32,400			2	Do. 2nd „ at 1,350	32,400					
1	Do. 3rd „ at 1,100	13,200			1	Do. 3rd „ at 1,100	13,200					
5	Military and other Allowances ...	15,423	99,423		5	Military and other Allowances ...	15,423	99,423				
8	Ex. Engrs., 1st Grade, at 950	91,200			8	Ex. Engrs., 1st Grade, at 950	91,200					
9	Do. 2nd „ at 800	86,400			9	Do. 2nd „ at 800	86,400					
9	Do. 3rd „ at 650	70,200			9	Do. 3rd „ at 650	70,200					
11	Do. 4th „ at 550	72,600			11	Do. 4th „ at 550	72,600					
37	Military and other Allowances ...	60,479	3,80,879		37	Military and other Allowances ...	60,479	3,80,879				
15	Asstt. Engineers, 1st Grade, at 450	81,000			15	Asstt. Engineers, 1st Grade, at 450	81,000					
22	Do. 2nd „ at 350	92,400			24	Do. 2nd „ at 350	1,00,800	...	...	8,400		
7	Do. 3rd „ at 250	21,000			4	Do. 3rd „ at 250	12,000	...	...	...	9,000	See paragraph 17 of G.O.
1	Do. Supt., Public Works Stores and Workshop ... at 300	3,600			1	Do. Supt., Public Works Stores and Workshop ... at 300	3,600					
45	Military and other Allowances ...	11,088	2,09,088		44	Military and other Allowances ...	11,088	2,08,488				
	Total, Engineer Establishment...	...	...	7,49,966		Total, Engineer Establishment...	...	...	7,49,360			
	Upper Subordinate Establishment.					*Upper Subordinate Establishment.*						
4	Sub-Engineers, 1st Grade, at 400	19,200			4	Sub-Engineers, 1st grade, at 400	19,200					
3	Do. 2nd „ at 300	10,800			3	Do. 2nd „ at 300	10,800					
7	Do. 3rd „ at 250	21,000			7	Do. 3rd „ at 250	21,000					
14			51,000		14			51,000				
16	Supervisors, 1st Grade, at 200	38,400			16	Supervisors, 1st Grade, at 200	38,400					
26	Do. 2nd „ at 150	46,800	85,200		26	Do. 2nd „ at 150	46,800	85,200				
42					42							
40	Overseers, 1st Grade, at 100	48,000			40	Overseers, 1st Grade, at 100	48,000					
60	Do. 2nd „ at 80	57,600			60	Do. 2nd „ at 80	57,600					
87	Do. 3rd „ at 60	62,640	1,68,240		87	Do. 3rd „ at 60	62,640	1,68,240				
187					187							
2	Mechanical Engineers	...	8,640		...	Mechanical Engineers	...	...	...	...	...	8,640
	Military and other Allowances ...	...	20,400			Military and other Allowances ...	...	20,400				
	Total, Upper Sub. Establishment.	...	...	3,33,480		Total, Upper Sub. Establishment.	...	...	3,24,840			
	Lower Subordinate Establishment.					*Lower Subordinate Establishment.*						
85	Sub-Overseers, 1st Grade, from 50 to 75.	60,840			85	Sub-Overseers, 1st Grade, from 50 to 75.	60,840					
18	Sub-Overseers, 2nd Grade, from 35 to 45.	8,820			18	Sub-Overseers, 2nd Grade, from 35 to 45.	8,820					
134	Sub-Overseers, 3rd Grade, from 20 to 35.	33,240			134	Sub-Overseers, 3rd Grade, from 20 to 35.	33,240					
237			1,02,900		237			1,02,900				
	Total, Lower Sub. Establishment.	...	...	1,02,900		Total, Lower Sub. Establishment.	...	...	1,02,900			
	Petty Establishment	(As per Budget, 1878-79.)		50,565		*Petty Establishment*	(As per Appendix C, No. 11.)		87,645	37,080	...	
	Office Establishment	(As per Budget, 1878-79.)		3,57,756		*Office Establishment*	(As per Appendix C, No. 1.)		2,14,764	...	1,42,992	
	Irrigation Establishment	(As per Budget, 1878-79.)		1,36,105		*Irrigation Establishment*	(Same as at present.)		1,36,105			
	Temporary Establishment... ...	(As per Budget, 1878-79.)		10,000		*Temporary Establishment*... ...	(Do. do.)		10,000			
	Local Allowances	(As per Budget, 1878-79.)		14,864		*Local Allowances*	(Do. do.)		14,864			
	Presidency Allowance	(As per Budget, 1878-79.)		5,610		*Presidency Allowance*	(Do. do.)		5,610			
	TOTAL SALARIES	.....		17,61,246		TOTAL SALARIES	.....		16,46,094	45,480	1,60,632	
	TRAVELLING ALLOWANCES ...	(As per Budget, 1878-79.)		2,79,407		TRAVELLING ALLOWANCES ...	(Same as at present.)		2,79,407			
	CONTINGENCIES	(As per Budget, 1878-79.)		40,778		CONTINGENCIES	(Do. do.)		40,778			
	GRAND TOTAL, EXECUTIVE BRANCH.	.....		20,81,431		GRAND TOTAL, EXECUTIVE BRANCH.	.....		19,66,279	45,480	1,60,632	
	Carried over...	.....		20,81,431		Carried over...	.....		19,66,279	45,480	1,60,632	

Comparative Statement of Public Works Establishments, existing and proposed—(Continued).

No.	Description.	Proposed. Each Class or Grade.	Proposed. Annual Cost.	Proposed. Total.	Difference. Increase.	Difference. Decrease.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	
	Brought over...	...	...	19,66,279	45,480	1,60,632	
	Accounts Branch.						
3	1 Examiner and 2 Deputy Examiners.	29,400					
	Military Pay and Allowances ...	3,032	32,432				
123	Accountants, 40 to 240 ... (As per Budget, 1878-79.)	1,01,160					
	Office Establishment ... (As per Budget, 1878-79.)	10,140	1,11,240				
	Temporary Establishment ...	(Budget, 1878-79.)	9,600				
	Presidency House-rent	(Do.)	2,400				
	Total Salaries	.....		1,53,672			
	Travelling Allowances ...	(As per Budget, 1878-79.)		10,000			
	Contingencies	(As per Budget, 1878-79.)		6,300			
	Grand Total, Accounts Branch.	...	...	1,71,972			
	Grand Total, Public Works Dept.	...	...	21,38,251	45,480	1,60,632	Net ▼ Decrease Rs 1,15,152.

(Signed) E. A. FOORD, Colonel R.E.,
Secy. to Govt., P.W.D.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

OOTACAMUND,
18th September 1878.

APPENDIX F.

No. 1.

Per-centage of Establishment as compared with Grants for Works, &c.

Particulars.	Per-centages. Executive Branch.	Accounts Branch.	Total.	Remarks.
Average Per-centage obtaining throughout India.	26·97	1·76	28·73	
Per-centage of average grant for Madras during three years, viz., 1874-75, 1875-76, and 1876-77.	23·73	1·46	25·19	Average grant for three years, Rs. 84,93,178.
Per-centage of Grant for Madras for the current year.	33·30	2·05	35·35	Grant for current year, Rs. 60,50,946.

APPENDIX F.

No. 2.

Comparative Statement of the Per-centages of the different Classes of Establishments.

Establishments.	Per-centages of Average throughout India.	Proposed Madras Establishment.	Remarks.
	Rs.	Rs.	
Engineer Establishment	40·15	35·39	The first column shows the per-centage (average) obtaining throughout the whole of India, as obtained from the review by the Accountant-General, Public Works Department, of the Public Works Budget Estimates for the year 1875-76.
Upper Subordinate Establishment ...	12·61	15·33	
Lower do. do. ...	4·05	4·86	
Petty do. ...	4·13	4·14	
Office do. ...	12·59	10·13	
Collection and Police, Irrigation ...	5·44	6·42	
Local allowances	1·47	0·96	
Total, Salaries ...	80·44	77·23	
Travelling allowances	8·61	13·18	
Contingencies	2·50	1·92	
Total, Executive Branch ...	91·55	92·33	
Control Establishment	1·63	1·53	
Accountants	5·26	4·53	
Office Establishment	1·02	0·72	
Local allowances	0·11	0·11	
Total, Salaries ...	8·02	6·89	
Travelling allowances	0·17	0·48	
Contingencies	0·26	0·30	
Total, Accounts Establishment ...	8·45	7·67	
Total ...	100·00	100·00	

OOTACAMUND,
18th September 1878.

(Signed) L. CONWAY-GORDON,
Examiner, P. W. Accounts.

APPENDIX G.

Distribution Statement.

No.	——	Secretariat.	Circles.	Divisions.	Sub-Divisions.	For General duties.	Total.
			5	39	50		
2	Chief Engineers	2	...	...	...	...	2
5	Superintending Engineers ...	...	4	1	...	...	5
43	Assistant Engineers	1	1	34	...	...	37
14	Sub-Engineers	...	5	4	33	...	43
42	Supervisors	...	...	...	14	...	14
187	Overseers	...	...	...	3	39	42
		...	...	...	...	187	187
		5	10	39	50	226	330

OOTACAMUND,
18th September 1878.

(Signed) E. A. FOORD, Colonel, R.E.,
Secy. to Govt., P.W.D.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

18th September 1878, No. 3,674 W.

Re-organisation of the Public Works Department.

Read the following :—

Letter from the Government of India, No. 308 E.G., dated 20th February 1877.

MINUTE BY THE HON. SIR W. ROBINSON, K.C.S.I., dated 17th July 1878.

No statement of the principles and objects of this proposed re-organisation of Public Works Establishments—the second or third which extravagance and failure of administration have suggested since its constitution—accompanies these papers; but I gather the object to be to secure more departmental supervision and inspection of subordinate establishment and their works throughout the country, to systematise and strengthen district administration and control, and to concentrate finance management. A small saving of some two to three per cent. on the existing cost of establishments is deduced; but, viewed by the light of the past, it is unlikely to be maintained under the conditions proposed.

2. The annual task to be performed by this department may be gathered from the expenditure of a fairly normal year. Taking the figures of 1875-76 (Administration Report), in which the grants were somewhat larger than is usually the case—agricultural ordinary grants have since fallen off,—we find that it was distributed as shown in the margin; we had a total grant of 102½ lakhs. The proportion of this sum which was spent on establishment was, in round numbers, 21½ lakhs, while the actual work performed under this supervision, &c., by the establishment for that money was worth, say, 77 lakhs—including the large profits of contractors and builders. In other words, between one-fifth and one-fourth of all grants was spent on supervision, management, &c., and yet neither efficiency nor honesty was absolutely secured.

		Rs.
Military		8,32,744
Irrigation Capital—		
Capital, Extraordinary..	6,10,082	
„ Ordinary ...	4,33,685	
		10,43,767
Irrigation, Revenue—		
Extension and Repairs.	7,87,227	
Agricultural Ordinary...	18,05,030	
		25,92,257
Provincial—		
Lump Grant	21,89,016	
Local Fund	35,80,082	
Repairs	16,180	
		57,85,278
		102,54,046

3. It would unduly swell my observations were I to endeavour to sketch the nature of the works so managed. But I may remark that even under Military and Irrigation Capital Account Works, which alone deserve to be classed as Imperial, a large mass of engagements were of an unimportant and minor character. However, even assuming for the nonce that the whole of these works were of sufficient importance to palliate the expenditure on establishment of some Rupees 4,60,000 (at 25 per cent. of the grant) for an expenditure under 14 lakhs, there can be no doubt that an establishment costing, say, 16½ lakhs for the expenditure of, say, 65½ lakhs, on such works as constitute Provincial and Local Fund Works or Revenue Repairs, &c., and Agricultural Ordinary Works was utterly extra-

vagant under any consideration. For probably three-fourths of the expenditure on Communications, &c., under Provincial and Local Funds consisted of mileage grants for the mere raking in of ruts and laying the metal of ordinary annual repairs; while the other works of the simplest character, such as constructing taluk offices, Police lines, and the like, and Local Fund Dispensaries, require only such scientific skill as may be commanded at very reasonable cost. The existing outlay on establishment, &c., in their interest is, therefore, clumsy and extravagant in the extreme. The same observations apply to Agricultural Ordinary Works, such as channels, tank-sluices and escapes—which, barring sufficiency, the people have been constructing for themselves with admirable ability—embankments and the like, which require no skill of higher pretensions. Honesty of estimate and expenditure is not the characteristic of large subordinate establishments in this country; though it is the usual plea for constituting them.

4. On the whole, I but record the conviction, which has now possessed all minds outside the department, that the cost of Department of Public Works Establishment is out of proportion with the work they have to do; and that the time has fully come when it is the absolute duty of the Government to moderate their expenditure in this respect, in accordance with the requirements of works to be done, and with the interest of the country and of the public fisc alike. It is time that departmental constitution and management should follow obvious public consideration and the expenditure thereon be kept within reasonable limits.

5. Taking, then, the normal annual grants for Public Works under all heads at 100 lakhs a-year, one-fourth of this sum may be accepted as Imperial properly so called, viz., "Military" and "Irrigation Capital Account" Works; and I am satisfied that 20 per cent. of this outlay should cover the establishment charges for all Imperial Public Works, say, 5 lakhs a-year. A larger charge than this is unfair to the Imperial fisc.

6. All other works should be classed as Provincial and Local, which is their proper character, and the sooner the wise measure of decentralisation is extended to all these items, the better. Now as respects these minor works, permanent establishment charges should be more than fully met, under any thing like reasonable and efficient administration, at from 10 to 15 per cent. of the outlay, or say (taking the higher rate) 11 lakhs, making a total of 16 lakhs for all establishment charges in this department. It is utterly, I venture to hold, inequitable that the State should charge Municipal bodies one-fourth of their whole grant for local Public Works, for the most extravagant supervision that was ever devised; and that the Provincial Government should waste on extravagant establishment from 30 to 40 per cent. of the Provincial Grant entrusted to their administration by the Imperial Government; as is now occurring. I consider that 17½ lakhs to 18 should be an outside charge for Department of Public Works Establishment.

7. The Committee, which sat in 1869-70, recommended useful reforms, and I cannot be a party to any illusory re-organisation, which fails to start on the basis of an equitable and reasonable appropriation of expenditure between supervision and management and works. This is not the character of the one before me. I hold that the Government are bound to determine the maximum expenditure on establishment with reference to the funds at disposal for works, and to arrest existing waste of both money and power.

8. These exist, as it appears to me, waste of money and power in almost every branch of the establishment, and perhaps not least at the head of the existing organisation. As a matter of fact, we have the administration of this department of execution and expenditure—one specially needing concentrated control and management as respects its finance and direction—broken up into three separate and more or less independent branches, including the Railway branch, whose Consulting Engineer has recently been added to the Government Office Secretariat. Each department has its own Chief Engineer, each of whom again is his own Secretary to Government in respect of his own work, and so much of that of the General District Establishments as relate to his share of the administration. It is, of course, with the Executive Departments, General and Irrigation, that we have

chiefly here to do. In these relations every District Engineer in the country serves two masters and two secretaries to Government.

9. Each Chief Engineer and Department of Public Works Secretary to Government again has a Deputy Chief Engineer employed in the main as Under-Secretary or Assistant—one (Colonel Farewell) occupying the place and drawing the salary of a Superintending Officer—with, in practice, a distinct office establishment. From an administrative point of view, we have thus a cumbersome and inconvenient organisation in the offices. Each of the Chief and Deputy Chief Engineer is, I conceive, understood to control and inspect, from time to time, the larger works connected with his respective branch of the department; but as Secretaries to Government, all these officers are attached through the greater part of their time to the Government Office, and the Chief Engineers at least are in residence around the Government at Ooty, and absent from their offices of verification and control for a great part of the year. They are thus hampered as respects system, control, inspection and the like by the ministerial duties of the Government Secretariat. When one of these officers is required as Chief Engineer to be afield amongst his District Officers in the ordinary course of duty, or under special emergency, the Secretariat duties of the absentee devolve *pro tem.* on an Under-Secretary, and the *portfolio* of the particular branch of the department is, so far as Council is concerned, brought in by the head of separate branch, who is more or less unfamiliar with the threads of the department supervised by his brother Chief Engineer, and is probably discouraged by the etiquette of the service from advising Government independently on any subject, which he may be permitted by his co-ordinate Chief Engineer to introduce to their notice.

10. As heads of their respective branches, these officers no doubt have a reasonable amount of work to do, though I should doubt whether—shorn of irrigation—the General Chief Engineer himself has as much to do as an officer of that position and emolument might overtake. Be this as it may, the triple and separate Secretariat to Government (with its Deputy Chief Engineers as Under-Secretaries, &c.,) is, I believe, absolute waste of power and of public money and time. The arrangement is not only detrimental to public interest by the traverse of primary duties of these heads of the department, which is involved in personal attendance on Government and prolonged absence from their offices and duties of inspection, &c.; but it is at variance with one of the first principles of administration in this country, viz., that the work of every department shall pass into independent hands when it appears in the Secretariat of Government.

11. Writing from five years' experience of the Madras Council Chamber, I do not hesitate to say that taking one week with another throughout the month, all the three Chief Engineers and Public Works Secretaries to Government together do not occupy Council for one hour a week—the Consulting Engineer for Railways very rarely appears at all—all the year through, although various of the matters which are brought into Council in this department had better be left to the Executives of the Department. This occurs for the very obvious reason that very little, indeed,—certainly not one-tenth—of the work of a Department of this kind is such as is or can be conveniently transacted in Council or in the Government Secretariat, or, in fact, by personal communication with the Members of Government at all. Submitted with a Chief Engineer's report or countersignature, by far the greater bulk of the business of this department would be better and more systematically done by a single officer of the Secretariat, who might be of moderate standing and appointed *ad hoc*. We would then have undivided attention to Secretariat duties, while the heads of the various branches would give their undivided attention to the control of their officers. Great projects of public utility are in the main, or should always be, discussed by Council deliberately on the estimates and responsible official reports, and it does not require an officer of exalted standing to lay the well-considered report of a Chief Engineer, with enclosures, before Government. I believe that it were much better even now, were all estimates and reports submitted with a final review of the Chief Engineer—as such—to Government, through a Secretary of subordinate rank for their calm consid-

eration. But what occurs now is this, Colonel Foord, as Chief Engineer, circulates a more or less informal Note about any matter in his department, and then, as Secretary to Government, drafts Government Orders practically to himself as Chief Engineer; Colonel Mullins in like manner, as Chief Engineer of Irrigation, submits a memorandum practically to himself, and, as Secretary to Government, circulates the draft of a Government Order in echo of his memorandum for the initials of the Members of Government,—in a manner which differs from, while it scarcely improves upon, the formal and precise character of independent reports which come before Government for disposal under the signature of responsible heads of other departments, with a Note by the Secretary, who takes a fresher view of the subject. Business in Department of Public Works necessarily assumes, as it seems to me, a less formal and careful character; and possibly members themselves are tempted to endorse the Chief Engineer's disposal of matters in the Secretariat, more readily than occurs in respect to any other department of the administration. Be this as it may, the precious time of these Chief Engineers is practically still taken up by a second review of matters before them; and it is still further occupied by a mass of trivial routine and by the attendance on Government on the Hills and elsewhere, which necessarily attaches to a Secretariat, and is, I think, unworthy of officers in their position; and otherwise objectionable.

12. But a still graver objection in principle—and therefore also in practical consequences—attaches to the position of these permanent heads of departments serving as *quasi*-Secretaries in the Government Office. Move up the permanent head of any department—much less three such heads of as many branches of the same department as permanent Secretaries (each in respect to his own branch of the work)—to a more or less shifting cabinet of three in number, and bringing, as he must, a very potential voice to their deliberations, and I will not express what I think follows; but what I will affirm is this:—the Secretaries necessarily cease to be simply ministerial officers of that cabinet, and any really effective and independent control by the members of Government over the various branches of the administration, which its chiefs represent in Council is seriously enfeebled and embarrassed. It is, I believe, absolutely impossible for the "member in charge" of the Department of Public Works to work with two or three Chief Engineers, as if they were really ministerial officers of his Secretariat or for the Government effectively to exercise that certain control which it does exercise over all other departments of the general administration not so favored; financial control and retrenchment are almost impossible under the circumstances. As a matter of fact, the presence of three Chief Engineers and two Deputy Chief Engineers of the Department of Public Works in the Government Secretariat is no more reasonable than would be that of the Bishop and his Archdeacon, or of the 1st Member of the Board of Revenue or Director of Revenue Settlement, each in charge, as Secretaries to Government, of their respective departments, under the equally applicable plea that there are technicalities in their departmental duties which require to be explained personally to the Members of Government in Council and that their departmental business requires specially to be guided by themselves through the State Cabinet. No more complete traverse of the most ordinary principles of administration and control could be devised, as it appears to me, than that which exists in the Secretariat of the Government of Madras at this moment in respect to the Department of Public Works; and I refuse to believe that any further re-organisation can be usefully or effectually taken in hand which does not remove the existing embarrassment of Government in respect to its overwhelming Department of Public Works Secretariat; which does not unburden each Chief Engineer, together with their Deputies, of the Secretariat office-work, which now harasses and trammels their proper functions as the heads of a department, by claims on them as *quasi*-ministerial officers of the Government Secretariat, and which fails to place these officers of highest standing in a position which shall enable them to exercise useful personal control, inspection, and uninterrupted scrutiny of the projects, estimates, and works of their subordinates. The Commission which sat in 1869-70 to consider the re-organisation of Department of Public Works reported unfavorable of the conditions

now under consideration, although there was then but one Secretary to Government, Colonel Orr, who undertook, I believe, no duty or responsibility which properly belongs to a Chief Engineer, in addition to his Secretariat functions.

13. It is obvious that the presence of responsible heads of all these branches of one department in the Secretariat of Government is in no way necessary with a view to personal communication with the Members of Government on matters of importance. The head of any branch of the Department of Public Works organisation can be sent for or otherwise communicated with, as it occurs in other departments, at any moment without being further burdened with ministerial office duties. In fact, removed from the ministerial and Secretariat subordination and uncertainties, the head of a department is in a better position to offer influential and reliable advice. I need scarcely add that I attach the utmost importance to this measure of reform of existing conditions, because, apart from other considerations, I hold that the unembarrassed attention of the head of a department to its internal working is the keystone of efficiency, and where it is traversed, the defect has to be supplied by otherwise needlessly numerous and costly subordinate inspectorate arrangements.

14. The project of re-organisation before me apparently retains the position of the three Engineers and the Deputies in the Government Secretariat untouched, and seeks to supplement consequent and inevitable deficiencies as respects inspection and other primary duties of their offices, by relying on Superintending Engineers to effect these duties in part at least. This cumbersome expedient cannot heal defective and costly conditions at the top of the department, for the whole thing is, I hold, top-heavy and inconsistent at its head. This Government has already proposed to the Government of India a sound re-organisation of the Secretariat and the appointment of a separate Secretary to Government in the D.P.W. Department; and I should recommend that we adhere firmly to the economical and administrative charges which we have decided to be indispensable in our present proposals. By relieving the Chief Engineers and their deputies of Secretariat inconveniences, the needful increased supervisory control will, in a great measure, be provided and reductions made feasible.

15. The pivot of all administration in this Presidency is the District; and the direction to be observed in its improvement as respects the Department of Public Works lies, therefore, in, so far as possible, centralising and consolidating control and responsibility in the hands of the District Engineers in respect to every matter relating to the Department of Public Works within each district. The next step, after wholesome adjustment at the head, in due re-organisation, therefore, lies in effective adjustment in the district establishment. Ingenuity could scarcely contrive a more complete system of confusion as respects any civil branch of administration in this Presidency than one which should place between seventy and eighty of the Collectors' subordinates of all classes and castes all over the country in an executive position of more or less independence of the Collectors; that should allow them to draw funds from, and render accounts to, the Accountant-General without intervention of the Collector; to supply themselves with lump grants under every head of expenditure to be laid out more or less at discretion for the time being, while it should leave the Collector—outside some progress report forms and other minor arrangements, which do not appear to give their immediate sufficient effective control—to wander abroad and find out, if he can, what his subordinates are about, and so on. Yet this is not altogether an exaggerated picture of the confusion which exists at this moment in respect to the establishment of the Department of Public Works and of the position of the District Engineer, unless he be a man of peculiar energy, method, and command. The district system was revived on the recommendation of the Commission which sat in 1869-70 some years ago, but it has been imperfectly carried out as yet in detail.

16. In re-organisation, therefore, the District Engineer's position must be consolidated, strengthened, and energised. He must be placed as completely at the head of the whole district and in control of its Department of Public Works establishments as the Collector is as respects the Civil establishments. He should be the only officer in direct account with the Controller or in communication with superior

authority, and so on. And this is quite as feasible in this department as it is in the other departments of the Administration; for, as a rule, Civil Districts are not in size—proposals have already been submitted for the reduction of excessive areas—beyond the capacity of one District Engineer. It may, however, be convenient to admit sub-divisions of the districts of Godavari and Kistna—and possibly Tanjore—as they will stand even after the sub-division proposed some months back. At the outside, however, twenty-five or twenty-six—providing for the new districts—officers of the grade of District Engineers are required for the Presidency—exclusive, of course, of any required to fill equivalent appointments in the general administration—and no District should be sub-divided if it possibly can be avoided. I look upon the maintenance of the district organisation as of the utmost importance, and I hope that the time may not be far off when, with proper means, raised for the maintenance and improvement of irrigation works, &c., and with the grant for "agricultural ordinary" works properly distributed in each district as a local fund, every district may become more or less self-supporting, as respects Department of Public Works establishments from local funds aided by the per-centages under Imperial and Provincial for work supervised. If district establishments were localised and placed under district officers and Municipal bodies, we should soon find that they would be organised and managed more in accordance with the works to be overtaken and money available, and far less expensively than now.

17. Under the District Engineer a moderate number of Assistant Engineers, nowhere exceeding two (2) per district, would be required, who, with as many Upper Subordinates and Taluq Overseers as may be necessary, should constitute a district establishment. In small districts, such as Canara and Trichinopoly, and almost without exception in the new auxiliary districts, one District Engineer with the requisite subordinate establishment should amply suffice. The District Engineer is an Executive Officer in so far as he is responsible to see work efficiently executed by his subordinates and contractors.

18. Having set the Chief Engineers and their Deputies free from Secretariat obstructions to their more appropriate duties and placed them in their proper positions in relation to the work of the subordinates, and having consolidated effective district establishments, the Superintending Grade—now five in number—may, I think, be reasonably reduced. The Committee of 1869-70 recommended, I believe, two Superintending Engineers. Three would amply suffice under the proposed re-organisation. This grade should be absolutely non-executive; they have simply to see that the executives in the districts within their respective ranges do their duty, to inquire into shortcomings and fiascos, and otherwise provide for the investigation of important projects within their respective spheres of duty. An over-strong Inspectorate does more harm than good, weakens real responsibility, where it should be sternly insisted on, viz., in the district, and otherwise clogs the wheels of administration.

19. The four* northern districts with Nellore should constitute one range with Rajahmundry as head-quarters. The Chief Engineer and his Deputies might retain the Presidency District, Chingleput, and Bangalore under their more immediate observation and occasionally visit the Hills. The southern† districts would constitute one Range with Tanjore or Trichinopoly as head-quarters; and the Ceded Districts with North Arcot, Salem, and Coimbatore should constitute a third range. Malabar and Canara should be visited occasionally by special deputation of a Deputy Chief Engineer, for, as a rule, there is little doing in either district, which requires frequent State inspection or report. The ranges which I propose are large, but not unmanageable as respects works requiring an inspector's observation; for it is simply futile to attempt to organise a State Inspectorate which should bring Local Fund and Agricultural "Ordinary"

* Ganjam.	Kistna.
Vizagapatam.	Nellore.
Godavari.	

† South Arcot.	Madura and
Tanjore.	Tinnevelly.
Trichinopoly.	Head-quarters, Vellore.

95
19

works and the like within the reach of the personal observation of a highly-paid State Inspector. Nor is it needful; for a good District Engineer is practically an infinitely better Inspector of such works than any Superintending Engineer could be, even if it were possible to afford eight or ten officers of this grade.

20. Such is roughly the cast of the re-organisation which I would recommend as regards Superintending or as they should be called Inspecting Engineers. But it may be useful to review the actual working of the thing at this moment. We have, as already observed, a staff of (5) five Superintending Engineers—with requisite salary attached; but there is actually not one of these officers doing the duty of his office. One (Colonel Farewell) is a Deputy Chief Engineer and Under-Secretary to Government, and mainly engaged in office-work, and the four others are District Engineers without any inspecting duty whatever attached to their functions, although, I believe, they draw the pay of the grade. The thing is without parallel in any other department of the Administration and probably accounts for much of the existing confusion.

21. On the whole, I am satisfied that the matter has to be taken in a firm and somewhat drastic form, and I would not now re-organise the department without that searching scrutiny and retrenchment which are now unavoidable. At length the Government of India and Northern Administrations have realised—as we have long done in this Presidency—that the establishments of the Department of Public Works as now constituted throughout India are beyond the needs of the country and costly and extravagant beyond the nature of the work ordinarily to be performed; and they are, I believe, re-organising with large retrenchments. We should follow the example, I think, somewhat on the principles I have ventured to sketch.

22. The undue preponderance of costly (and possibly not altogether reliable) European subordinate executives in the department requires the earnest attention of Government, and reflects, I think, on the superior departmental management. There are but two Natives in any position (both low) amongst the 100 and odd men above the rank of upper subordinates in the Department. Encouragement has not really been given to the higher classes to qualify for employment in the Department of Public Works.

23. The effective re-organisation of the District Engineer system should enable reduction in Account Department by limiting the number of officers in account with the Controller.

24. Sound re-organisation will affect the constitution of the service and adjustment of grades in some degree throughout the department, but it will be found that the semi-military spirit which underlies the organisation of a purely Civil Executive Department militates against both financial and administrative adjustment, and should, I hold, disappear.

To sum up I recommend—

(1) that large reductions of establishment and cost be effected;
(2) that the Government Secretariat be re-organised and an Under-Secretary be appointed in charge of Department of Public Works correspondence;
(3) that Chief Engineers be relieved from all Secretariat duty;
(4) that the Department of Public Works Inspectorate (five Superintending Engineers) be reduced to three with fixed ranges of inspection;
(5) that District Establishments be re-organised on a reasonably thrifty but efficient scale;
(6) that the cost of the Account Department be reduced; and,
(7) that the department be re-graded with reference to requirements of the service to be performed and not with reference to the ill-suited existing gradation.

(Signed) W. ROBINSON.

MINUTE BY THE HON. SIR W. ROBINSON, K.C.S.I., dated 14th September 1878.

I HAVE examined these statements of the proposed re-distribution of the Department of Public Works service with great care, and regret that I am still unable to endorse the proposals as embodying those measures of economical executive Administration and financial control which are urgently needed in the department of Public Works in this Presidency in regard to which I hold that the opportunity afforded at this time should be effectively availed of.

2. The saving—chiefly in subordinate and office establishment—which the Controller's able revision and apportionment has effected, simply demonstrates, as I believe, that if the same drastic manipulation were carried up into the more costly grades of the establishment, the expenditure under this head might be reduced to 17½ to 18 lakhs a-year—an all-sufficient per-centage of the moderate annual allotment under all heads of expenditure which have to be worked out; and I believe, as I have already indicated, that the only effective mode of dealing with this question is for Government to decide what they will spend on establishment, and leave it to the heads of the department—including our able Controller—to submit proposals for the distribution of that sum amongst an efficient and economical establishment under each branch of service.

3. Under the proposals before me—judging from the "Distribution Statement" the whole executive establishment is practically to be maintained—more especially the upper grades. The savings are made, as I gather, in office establishments and other small appendices to the upper distribution, &c. I refuse, myself, to believe that the pyramid—over-weighted above—will fail gradually to recover its natural slope or that the reductions will be long maintained under the proposed arrangements.

4. I again record my conviction as regards the unsuitable and inconvenient position held by the Chief Engineers of all executive branches of this service in the Government Secretariat. The course which has characterised this very redistribution arrangement now before me shows how the true functions of the heads of departments may be made to give place to mere ministerial conditions. I look in vain amongst these papers for the recorded views of such important functionaries as heads of departments of the D. P. W. on the proposed redistribution and for those of the Board of Revenue (as Controllers of Local Fund Expenditure). These functionaries have not advised the Government as heads of Department—the Board of Revenue have had no opportunity to do so—but apparently have taken their orders as Secretaries; and I confess that I think that this is a serious defect in a matter of this kind.

5. But it is perhaps mainly as a matter of financial control that the conditions which it is proposed to continue fail, as it seems to me, to commend themselves. It will not, I conceive, be asserted that the financial control of Government and its Secretariat is or has ever been practically effective throughout the department; and yet the main duty of the Government and its advisers in respect to an executive and expending Department lies in this direction—the position of Government is mainly that of the Treasury in respect to financial control—and yet for these duties the Government have practically to look to executive heads of administrative branches of this department, and, as I believe, must look in vain under the ordinary condition of such a system—or rather traverse of system and principle of administration. Let the Government ask the Controller whether he finds that he is exercising that effective control through this Government, which his functions indicate, to his satisfaction; ask the Board of Revenue whether they find that they practically enjoy the financial position which their responsibilities claim; ask Collectors whether their functions in this respect or in some other respects are what sound local administration requires; on these points I have only to invite the attention of my honorable colleagues to the Controller's letters, dated 13th April 1878, No. 14 W, dated 17th April 1878, No. 19 W, dated 13th August 1878, No. 222 W,—all as yet undisposed of—and to ask whether they disclose a state of things which this Government can accept as proper in itself or of which they are

justified in hazarding their possible continuance. I confess that these letters read to me like an unanswered impeachment of the general conduct of Government. Be this as it may, they certainly are letters such as it should not be possible for an officer in that position to address to this Government, or to submit, as I conceive, in the course of business to the Government of India for perusal.

6. I have on my table the Board's Proceedings, dated 23rd August, on the subject of the Kowtaram road, one of many items found in the Controller's return of objectionable items of expenditure, and I have heard that the district of Salem as well as others are more or less out of order in respect to financial discipline.

7. I have no fault to find with the able officers who hold and have held the position of Chief Engineers and Secretaries to Government. The interest and proclivities of an executive and expending Department and of the Managers of its *personnel*, are not and never can be altogether at one with those of financial control and strict discipline in this respect. What I press so earnestly on attention is but the natural outcome of the conditions, executive and personal, of the traverse of a sound and acknowledged administrative principle. It is precisely what would have occurred in the department of which I was long the executive head, had I, as Inspector-General of Police, passed ten years in the Government Secretariat in charge of the finance and administration of my own department—precisely what would occur were the Commissary-General, the Inspector-General of Jails, or the head of any other executive and expending Department called to the same position. I am—as I long have been—most earnest on this matter, because I believe,—a belief to which five years' experience as a Member of Government has given the strength of a creed,—that the very keystone of the financial position lies in reverting to sound principle in this direction; because I believe that the *fons et origo* of our difficulties of control are inherent in the traverse of principle which existing conditions—to be perpetuated under this redistribution of functions now before me—present.

8. I have already indicated how, as it seems to me, the needless Secretariat pre-occupation of the Chief Engineers necessarily leads to excessive expenditure in the next higher grade of the establishment, viz., the Inspecting or Superintending Staff; and the Appendix marked A to the proposals before me appear to evidence the fact. We are practically to have five minor Chief Engineers, with proportionate offices, in executive charge of four or five districts each, which are again sub-divided into thirty-eight ranges (divisions) or independent districts, with their officers in account with the Controller, &c. Now as it seems to me, the real functions of the Inspecting Officers are lost in those of the *quasi*-responsible Deputy Chief Engineers (Superintending Engineers) of Circles, and the little gain which resulted from the re-organisation of 1872—consequent on the labors of the Commission, which sat in 1869-70—in replacing the District Engineer, in some measure, in his proper position as the pivot of executive organisation and local administration is foregone. We are simply reverting—under some change of nomenclature—to the condition of Deputy Chief Engineers of Circles (Superintending Engineers) with the Range-officer organisation, pure and simple; somewhat reduced as regards numerical distribution and more extended in territorial charge, but still incompatible with the fundamental principle of our civil administration. The thing has already been condemned as unsuited to our administrative conditions, and has been in abeyance as respects Superintending Engineers for years; and I regret to find myself, therefore, wholly unable to support what appears to me a serious traverse of sound administration as respects both executive control and financial administration, and the duty of independent inspection in regard to this Presidency.

	Districts.	*Ranges.
1st Circle	4	9
2nd do.	4	7
3rd do.	†4	8
4th do.	‡5	7
5th do.	4	7
	21	38

* Plus the Bangalore Cantonment.
† Includes the Nilgiri Taluk.
‡ Excluding the Consulting Architect.

9. What we want in this Presidency is real financial control in the Government Office by an officer, who shall be relieved in the main from executive responsibilities and other disturbing influences, which necessarily attach to executive heads of departments. We then want the heads of the various branches of the administration freed to devote their whole time to their executive and controlling duties, and under these we require sound and concentrated district organisation—with a moderate staff of Inspecting Engineers, who shall see that the district work is done and to assist occasionally in elaborating the very few works of larger importance, which —with the means at our disposal—we can possibly hope to undertake from year to year in any district. The distribution before me, with what practically constitutes seven Chief Engineerships of grades and thirty-eight District Engineerships with their office establishments, &c., does not in the main present those conditions, and I am unable to accept it as meeting the requirements of the country financially or otherwise.

10. It is difficult to deal with Appendix B of the proposals; because the average expenditure in the proposed ranges (divisions) and the establishment designed for each division is not shown, other statistical information and local advice are wanting; and the somewhat bald statements before me do not give any reasons for the proposals submitted. Territorial considerations, however, appear in the main to have guided the distribution, and I think that in various respects these adjustments even are defective.

11. I observe that the Godavari District is broken up into three or four independent ranges. I should be willing, as already stated, to give two officers of the grade and emoluments of District Engineers to this district. But I find a third range constituted out of the taluks of Rajahmundry, Yernagudium, and Ellore, and also that Dumagudium is to constitute a fourth range of this district. Now the taluk of Ellore with its high level canal and other territorial conditions belongs to the Western Delta (a proposed very moderate range of three taluks for a high grade officer) and the other two dry taluks even if we add Dumagudium, where we are now spending 2 Rupees on establishment for every rupee of work performed, is nothing but what an assistant to the District Engineer of the Northern Range could more than overtake; but in the proposals before me, we have, I gather, two independent ranges in place of one assistantship, which, I think, should amply suffice for all that is doing in the two ranges proposed.

12. The same observation applies to the range distribution of the Kistna District. The Palnad Taluk and Bezwada should be added to the Eastern Delta District. The proposed charge of the Western Delta is composed of two taluks,—a wholly inadequate range for an officer in the position and enjoying the emoluments of a District Engineer. Now I am satisfied that the ordinary expenditure in the dry taluks of Vinnacondah, Satenapally, &c., will at once indicate suitable employment for an assistant on moderate salary to the District Engineer in charge of the Western Delta, or in view to the possible constitution of a new district of Ongole, one or two taluks might be joined to the Ongole Range of Nellore.

13. As respects Nellore and in view to the possible constitution of a new district of Ongole, I would pass two divisions. I will not remark on the proposed distribution of taluks, which, I think, is defective and not what the local officers would recommend as it is a minor matter of detail; but the distribution should, I think, provide for Cumbum and Markapur of Kurnool, which suitably belong to this executive charge.

14. As respects Cuddapah there is no sufficient ground for breaking up the district administration and constituting two districts in that tract. And the four dry taluks of Kadri, Madanapally, Royachoty, and Voilpaud constitute a charge on which the District Engineer of Cuddapah might generally employ his assistant.

15. Nor do I find sufficient grounds for breaking up the district administration of North Arcot. The District Engineer would find his main occupation in the southern and Palar Valley taluks, while his assistant would be suitably employed in the Zemindari tracts and dry taluks of the north. Two districts are not required.

16. The same observations apply to the district of South Arcot. What is there doing or likely to be doing in the (in the main) dry taluks of Villapuram, Tindivanum, and Trinomallay—or even if we add to the charge, as ought to be done, the taluk of Kallakurchy, which would justify the constitution of a separate District Engineership for these tracts? What that an assistant to the District Engineer of the district could not look after under direction of the superior officer?

17. I am very doubtful whether the district administration of Coimbatore need be broken up as proposed, and I am satisfied that a District Engineer for Malabar with an assistant mainly employed by him in what is proposed to constitute the Northern Range would quite suffice for this district under the financial exigencies of the case.

18. I entirely object to breaking up the district administration of Madura and Tinnevelly. There is absolutely nothing in the proposed new district of Dindigul which can justify its separation from the district of Madura and constitute as a separate division or district under a superior officer; and as respects the proposed Satur (Tinnevelly) Range (Division), I conceive that it would be difficult to show that it would constitute a reasonable charge even for an assistant to the District Engineer of Tinnevelly.

19. I am not competent to examine in detail the Appendices C and D ("General Abstract of Office Establishment and Accountants"), but it is obvious that the constitution of five new offices for as many Deputy Chief Engineers (Superintending Engineers) of Circles instead of officers for inspection, and certainly of six or eight needless Range Offices, prevent retrenchment in the manner which strict adherence, so far as possible, to the District Engineer system and further reduction of the offices in account with the Controller, would provide.

20. *Appendix F* ("Comparative Statement of Per-centage of Establishment") is, I hold, more or less delusive; it is merely comparing ourselves with ourselves with the usual result; and we have no reason to assume that the standard of comparison put forward ("per-centages of India's Establishment") is one framed in accordance with strictly economical necessities of the work to be performed and of the requirements of the country and its ability to support such establishment as a whole. I have reason to believe that the same excess of establishment charges in the Department of Public Works is engaging the attention of thoughtful men throughout India. Be this as it may, we have simply to do with our own conditions and expenditure, and with reference to these I hold that our establishment is susceptible of very material reduction of cost by sound organisation and more efficient financial control, and that it is our duty to submit to such retrenchments whatever may occur in other parts of India.

21. *Appendix F* ("Per-centages of Establishment as compared with grants for works, &c.,") is a very momentous statement. It shows that between one-fourth and one-third of all our Public Works expenditure in India is absorbed by establishment; that on the average of three years (1874—77) our expenditure on establishments in Madras has exceeded one-fourth of the whole grant; and that for the current year it will considerably exceed one-third of the whole grant. All the excess above one-fourth having to be supplemented, I believe, from the Provincial Grant under this head. Now under existing financial exigencies of the Empire, we cannot claim to have our grant maintained, and as it is, the demand on Local Funds is such as excites much hostile criticism throughout the Presidency; for our extravagance, as it appears to them, and weakness of financial control is unavoidably laid before a large body of the Native Members of our Local Boards all over the country. We must, therefore, set our house in order, and it can only be done by drastic re-organisation and effective financial control, such as I earnestly invite my honorable colleagues to consider at this time.

22. In fine, I must record my conviction that the retention in its strictest form of the District-system (with due inspection only) is the very sheet-anchor of any suitable organisation and future development in this department for the Madras Presidency. We must decentralise administration and establishment charges on districts in the same manner as the Government of India has decentralised on local

administrations throughout India. Every endeavour must be made to bring each district into self-supporting and self-administering condition—both on administrative and financial grounds; and it will, I believe, by no means be difficult so to do. Already rapidly developing Local Funds contribute very largely in several districts towards the cost of the whole District Establishment. We may confidently look to them for 5½ to 6½ lakhs towards establishment expenditure in future. If the annual grant of 10 to 12 lakhs under "Agricultural Ordinary" be equitably distributed as a Local Fund to the districts to which this local grant for ordinary communal irrigation works properly belongs (instead of being held at centralised disposal as now) we have a further Local Fund of some 12 lakhs and upwards; from which establishment charges to the extent of 2½ to 3 lakhs may be met. An Irrigation Cess for the maintenance and improvement of our communal and district systems of tanks is an obvious necessity (subject, of course, to its being strictly constituted a Local District Fund, and the whole "agricultural ordinary" grant being localised) for (*Kudimaramut*) customary tenant-labor is a domestic and communal matter with which the State has nothing whatever to do, and against which it has no claim. Such a tank cess at even one anna per rupee of our communal tank revenue of 100 lakhs (in round numbers) would produce upwards of 6 lakhs, with a provision for establishment of 1½ lakhs and upwards. Our grant under Provincial Department of Public Works (12 lakhs), if properly assigned to district administration, provides 3 lakhs for establishment; and Imperial contribution for State works would go to make up a sum which would probably provide for the needful local establishment for all districts, and leave a margin, with proper retrenchment and financial control, for lowering all our demands on Local Funds, whether existing or prospective, as the tank cess still is. Of course, the establishment charges for anicut tracts would remain Imperial as the works are neither Provincial, local nor communal.

23. I do not offer these rough calculations as authoritative figures, for I have neither the means at hand, nor the time to work out the details; but I look forward with confidence to the time when Government may say to each district:—you must find the ways and means for maintaining your own Public Works Establishments, and may frame them according to your local needs—with sufficient margin to meet needful charges for inspection and general administration—in such a manner that the whole shall square—with such aid as you are entitled to under the rules from Provincial and Imperial Sources—with your own financial condition.

24. I entirely agree with the Office Note of the Controller, dated 12th instant, which forms an enclosure to these papers, except in so far as he evidently mistakes the condition of "customary labor" in paragraph 3(*a*). The Secretary of State decided so far back as 1868 what works are to be left to the Revenue Department,—or, as I should now put it, to the Collectors and Local Fund Boards in co-operation with District Engineers, with power to levy a moderate communal tank repair cess as above suggested.

25. In regard to class (*b*), I would suggest that the officers of the Department of Public Works in communication with the Collector and Local Fund Board of each district, should report precisely what District Establishment is required in their respective districts to execute all works of a local character, including tank-repairs, &c., and the ways and means to maintain such establishments from District Funds.

26. I have endeavoured, with reference to paragraph 4, to suggest how the finance of the department can be promptly brought under more efficient control with much benefit, as I believe, to executive administration and retrenchment of undue expenditure, but I have no objection to seek the further advice suggested.

27. I have to apologise to my honorable colleagues for the discursive and incomplete form in which I am obliged to submit my observations on the papers before me. The papers only came in to my hands after late Council yesterday (Friday), and they have to be circulated emergently with reference to the proposed final discussion of the scheme on Monday at noon. Time for more mature examination and concise discussion has been wanting.

W. ROBINSON.

ORDER THEREON, 18th September 1878, No. 3674 W.

THE undue strain brought upon the Provincial finances by the present excessive cost of the Public Works Department has long been a source of anxiety to Government, and was the subject of much deliberation in the year 1876, when the pressure of business, which devolved on the Government owing to the famine, caused the matter to be temporarily laid aside.

2. The subject having again come under consideration, His Grace the Governor in Council considers it unnecessary to defer any longer that thorough re-organisation of the Public Works Establishment, which experience has shown to be absolutely essential both to secure greater efficiency in the department, and to prevent further financial embarrassment to the Government.

3. In carrying out these changes, His Grace the Governor in Council believes, that by utilising to the utmost the establishment and agencies that are available to the Government, it is possible, without abandoning any of the general principles on which the business of the department has heretofore been conducted, to secure a great increase of administrative efficiency and at a diminished cost.

4. As regards the Public Works Secretariat, the division of the administrative work of the department will, at present, continue as laid down in Chapter III, Section i, of the Public Works Code, which fully prescribes the responsibilities of the Chief Engineers and Secretaries in charge of the several branches and the duties which Government look to them to have thoroughly performed.

5. All correspondence from the Superintending Engineers will be addressed to the Chief Engineer of the Branch concerned, who will dispose of every thing within his own powers on his own responsibility. The Chief Engineer will submit to Government only such matters as either may be beyond his own powers, or may appear to be of sufficient general interest to require an expression of the views of Government thereon.

6. Each Chief Engineer will be allowed an Officer as Assistant Chief Engineer and Secretary, to be ordinarily of the rank of an Executive Engineer, to conduct, under the authority and responsibility of the Chief Engineer and Secretary, the current duties of the Secretariat during the absence of the Chief Engineer on his tours of inspection.

7. The question of the best method of compiling engineering statistics, and of collecting professional data and information, and the agency to be employed for this purpose in connection with the Secretariat Office will be reported on by the Chief Engineer and the Examiner for the consideration of Government.

8. The Examiner of Public Works Accounts, as Chief Financial Officer of the Department, is to be regarded as the financial adviser to the Public Works Secretaries, and their communications will be chiefly of a personal nature as members of the same office; all formal correspondence between them being, as far as possible, avoided. All questions connected with finance and account will be noted upon by the Examiner previous to being dealt with finally by the Secretary concerned, in order that Government, before passing orders on the case, may have before them not only the aspect of the case from a financial point of view, but also the bearing of all the financial rules and regulations relevant to the subject.

9. All Gazette Notifications and Government Orders, which affect the pay or service of Public Works Officers, will be referred to the Examiner before issue, to ensure that the proposed Notifications or Orders are in no way opposed to any rule or regulation of the Government of India, and provide for all necessary formalities.

10. The respective responsibilities of the Chief Engineer and the Examiner in controlling the expenditure of the department is very clearly defined in the Public Works Code III, i, 24 and III, vii, 14. Briefly, it is the duty of the Examiner to bring all items of objectionable expenditure to the notice of the Chief Engineer, and it is the duty of the Chief Engineer to summarily put a stop to all irregular expenditure directly his attention is called to it. His Grace the Governor in Council trusts that every effort will be made to reduce the number of items of objectionable expenditure that month by month are now brought to the notice of Government.

11. To enable the Chief Engineers and the Examiner to satisfactorily carry out a proper control over the expenditure of the department, it is to be considered an essential principle that all expenditure whatever, chargeable to the Imperial and Provincial Public Works grants, is to be sanctioned in the Public Works Department. No other department of the Government will take any steps that will commit the Government to expenditure in the Public Works Department, until the responsible officers of that department have had an opportunity of deciding whether the state of the Public Works grants will admit of the expenditure being incurred.

12. As regards Local Fund Works, His Grace the Governor in Council is of opinion that heretofore there has been an absence of that professional supervision and control by the Chief Engineer which are essential to the satisfactory execution of Public Works.

13. The principle involved in the administration of Local Fund Works is to leave all financial arrangements and the initiation of works in the hands of the Local Fund Boards, and to leave the engineering of, and the accounting for, such works in those of professional Officers under definite professional control. The Chief Engineer will, therefore, consider himself as directly responsible for the professional control of Public Works carried out from Local Funds as for those carried out from any other Public Works Grant. Designs for Local Fund works, the cost of which exceed Rupees 5,000, will be submitted to the Chief Engineer for professional check, and the formal sanction to the estimate for such works, after the approval of the Board of Revenue has been conveyed, in ordinary course, to the project, will be given in the Public Works Department, the necessary funds for the execution of the work being provided in the Financial Department. Proposals for transfers of Local Fund appropriations for Public Works, which exceed the powers of the Board of Revenue, will be dealt with by Government in the Public Works Department.

14. For purposes of supervision, the Presidency will be divided into five Circles, each under charge of a Superintending Engineer or of an Executive Engineer of the 1st Grade acting as such. The head-quarters and territorial limits of each of these Circles are shown in Appendix A.

To the office of each Superintending Engineer will be attached an Assistant Engineer to act as Assistant to the Superintending Engineer, and to carry out, under his authority and responsibility, the current duties of the office during the absence of the Superintending Engineer on duty.

15. For purposes of construction, each Circle will be divided into Executive Divisions, each of which will ordinarily be in charge of an Executive Engineer or some other professional officer of the Engineer Establishment. The names of the divisions, altogether 39 in number, are shown in Appendix B. The question of the exact territorial limits to be assigned to each Executive Division is referred to the Chief Engineers for early report in communication with the Collectors and the Local Public Works Officers, the importance being borne in mind, of making the limits of the Public Works Executive Divisions, as far as possible, coterminous with those of the Local Fund Circles.

16. The duties, powers, and responsibilities of the Superintending Engineers and of the Executive Engineers will be found very fully described in Chapter III, Sections ii and iii of the Public Works Code.

17. The numbers of the Engineer Officers attached to the Presidency being sufficient for the proposed new charges, no change is at present intended in the strength of the Engineer Establishment, except that, with the sanction of the Government of India, two 2nd Grade and four 3rd Grade Assistant Engineers

will be substituted for the present sanctioned number (seven) of 3rd Grade Assistant Engineers, the monthly charges involved in each case being nearly the same.

18. With regard to the Upper Subordinate, the Lower Subordinate, and the Petty Establishments, no final arrangements will be decided upon until the Superintending Engineers have acquired some practical knowledge of the requirements of their several Circles.

His Grace the Governor in Council believes, however, that the numbers and cost of the Overseers, the Lower Subordinate and the Petty Establishment, especially of the Overseers, will be found to be in excess of permanent requirements under the new arrangements, and that it is advisable with a view to securing greater elasticity in the Public Works Establishments to employ temporary hands to a far greater extent than has hitherto been the case.

19. The Superintending Engineers will, as soon as possible after taking charge, review the Subordinate and Petty Establishments of their Circles, and will submit, for the information of Government, statements in Public Works Form No. 77, showing the minimum number of permanent men they wish to retain, and the extent to which they propose to employ temporary establishments.

20. On savings being effected in the cost of the Subordinate and Petty Establishments, His Grace the Governor in Council will be prepared to consider the advisability of appointing to each Circle a small permanent establishment of qualified Surveyors.

21. As regards Office Establishments and the Establishment of Accountants, the reduction in the number of the Public Works offices will lead to a considerable reduction in the numbers of the Accountants and Clerks employed, and in the aggregate cost of these two establishments. The scale of Accountants and Clerks now sanctioned, which is ultimately to be worked up to in each office, is shown in Appendices C and D.

22. The aggregate effect financially of all these changes is shown in Appendix E, containing a comparative statement of all the Public Works Establishments, existing and proposed. The net result is a saving of about Rupees 1,15,000, exclusive of the further saving that is expected in the cost of the Subordinate and Petty Establishments.

23. In Appendix F will be found a statement of the relative cost of the several establishments and of the aggregate cost of the Public Works Establishment as a per-centage of the grants for works and repairs compared with similar establishments obtaining throughout India; these figures being derived from the review by the Accountant-General, Public Works Department, of the Public Works Budget Estimates for the year 1875-76. From this statement the cost of the Upper Subordinate Establishment appears relatively high, while that of the Engineer and Accountant Establishment is very moderate. The charge for travelling allowances in this Presidency appears to be so exceptional, that His Grace the Governor in Council desires that a special report may be submitted to Government by the Examiner on the subject.

24. The Chief Engineer will at once submit, for the approval of Government, a list of the officers he recommends for the charge of the several Circles and Divisions. On approval, these appointments will be notified in the Gazette in order to give the whole staff the earliest possible advice of the arrangements decided upon.

25. In order to give effect to these orders with the least possible inconvenience to all concerned, the Chief Engineer will at once take steps to relieve from their present charges the five officers selected for the charge of the five Circles of supervision, other officers being appointed to act temporarily as District Engineers

in their places. On relief, they will immediately proceed to the head-quarters of their Circle, and there take over charge of the District Engineer's Office.

26. On their taking charge as Superintending Engineers of the present District Engineer's Office at the head-quarters of their Circles, the present District Engineers in the Circle will proceed to take charge as Executive Engineers of the present Range Offices at the head-quarters of the Divisions to which they are appointed. The records of the District Engineers' Offices other than that at the head-quarters of the Circle, together with one or two Clerks from each District Office (as may be locally arranged by the Superintending Engineer) will be transferred to the head-quarters of the Circle, and the Clerks so transferred, together with the whole establishment of the District Office at head-quarters, will form the *provisional* establishment of the Superintending Engineer's Office.

27. In a similar manner, the records and the establishment of the present Range Offices will be distributed to the new Divisional Offices, and the Clerks so transferred will form the *provisional* establishment of the Divisional Offices. Nominal rolls, showing the distribution of the existing establishments amongst the various offices in the Circle will be submitted as early as possible by Superintending Engineers to the Examiner, to admit of the salary bills being duly audited. All subsequent transfers of the establishment will be similarly advised.

28. The scale of office establishment to be ultimately worked up to, as shown in Appendices C and D, consists, it will be noticed, of fewer Clerks and Accountants with slightly increased salaries, the whole classified in accordance with the Public Works Code, Chapter I, Section i, 10—12. No immediate reductions, appointments, or promotions will be carried into effect in order to make the existing establishment agree with the new sanctioned scale. This latter will be arrived at gradually only as casualties occur.

29. In the Office Establishments, on the occurrence of a vacancy, it will be open to the Superintending Engineer concerned to utilise one-half of the salary thus made available in making promotions of properly qualified persons to the minima salaries of the sanctioned grades to which they may be appointed. The other half of the salary will lapse to Government as a saving. Without the special sanction of Government, no new appointments will be made until the excess hands have been completely absorbed. The Examiner will be held responsible for reporting for the orders of Government, any case of the kind that may occur.

30. The above remarks do not apply to the Office Establishments of the Secretariat, of the Presidency Engineer, and of the Consulting Architect to Government, in which no change has been made beyond classifying the present Office Establishments. In all these cases, the Clerks will draw the minima salary of their grades together with such a number of increments as may make their total salary at least equal to what they are drawing at present.

31. In order to keep the whole body of officers alive to their duties and responsibilities under the new arrangements, His Grace the Governor in Council desires to impress upon the Public Works Code Committee the desirability of completing the Public Works Code at the earliest possible date. The Chief and Superintending Engineers and the Examiner will bring to the notice of the Public Works Code Committee any clauses in the Code they may deem inapplicable to the present circumstances of the department, and these, if found necessary, will be modified in ordinary course by the issue of standing orders.

32. With these modifications, His Grace the Governor in Council looks to the Chief Engineers and to the Examiner, in their several branches of the Department, to see that the whole of the Public Works Code as issued is scrupulously adhered to, and that the time of Government and of all officers concerned is no longer wasted by a general want of method and system throughout the Department and by constant references on minor points of principle or practice which will be found once for all clearly laid down in the Public Works Code for general information.

33. The Manual for the business in the Public Works Secretariat and the book of Specifications, the former of which has been a long time in type, should also be taken up and completed by the Public Works Code Committee.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Government, P.W.D.

To All District Engineers.
To the Chief Engineer for Irrigation.
" Chief Engineer, Public Works Department.
" Consulting Engineer for Railways.
" Consulting Architect to Government.
" Examiner, Public Works Accounts.
" Financial, &c., Departments.
" Revenue Department.
" Military Department.
" Revenue (Famine) Department.

2/17/85

RE-ORGANISATION OF THE
PUBLIC WORKS DEPARTMENT.

Govt. of (1878) Madras.

PUBLIC WORKS.

To

ALL DISTRICT ENGINEERS,
&c., &c., &c.

Dated September 18*th*.

Issued

Read. *Encl.*

G. O., 18th September 1878, No. 2,674 W.

SEPTEMBER.

Re-organisation of the Public Works Department.—Passing orders on the —.

237
85

SCHEME

FOR THE

REPAIR AND CONSERVANCY OF THE MINOR IRRIGATION WORKS

IN THE

MADRAS PRESIDENCY.

By Lieut.-Colonel P. MONTGOMERIE, R.E.

TABLE OF CONTENTS.

PREFATORY REMARKS.

Para. (1) Natural divisions of the subject.
I. Professional treatment.
II. Conservancy.

PART I.

PROFESSIONAL TREATMENT OF MINOR IRRIGATION WORKS.

The Revenue and Capitalized Value of Minor Irrigation Works.

" (2) Analysis of the Land Revenue Accounts of the Madras Presidency for 1882-83.
Total cultivation.
Total revenue.
" (3) Revenue from the Irrigation Works for which Capital and Revenue Accounts are kept.
Revenue dependent on the Minor Irrigation works.
" (4) Capitalized value of the Minor Irrigation works.
" (5) Want of detailed information, both revenue and professional.
" (6) Technical data to be collected by the Public Works Department.
" (7) Revenue details to be furnished by the Revenue Department.
" (8) Upper Vaigai river basin selected to illustrate the condition of Minor Irrigation works generally.

Professional Investigations of Minor Irrigation Works.

" (9) Method and general principles to be explained.
Classification of Minor Irrigation works with reference only to areas irrigated unsuitable.
" (10) Systematic investigations with reference to sources of supply necessary.
" (11) Detailed investigations to include—
Group map; scale, 1 inch to a mile.
Detailed maps; scale, 4 inches to a mile.
Statement of financial details.
Abstract of hydraulic details.
Descriptive memoirs.
Estimates by sub-groups.
" (12) Proposed publication of descriptive memoirs with maps.

Special Investigation of the Periyakulam Minor Basin.

" (13) Minor basins of the Upper Vaigai river basin.
" (14) Periyakulam minor basins selected as a specimen.
" (15) Standard of efficiency of tanks.
" (16) Level of top of bund to depend on water-spread in front.
Standard heights of tank bunds.
" (17) Standard of efficiency of channels.
" (18) General principles to be followed in constructing masonry works for channels.
" (19) Preparation of the financial statement of the Periyakulam minor basin.
Proposed ultimate irrigation ascertained from cultivators.

Results of the Special Investigations of the Periyakulam Minor Basin.

Para. (20) Remissions under tanks.
" (21) Analysis of financial statement.
" (22) Tank bunds below par.
Sufficiency of general design.
" (23) Regulation of water by the cultivators.
" (24) Condition of anicuts and river channels.
" (25) Summary of results.

The Extension and Improvement of Minor Irrigation Works.

" (26) Diversity of opinions.
Sir Arthur Cotton, R.E.
The late Colonel Anderson, R.E.
" (27) The results of schemes executed.
Chembrambakam tank.
Pálár Anicut System.
Pelandorai Anicut.
Mysore tank scheme.
" (28) Minor Irrigation Works of Madras, the results of long experience.
" (29) One year's revenue sufficient for the Periyakulam minor basin.
" (30) 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.

Para. (31) Conservancy and execution of general repair to be considered together.
Separation of duties in the Public Works Department necessary for conservancy.
" (32) Labor of the cultivator, a prime factor in conservancy.
The late Colonel Anderson's opinion.
Admission by Colonel Mullins.
" (33) 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) Collector's department incapable of enforcing Kudimaramut or carrying out general repairs without conservancy establishment.
" (35) Public Works Department can carry out professional investigations and constructive work.

Administrative Reforms.

" (36) Separation of conservancy and the execution of repairs from investigation, an essential reform.
" (37) Separate conservancy establishments for each collectorate.
Conservancy Engineers to have magisterial powers and to assist Collectors in giving effect to the law.
" (38) Eight existing divisions to be made irrigation and form the nucleus of the conservancy establishments.
" (39) The eight irrigation divisions to take ultimately the place of the tank divisions.
" (40) The five general divisions will be more efficient than the existing divisions.
" (41) Slight alterations, in Superintending Engineers' Circles.
" (42) Revenue taluk boundaries to be re-arranged.
Taluks to be conterminous with minor basins and conservancy charges.
" (43) Revenue returns to be punctually furnished to Irrigation Engineers.
" (44) Irrigation Conservancy Code to be drawn up.
" (45) Chief Engineer for Irrigation to be an *ex officio* Member of the Board of Revenue.
An Engineer to be Irrigation Secretary to the Board of Revenue.
" (46) Brief summary of the administrative reforms required.
" (47) Suggested reforms will secure the efficiency of the conservancy establishment, and reduce friction between Revenue and Public Works Department officials.
" (48) Proposed scheme, the logical conclusion of the employment of tank divisions.

APPENDICES.

Appendix A. List of river basins in the Madras Presidency.
" B. List of plans and documents connected with the professional investigations of the Periyakulam minor basin.
" C. Estimate of the cost of publishing descriptive memoirs with maps of Minor Irrigation Works.
" D. Letter, No. 4002, dated 1st November 1883, from the Acting Collector of Madura.
" E. Letter from the Secretary to the Government of Mysore, with statement showing the financial results of the Mysore tank scheme.

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 Nílgiris, 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.

——	Areas 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	1,96,816	...	„ „ 725 I., of 5th „ „
Total ...	1,756,344	...	80,85,934	

Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.

——	Areas 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	2,86,335	...	
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 those 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.
Andipatty Basin.	All lands draining into the Vaigai river on the right bank between its junction with the Surulyaur river and Perria Ani.	
Talla 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.
Tanbugies.	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 ...	... From 1,500 to 900 feet ...	... 6' to 4½'
2nd do. ...	... Do. 900 to 300 „ ...	... 4½' to 3'
3rd do. ...	... Under 300 feet ...	... 3'
Special ...	... Over 1,500 „ ...	... 6' 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 Kalingaroyen 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.

2375 31

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	
Total ayacut assessments			38,750
			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 earth-works, 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 earth-works, 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 Bhaváni 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 'Manul.' 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.

Godávari, 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 ... ... } Vizagapatam ... ... } Bellary	1	1	All basins north of the Godávari.
Cuddapah ... ... } Kurnool ... ... } Coimbatore	1	2	To be settled hereafter.
Salem ... ... } North Arcot ... ... }	1	1	Cauvery above the Amarávati and Pooniar above hills.
Chingleput ... ... } South Arcot ... ... }	1	2	Pálár and Madras drainage basins. Cheyár and drainages south to Coleroon.
Trichinopoly ... ... } 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 to be 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 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 Engineers) to be entrusted with magisterial powers for the purposes of carrying out the conditions of the law. They will thus become virtually the Assistants to the Collectors and will be intimately associated with him in the Irrigation Administration of the district.

7*th*. A conservancy charge 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. 2,000, 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 secure the efficiency of these divisions.

9*th*. The boundaries of revenue taluks to be made conterminous 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 when 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 return for each minor basin showing the remissions with explanations of the precise causes of these remissions to be furnished punctually by the Collector to the Irrigation Engineers.

11*th*. An Irrigation Conservancy Code defining the duties of all connected with the irrigation to be drawn up.

12*th*. And 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.

Suggested reforms will secure efficiency of conservancy establishments and reduce friction between Revenue and Public Works Department subordinates.

47. These reforms are suggested with the view of—

1*st*. Securing the necessary discipline and professional training of the conservancy establishments which cannot be done outside of the Public Works Department; and

2*nd*. Reducing to a minimum the friction which cannot altogether be avoided between the subordinate officials of the Revenue and Conservancy establishments by making the latter more intimately associated with the Revenue Administration of the districts.

And it is believed that if these reforms are fairly and honestly carried out, the maintenance and conservancy of the numerous minor irrigation works of the Madras presidency will be placed on a more efficient footing than has hitherto been possible.

Poposed scheme the logical conclusion of employment of Tank divisions.

48. The scheme now submitted is merely the carrying out to its logical conclusions the "Tank Maintenance Scheme" sketched by the Acting Chief Engineer. The strength of the present Tank divisions 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	Tinnevelly and Madura.
	Between Támbraparni and Vaippar basins.	340	
	And between the Goondaur and Vaippar basins.	235	
Upper Goondaur basin.	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.
Mid Vaigai basin ...	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.	All drainages between Icunney-aur and Vaigai basins except those already specified.	1,950	Madura and Tanjore.
The delta of the Cauvery river.	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.	1,035	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	Patukota, 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.
Honbully 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, Melnangalam, 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.	
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.	To be published.

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. Rs. A. P.	Per.	Amount. Rs. A. P.	Total. Rs. A. P.
					Plate I.				
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	
..	..	..	..	50	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	
..	..	..	..	50	Sheets of drawing paper	1 8 0	Sheet.	75 0 0	
					Printing charges, &c.	..	..	16 8 0	
									185 0 0
					Plate V.				
1	35″	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 95 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 nanjatirva is paid for the lands under them.

No. 8, Tenkaraiputhagan Kamatchi Amman tank.
,, 12, Vadagarai Odaikulam.
,, 13, Do. Mangathikulam.
,, 19, Do. Chakiliankulam.
,, 54, Naranan tank.

3. Your statement shows that No. 10 Saluppankulam 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 been included in the punja ayacut of the village.

4. As regards the sum spent by Government both on new works and repairs attached to the group under reference, I herewith forward a statement showing the outlay on works repaired by 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.

APPENDIX D.

STATEMENT showing the amount expended on Maramut 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 Maramut.	Remarks.
1	2	3	4	5	6	7
					Rs. A. P.	
Kaikilangulam	34	Chinnapúlangulam ..	Repair ..	1877-78 ..	320 15 0	
Do.	43	Kaikilangulam ..	Do. ..	1877-78 ..	514 5 3	This maramut was conducted by the Revenue Department as forming part of relief work.
Do.	40	Véruppukyakangulam.	Do. ..	1877-78 ..	403 0 1	
Thenkarai ..	2	Periyakulam ..		Total ..	1,238 4 4	
Kaikilangulam	42	Kaikilangulam channel.	Repair .. New work.	1880-81 .. 1881-82 ..	237 8 0 616 3 7	This maramut was conducted during the years 1880-81, 1881-82, by the Revenue Department.
Do.	42	Kaikilangulam channel.	..	1881-82 ..	45 2 1	
				Total ..	898 13 8	
Kallaparam	62	Sirukulam ..	Repair ..	1883-84 ..	629 13 0	The estimate has been sanctioned for maramut of these two tanks and the work is now going on.
Kilamangalam	52	Puthukulam ..	Do. ..	1883-84 ..	542 10 5	
				Total ..	1,172 7 5	
				Grand Total.	3,309 9 5	

MADURA,
2nd November 1883.

(Signed) E. G. RICKETTS,
for Acting Collector.

(Signed) P. MONTGOMERIE, Lieut.-Col., R.E.,
Superintending Engineer, Tank Maintenance Scheme.

From Captain H. M. KENSINGTON, R.E., Secretary to the Government of Mysore, Public Works Department, to the Superintending Engineer, Tank Maintenance Scheme, dated Bangalore, 13th February 1884, No. 561.

I have the honor to return the abstract statements 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 serial 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 seasons fluctuates every year, and it is therefore not possible to state the actual increase in revenue secured. Of the four years for which revenue is shown in the abstracts, the first three, viz., 1875-76 to 1877-78, were famine years, and 1878-79 the only favorable year; and it would not, therefore, be fair to compare the average revenue of these years with the figures in column 2, which represent the average revenue for five 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 Kolar division, viz., Rs. 5,69,667, differs from that shown in abstract previously supplied to you, viz., Rs. 4,28,458. This discrepancy is due to the latter abstract including only the sub-series which were completely dealt with, whereas the former abstract includes also the independent tanks that were selected for repair to afford relief to the distressed population.

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 Taluk 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.			
	2	3	4	5	6	7	8	9	11
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Ramagar No. I Sub Series ..	1,265	2,540	1,026	1,145	1,245	1,360	18,856		
,, II ,, ..	2,579	5,602	1,977	1,965	2,169	3,024	31,306		
,, III ,, ..	1,151	2,435	732	855	879	855	16,607		
,, IV ,, ..	1,393	1,798	259	836	318	893	14,844		
,, V ,, ..	1,850	4,551	580	845	993	2,030	27,321		
,, VI ,, ..	2,584	6,758	2,751	2,794	2,902	5,635	28,022		
,, VII ,, ..	7,832	11,707	7,878	8,442	8,806	13,484	1,03,258		
,, VIII ,, ..	5,952	7,596	4,857	5,367	5,107	11,435	46,400		
,, IX ,, ..	1,066	2,103	807	330	669	1,865	16,653		
,, X ,, ..	704	1,021	458	488	428	651	2,235		
,, XII ,, ..	610	2,130	610	468	120	300	8,393		
,, XIII ,, ..	866	264	264	900	551	1,475	714		
,, XV ,, ..	1,757	1,017	2,666	694	1,598	881	45,849		
,, XVIII ,, ..	1,803	3,415	384	832	728	826	4,783		
,, XIX ,, ..	88	200	63	62	67	140	2,073		
,, XXI ,, ..	117	424	78	104	124	151	9,962		
,, XXII ,, ..	955	2,570	852	737	534	548	19,167		
,, XXIII ,, ..	2,148	3,561	1,551	1,684	1,522	2,053	27,160		
,, XXIV ,, ..	3,156	6,716	4,926	4,068	3,622	9,622	26,884		
,, XXV ,, ..	2,174	6,010	1,960	1,792	2,029	3,868	20,611		
Pálar minor series No. I Sarvareddy valley ..	262	630	328	164	541	446	4,916		
Do. outlying chains No. II Syndrapully valley.	1,210	1,695	1,681	955	947	1,089	12,806		
Do. Madiri valley No. III ..	816	1,759	638			1,004	7,228		
Kolar Holati tank ..	1,009					1,869	26,015		
Bellamingala Dodkeri ..	2,837	3,050	2,993	2,963	2,918	692	14,963		
Ramagar tank ..	2,920	5,765	2,513	1,671	2,627	2,510	26,912		
Sidlaghat Anekeri tank ..	192	923	232	1,837	433	4,056	6,202		
Grand Total ..	49,146	91,178	41,670	38,079	38,134	66,095	5,69,667	16,949	2·97
	—	— 49,146							
Net anticipated increase of Revenue ..		42,032							

1878-79
Increase Expenditure. Revenue.

	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.

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APPENDIX E.

BANGALORE DISTRICT.

Statement showing Revenue promised and that realised annually from Tank Restoration Works since their completion compared with the actual expenditure incurred up to 31st March 1879.

Description.	Revenue shewn in the Financial Statement.		'Revenue given in Form No. III, as per Tank Register kept in the office since the restoration of Tanks.		Increase of Revenue per cent. of Expenditure.	Remarks.
	Revenue realised as per Taluk Account.	Anticipated.	1875-76.	1876-77.		
1	2	3	4	5	6	
	Rs.	Rs.	Rs.	Rs.	Rs.	
I.—Hassenghattu Series—						
Arulmullegay Sub-Series ..	3,751	7,195	2,926	824	..	
Jumbinkey do. ..	2,198	5,326	1,702	1,068	..	
Nagnakere do. ..	6,344½	7,469	2,437	1,471	..	
Kollatorn do. ..	3,429	6,598	2,465	1,189	..	
Kacole do. ..	1,626½	3,695	265	342	..	
Hassenghatte do. ..	13,640	16,321	6,107	3,184	..	
II.—Kadgudy Series ..	8,844	15,667	9,417	6,249	..	
III.—Minor series of outlying chains on the left bank of Arkavati below Harrunghatti series ..	841	3,182	1,303	458	..	
IV.—Hoskote series	4,969	7,543	1,675	2,050	..	
Grand Total ..	45,542	72,934	27,194	16,835	..	
		45,542				
Net anticipated increase of Revenue ..	..	27,392	..	..	..	

	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.		
					Increase Revenue.	Expenditure.
	Rs.	Rs.	Rs.		Rs.	Rs.
	7	8	9	10	11	
	Rs.	Rs.	Rs.			
	..	36,069	..			
	..	23,780	..			
	..	38,193	..			
	..	63,856	..			
	..	36,034	..			
	..	55,344	..			
	..	87,011	..			
	..	..	..	Bangalore district	6,751	3,68,615
	..	..	..	Kolar district	16,949	5,69,667
	..	..	..	Total ..	23,700	9,38,282
	..	4,270	..			
	..	23,153	..			
	..	..	..	Total increase of Expenditure.		
	6,751	3,68,615	1·83	1878-79.		

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)

12th July 1884, No. 647 I., Public Works.

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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 question of the conservancy of the works, I would most respectfully suggest the advisability of incorporating the temporary divisions with the permanent establishment in the manner proposed in the accompanying scheme. By this arrangement there would be some prospect that the estimates for the repairs required to bring the works up to the standard of efficiency would be carried out in a definite period. And the extra temporary establishment would then be free to complete the investigations, which are essentially necessary, before any satisfactory progress can be made in the conservancy of the works.

5. It will be admitted by every one who has had practical experience of the rural districts of Madras in which the minor irrigation works are situated that, from the very nature and circumstances of the case, no Department of Public Works, however constituted, can *alone* deal with the conservancy of the works, and that any scheme of conservancy, which does not invoke the influence of the Collector, or ignores the 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 the utilisation of a portion of the subordinate establishment of the permanent Tank or rather irrigation divisions as a separate conservancy branch to assist the Collectors in carrying out the repairs and in giving effect to the law; and I see no reason why this essential reform could not be carried out without hampering the action of the Public Works Department: for it would in no way alter its existing strength and organisation, and would principally consist in defining the duties of its subordinate members, instead of permitting them to be employed on any and every description of work indiscriminately as at present. The extra cost entailed by the tank inspectors would be more than covered by the increase of revenue anticipated, which it is estimated will be about 6 per cent.

6. Should it be found impracticable to form a separate conservancy branch of the Irrigation Department to co-operate with the Collectors in the execution of the repairs and the conservancy of the works, I have no hesitation in saying that it would be to the interests of the country generally as well as for the reputation of the Public Works Department for that department to retire from the tank districts so far as the conservancy of the minor irrigation works is concerned and to place the subordinate establishment thus set free at the disposal of the Collectors for the formation of a conservancy department, the Engineers being required to attend only to the purely professional 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 of the professional investigations will amount to only 3·27 per cent. of the revenue or to ·16 per cent. of the capitalised value of the works. By whatever agency the execution of repairs and conservancy is to be carried out in future, investigations into the condition and circumstances of the works are essential, and it is very necessary that the data collected should be permanently recorded for future reference and guidance.

8. In the accompanying statement is a *résumé* of the more important points brought out by the present inquiry, with an outline of the administrative reforms proposed. These proposals are very similar to those which I had the honor to submit to the Famine Commission, at their request, in February 1879, and the further inquiry 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 works of the Madras Presidency, with proposals for their more efficient repair and management, 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 Presidency, 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 16½ 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 basin (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 ayacuts 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

(*i*) With regard to the minor river channels such as most of these 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 Barúr, 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 Bhaváni 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.
Chingleput			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.,
5th March 1884. Suptg. Engr., Tank Maintenance Scheme.

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, flood 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 a 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 Commission 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

8-46

IRRIGATION.

Govt. of (1884) Madras.

PUBLIC WORKS.

Dated July, 12th.

Recd. *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.

53
47

ENCLOSURE.

STATEMENT showing the number of works accounted for in each division in December 1884, and dates proposed for submission of accounts.

Circle.	Division.	No. of works under each agency.				Dates proposed by Superintending Engineers		Dates by which complete accounts should reach the Examiner's office under present orders.
		Contract and petty contract.	Departmental labor.	Mixed.	Total.	Of despatch of accounts from Executive Engineer's office.	Of arrival in Examiner's office.	
I	Ganjam	6	16	...	22	16	24	20
	Rushikuliya	...	19	...	19	16	24	20
	Vizagapatam	...	26	...	26	17	23	20
	Godávari eastern	...	192	...	192	24	30	30
	Do. central	...	55	...	55	19	25	25
	Do. western	...	84	...	84	20	25	25
	Dowlaishwaram workshops ..	...	...	...	...	14	20	20
II	Kistna eastern	5	62	6	73	20	24	24
	Do. western	8	56	2	66	19	23	23
	Gudiváda	7	19	11	37	20	24	24
	Nellore	18	57	...	75	18	20	20
	Sangam project	10	64	...	74	19	21	21
	Buckingham canal	18	7	...	25	19	21	18
III	Kurnool	11	7	...	18	18	20	16
	Do. canal	2	5	1	8	18	20	20
	Bellary	15	31	...	46	19	20	20
	Cuddapah	5	15	...	20	19	20	16
	C. Project *	...	...	...	...	...	...	...
IV	Barur project...	10	12	...	22	17	19	16
	B. Project	...	4	...	4	17	18	16
	North Arcot †	28	15	4	47	20	21	21
	Coimbatore	29	12	...	41	20	21	21
	Nílgiri	...	41	5	46	20	22	22
	West Coast	28	10	...	38	24	25	25
V	South Arcot	32	51	...	83	20	21	21
	Chingleput	26	62	...	88	20	21	21
	Presidency	19	119	...	138	20	21	21
	Do. stores	...	...	...	...	20	‡ 20	20
	Do. workshops ...	...	...	...	..	20	‡ 20	20*
VI	Trichinopoly	20	39	3	62	18	† 19	19
	Cauvery and Vennár ...	...	18	...	18	18	19	19
	Negapatam	20	51	...	71	18	19	19
	Madura	55	6	...	61	18	20	20
	Tinnevelly	27	37	2	66	18	21	21
	Tanjore	36	52	...	88	24	25	25
	Consulting Architect ...	8	8	7	23	20	20	20
	Madras Harbour	...	...	...	...	20	20	20

* Accounts compiled in Examiner's office. † Since transferred to V Circle. ‡ Dates of actual receipt.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

Read—the following papers :—

From Superintending Engineer,	I Circle,	dated	24th February 1885,	No.	423 G.L.
" " "	II "	"	4th "	"	" 359 "
" " "	III "	"	30th January	"	" 2152.
" " "	IV "	"	16th "	"	" 10 E.W.
" " "	V "	"	16th February	"	" 4293.
" " "	VI "	"	15th January	"	" 1577 T.J.
" Consulting Architect to Government,		"	14th "	"	" 1523.

From D. C. GORDON, Esq., Examiner, Public Works Accounts, to the Secretary to Government, Public Works Department, dated Madras, 13th March 1885, No. 134 W.

The reports called for in G.O., No. 18 W., dated 6th January 1885, having been received from all Superintending Engineers, I have the honor to submit them in original with a statement giving in tabular form the number of works accounted for under each agency in the accounts of the several divisions for the month of December 1884, and the dates proposed by Superintending Engineers for despatch of accounts from Executive Engineers' offices, as well as the probable date of their arrival in Examiner's office, and to offer the following remarks thereon :—

2. *I Circle.*—Of the first three divisions, the amount of accounting in each of which has been pretty nearly the same, the average dates on which accounts have been received in this office from April to December compared with the proposed dates are as follows :—

	Actual average.	Proposed.
1. Ganjam	23rd	24th
2. Rushikuliya	20th	24th
3. Vizagapatam	19th	23rd

So that there will be a distinct loss of time in each case. I do not think it advisable, therefore, to concede any extension in these cases. In the next three divisions, the work is heavy and the distance is great; the time asked for may be allowed for the present. But I think when the normal cost system has been introduced, the increased establishment required for the Godávari eastern division sanctioned, the relief to Executive Engineers proposed in G.O., No. 3151 W., dated 23rd December 1884, afforded, and the plan of closing sub-divisional accounts when the sub-treasury closes, viz., the 24th or 26th, adopted, earlier dates may fairly be fixed for these divisions.

3. *II Circle.*—The time asked for may be allowed on the same understanding as above, except in the case of the Buckingham canal. The work of this division is chiefly done by contract. It appears to me that the accounts of this division may fairly be required to reach this office by the 18th of the month (see report by the Superintending Engineer, V Circle).

4. *III Circle.*—Kurnool and Cuddapah are light divisions. The accounts should reach this office on the 16th. The other dates may stand.

5. *IV Circle.*—Barur and B. Project divisional accounts should reach this office by the 16th. The other dates may stand for the present, but improvement will be expected hereafter as suggested in paragraph 2.

6. *V Circle.*—The dates proposed by the Superintending Engineer may be allowed.

7. *VI Circle, Consulting Architect and Madras Harbour.*—The proposed dates may be allowed, but Tanjore should improve hereafter.

8. It is of course to be distinctly understood that by the dates named *complete* accounts must be received, all vouchers accompanying.

Order—dated 23rd March 1885, No. 721 W., Public Works.

In their letter recorded in proceedings of Government, No. 18 W., dated 6th January 1885, the Government of India declined to sanction any general relaxation in the prescribed date for the submission of divisional accounts, but suggested that the dates should be settled from time to time by Superintending Engineers and the Examiner, so as to suit the circumstances of each division.

2. With their letters above recorded, Superintending Engineers have submitted their views on this point, and the Examiner, Public Works Accounts, has tabulated their recommendations, and submitted them with his own opinion and suggestions.

3. On full consideration of the subject, the Government accept the recommendations of Superintending Engineers as modified by the Examiner's suggestions. In the last column of the statement attached to these proceedings is given the date by which the complete accounts of each division should reach the Examiner's office, and the Government trust that, with the relaxation allowed in the case of the more heavily worked divisions, Executive officers will strive to render their accounts with punctuality.

4. It must be understood that the dates now fixed are tentative, and will be subject to consideration after the lapse of a year, when the subject will again be reported on generally by the Examiner, Public Works Accounts.

(True Extract.)

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

To Superintending Engineers
To the Consulting Architect to Government.
" Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.

Exd. A. Grubert.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of 1885 Madras.

PUBLIC WORKS.

Dated March, 23rd.

Read. *Encl.*

G.O., 23rd March 1885, No. 721 W.

MARCH.

Divisional Accounts

Accepting the recommendations of Superintending Engineers as modified by the Examiner's suggestion for the submission of —.

29TH MAY 1886, No. 1351 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following papers :—

From the Superintending Engineer, VI Circle, to the Chief Engineer, Public Works Department, dated 14th May 1886, No. 225 T.J.

VI CIRCLE.

STATEMENT of Proposition for Temporary Establishment required for 1886-87.

Order sanctioning the present Establishment—Government of Madras, P.W.D.		Nature of Charge.	Present Scale.						Proposition.						Remarks.
					Pay.				Permanent.				Temporary.		
Number.	Date.	Office to which proposition relates.	Designation.	Number.	Minimum.	Increment.	Maximum.	Fixed.	Increase per month.	Decrease per month.			Increase per month.	Decrease per month.	
									Period.	Amount.	Period.	Amount.	Period.	Amount.	
1438 W	20th June 1886.	Quarry and Vaccine Regulator Division.			Rs.	Rs.	Rs.	Rs.		Rs.		Rs.		Rs.	
		Superintending Engineer's office, VI Circle.	*Petty Establishment.*												
			Store-keeper	1				25							
			Lascars at Rs. 6 each	5				30							
			Office Establishment.												
			Clerk, 3rd class, 2nd grade	1				60							
			,, 4th ,, 2nd ,,	1				30							
			Clerks, 4th ,, 3rd ,, at Rs. 20 each	2				40							
			Draftsman, 1st class	1				60							
			,, 3rd ,,	1				20							
			Messenger	1				7							
			,,	1				6							
			Clerks, 5th class, 1st grade, at Rs. 15 each	2				30							
			Medical Establishment.												
			Hospital Assistant	1				60							
			Peon	1				5							
			Total per mensem					338							
			Total for 4 months					1,352							
			Office Establishment.												
			Clerks at Rs. 15 per mensem	2				30							
			Total per mensem					30							

* Owing to the employment of a Second-class Hospital Assistant.

Lower Subordinate Establishment.															
1	Sub overseer	..	..	..	35	1	Sub-overseer	..	..	..	35	..			
	Office Establishment.						*Office Establishment.*								
1	Clerk	..	..	..	50	1	Clerk	..	..	..	50	..			
1	Do.	..	..	..	30	1	Do.	..	..	..	30	..			
2	Clerks at Rs. 20 each	..	..	..	40	2	Clerks at Rs. 20 each	..	..	..	40	..			
1	Draftsman ..	..	..	..	40	1	Draftsman ..	..	..	..	40	..			
1	Do. ..	..	..	..	20	1	Do. ..	..	..	..	20	..			
1	Messenger ..	..	..	..	7	1	Messenger ..	..	..	..	7	..			
1	Do. ..	..	..	..	6	1	Do. ..	..	..	..	6	..			
3	Clerks at Rs. 15 each	..	..	..	45	3	Clerks at Rs. 15 each	..	..	..	45	..			
	Petty Establishment.						*Petty Establishment.*								
6	Lascars at Rs. 6 each	..	..	..	36	18	Lascars at Rs. 6 each	..	..	..	48	..	† 4 lascars for employment in the divisional office.	..	..
	Total per mensem	..	..	..	399	..	Total per mensem	..	..	..	321	..	1 lascar for employment under Supervisor Murugesam Pillai.	..	..
	Office Establishment.						*Office Establishment.*						1 lascar for employment under Overseer Appaswamy Iyengar.		
1	Clerk	..	..	..	15	1	Clerk	..	..	..	15	..	1 lascar for employment under Overseer Ramachandra Sastry.		
	Office Establishment.						*Office Establishment.*						1 lascar for employment under Overseer Arumugam Pillay, only till May 1886, or until the lascar from the Timuvelly division joins his office.		
1	Clerk	..	..	..	15	1	Clerk	..	..	..	15	..			
	Petty Establishment.						*Petty Establishment.*								
4	Lascars at Rs. 6 each	..	..	..	24	4	Lascars at Rs. 6 each	..	..	..	24	..	For 3 detached officers and 1 temporary overseer.	..	..
	Total per mensem for Tanjore Division	..	..	..	79	..	Total per mensem for Tanjore Division	..	..	..	69	..			
	Office Establishment.						*Office Establishment.*								
1	Clerk	..	..	..	30	1	Clerks at Rs. 15 each	..	..	..	30	1	1 clerk for Mannârgudi and another for Tirutturaipundi sub-divisional office as one clerk in each sub-division is unable to do the office work.	15	..

1439 W.

20th June 1886.

57-51

Statement of Proposition for Temporary Establishment required for 1886-87—*cont.*

Order sanctioning the present Establishment—Government of Madras, P.W.D.		Office to which proposition refers.	Nature of Charge.										Proposition.						Remarks.
			Present Scale.					Proposed Scale.					Permanent.		Temporary.				
					Pay.					Pay.									
Number.	Date.		Number.	Designation.	Minimum.	Increment.	Maximum.	Fixed.	Number.	Designation.	Minimum.	Increment.	Maximum.	Fixed.	Increase per month. Amount.	Decrease per month. Amount.	Increase per month. Period.	Increase per month. Amount.	Decrease per month. Period.	Decrease per month. Amount.	
				Office Establishment.	Rs.	Rs.	Rs.	Rs.		*Office Establishment.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.		Rs.	
1327 W.	8th June 1885.	Vedarniem Canal	1	Clerk	..	..	..	15	1	Clerk	..	..	..	15	..	..	..	..	..	..	
				Petty Establishment.						*Petty Establishment.*											
			1	Lascar	..	..	..	6	1	Lascar	..	..	..	6	..	..	..	..	..	..	
				Petty Establishment.						*Petty Establishment.*											
		Negapatam Division.	5	Lascars at Rs. 6 each ..	..	..	..	30	5	Lascars at Rs. 6 each ..	..	..	..	30	..	..	..	..	..	..	
				Total per mensem under Negapatam Division ..	..	..	..	66		Total per mensem under Negapatam Division ..	..	..	..	81	..	..	..	..	..	..	For employment under 5 detached officers.
				Petty Establishment.						*Petty Establishment.*											
		Trichinopoly Division.	2	Lascars	..	..	..	12	1	Lascar	..	..	..	6	..	..	..	..	..	..	
				Total per mensem for Trichinopoly Division ..	..	..	..	12		Total per mensem for Trichinopoly Division ..	..	..	..	6	..	..	..	..	..	..	For employment under the detached officer at Trichinopoly.
				Office Establishment.						*Office Establishment.*											
1430 W.	20th June 1885.	Madura Division.	5	Clerks at Rs. 15 per mensem.	..	..	..	75	6	Clerks at Rs. 15 per mensem.	..	..	..	90	..	..	1	15	..	..	2 for Division office. 1 for Sub-division office, Dindigul. 1 for a detached officer. 1 for a temporary overseer. 1 for South Sub-division office. The temporary clerk for the South Sub division is required in consequence of the execution of Tank Maintenance Works.
				Petty Establishment.						*Petty Establishment.*											
			5	Lascars at Rs. 6 each ..	..	..	..	30	4	Lascars at Rs. 6 each ..	..	..	..	24	..	..	..	..	*1	6	1 for Supervisor Abdul Lateef Sahib.
				Total per mensem for Madura Division ..	..	..	..	105		Total per mensem for Madura Division ..	..	..	..	114	..	..	..	..	..	..	1 for Supervisor Mr. Taylor. 1 for Supervisor Nithiyananda Moodaliar. 1 for Temporary Overseer Massillamoney Pillay.
1430 W. and 520 W.	20th June 1885 and 26th February 1886.	Tinnevelly Division		*Office Establishment.*						*Office Establishment.*											
			1	Draftsman at Rs. 40 per mensem.	..	..	..	..	1	Draftsman at Rs. 40 per mensem.	..	..	..	..	..	..	..	..	..	..	Already sanctioned in G.O., No. 520 W., dated 26th February 1886.
				Petty Establishment.						*Petty Establishment.*											
			2	Lascars at Rs. 6 per mensem.	..	..	..	12	2	Lascars at Rs. 6 per mensem.	..	..	..	12	..	..	..	..	..	..	
				Total per mensem for Tinnevelly Division ..	..	..	..	12		Total per mensem for Tinnevelly Division ..	..	..	..	12	..	..	..	..	..	..	
				Total per mensem for the VI Circle	..	..	..	956		Total per mensem for the VI Circle	..	..	..	971	..	..	..	42	..	27	

* Owing to the transfer of Supervisor Murugesam Pillay from Madura to Ramnad Division.

KODAIKANAL,
14th May 1886.

(Signed) J. PENNYCUICK, Lieut.-Colonel, R.E.,
Superintending Engineer, VI Circle.

Office note from the Examiner of Public Works Accounts, dated 22nd May 1886, No. 152.

ORDER—dated 29th May 1886, No. 1351 W., Public Works.

The statement of temporary establishment required in the VI Circle during 1886-87 is sanctioned; but the provision therein made for an Executive Engineer has been struck out, as one has been sanctioned in separate orders.

2. This sanction has been registered as Provincial, No. 17 W. of 1886-87, and classified as Establishment, Temporary.

(True Extract.)

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

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

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1886} Madras.

PUBLIC WORKS.

Dated May, 29th.

Read. *Encl.*

G.O., 29th May 1886, No. 1351 W.

MAY.

Temporary Establishment

A statement of — required in the VI Circle during 1886-87, sanctioned.

X 59

Extract-para 10- of Notes of Inspection of the Superintending Engineer VI Circle of 1st April 1887. —

× × × × ×

(10). It appears that the Clerk and Lascars employed on the works are now being charged to "works" on account of their being no provision for temporary establishment. This should not be as the District Board pay handsomely for supervision and are entitled to have a sufficient establishment provided.

× × ×

Signed / J.O.H.
E.S.

X 7
55

Letter from H. E. Clerk Esq. Executive Engineer
Vaigai Bridge works, Madura to
the Superintending Engineer, Trichy
dated 1st April 1887, No 1.

—

With reference to G.O. No 758 W
of 11th March 87 sanctioning 1 Clerk &
5 Lascars being charged to works, I
have the honor to request that this
arrangement may be modified.
As this work is executed from
funds provided by the Local Fund
Board they are charged 24 per cent
for establishment and plant, and
it appears to me that in return for
this charge the P.W. Department is
bound to provide the necessary
Establishment on the scale laid
down in your letter No 152 MD dated
21st July 1886–
At present the pay of one Clerk

& 5 Lascars is charged to petty supervision and this deducts so much from the amount at my disposal for the payment of Coolies.

These Lascars and the Clerk are being paid for twice over by the Local Fund Board.

If it is inconvenient to allow me a Draftsman, I think I can get on without one as soon as the revised Estimate is sent in and sanctioned, but a second Clerk is very necessary and I request that one may be given me at once and charged to Establishment.

No. 28. M.D

Forwarded to the Chief Engineer, P.W.D. in confirmation of my Inspection Notes of 2d Instant.

2. I entirely agree with the Executive Engineer that the establishment in question cannot in fairness to the District Board, be debited to "Works".

Kodaikanal.
8th April 1887.

Supt. Engineer, Trichy.

To

The Chief Engineer
P.W.D.

Q.6. No 942 W 28. 3. 87
B. No 753 W 11. 3. 87
" 617 W 3. 3. 87
" 620 W 1. 3. 87
No 648 C 14. 2. 87
" 475 C 9. 2. 87
" 2680 W 13. 10. 86
" 3382 C 1. 10. 86
B. No 992 W 1. 4. 87
No 1158 C 26. 3. 87
" 1070 C 19. 3. 87
" 694 C 28. 2. 87
" 294 C 26. 1. 87
" 171 C 17. 1. 87
B. No 31 W 7. 1. 87
Q.6. 358 W 9. 2. 86
No 502 D 6. 8. 86
B. No 2469 W 23. 9. 86
" 2281 W 10. 9. 86
" 2826 W 27. 10. 86
" 3203 W 4. 12. 87
No 646 C 24. 9. 85
B. No 388 23. 4. 85.

P.W.D.

Memo.

Write reference to his No: 28. M.D. dated 8th April/87, the Supdg Engr, VI circle, is requested to submit forwarders a proposition statement in the prescribed form for the temporary Establishment required for the Vaigai Bridge works. ~~Vide~~ :- ~~Two clerks and five coolies~~

The cost of this temporary Estt will have to be met from the percentage for Estt of the extra grant recently made to the Dept.

Supdg Engr. VI Circle
10/4/87

Sd/
10/4/87
It may be necessary to
vibrate a shuttering for
Sometime —

Sd/
14. 4. 87

To,
The Chief Engineer
P. W D
No: 28. M D
Dated 8: April 87

Forwarded for orders
letter from the
executive Engineer
Vaigai Bridge works
requesting sanction
to change the Clerks
&c. of the Vaigai
bridge to Establish-
ment.

Q. 14. 4. 87 R. 19. 4. 87

No. 4905 S.

Executive Engineer's Office
3rd October 1887
Desp 5th

From, The Executive Engineer
Madura Division.

To, The Superintending Engineer,
6th Circle,
Trichinopoly.

Sir,

I have the honor to bring to your notice, that while the Expenditure in Madura is more than in most 1st Class Divisions, the Grants for this year being about Rs. 300,000 for works, the Office Establishment is only that allowed for a 2nd Class Division. Of the 4 Clerks two are fully employed in assisting the Account* -ant, leaving only two to deal with an enormous mass of correspondence. The Accountant and Clerks work an average of some nine hours a day including nearly all Sundays and holidays. I am also temporarily without a Storekeeper. It appears to me under the circumstances impossible to expect the members of the Office to endure this strain for very long without some one getting knocked up, and if such a misfortune happens a rapid accumulation of arrears will be inevitable. It would be an advantage also and facilitate the despatch of correspondence if I could take a Clerk into Camp with me. At present, I cannot

* The average No. of Vouchers to be checked & forwarded to the Examiner has recently been 220 & there are 18 Work Vouchers for Imp. Works to be prepared.

4 W. G. 87 - 4 Bks & 2 Rs. 19-4-87

cannot do so. For all these reasons I beg that you will let me have at least one good Clerk in addition to the present staff.

In the Office of the South Sub-Division I am informed that the Clerk's work is 12 hours a day. Only one Clerk is allowed by Government but some of the subordinates Clerks are called in to assist. The Sub-Division Officer informs me that the records prior to the last year and a half are in the greatest confusion and as there are a great many old accounts to settle and old references to be looked up, much current work is unavoidably in arrears and if even all arrears could be cleared off there would still be more to do than one man can manage. Besides, the present Sub-Division Clerk is reported to be slow and inefficient though willing. I should be much obliged, if you can let me have an active and capable man in his place and sanction the employment of a temporary Clerk on Rs 15 for nine months.

I have &c &c

Signed/ W. Hughes
Executive Engineer
Madura Division

Encl: 1
No. 677 dtd

True Copy/
Submitted to the
Chief

Chief Engineer, Public Works Department,

With a request that, under the circumstances explained in the above letter he will be good enough to sanction the employment of two temporary Clerks on Rs. 30 and 20 for the Madura Division, and the Periakulam or South Sub-Division Offices respectively.

2 A proposition statement showing the required temporary hands is enclosed.

3 It is undoubtedly true that the work in the Madura Division is heavier than that of any other in the Circle, and the present Executive Engineer and the Sub-Engineer in charge of the Periakulam Sub-Division are doing their best to remedy the short comings of their predecessors.

4 I am satisfied by personal knowledge that the Establishment asked for is wanted.

5 The vacancy in the post of Storekeeper referred to in the first para of the above letter has been filled up.

Lieutt Col R.E.
Superintending Engineer 6th Circle

The Ready
4th October 1887
D/ 18th

No. 2935 dated 5 Dec 87

HW/A

PWC No. 8790

69

Genl
Extract

From

The Supdg. Engineer
VI. a Circle.

To.

The Chief Engineer
P.W.D.

No. 677 Bnd

Dated 14th October 1887.

Encls. 1

PH
4 Nov.
The entertainment of 2 temporary clerks on Rs 30 & 20 is sanctioned for 6 months as proposed.
This sanction has been registered as Statement No 38 of 1887-88, and classified as Establishment, Temporary

WCS
1.11.87

JSH
3/11/87

Request sanction for the entertainment of 2 Temporary Clerks on Rs 30 + 20 for the Madura Dn

with orders

KS
S. Gn Circle
Exd. 19/11/87
with one statement

Asst. 3-11-87

8390

Govt. of Madras.

PUBLIC WORKS.

Dated

Rect.

Encl.

G.O. 5 Nov. 1887, No. 293

Establishment

=

Re Entertainment of a clerk on Rs 20 for the Madura division & one on Rs 20 for the Periakulam Sub-division for six months sanctioned

40

X