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TAMIL NADU ARCHIVES

ERNMENT OF TAMIL NADU

JWD. DEPARTMENT

G.O. No.	1770. - w	Press.
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Dated	19. 7. 1884	197.

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 Statement

19TH JULY 1884, No. 1770 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General
Establishment.

the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 9th July 1884, No. 820 G :—

reply to your letter, No. 1502 W., dated 16th June 1884, relating to the of Engineers on the Madras Establishment, I am directed to state that the dian Engineering College Engineers who have just passed out of College, and be available for active work as Assistant Engineers in 1885, have already been and two have been given to Madras. The Government of India will, however, the wants of the Madras Presidency, in this respect, in 1885 when making bution of the Engineers who will pass out of the College in that year, but it probable that any appreciable increase can be made in the number given to

With reference to paragraph 3 of your letter, I am to state that if it should be to transfer an unemployed officer from elsewhere, the interests of the staff of in Madras will be protected in the manner suggested, until at least some ders have been received from the Secretary of State regarding the re-organi- the Engineer Establishment which is now under His Lordship's consideration.

ated 19th July 1884, No. 1770 W., Public Works.

Recorded.

(True Extract.)

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

adez.

GENERAL
ESTABLISHMENT

Gobt. of 1884 Madras.
PUBLIC WORKS.

Dated July, 19th.

Recd.

Encl.

G.O., 19th July 1884, No. 1770 W.

JULY.

Madras Engineer Establish-
ment

Letter from the Government of India re-
garding the suggestions of this Government as
to the mode of filling up the additional
posts recently sanctioned in the —, recorded.

10TH JUNE 1882, No. 1448 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

General
Establishment.

No. 1448 W.

No. 60.

LETTER—from

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

Secretary to Government, Public Works Department,
Madras.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR.

I am directed to bring to the notice of the Government of India the inconve-
nience that is now felt in the Madras Public Works Department owing to the inadequate
provision made for absentees in the scale sanctioned for the Engineer Establishment
of this Department. In the Civil Departments under this Government a proportion
of 20 per cent. is allowed—*Vide* Rule I under Section 49 of the Civil Leave Code,
a ruling which it is understood has lately been extended to the Ecclesiastical Depart-
ment, while in the Public Works Department a proportion of only 10 per cent. has
been added to the sanctioned scale for casualties of this nature, 3 Executive and 4
Assistant Engineers only having been provided for out of a total numerical scale of
92. See the Distribution Statement submitted with my letter No. 2277 W., dated 1st
October 1880, also paragraph 5 of No. 1697 W., dated 9th July 1881.

2. As compared with the sanctioned provision the following officers are now,
either through illness or other causes which rendered furlough to Europe absolutely
necessary, non-effective:—

1. Colonel J. Mullins, R.E. ... Eighteen months' furlough.
2. Colonel W. Chrystie, R.E. ... On Special leave.
3. Colonel J. N. Hunter, R.E. ... Special leave for two years.
4. Lieutenant-Colonel H. Smalley,
R.E. ... Special furlough for two years.
5. Lieutenant-Colonel P. Mont-
gomerie, R.E. ... Furlough for two years.
6. Major H. M. Vibart, R.E. ... Furlough for two years.
7. Major C. Bowen, R.E. ... Furlough—not yet joined.
8. Major J. L. L. Morant, R.E. ... Furlough for two years.
9. Major S. C. Clarke, R.E. ... Special leave for two years.
10. Mr. J. Hannan ... Furlough for two years.
11. Major B. F. Morris, R.E. ... Furlough—not expected to return.

GENERAL
ESTABLISHMENT.

Govt. of (1882) Madras.
PUBLIC WORKS.

Dated June, 10th.

Recd.

Encl.

G.O., 10th June 1882, No. 1448 W.

JUNE.
No. 60.

Engineer Establishment of the
Public Works Department.

*Absentees in the scale sanctioned for the —
On the desirability of fixing a higher pro-
portion than 10 per cent. for —*

16th OCTOBER 1882, No. 2695 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General
Establishment.

No. 96.

READ—the following papers:—

From Colonel W. S. TREVOR, R.E., Secretary to the Government of India,
Public Works Department, (General,) to the Secretary to the Government
of Madras, Public Works Department, dated Simla, 24th July 1882,
No. 1082 G.

I am directed to acknowledge your letter No. 1439 W., dated 9th June, making
certain proposals for working new divisions proposed to be made in the Delta Irriga-
tion Works, and to communicate the following remarks.

2. The plan proposed of engaging upper subordinates, after taking their pensions,
as Executive and Assistant Engineers, is opposed to the regulations of the Civil
Pension Code. It is moreover, in the opinion of the Government of India, not in the
interests of Government to entrust such large responsibility to men whose previous
training has been wholly in the Upper Subordinate Establishment.

3. But before any other method of increasing the strength of Engineers in
Madras is considered, I am to request that the previous question may be considered
whether any increase at all is required. The proposals just submitted by the Govern-
ment of Madras point to the conclusion that the present staff is sufficient to meet all or
nearly all requirements; for those proposals, if carried out, would only lead to an
increase of a few Overseers. The Government of India has all along considered the
sanctioned strength of Engineers in Madras to be extravagant, and one reason which
led to its acceptance of the proposals of the Madras Government in regard to the
permanent staff of Engineers was that it was thought the same staff would be able to
undertake extended work, when funds should be made available. After making due
allowance for revenue work, it seems probable that the whole establishment charges
in Madras are not much short of 40 per cent. on the outlay on works and repairs. This
disproportion has more than once been commented on by the Secretary of State. I am
to request therefore that the distribution and employment of the whole Engineer staff
may be carefully reviewed, and that no consideration of mere territorial occupation or
traditional custom may be allowed to stand in the way of a stringent limitation of the
use of members of the Engineer Establishment to work which demands the exercise
of their higher training.

4. I am to state that it must be looked upon as fixed and settled that no
increase will be made to the permanent sanctioned scale of Engineers in Madras.
It would therefore seem advisable to provide the Executive Engineers for the new divi-
sions from the existing permanent staff, and if it should be found, after careful view,
that an increase to the engineering staff is absolutely necessary, that increase should
be obtained either by transfer from other Provinces or by the engagement of tempo-
rary Assistant Engineers or Upper Subordinates.

No. 96-A.

From the same Officer, dated Simla, 25th July 1882, No. 1087 G.

In reply to your letter No. 1448 W., dated 10th June 1882, affirming the inadequacy of the provision made for absentees in the establishment sanctioned for the Madras Public Works Department, and requesting that the provision may be increased so as to be more in consonance with actual experience gained in the Province, I am directed to observe that when the present scale of establishment for the Madras Public Works Department was sanctioned, the Government of Madras was told, in paragraph 6 of Public Works Department letter No. 1250 G., of 23rd September 1881, that the scale must be regarded as the maximum, and that provision for the superintendence of any works that might hereafter be taken in hand must be made without any increase of the permanent staff. The Secretary of State was also so informed.

2. A comparison of the percentage of establishments to works in some of the larger Provinces show that the existing establishment in Madras is by far the most expensive. The Secretary of State has on more than one occasion commented on the extravagance of the Public Works Establishments in Madras, and the Government of India regrets that it is unable to meet the wishes of the Madras Government.

3. If the Public Works Department in Madras is short handed, the first obvious step, I am to point out, is to recall to duty the officers on special leave. If this should not suffice, I am to say that the permanent establishment should be supplemented by the entertainment of temporary establishment.

No. 97.

ORDER—dated 16th October 1882, No. 2695 W., Public Works.

Ordered that the following letter be despatched to the Government of India.

(Here enter, No. 2696 W., dated 16th October 1882.)

(True Extract.)

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

Ed. S. T. Austin
Spare Copies

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GENERAL
ESTABLISHMENT.

Gobt. of 1882 Madras.
PUBLIC WORKS.

Dated October, 16th.

Recd.

Encl.

G.O., 16th Oct. 1882, No. 2695 W.

OCTOBER.
Nos. 96-97.

Public Works Establishment,
Madras Presidency.

Ordered that the Government of India be
addressed on the subject of the scale of the—

16th OCTOBER 1882, No. 2696 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

No. 98.

LETTER—FROM

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

Secretary to Government, Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

In your letters marginally noted the attention of this Government is drawn to what is held to be the extravagantly large Establishment of this Department as proved by the percentage which its cost bears to works compared with the results in other Provinces.

2. Since the receipt of the above communications, proposals have been made in my letter No. 2592 W., dated 4th October 1882 for organizing the establishment of the

Godavari, Central.
Kistna. do.
Cauvery and Vennar Regulators.

three new temporary divisions marginally noted on a basis which has been approved by the Government of India; my present communication will therefore, I am desired

to say, be confined to dealing with the more important question above adverted to.

3. The first point requiring attention is that contained in paragraph 3 of your letter No. 1082 G., calling for a review of the distribution and employment of the whole of the Engineer staff, and observing that "no consideration of mere territorial occupation or traditional custom may be allowed to stand in the way of a stringent limitation of the use of the members of the Engineer Establishment."

4. To elucidate, as far as possible, this portion of the subject, I am to solicit a reference to Appendices A, B, and C, as also to the annexed index map showing the Civil Districts of this Presidency and their respective areas.

5. In Appendix A will be found the distribution of the establishment as existing on the 1st July 1882 (which is the most convenient date with reference to the returns), the proposed outlay on works under all heads of service, including the undistributed reserve for each division in the current official year, and the percentage cost of establishment as thus shown under "Construction."

6. To admit of an opinion being formed as to the actual duties performed by the divisional staff, Appendices B and C must also be consulted. The first shows, as far as possible, the irrigation works classified under—

(a) Large "Productive works."

(b) Smaller systems consisting, mainly of tanks and channels irrigating over 200 acres each, and provisionally classed as "Imperial."

Appendix C, exhibits the Minor Irrigation Works irrigating each less than 200 acres.

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7. Broadly speaking, all works (a) and (b) fall to the charge of the officers of this Department, who have likewise to maintain all tanks, whether great or small, composing the chains or series crossed by lines of railway. They have, moreover, the duty imposed on them of grouping all reservoirs, irrespective of size, shown in Appendix C—a work of considerable labor.

8. The minor irrigation works not having in all cases been grouped, the returns do not at present admit of giving accurately in detail the numbers, acreage, and revenue of works falling within the charge of the several Public Works Divisions under the reorganization of last year; it has only therefore been found practicable to give the figures according to the Civil Districts. The following however may be taken as affording a fair general view of the distribution of the works and of the interests involved:—

Description.	Number of Works.	Acreage.	Net Revenue.
<i>I.—Under Public Works Officers.</i>			
(See Appendix B.)			
Productive Works (six Irrigation Systems) * ...	1,315	1,781,336	79,53,254
Navigation and Irrigation Works other than Productive ...	3,724	1,505,993	73,48,103
Total Public Works Officers ...	5,039	3,287,329	1,52,81,357
<i>II.—Under Civil Officers.</i>			
(See Appendix C.)			
Minor Irrigation Works ...	19,897	1,936,684	50,29,402
Grand Total under both Departments ...	24,936	5,224,013	2,03,10,759

9. The vast amount of work involved in the proper maintenance of these works and their enormous importance will be more clearly recognized from remarks which will be found further on; but here it may suffice to observe that, in order to estimate even approximately the duties devolving on the several divisional officers, weight must be given to the area over which the works are spread, to their numbers, and to the revenue dependent on them.

10. It may however be doubted whether, in the absence of special local acquaintance with the works, any really correct idea of the duties involved in their maintenance can be formed, as it is needless to say that nothing even approaching to a comparison with the system of water storage in Southern India can be found in any other part of the world; deductions and experiences drawn from other Provinces are in fact wholly inapplicable to the case.

11. It will subsequently be shown that, far from being in adequate strength, the Department is altogether undermanned if due consideration be given to the interests of the irrigation works.

12. Regarding the observations as to the undesirability of allowing considerations of "territorial occupation or traditional custom" to weigh in deciding the distribution of the establishment, I am to request a reference to Appendix D, which affords detailed explanations on this point.

13. No such considerations as those supposed were allowed to weigh in the arrangement of divisions under the last sanctioned normal scale, and there is not, I am to observe, any desire on the part of this Government to permit the perpetuation of any arrangement not wholly regulated by the requirements of the works.

14. Whatever advantages may have been derived from a territorial arrangement of divisions, so long as the Local Fund works were executed by this department, have

* Excluding Sangam Aicut now under construction.

new in nearly all instances ceased to exist, owing to the disconnection with the works which followed on the reduction of establishment in 1879-80.

15. The second point calling for attention is that adverted to in paragraph 2 of your letter No. 1087 G., where it is observed, that a comparison of the percentage of establishment to works in some of the larger Provinces shows that the existing establishment in Madras is by far the most expensive, adding that "the Secretary of State has, on more than one occasion, commented on the extravagance of the Public Works Establishment in Madras."

16. Before dealing with the percentage charge I am desired to submit, in reference to the above quotation, that this Government had previous to the receipt of your letter under reply only on one occasion been made aware of the Secretary of State's opinion, and this, as will immediately be shown, was based on a misconception of the facts of the case.

17. In a despatch* of 1881, his Lordship observed, that an examination of the figures of the Public Works Budgets showed a percentage charge of 84.4 on

works, but in the reply of this Government (despatch No. 41 of 16th July 1881) it was pointed out that had the full and correct figures been before his Lordship he would have seen that the percentage was about 47, and that even this apparently high rate was due, not so much to excessive numbers as to the curtailment of grants for works for this Presidency, to the great area over which works have to be supervised, and to the system adopted in Madras for debiting the charges which did not correspond with that followed in other Provinces under the Government of India.

18. As no rejoinder has been received from the Secretary of State, either to this despatch or to another connected with the same subject, No. 50-2017 W., dated 17th August 1881, it is only reasonable to conclude that his Lordship was satisfied with the explanations afforded. Both despatches were communicated to the Government of India, and special attention was drawn to the subject in my letter No. 2473 W., dated 20th October 1881.

19. In turning now to the point on which the Government of India lay most stress, viz., the high percentage charges for Establishment, I am desired to invite attention to Appendix E, which has been drawn up by the Chief Engineer for the information of this Government.

20. As the Government of India are aware that, for cogent reasons, the force of which has been admitted, it has never been found practicable to create separate branches for the Establishment, viz., for Irrigation, Military Works, General and Local, the result is that artificial arrangements connected with the method of showing the establishment charges, have for convenience in the matter of accounts been adopted under sanction of the Government of India. To avoid the complications inseparable from this method of dealing with the question, and to which previous misapprehensions may readily be traced, the establishment and work charges are now treated for five years, including that now current, as if no separate branches of the Department existed. The work as a whole, is taken as having been carried out by one undivided establishment, an assumption which in the case of this Presidency corresponds in every way with the facts. Any other method would be artificial and quite untrue.

21. The highest percentage in any of the five years examined has been found to be 42.0 without deductions of any kind, and the lowest 29.4. Taking however into account the contributions already conceded by the Government of India, and those which will in all probability be eventually granted on account of percentage due to indirect revenue of Irrigation and Navigation Works, not classed as Productive, the percentages are found to be reduced to 34.5 and 19.6 respectively.

22. Were precisely the same terms, as regards contributions on account of the indirect revenue of the irrigation works, conceded to this Presidency as are understood to prevail in Northern India, and further were the charges for establishments wholly engaged on the projection of famine works struck out of the accounts, as the individuals concerned have no executive duties chargeable to works, His Excellency the

Governor in Council sees no reason to doubt the correctness of the conclusions arrived at by the Chief Engineer, that the charge for the establishment would, as against "works," not exceed 20 per cent.

23. Considering the much more scattered character of the works in Southern India than elsewhere, the percentages as thus worked out would appear to compare not unfavorably with those of other Provinces so far as known, but as the Government is satisfied that a test of this description must prove fallacious and misleading, and only serving to divert attention from the real requirements of this Presidency, they now desire to place before the Government of India the following observations bearing upon this vital point.

24. Hitherto, I am to observe, the facts upon which the strength of the establishment of this department has been decided have mainly been (1) the sums which, after meeting other exigencies, could be conveniently spared to Madras; (2) the percentage charge which, under experience derived from other Provinces, it was held would suffice for an establishment to expend the sums thus placed at disposal.

25. His Excellency in Council, after a careful review of the Finance and Revenue Accounts of India, has been confirmed in the general conclusions submitted for the consideration of the Government of India in my letter No. 337 W., as to the measure meted out to Madras in the matter of assignments from the Imperial Revenue compared with those conceded to other Provinces; and while quite prepared to admit that there have been at times political reasons of sufficient weight to justify the occasional departure from what might appear to be a strictly rateable distribution of the general funds at the disposal of the Government of India, he feels it incumbent on him to submit that such reasons no longer exist, and that the time has arrived for conceding to this Presidency its fair rateable share of the available surplus.

26. His Excellency is fully persuaded that the Government of India will, on consideration, be prepared to admit the justice of a request of this character, for which there are, moreover, very special reasons connected with the peculiar circumstances of this Presidency, to which I am now to invite attention.

27. The first and chief of these is the well-recognized fact that Madras has from time immemorial suffered in a greater degree from destructive famines than any other part of India, while, unlike the Northern Provinces, it has been denied by nature the advantages of internal water communications, afforded by such rivers as the Indus, Ganges, and Brahmaputra with their navigable tributaries.

28. The facts in this connection are, however, too well known and recognized to call for further remark, and I am therefore now to submit, as the second special reason, for consideration the following remarks as to the actual condition of the ancient systems of irrigation works, on the proper maintenance of which the land revenue, and indeed the whole prosperity of the Presidency, mainly depends.

29. In the tours which His Excellency the Governor has since his arrival been enabled to make through various parts of the Presidency, no subject has more constantly been brought to notice in the addresses presented to him, than the need of greater outlay and attention in regard to the minor irrigation works. A précis of the evidence previously taken on the subject and other information of a specific character will, it is hoped, ere long be submitted, with definite proposals, to the Government of India; but, in the meanwhile, I am to solicit attention to Appendix F, which shows in concise form the entire cultivable area of the Presidency, and the losses which have been sustained in the form of remissions of revenue from the year 1863-64 to 1880-81, both inclusive.

30. Not to overburden the statement, areas and assessment are expressed in lakhs of acres and rupees respectively. All the land as shown in the statement has at one time or another been classed as "wet," i.e., had means of irrigation afforded, but as will be observed from the remarks appended to the statement reasons exist in some cases for supposing that the classification is not strictly accurate: making however all desirable reductions on this account the facts revealed are almost startling.

31. Here it will be seen that year after year enormous areas of land which, were the works in order, should be under irrigation and bear wet assessment, are shown to have been thrown out of cultivation from the neglected condition of the tanks and channels. The aggregate losses each year in the opinion of the Revenue officers of Government amount to not less than 40 lakhs. The statement gives the aggregate loss in the 18 years recorded at 807 lakhs, but making all due deductions as above the actual amount, which, had means existed for bestowing proper attention on the works, should have been saved, cannot be estimated at less than 700 lakhs.

32. From the statements before Government the following was the reported condition of the irrigation works in the Presidency in 1879:—

	In Repair.	Out of Repair.	Total No.	Remarks.
Tanks	29,208	6,826	36,034	The figures here given were reported before the lists (Appendix B and C) were compiled and include the many very minor works there omitted.
River Channels	10,160	801	10,961	
Spring Channels	5,393	1,008	6,401	
Anicuts	1,836	515	2,351	
Wells	378,236	58,918	437,154	

33. It is impossible to test in all cases the accuracy of the returns on which these statements have been compiled, but it may generally be assumed that a very large proportion of the works are out of repair; and in regard to this it is necessary to bear in mind that, even where in so-called "repair," but very few tanks or channels are really doing at all the amount of effective work which, under proper scientific investigation and management they should be capable of. The Board of Revenue considered that the term "in repair" merely meant that the works "were not in an absolutely useless state."

34. And this leads to the third point for special consideration as to the claims of this Presidency, viz., the construction of new and extension of the area commanded by old irrigation works, were an adequate engineering staff and enhanced funds placed at the disposal of Government.

35. The following table, taken from page 106 of Sir John and General R. Strachey's late work on the Finances and Public Works of India, amply proves the truth of the observation made by a previous writer (Mr. Buckley) that the Madras works much "more than recoup all the deficiencies" of others of a similar character in India:—

Provinces.	Capital.	Net Revenue.	Interest at 4½ per Cent.	Surplus.	Excess Charge.
	£	£	£	£	£
Bengal	4,980,000	18,000	220,000	...	202,000
North-West Provinces	5,346,000	269,000	237,000	32,000	...
Punjab	3,544,000	170,000	155,000	15,000	...
Madras	1,720,000	427,000	77,000	350,000	...
Bombay	1,333,000	10,000	59,000	...	49,000
Total ...	16,933,000	894,000	748,000	146,000	...

36. Not only have the Madras works languished year after year for want of funds and through insufficient strength of establishment, but, as here shown, ten times the amount have elsewhere been expended, too often with the result of heavy loss to the State. The table however only shows actuals of outlay down to 1879-80, and does not disclose the enormous amount of funds which has been sanctioned for outlay or sunk in lost interest on many of the works in Northern India, which it is

submitted have by no means as great a claim as the Madras works viewed either as Productive or Protective undertakings. It is believed that, in addition to the Capital outlay shown, not less than 15 millions sterling have been lost in interest or sanctioned for the completion of such works as the Sutlej Canal, Lower Ganges Canal, Sone works, &c., whereas Madras past, present and prospective will not have had $2\frac{1}{2}$ millions assigned for its great and highly remunerative works. Some 25 millions sterling have thus been spent or assigned from the Imperial exchequer without, it is believed any probability of the works producing anything approaching to the same results, either as paying schemes or as safeguards against famine as would have been produced from a smaller sum expended in Southern India.

37. From information in possession of the Irrigation Branch there are the best grounds to conclude that the irrigated area of the Presidency might be increased by 1,500,000 acres were the needful means afforded, and with every prospect of returns, which if not quite on a par with those derived from the productive works constructed at an earlier period, would in all probability prove much more remunerative than works of a corresponding class in other parts of India.

38. With a thoroughly trained and sufficiently strong establishment there is thus a well-founded hope that much of the sufferings due to famine might in future be counteracted, that 40 lakhs of annual remissions of revenue might be saved, and that some $1\frac{1}{2}$ millions of acres, with a revenue value of 60 lakhs per annum, might be added to the irrigated area.

39. There are other objects of a special character of hardly less importance to be attained, if the Government is to fulfil in any adequate sense the duties imposed on it. Chief among these stands the need of works of water-supply and drainage for certain large centres of population which are quite beyond the local means to execute. In reference to this the Secretary of State has lately, at the instance of the Army Sanitary Commission, pressed on the serious attention of this Government the necessity of coming to the aid of the Madras Municipality which is unable to complete from its own resources the needful works. The condition of matters at the Presidency town is little short of a disgrace to any civilized Government, and matters in other large centres are if anything in a worse condition. As the papers in connection with Madras will ere long be submitted through the Government of India for the information of the Secretary of State, His Excellency the Governor-General in Council will be enabled to see how very pressing is the need for action.

40. If it be inquired how sufficient ways and means are to be provided for meeting all the demands as above set forth for this Presidency, I am to state that nothing further is needed in the opinion of His Excellency in Council than such a re-adjustment of the Imperial charges as will throw upon Madras only its ratable share. From the Finance and Revenue Accounts, 1863-64 to 1879-80, it can be shown that this Presidency has hitherto contributed more than 22 per cent. of the Imperial charges—a disproportion so marked, whether judged from the stand point of Provincial receipts, land revenue or population, as to call for most careful consideration.

41. That such is also clear from the assignments made under the late decentralization scheme, it has only to be stated that, whereas 38·48 of the land revenue has been conceded to Bengal, 43·29 to the Punjab, 48·46 to the Central Provinces, 49·82 to Assam, 33·61 to British Burma, and no less than 58·55 to Bombay,* only 28·9 per cent. has been granted to this Presidency.

42. If the inequalities in the incidence of the public burdens which have hitherto obtained, and which, in the opinion of His Excellency the Governor in Council, there is no sufficient reason for continuing be removed, and further, if powers be granted for the needful increase of Provincial establishments adequate for the growing demands,

* The percentage is in fact very much higher, as from the manner in which man lands are included in the Bombay land revenues, these in the last 17 years have been swelled by an anomalous asset of no less than 745·7 lakhs, or on an average of 43·3 lakhs per annum. The true amount assigned to Bombay is much more nearly 66·3 of its land revenue.

there should apparently be no difficulty in future in providing for all the most pressing wants of this Presidency or in largely swelling the Imperial revenue derived from many portions of its territory.

I have the honor to be,

Sir,

Your most obedient servant,

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

Exd. S. T. Austin.
Spare Copies

GENERAL
ESTABLISHMENT.

Gobt. of (1882) Madras.
PUBLIC WORKS.

Dated October, 16th.

Recd.

Encl.

16th Oct. 1882, No. 2696 W.

OCTOBER.

No. 98.

Public Works Establishment of
the Madras Presidency.

Regarding the scale of the —

30TH NOVEMBER 1883, No. 3422 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ again—

From G. H. W. WALKER, Esq., Officiating Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 29th January 1883, No. 147 G.

In reply to your letter, No. 2696 W., dated 16th October 1882, comparing the percentage of establishment charges to works in various provinces, in order to show that the cost of the Engineer establishment in Madras is not so high as is supposed in comparison with the work done and with the charges in other provinces, I am directed to state that the Government of India does not attach much importance to comparisons between provinces which are apt to be fallacious in consequence of the different circumstances of each, and am to refer you to paragraphs 9 and 10 of the letter quoted in the margin which deals with this question.

2. I am to add, however, that the Government of India is always ready to consider all proposals on their individual merits, and in the present case it is hoped that the grant recently sanctioned for irrigation purposes in Public Works Department letter, No. 40 L., dated 26th January 1883, will meet all the requirements of the Madras Government.

Note by the Acting Chief Engineer for Irrigation, dated 15th February 1883.
No. 36.

As regards the method of showing land and irrigation revenue in the Imperial accounts, it is understood from Colonel Brownlow that the Financial Department of the Government of India have overruled the Accountant-General, and will not permit any change in the system of exhibiting the accounts of Productive Public Works. I think, myself, that it is a matter of small consequence, if the accounts are intelligible, and accept the Government of India's decision.

2. As to the percentages to be charged for establishment, it is proposed to let the subject rest until the result of Colonel Brownlow's visit is known. His note will deal with this subject fully.

3. The Government of India's letter may lie over till receipt of orders on Colonel Brownlow's note, or be communicated to Chief Engineer, Public Works Department, and Chief Engineer for Irrigation, who can note on it when these orders are received; the letter deals with two subjects, one in each branch.

From Colonel W. S. TREVOR, R.E., Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 16th July 1883, No. 983 G.

In continuation of this office letter, No. 147 G., dated 29th January 1883, I am directed to communicate the following observations regarding the Engineer establishment of the Public Works Department in Madras.

2. It is understood from a note written by Colonel Brownlow when in Madras that the proposals of the Madras Government, in respect of Engineer establishment, may be summarised as follows:—

I. That the permanent establishment of Engineers shall be maintained at its full sanctioned strength.

II. That the allowance for absentees shall be increased from 10 to 20 per cent.

III. That the same percentage shall be allowed on Irrigation Revenue for Public Works establishment in Madras as actually prevails in Upper India, a fair deduction being made for cost of duties performed in Upper India, but not required in Madras.

IV. That a small allowance shall be made on revenue derived from Imperial Irrigation Works, for which neither Capital nor Revenue Accounts are kept, in order to cover cost of general engineering supervision and control of these works, on which upwards of 75 lakhs of rupees of revenue depend.

V. That the balance of establishment charges shall be uniformly distributed over works outlay under all heads.

VI. That the establishment required for the six tank divisions asked for by the Chief Engineer of Irrigation shall be sanctioned as permanent.

3. In respect of No. I of the above requests, I am to observe that including the three officers (Messrs. Lewis, Todd and Joyce) recently transferred from the Government of India to the Madras list, the Madras establishment has been raised up to its sanctioned strength of eighty-three, and that there are no officers now on special leave. Endeavours will be made to transfer another officer on the permanent list to fill the additional post referred to in paragraph 4.

4. In respect of No. II, I am to observe that the figures advanced, in support of the request that the allowance for absentees shall be doubled, refer to only two years, 1881 and 1882, and it is possible that these may have been exceptionally unhealthy, or unfortunate for the Engineer establishment, therefore, before the Government of India can consent to so large an increase in the provision under this head, statistics, extending over a series of at least ten years, should be submitted in proof of the abnormal unhealthiness of Madras and of the necessity of sanctioning such a marked increase in the present allowance for absentees. In the meanwhile, however, I am to say that measures will be taken to increase the allowance for absentees, by calculating it at 10 per cent. on the whole number of 85 sanctioned posts instead of on the 76 posts only of Executive and Assistant Engineers. This will increase the total sanctioned scale of Executive and Assistant Engineers from 83 to 84 or by one post only, which will be transferred, if possible, from some other list.

5. In regard to No. III, I am to observe that analysis of the latest figures furnished by the Government of the North-Western Provinces and Oudh shows that 13.5 per cent. on direct Irrigation Revenue is a sufficient allowance to cover all establishment charges incurred in connection with canal revenue, including those in the Civil department; further, that calculations, made in communication with the Inspector-General of Irrigation, show that 5 per cent. on the same revenue is a fair allowance to cover the cost of duties of detailed measurement and assessment performed in Upper India but not required in Madras; 8.5 per cent. on revenue should, therefore, on the analogy of expenditure in Upper India, be a sufficient allowance to cover all charges connected with canal revenue in Madras, including those in the Civil department. From a consideration of the figures shown further on, the Government of India is, however, willing to allow the present percentage of 6 on Irrigation Revenue collected in the Civil department to stand unaltered, and this percentage may be charged by the Public Works Department on both the revenue derived from outlay incurred by the British Government and on that derived from the old works for which Capital and Revenue Accounts are kept, the Public Works establishment having as much work in connection with the one as with the other. This percentage cannot be allowed on the share of enhanced Land Revenue due to irrigation.

The combined Public Works and Civil charges will then stand at 13.2 per cent. on the revenue, and, having regard to the very large amount of additional work which is covered by almost exactly the same percentage in Upper India, the Supreme Government cannot but consider it a high allowance for Madras. The charge made

in the Civil department (7.2 per cent. on collections) appears especially high, and I am to ask how it has been arrived at, and if it cannot be reduced. In the North-Western Provinces the cost of collecting the canal revenue in great detail amounted during 1881-82 to only 3.06 per cent. of the gross collections.

6. I am to express regret that the Government of India finds itself at present unable to comply with proposals IV and V for the following reasons, but any explanations or further arguments which the Government of Madras may have to advance in support of them will meet with the fullest and most careful consideration.

7. The total estimated cost of the Madras Public Works establishment for the year 1883-84 amounts to Rs. 21,87,356 as shown on page 31 of the Madras Budget Estimate for Provincial Services. From this must be deducted the sum specially provided for establishment for surveys from the Productive Works grant or Rs. 1,12,000 as shown on page 17 of the Madras Budget Estimate for Irrigation and Navigation, Agricultural and Protective Works, and also, the sum of Rs. 65,600 specially provided as the cost of the establishment required for the Tank Maintenance Division (see page 31 of the Madras Budget Estimate for Provincial Services for 1883-84). It is believed that the Tank Division this year will be chiefly if not solely employed in estimating and laying down the plan of future operations. The sum of these two deductions is Rs. 1,77,600, and the balance of the charges for establishment which can properly be attributed to the supervision of works and repairs as well as the distribution of water will consequently amount to Rs. 20,09,756.

8. The outlay on works and repairs to be supervised by the Public Works establishment in Madras in 1883-84 is estimated as follows:—

Imperial.				RS.
Military Works	...	...	...	4,81,737
Civil Buildings, Roads and Services	...	...	...	2,10,450
Irrigation—				
Productive Public Works, Capital Account	...	...	...	11,81,693
Do. do. Revenue Account	...	...	...	6,30,620
Famine Relief Protective Works	...	...	...	64,400
Irrigation and Navigation and Agricultural Works	...	...	...	16,20,560
Total Imperial				41,89,110
Provincial.				
Civil Buildings, Roads and Services	...	...	...	11,07,421
Irrigation and Navigation	...	...	...	2,70,764
Total Provincial				13,78,185
Local.				
Incorporated	...	...	...	43,220
Excluded	...	...	...	31,150
Total Local				74,370
Grand Total				56,41,665

It may be here noted that the figures quoted above include the cost of land, &c., on which no percentage is allowed to be charged to Imperial Funds for establishment, (Public Works Department Code, Chapter XV, Section iv, paragraph 131), as well as the outlay, if any, on works and repairs to be executed by the special establishment referred to in paragraph 7 of this letter. The inclusion of these items is, however, unavoidable as the Government of India is not in possession of the information necessary to eliminate them. These items, however, cannot affect the calculations to any serious extent.

9. Without making any allowance for the credits authorized by the Government of India for supervising revenue operations, the normal charges for establishment for

the year 1883-84, *i.e.*, Rs. 20,09,756, would amount to a little over 35.6 per cent. on the outlay on works and repairs, *i.e.*, Rs. 56,41,665.

10. Going back to the year 1872-73 (the first year after the introduction of the provincialization scheme and for which complete information is available in the Accountant-General's office) it is found that the following Public Works outlay on works and repairs was incurred in Madras by an establishment costing Rs. 20,03,500 :—

Imperial.							RS.
Military Works	...	...	...	...	...	...	5,27,190
Other Services	...	...	...	...	...	...	51,100
Irrigation—							
Productive Public Works	...	...	...	...	...	...	26,850
Ordinary Irrigation and Navigation	...	...	...	...	...	...	21,12,960
Total Imperial							27,18,160
Provincial.							
Other Services	...	...	...	...	...	...	8,87,790
Local.							
Incorporated and Excluded	...	...	...	...	...	...	32,85,560
Grand Total							68,91,510

The percentage of establishment charges in this case was only 29 per cent. on the outlay on works and repairs, and it may be here observed that the year 1872-73 is more favorable to the position assumed by the Government of Madras than the years immediately following, during which the percentages were as follows :—

1873-74	...	...	...	...	...	...	26.0
1874-75	...	...	...	...	...	...	27.1
1875-76	...	...	...	...	...	...	27.0
1876-77	...	...	...	...	...	...	23.6

Government of India, Public Works Department, Circular No. XX of 29th September 1881.

Government of India, Public Works Department, letter No. 101 A.G., dated 20th February 1882.

11. Under the orders cited in the margin in accordance with which the preliminary budget estimates of the Madras Presidency for the year 1883-84 have been prepared, the Imperial Government authorized the calculation of establishment charges on account of revenue

realizations on the following percentage :—

- 5 per cent. on revenue realized from ordinary Public Works.
- 10 per cent. on all direct receipts from Irrigation Works, and
- 6 per cent. indirect revenue due to Productive Public Works realized in the Civil department and credited to the Public Works Department.

12. By the above orders, the Government of Madras was entitled to the following credits based on the estimated figures of the revenue for the year 1883-84 :—

RS.							RS.
5 per cent. on the revenue (Rs. 2,30,000) from ordinary Public Works	...	...	...	...	...	...	11,500
10 per cent. on the direct receipts (Rs. 3,06,650) from Irrigation Works	...	...	...	...	...	...	30,665
6 per cent. on the indirect revenue (Rs. 35,48,500) due to Productive Public Works	...	...	...	...	...	...	2,12,910
Total							2,55,065

If this amount is deducted from the normal cost (Rs. 20,09,756) of the Madras Public Works establishment for the year 1883-84, the balance (Rs. 17,54,691) will represent the amount to be borne by works and repairs which is a little over 31.1 per cent. on the outlay on works and repairs in that year.

13. In accordance with the decision arrived at in paragraph 5 of this letter, an additional credit of Rs. 1,64,490 being 6 per cent. on (Rs. 27,41,500) the revenue due to the old irrigation works has been authorized, which reduces the charge for establishment against the outlay on works and repairs in 1883-84 to Rs. 15,90,201. The percentage which this amount bears to the outlay (Rs. 56,41,665) on works and repairs in 1883-84 is, therefore, only a little over 28.1 per cent.

14. The Government of India is not in a position to say what the precise revenue for irrigation projects classed as Productive Public Works amounted to in 1872-73, but it is believed that no new works have come into operation in the interim, nor has there been any very large extension of existing works. Accordingly if the amount now credited on account of supervision of revenue had been similarly credited in that year, the establishment charges to be borne by works and repairs would have been reduced from Rs. 20,03,500 to Rs. 15,83,945 or a little below 23 per cent. on the outlay on works and repairs in that year.

15. The increased cost of the charges for establishment in Madras as compared with the outlay on works and repairs between the years 1872-73 and 1883-84, *i.e.*, from 23 to 28.1 per cent. is due to the action of the Government of Madras in having placed the greater portion of the outlay on Local Fund works under a separate Local Fund establishment, and to its having reduced the outlay on Provincial works and repairs to a figure considerably below the amount placed at its disposal for these purposes under the provincialization scheme of 1870. If this latter outlay has been, for reasons which may doubtless be good and sufficient, reduced to such an extent as to render the cost of Public Works establishment higher in proportion to the expenditure than previous experience has shown that it need be, the responsibility for this increase clearly rests with the Government of Madras and not with the Government of India.

16. In Public Works Department Resolution No. 3334 of the 14th December 1870, the following amounts were contributed from Imperial to Provincial funds with a view of meeting outlay on Provincial works and repairs now classed under the head "Civil Buildings, Roads and Services" which had heretofore been treated as Imperial :—

RS.							RS.
Roads and Miscellaneous Public Improvements	...	...	...	...	...	...	12,38,800
Civil Buildings	...	...	...	...	...	...	5,85,000
Total							18,23,800

17. The allotment made from Provincial funds under the above heads for the year 1883-84 amount to Rs. 11,07,421 only or Rs. 7,16,439 less than the Imperial contribution for the purpose, *vide* preceding paragraph. If this sum had been made available for outlay on works and repairs in 1883-84, the total grant under those sub-heads in Madras would be increased from Rs. 56,41,665 to Rs. 63,58,104; and supposing that the establishment provided in the budget estimates of Madras for 1883-84 could deal with this additional outlay (apparently this might well be done considering that an establishment costing about the same amount expended Rs. 68,91,510 in 1872-73), the percentage of the establishment charges to works and repairs would be reduced to nearly 25 per cent.

18. The Local Fund outlay in Madras not supervised by the Public Works Department in 1883-84 is estimated at Rs. 41,50,000. If this outlay was still supervised by the Public Works Department establishment as it used to be, it cannot be denied that the percentage of the establishment charges to the outlay on works and repairs would be still further reduced, probably to 20 or at the outside 21 per cent. The permanent reduction of Public Works establishment consequent on removal of this outlay from its charge ought therefore to have been such as to maintain the proportion between cost of establishment and expenditure which originally existed.

19. That the percentage for establishment which falls on Provincial funds is higher than 23 per cent. on the outlay on works and repairs is due entirely as shown above to the action of the Government of Madras, and the Government of India can

1770
12

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see no grounds on which additional Imperial funds should be assigned to Madras in order to reduce the abnormally high percentage.

20. Under the above circumstances, the Government of India considers that the percentage for establishment charges now allowed on Imperial works and repairs is ample, and cannot be increased.

21. The proposal to give the Madras Public Works establishment a small allowance of 3 per cent. on the revenue derived from the Irrigation projects for which neither Capital nor Revenue Accounts are kept, would amount to assigning an additional contribution from Imperial to the Madras Provincial Revenues. The result of any such procedure would be to reduce the percentage of establishment to outlay on works, repairs, &c., and this percentage as shown above would not have been too high had the Madras Government not altered the procedure which was in force when the Provincial scheme was introduced.

The duty of looking after these Irrigation works has been a portion of the duty of the Madras Public Works Department establishment since that department was formed, and it is clear that until the Madras Government altered its procedure in connection with Public Works, no allowance of the nature asked for was needed. Moreover, the Government of India has recently promised to give increased allotments for this class of works for the next few years, which allotments are to provide for the special establishment employed in connection therewith. The additional outlay on these works will, it is hoped, lead to increased Land Revenue and a reduction of remissions, and the provincial revenues will, it is hoped, derive considerable benefit from this source. Under these circumstances the Government of India cannot see its way to grant the Madras Government any further concessions in addition to those now allowed.

22. With regard to proposal VI the Government of India would not object to applying to the Secretary of State, or otherwise providing for a permanent addition of three Executive and six Assistant Engineers for the supervision of expenditure on improvement and development of the Irrigation tanks in the Madras Presidency. This establishment is based on the assumption that subsequent to the expiry of the present Provincial contract, provision will be made for an annual expenditure of 4½ lakhs on tanks. The precise mode of providing for this expenditure will have to be arranged when the terms, upon which the present Provincial contract is renewed, come under consideration.

Office note from the Examiner, Public Works Accounts, dated 9th August 1883, No. 477.

Read—also the following papers:—

Office note from the Examiner, Public Works Accounts, dated 10th August 1883, No. 487.

Office note from the Examiner, Public Works Accounts, dated 21st August 1883, No. 529.

From W. WILSON, Esq., Director of Revenue Settlement and Agriculture, to the Secretary to Government, Public Works Department, dated Madras, 31st August 1883, No. 42.

I have the honor to return the statement received with your endorsement, No. 1743 D., dated 13th current, duly verified and countersigned.

The figures for 1882-83 have been altered to accord with the accounts submitted to Government from this office.

From the same officer, dated Madras, 4th September 1883, No. 44.

I have the honor, in reference to your letter, No. 1646 C., dated 1st current, to forward a statement showing the revenue derived in 1872-73 from the irrigation projects classed as Productive Public Works.

2. The letters referred to in paragraph 2 of your letter were answered in this office Nos. 41-A. and 42, dated 24th and 31st ultimo, respectively.

ENCLOSURE.

STATEMENT showing the Revenue derived from Irrigation Projects classed as Productive Public Works in 1872-73.

Name of Work.	AREA IRRIGATED.		Revenue due to Irrigation.	Deduct portion due to old sources of Irrigation.	Increase of Revenue due to the outlay incurred.	Indirect Receipts.	Total.	Remarks.
	First Crop.	Second Crop.						
Godavari ..	489,666	..	14,98,823	1,23,365	13,75,458	1,43,172	15,23,430	Vide G.O., dated 31st January 1882, No. 72 L.
Kistna ..	228,532	..	6,21,682	81,898	5,42,784	1,03,442	6,46,226	Vide G.O., dated 24th April 1883, No. 347 L.
Canary ..	872,938	64,886	27,74,579	28,41,769	4,32,810	1,13,455	5,46,265	Vide G.O., dated 21st July 1883, No. 574 L.
Pennar ..	50,604	192	1,20,986	67,195	53,851	14,986	68,837	Vide G.O., dated 6th July 1882, No. 517 L.
Sivakantham ..	12,626	3,967	88,398	1,03,793	15,395	102	15,293	Vide G.O., dated 2nd December 1882, No. 977 L.
Total ..	..	..	51,97,268	27,17,960	23,69,308	3,30,217	27,09,525	

N.B.—The figures in large type indicate loss.

ORDER—dated 30th November 1883, No. 3422 W., Public Works.

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

(Here enter No. 3423 W., dated 30th November 1883.)

(True Extract.)

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

To the Chief Engineer for Irrigation, } with copy of letter.
" Financial Department,

Examiner P.W. Accounts
Board of Revenue
Revenue Department

Encl. J. Moses.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of (1883) Madras.
PUBLIC WORKS.

Dated November, 30th.

Recd.

Encl.

G.O., 30th Nov. 1883, No. 3422 W.

NOVEMBER.

Engineer Establishment

Ordering that the observations of the Government of India regarding the — of the Public Works Department in Madras, be replied to.

30TH NOVEMBER 1883, No. 3422 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from

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

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

In continuation of my letter, No. 2239 W., dated 11th August 1883, promising a detailed reply to the several points adverted to in your letter, No. 983 G., dated 16th July 1883, I am desired, by His Excellency the Governor in Council, to submit the following observations.

2. With respect to the request preferred in paragraph 4 of that letter, that statistics of casualties extending over ten years should be submitted, I am directed to invite attention to the annexed Statement A, prepared by the Examiner, showing the number of officers of the Engineer establishment absent from duty on leave, deputation, transfer, casualty, &c., from 1873 to 1882.

The abstract of that statement gives the proportion of effectives to non-effectives for the years in question; columns 2 to 7 bring out the percentages of absentees, as tested by the sanctioned scale; and columns 8 to 11, as shown by the actual number of officers borne on the classified lists.

The results brought out in the last column, showing the minimum number of absentees to have been 16.1 per cent. in 1873, and the maximum 38.5 per cent. in 1880, are clearly those which must be taken as the guide, not those in the left hand columns.

3. It may be observed that the low number of absentees in the four years from 1873 to 1876 is probably due in great measure to the number of young Royal and Cooper's Hill Engineers who then entered the department, and who thus had not put in the qualifying periods for their first furlough.

The rapid rise in the number of absentees to a percentage of 29.4 in 1879, and 38.5 in 1880, is due to the relaxation which necessarily followed in this respect at the close of the famine.

On the whole, the average of the years is 21.4 of non-effectives, which is in excess of the demand previously preferred. As a large number of officers have now put in their qualifying period for the first furlough, it may be expected that the applications will exceed the 20 per cent. named, but His Excellency in Council is still of opinion that this percentage should be adopted as being sufficiently liberal.

4. Under Section 49, Rule 1, Chapter V, of the Civil Leave Code, Covenanted Civil Servants and Military Officers subject to the civil rules are allowed to be absent on furlough to the aggregate of 20 per cent. of actual strength, *exclusive* of those absent on medical certificate and urgent private affairs; and, under the despatch of the Secretary of State, No. 20, of 16th February 1882 (Public, Ecclesiastical), the same ruling has been extended to Chaplains.

Looking to the unhealthiness of the tracts in which engineering operations have frequently to be carried on within this Presidency, and to the exposed character of the service generally, I am to observe that the necessities of the case clearly point to the desirability of allowing a more liberal working margin to this department; and

His Excellency in Council is satisfied that there can be no question as to the necessity for increasing the percentage for non-effectives from ten, as previously sanctioned, to twenty, and trusts that the Government of India may be pleased to sanction this at a very early date, so as to insure the efficient working of the department. During the past year, owing to the insufficient margin for non-effectives, three out of four of the project divisions had to be temporarily closed; and to meet even the most ordinary requirements of the works, other divisions were placed under subordinates, and the whole machine strained in many cases almost to the point of collapse.

5. Adverting to the first portion of paragraph 5 of the letter under reply, I am to observe that, as stated in paragraph 2, Clause III, the proposals of this Government (summarised from Colonel Brownlow's note) were "that the same percentage should be allowed on irrigation revenue for the Public Works establishments in Madras as actually prevails in Upper India;" whereas, in the paragraph adverted to, the allowance is calculated on "an analysis of the latest figures furnished by the Government of the North-Western Provinces and Oudh." The allowance thus made (13.5 per cent. on direct Irrigation Revenue) appears to be the result of working during an exceptionally favorable year, on exceptionally favored works, and to have but little connection with the general percentage actually prevailing in Upper India.

As pointed out by the Chief Engineer, paragraph 33 of Appendix E, letter No. 2696 W., dated 16th October 1882, the percentages calculated from five years' figures, as supplied unofficially by the late Inspector-General of Irrigation Works, ranged from 16.3 per cent. on the Ganges canal to 28.2 on the Upper Sutlej canal; and this, notwithstanding that 25 (not 23 per cent. as now) was charged off against the works for Public Works establishment. It must also be remembered that the scattered nature of the irrigation works of the Madras Presidency imposes on the establishment an amount of work without parallel in other parts of India.

6. Such being the case, His Excellency in Council, whilst not wishing to question in any captious spirit the decision of the Government of India in regard to this point, is compelled to submit that a ruling has thus been applied to the Madras works generally based on results which appear to be of an exceptional character.

7. From the figures which have thus been worked out, the Government of India has allowed, for the future, a contribution of 6 per cent. on the "revenue derived from outlay incurred by the British Government and on that derived from the old works for which Capital and Revenue Accounts are kept," from Imperial, to relieve the charges for establishment as debited to Provincial.

While thankfully accepting the substantial concession thus accorded, His Excellency in Council would still solicit a re-examination, in the light of the above remarks, of the figures by which the result has been arrived at. He would, moreover, in consideration of the frequent representations preferred by this Government, extending over some years, request that its claim to reimbursement on this account be now investigated.

8. In order to show the amount gained by Imperial and lost to Provincial through the delay in settlement of this question, I am to invite a reference to the annexed Statement B, drawn up by the Examiner on the figures for the revenue of the irrigation works in question furnished by the Director of Revenue Settlement and Agriculture. The Examiner has in this statement taken the 6 per cent. on revenue now conceded by the Government of India as the basis of his calculations. The pre-famine and famine years have been set aside, and the calculation of losses thus only commences with the year 1879-80.

The differences between actual charges for establishment on Irrigation and Navigation Works (Imperial) and the true amounts calculated under the late ruling would, as thus shown, be:—

	Provincial.
	Rs.
For 1879-80	+ 22,666
" 1880-81	— 1,48,353
" 1881-82	— 1,65,638
Total lost by Provincial and gained by Imperial ...	2,91,325

This does not represent the total actual loss sustained; but it is at least the amount which, on the percentage now conceded, seems to His Excellency in Council to be fairly claimable as a reimbursement from Imperial to Provincial.

9. As regards the observation made in the second clause of paragraph 5 of the letter under reply, that the charge made in the Civil Department (Madras) (7.2 per cent. on the collections) appears "especially high," and that in the North-West Provinces it amounted in 1881-82 to only 3.06 per cent. of the gross collections, I am to invite a reference to the annexed letter, No. 41 A., dated 24th August 1883, from Mr. Wilson, Director of Revenue Settlement (Appendix C).

That officer shows that the 7.2 per cent., previously adopted, covered charges, and had been determined in a manner having apparently but slight analogy to the supposed corresponding charge given for the North-West Provinces, which again, as in the case adverted to in paragraph 5 above, is in all probability exceptionally low as tested by the ordinary charges for this class of work in Upper India.

Mr. Wilson shows that, were the charges between "Land Revenue" and "Law and Justice" equally divided, the average charge for collection on the Madras works would be only 3.9 per cent., the rates varying from 2.9 for the Kistna to 5.5 for the Chembrambakam tank; whereas, if (as previously proposed by this Government and negatived by the Government of India) the proportion be adopted of two-thirds to "Land Revenue" and one-third to "Law and Justice," the average would be 5.1 per cent., varying from 3.8 for the Kistna to 7.3 for the Chembrambakam tank. This latter is a comparatively small work, and the charge is necessarily high.

10. It does not appear necessary to His Excellency in Council to pursue the investigation of this percentage charge, as it is clear that, owing to the different manner in which the accounts are kept, no reliable comparison can be instituted at present.

11. Turning now to the sixth and following paragraphs of the letter under reply, I am to submit the annexed statements (D) which exhibit the true position of the current year's budget, based on the latest information afforded by the Examiner. By the first of these statements, the total outlay on works supervised by the department under all heads of service is shown to amount to Rs. 63,10,739; or, excluding the Madras Harbour Works, to Rs. 59,38,137. The second statement gives the net cost of establishment, after deducting the various sanctioned contributions, as amounting to Rs. 14,66,427; or, excluding the Madras Harbour Works, to Rs. 14,05,471. The percentage which the establishment charges bear to the total outlay on works is therefore either 23.24 or 23.47, according as the Harbour Works are included or excluded.

Although the inclusion of the Madras Harbour Works has not hitherto been recognised by the Government of India in calculating the percentages, His Excellency in Council is unable to see any valid reason for their exclusion. The work devolving on the Chief and Superintending Engineers, as also on the Examiner, in connection with these operations, has been at least as great as in connection with any other large work under departmental control. Should, moreover, the direct control of the Harbour Works, as lately proposed to the Secretary of State by this Government, be in future vested exclusively in the Chief Engineer, there can no longer be even a technical argument for the expenditure being viewed apart from the general operations of the department.

12. Another material point which I am directed to request may receive special consideration is that, since the formation of the four project divisions, a large body of officers and subordinates have been employed exclusively on the projection of works without any expenditure being as yet shown against those works; and again, it is only of late that the establishment has at all settled down to its normal working, after the sweeping changes which had to be made in carrying out the wholesale reductions of 1879-80. These considerations being allowed the weight which they appear to be entitled to, His Excellency in Council is disposed to think that the Government of India will admit the validity of the conclusions reported in my No. 2696 W., viz., that the charge of the establishment in this Presidency does not exceed 20 per cent.

on "Works" outlay, and is thus distinctly lower than in previous years, and also in all probability lower than in any other province in India.

13. With respect to the remarks contained in paragraphs 15 to 20 of your letter under reply, on the subject of the transfer of Local Fund outlay to a separate agency under the immediate supervision of the Local Fund Boards, I am to point out that this course was unavoidable, inasmuch as, owing to the sudden withdrawal of eight lakhs of the Provincial grant for 1880-81, and the reduction of the Public Works establishment under the orders of the Government of India, the reduced establishment was numerically inadequate to supervise the numerous scattered works to be carried out from Local Funds. The transfer of works of this class for execution by the agency of Local Fund Boards was, moreover, in consonance with the declared policy of the Government of India—a policy which has been emphasised during the interval that has elapsed since the initiative was first taken by the Government of Madras under their Local Fund Act of 1871.

There can be no question that the outlay on Provincial Public Works has diminished since the decentralisation arrangements inaugurated by the Government of India Resolution, No. 2334, of the 14th December 1870, but the causes of this must be looked for under the circumstances of general administration. His Excellency in Council is, however, disposed to think that the encouraging condition of Provincial finance under present arrangements will, in the immediate future, admit of such a development of Public Works expenditure as will place the moderate cost of the supervising agency beyond doubt.

14. With respect to the objections stated in paragraph 21 of your letter under reply to the proposed allowance of 5 per cent. on the revenue derived from the irrigation projects for which neither Capital nor Revenue Accounts are kept, I am to observe that it appears unnecessary to report here the reasons for requiring this contribution,

Vide memorandum by the Chief Engineer for Irrigation, forwarded with letter, No. 266 W., dated 3rd February 1880; also that forwarded with letter, No. 187 L., dated 25th March 1880.

those reasons having been already laid in full before the Government of India. I may add, however, that the arguments used in support of the contribution from "Works for which Capital and Revenue Accounts are kept," to which arguments

the Government of India has acceded, have equal force when applied to the class of "Works for which neither Capital nor Revenue Accounts are kept."

I have the honor to be,

Sir,

Your most obedient servant.

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

FORT ST. GEORGE,
30th November 1883.

Encl. P. L. Pereira.
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GENERAL
ESTABLISHMENT.

Govt. of (1884) Madras.

PUBLIC WORKS

Dated November, 30th.

Recd.

Encl.

30th Nov. 1883, No. 3423 W.

NOVEMBER.

Engineer Establishment

REPLYING to the observations of the
Government of India regarding the --- of
the Public Works Department in Madras.

2ND JUNE 1884, No. 1374 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General
Establishment.

Read again---

Letter from Government of India, dated 16th July 1883, No. 983 G.
Do. do. 20th September 1883, No. 1254 G.

ORDER—dated 2nd June 1884, No. 1374 W., Public Works.

The following letter will be addressed to the Government of India :—

(Here enter No. 1375 W., dated 2nd June 1884.)

(True Extract.)

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

Exd. E. Fernandez.
Spare Copies

GENERAL
ESTABLISHMENT.

Gobt. of (1884) Madras,

PUBLIC WORKS.

Dated June, 2nd.

Recd.

Encl.

G.O., 2nd June 1884, No. 1374 W.

JUNE.

**Madras Engineer Establish-
ment**

Ordered that the Government of India be addressed on the importance of seeing that, in augmenting the strength of the —, the interests of the officers already in that establishment are not in any way allowed to suffer.

2ND JUNE 1884, No. 1375 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

LETTER—from

COLONEL J. SHAW-STEWART,

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

In your letter, dated 16th July 1883, No. 983 G, it was stated that "the Government of India would not object to applying to the Secretary of State or otherwise providing for a permanent addition of three Executive and six Assistant Engineers for the supervision of expenditure on improvement and development of the irrigation tanks in the Madras Presidency;" and in your subsequent letter, dated 20th September 1883, No. 1254 G, it was explained, with advertence to this promise, that "all that the Government of India can undertake to do is to gradually increase the Madras establishment within the next four years, by either transferring officers who may become available from its own lists, or by increasing the number of recruits for Madras, out of the total number arranged for the whole of India." It was added: "Any officer transferred now, or in the future, will carry his own rank in the graded list with him, the Madras list being increased and the list from which he is taken being reduced by one post corresponding to the rank of the officer. It is anticipated that the arrangements consequent on the re-organisation of the Engineer establishment now under consideration will provide that under this arrangement neither the promotion of the officer himself nor of the other officers on the Madras establishment will suffer."

2. What the proposed arrangements were, to which allusion was made, is not known to this Government; but I am directed to state that, unless the interests of the officers now on this establishment can be safeguarded, His Excellency the Governor in Council would prefer that the promised increase to the Public Works Department of this Presidency should be effected by adopting the second of the alternative measures quoted above. Without altogether objecting to the transfer of efficient officers from other lists, an arrangement which might occasionally be convenient, I am to state that this Government, looking to the fact that promotion in its Public Works Department is already very slow, and to other considerations, would greatly prefer to receive the promised additional aid in the shape of a larger proportion of the recruits sent out from England.

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GENERAL
ESTABLISHMENT.

Gobt. of (1884) Madras.

PUBLIC WORKS.

Dated June, 2nd.

Recd.

Encl.

2nd June 1884, No. 1375 W.

JUNE.

Madras Engineer Establish-
ment

Bringing to notice the importance attached to seeing that, in augmenting the strength of the —, the interests of officers already in that establishment are not in any way allowed to suffer.

16TH JUNE 1884, No. 1501 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General
Establishment.

READ—the following letter from A. B. SAMPSON, Esq., Under Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 26th May 1884, No. 638 G. :—

I am directed to acknowledge the receipt of your letter, No. 3423 W., dated

Sanctioned Number of Posts—	30th November last, submitting observa-
Chief Engineers	tions regarding the engineer establish-
Superintending Engineers ...	ment of the Public Works Department in
Executive and Assistant Engineers.	Madras, and to state, in reply to para-
	graphs 2 to 4, that the Government of
	India has been pleased to sanction the
Add 16 per cent	allowance for absentees being raised from
	10 to 16 per cent., which will raise the
	sanctioned number of engineers for the
	province from 90 to 95, as shown in the
	margin, and that endeavours will be made, as soon as possible, to send five engineers
	from the Government of India list to fill the increased number of posts.

2. In reply to paragraphs 5 to 8, I am to say that the whole question of distribution of establishment charges must come up for consideration at no distant date, and that if, as appears probable, it is decided to increase the percentage allowed to cover supervision of maintenance, as compared with that allowed for supervision of new work, the procedure will also be made applicable to Madras ; but that no change can, meanwhile, be allowed in the present procedure. The proposal to open up closed accounts of past years cannot be entertained by the Government of India, as it would entail an amount of inconvenience and correspondence out of all proportion to any benefit likely to result from it.

3. As regards paragraphs 9 and 10, I am to state that the Government of India cannot allow any debit to Productive Public Works Revenue in excess of a fair and reasonable percentage, sufficient to defray all *bond fide* outlay on assessment and collection of irrigation revenue. It is quite plain from Mr. Wilson's letter, appended to your letter under reply, that the 7.2 per cent. charged for assessment and collection of irrigation revenue is very considerably in excess of the real requirements of the case in all but two insignificant systems of irrigation, and the debit must, in future, commencing with the current official year, be reduced to 5 per cent., as any trifling excess of outlay over allowance on the two minor systems above referred to (Pálar andout and Chembrambakam tank) will be amply covered by the excess of allowance over outlay on the other systems.

4. In conclusion, I am to state that the further consideration of the question of distribution of establishment charges between Imperial, Provincial and Local Fund services may very well stand over until the result of the anticipated development of Provincial Public Works expenditure is known.

ORDER—dated 16th June 1884, No. 1501 W., Public Works.

Communicated to the Examiner, Public Works Accounts, and to the Revenue and Financial Departments, with reference to paragraph 3.

2. The Government of India will be addressed in respect to paragraph 1.

(Here enter No. 1502 W., dated 16th June 1884.)

(True Extract.)

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

To the Examiner, Public Works Accounts.

„ Chief Engineer for Irrigation.
„ Revenue Department.
„ Financial „

Exd. E. Fernandez.
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GENERAL
ESTABLISHMENT.

Govt. of (1884) Madras.

PUBLIC WORKS.

Dated June, 16th.

Recd.

Encl.

G.O., 16th June 1884, No. 1501 W.

JUNE.

Engineer Establishment

Letter from the Government of India sanctioning an addition of five engineers to the authorised strength of the Madras — and decreasing the percentage charged for assessment and collection of irrigation revenue to 5 per cent., communicated to the Examiner, Public Works Accounts, and to the Revenue and Financial Departments.

16th JUNE 1884, No. 1502 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

General
Establishment.

LETTER—from

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

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

I am directed to acknowledge the receipt of your letter, No. 638 G., dated 26th May 1884, in paragraph 1 of which an addition of five to the authorised number of engineers for this presidency is sanctioned, the allowance for absentees being raised from 10 to 16 per cent.

2. I am to express the thanks of the Madras Government for the concession thus made by the Government of India.

3. With respect to the arrangement under which it is proposed to provide for the additional posts now sanctioned, I am directed to invite attention to my letter, No. 1375 W., dated 2nd June 1884, and to say that His Excellency the Governor in Council would greatly prefer to receive the additional aid now promised in the shape of a somewhat larger annual allotment to this presidency, during the next few years, of the recruits sent out from England.

4. In the event, however, of an officer being transferred to this presidency from another part of India, I am directed to express the hope that the name of such officer may be retained on his old list for purposes of promotion.

I have the honor to be,
Sir,

Your most obedient servant,

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

OOTACAMUND,
16th June 1884.

Exd. E. Fernandez
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of (1884) Madras.
PUBLIC WORKS.

Dated June, 16th.

Recd.

Encl.

16th June 1884, No. 1502 W.

JUNE.

Engineer Establishment

The Government of India thanked for their sanction of an addition of five engineers to the authorised strength of the Madras — and requested to fill up the additional posts either by an increased annual allotment of the recruits from England or by a transfer of officers whose names are kept on their old lists for purposes of promotion.

APPENDIX A

STATEMENT showing year by year, from 1882, the number of officers of the Engineer Establishment absent from duty, on leave, deputation, transfer, casualty, &c., for the last ten years.

No.	Names	Rank	Nature and cause of leave, absence, &c.	PERIOD OF ACTUAL ABSENCE FROM DUTY.		Period of leave granted, &c.	Remarks.
				From	To		
Absences during the Year 1882.							
Colonel J. Mullins, R.E.	Chief Engineer, 2nd Class	Do.	Furlough, p.a.	1st April 1882	20th Oct. 1882.	1 6 0	Retired in England, 8th January 1883.
Colonel W. Christie, R.E.	Superintending Engineer, 2nd Class	Do.	Special leave	9th Jan. 1880	8th Jan. "	3 0 0	
Lieutenant-Colonel H. Sealley, R.E.	Executive Engineer, 1st Grade	Do.	Do.	2nd Dec. 1879	5th Dec. 1882.	3 0 0	Retired in England, 23rd March 1883.
Major C. Bowen, R.E.	Do.	Do.	Furlough	1st May 1881	4th April 1883.	1 11 4	
Major S. O. Clarke, R.E.	Do.	Do.	Special leave	5th April "	20th Mar. "	2 0 0	
Mr. J. Hannan	Do.	Do.	Furlough	5th Oct. "	23rd Dec. 1882.	2 0 0	
Colonel J. N. Hunter, R.E.	Do.	Do.	Special leave	12th Nov. 1879	23rd Mar. 1883	3 6 0	Retired in England, 23rd March 1883.
Lieut.-Colonel P. Montgomerie, R.E.	Superintending Engineer, 3rd Class	Do.	Furlough	31st Mar. 1881	19th Feb. "	2 0 0	
Major J. L. L. Morris, R.E.	Executive Engineer, 1st Grade	Do.	Furlough, p.a., and extension, m.c.	21st Sept. 1880	24th Oct. "	3 0 0	Extension, m.c., one year and one month.
Captain A. R. F. Dorward, R.E.	Do.	3rd do.	Furlough, p.a.	4th Dec. "	10th Aug. 1882	2 0 0	
Lieut.-Colonel H. M. Vibart, R.E.	Do.	1st do.	Do., and extension, m.c.	14th April 1881	31st Mar. 1883	2 6 0	Extension, m.c., six months.
Major R. Morris, R.E.	Do.	3rd do.	Furlough, p.a.	8th " 1879	29th Mar. "	2 0 0	
Mr. J. Grimes	Do.	4th do.	Furlough	24th May 1881	24th Oct. 1882.	2 0 0	Joined Chatham Depot, 1st May 1883.
Mr. C. J. Peters	Do.	3rd do.	Do.	30th Oct. 1880	18th April 1882	2 0 0	
Captain O. V. Roddy, R.E.	Do.	4th do.	Furlough, p.a.	18th April 1882	15th April 1882.	1 0 0	
Lieutenant R. E. Hamilton, R.E.	Do.	4th do.	Furlough, m.c.	13th Aug. 1881	15th April 1882.	1 0 0	
Mr. de Vinton, W. B.	Assistant Engineer, 1st Grade	Do.	Do.	24th May 1882.	" "	2 0 0	Services placed at the disposal of Foreign Department.
Captain C. H. M. Kensington, R.E.	Executive Engineer, 3rd do.	Do.	Foreign Department	14th Feb. "	" "	" "	
N. Rathamabapathy Pillay	Do.	1st do.	Sick leave in India	29th Nov. "	10th Jan. 1883.	0 1 13	Furlough in and out of India.
Captain L. Langley, R.E.	Do.	4th do.	Furlough, p.a.	25th Jan. "	" "	2 0 0	
Mr. E. B. Hanson	Assistant Engineer, 1st do.	Do.	Furlough, m.c., extension, m.c.	12th "	25th July 1883.	1 6 0	Resigned his appointment, 25th July 1883.
Mr. R. H. Dorman	Do.	2nd do.	Special leave on urgent p.a.	1st April "	1st Oct. 1882.	0 6 0	
Mr. W. Hughes	Executive Engineer, 3rd do.	Do.	Furlough in India, m.c.	28th July "	25th Sept. "	0 2 0	On special duty. Vizagapatnam-Rampur Railway Survey.
Mr. K. F. Nordmann	Do.	2nd do.	Special duty	1st Sept. 1881	1st May "	" "	
Major W. H. Coaker, R.E.	Do.	2nd do.	Military examination leave, &c.	12th April 1882	10th Oct. "	" "	Special leave by Secretary of State, 12th July 1882 to 4th August 1882.

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Statement showing year by year, from 1862, the number of officers of the Engineer Establishment absent from duty, &c.--(Continued).

No.	Names	Rank.	Nature and cause of leave, absence, &c.	Period of actual absence from duty		Period of leave granted, &c.	Remarks.
				From	To		
Absences during the Year 1882—cont.							
Major R. R. E. Drake-Evckman, R.E.	Executive Engineer, 2nd Grade	Executive Engineer, 2nd Grade	Military examination leave	13th April 1882	11th June 1882	2 0 0	Military examination leave, 6th August 1882 to 10th October 1882
Lieutenant-Colonel H. R. Mead, R.E.	Superintending Engineer, 2nd Class	Superintending Engineer, 2nd Class	Special duty	23rd Sept.	26th Oct.	2 0 0	Military examination leave, 6th February 1882 to 3rd March 1882
Mr. E. H. Partridge	Executive Engineer, 3rd Grade	Executive Engineer, 3rd Grade	Deceased	14th Feb.	15th Mar.	1 0 0	On Special duty at Travancore.
Captain A. Awdry, R.E.	Do.	Do.	Civil Department	30th May	..	..	Deceased, 30th May 1882
..	..	..	..	5th Nov. 1881	..	..	Services placed at the disposal of Civil Department.
Absences during the Year 1883.							
Major C. Bowen, R.E.	Executive Engineer, 1st Grade	Executive Engineer, 1st Grade	Furlough	1st May 1881	4th April 1882	1 11 4	..
Colonel J. O. Hasted, R.E.	Chief Engineer, 2nd Class (temporary rank)	Chief Engineer, 2nd Class (temporary rank)	Furlough, p.a.	8th April 1879	2nd .. 1881	2 0 0	..
Colonel W. Chrystie, R.E.	Superintending Engineer, 2nd Class	Superintending Engineer, 2nd Class	Special leave	8th Jan. 1880	8th Jan. 1880	2 0 0	Retired in England, 8th January 1880
Colonel W. H. Burton, R.E.	Executive Engineer, 1st Grade	Executive Engineer, 1st Grade	Do.	1st .. 1879	31st July 1881	2 0 0	..
Major S. C. Clarke, R.E.	Do.	Do.	Military duty	5th Nov. 1879	20th Mar. 1883	2 0 0	..
Colonel J. N. Hunter, R.E.	Do.	Do.	Special leave	12th ..	23rd Mar. 1883	3 0 0	Retired in England, 23rd March 1883
Lieutenant-Colonel P. Montgomery, R.E.	Do.	Do.	Furlough	31st Mar. 1881	19th Feb.	2 0 0	..
Major J. L. L. Morant, R.E.	Superintending Engineer, 3rd Grade	Superintending Engineer, 3rd Grade	Furlough, p.a.	21st Sept. 1880	..	2 0 0	..
Lieutenant-Colonel C. J. Smith, R.E.	Executive Engineer, 1st Grade	Executive Engineer, 1st Grade	Extension, m.c.	24th April 1880	23rd Oct. 1881	1 1 0	..
Major A. T. Fraser, R.E.	Do.	Do.	Furlough, p.a.	2nd Dec. 1879	5th Dec. 1882	3 0 0	..
Lieutenant-Colonel H. M. Vibart, R.E.	Do.	Do.	Special leave	6th Sept.	21st Mar. 1881	1 0 0	..
Major R. R. E. Drake-Evckman, R.E.	Do.	Do.	Furlough, p.a.	11th April 1881	..	2 0 0	..
Mr. J. Hannan	Do.	Do.	Extension, m.c.	27th May 1880	31st July 1881	2 0 0	..
Major R. F. Morris, R.E.	Do.	Do.	Furlough	6th Oct. 1881	12th Dec. 1882	2 0 0	..
Mr. A. S. Russell	Do.	Do.	Furlough, p.a.	8th April 1879	31st Mar. 1883	2 0 0	..
Captain A. R. F. Doreward, R.E.	Executive Engineer, 4th Grade	Executive Engineer, 4th Grade	Special furlough leave and extension, m.c.	4th Feb. 1880	29th Oct. 1881	1 0 0	..
Mr. C. Vincent	Do.	Do.	Do.	4th Dec.	10th Aug. 1882	2 0 0	Joined Chatterjee, 10th Aug. 1882
Mr. J. Grimes	Do.	Do.	Do.	24th May 1881	10th May 1883	2 0 0	..
Mr. C. J. Peters	Do.	Do.	Do.	20th Oct. 1880	17th Oct. 1882	2 0 0	..
Lieutenant R. E. Hamilton, R.E.	Do.	Do.	Do.	13th Aug. 1880	15th April	1 0 0	..
(Sub. pro. tem.)							
Absences during the Year 1880.							
Captain A. Awdry, R.E.	Executive Engineer, 2nd Grade	Executive Engineer, 2nd Grade	Furlough, p.a.	14th April 1881	31st Oct. 1881	2 0 0	Services placed at the disposal of Civil Department, and appointed as Private Secretary to His Excellency the Governor of Madras, 31st Oct. 1881.
Captain and Deputy Commissary W. Jackson	Assistant Engineer, 1st do.	Assistant Engineer, 1st do.	Furlough, m.c.	5th Mar. 1879	3rd Jan.	2 0 0	Joined Public Works Department from field duty, 27th Jan. 1881.
Captain O. V. Boddy, R.E.	Executive Engineer, 4th do.	Executive Engineer, 4th do.	Military duty	14th Jan.	27th ..	..	On special duty, Vizagapatnam-Railway Survey.
Captain O. C. Rowan, R.E.	Do.	Do.	Do.	23rd ..	23rd ..	..	..
Mr. R. E. Nordmann	Do.	Do.	Special duty	1st Sept. 1881	1st May 1882	..	..
Colonel J. O. Hasted, R.E.	Chief Engineer, 2nd Class	Chief Engineer, 2nd Class	Furlough, p.a.	8th April 1879	2nd April 1881	2 0 0	..
Colonel W. Chrystie, R.E.	Superintending Engineer, 2nd Class	Superintending Engineer, 2nd Class	Special leave	6th Jan. 1880	8th Jan. 1880	2 0 0	..
Colonel W. H. Burton, R.E.	Executive Engineer, 1st Class	Executive Engineer, 1st Class	Do.	1st Jan. 1879	31st July 1881	2 0 0	..
Mr. J. E. Paul	Do.	Do.	Do.	12th Nov. 1879	27th Mar. 1883	3 0 0	..
Major J. L. L. Morant, R.E.	Assistant Engineer, 1st do.	Assistant Engineer, 1st do.	Special furlough leave	26th April 1880	20th Oct. 1880	2 0 0	..
Lieutenant-Colonel H. Smalley, R.E.	Executive Engineer, 1st do.	Executive Engineer, 1st do.	Furlough, p.a.	21st Sept.	16th .. 1880	2 0 0	..
Lieutenant-Colonel C. J. Smith, R.E.	Do.	Do.	Special leave	2nd Dec. 1879	5th Dec. 1882	2 0 0	..
Major A. T. Fraser, R.E.	Do.	Do.	Furlough, p.a.	24th April 1880	20th Oct. 1881	1 0 0	..
Major R. R. E. Drake-Evckman, R.E.	Do.	Do.	Do.	9th Sept. 1879	21st Mar.	1 0 0	..
Major R. F. Morris, R.E.	Do.	Do.	Furlough to India	23rd May 1880	31st July	2 0 0	..
Major R. E. Drake-Evckman, R.E.	Do.	Do.	Furlough, p.a.	8th April 1879	31st Mar. 1883	2 0 0	..
Mr. R. W. Morris	Do.	Do.	Do.	12th Jan.	22nd Sept. 1880	1 0 0	..
Captain A. R. F. Doreward, R.E.	Do.	Do.	Furlough	4th Dec. 1880	19th Aug. 1882	2 0 0	Retired while on furlough, 31st March 1880, but re-appointed 1st August 1881.
Mr. C. J. Peters	Do.	Do.	Military duty	22nd .. 1879	7th Nov. 1880	2 0 0	..
Captain and Deputy Commissary W. Jackson	Assistant Engineer, 1st do.	Assistant Engineer, 1st do.	Furlough, m.c.	20th Oct. 1880	17th Oct. 1882	2 0 0	..
Mr. W. Hughes	Executive Engineer, 4th do.	Executive Engineer, 4th do.	Do.	5th Mar. 1879	3rd Jan. 1881	2 0 0	..
Mr. A. S. Russell	Do.	Do.	Furlough	21st April 1878	17th April 1880	2 0 0	..
Lieutenant-Colonel H. R. Mead, R.E.	Superintending Engineer, 2nd Class	Superintending Engineer, 2nd Class	Special furlough leave and extension, m.c.	4th Feb. 1880	26th Oct. 1881	1 0 0	..
Mr. C. Vincent	Executive Engineer, 4th Grade	Executive Engineer, 4th Grade	Special furlough leave	25th Mar. 1879	23rd Mar. 1880	1 0 0	..
Lieutenant-Colonel J. Reatty, R.E.	Superintending Engineer, 1st Class	Superintending Engineer, 1st Class	Furlough, p.a.	26th Oct. 1880	28th April 1881	0 0 0	..
Colonel W. T. F. Farewell, M.S.C.	Do.	Do.	Do.	13th July 1878	10th July 1880	2 0 0	Retired while on furlough from 19th Oct. 1880.
Lieutenant and Assistant Commissary G. F. Wiffen	Assistant Engineer, 1st Grade	Assistant Engineer, 1st Grade	Do.	8th April 1879	9th Jan.	2 0 0	Retired from 23rd Nov. 1880.
Major J. W. Huddle, M.S.C.	Executive Engineer, 2nd do.	Executive Engineer, 2nd do.	Furlough, m.c.	13th July	12th July	2 0 0	Services replaced at the disposal of Military Department from 13th July 1880.
Mr. J. D. Grant	Do.	Do.	Do.	21st Oct.	4th Aug.	2 0 0	..
Mr. W. Hughes	Do.	Do.	Do.	21st April	17th April	2 0 0	..
Lieutenant A. W. Smart, R.E.	Do.	Do.	Do.	13th .. 1879	26th Nov.	2 0 0	..
Mr. G. P. Carless	Assistant Engineer, 2nd do.	Assistant Engineer, 2nd do.	Special furlough leave	20th Mar. 1880	19th Sept.	0 0 0	Deceased while on furlough, 11th July 1880.
Mr. H. B. Hutchings	Do.	Do.	Furlough, m.c.	7th Dec. 1878	11th July	1 0 0	..
Mr. B. C. Barton	Executive Engineer, 1st do.	Executive Engineer, 1st do.	Do.	25th Mar.	..	0 0 0	Deceased while on furlough, 11th July 1880.
Captain L. Langley, R.E.	Do.	Do.	Military duty	29th Jan.	4th Nov. 1880	..	Extra on Madras Engineer Establishment, Chief Engineer, Travancore.
Services placed at the disposal of Military Department.							

Statement showing year by year, from 1882, the number of officers of the Engineer Establishment absent from duty, &c.—(Continued).

No.	Names.	Rank.	Nature and cause of leave, absence, &c.	Period of actual absence from duty.		Period of leave granted, &c.	Remarks.
				From.	To.		
Absentees during the Year 1879—cont.							
Mr. R. E. Norfor	Executive Engineer, 3rd Grade	Do.	Retired	16th Oct. 1879.	"	Y. M. D.	Specially retired, 16th Oct. 1879. Do. do. 24th Oct. 1879. Deceased.
Mr. R. J. Lowry	Do.	Do.	Do.	24th "	"	"	
Absentees during the Year 1878.							
Lieutenant-Colonel J. Peatty, R.E.	Superintending Engineer, 1st Class.	Do.	Furlough, p.a.	13th July 1878.	10th July 1880.	2 0 0	Employed as a member of the Finance Committee in the Military Department.
J. F. Fischer, R.E.	Executive Engineer, 1st Grade	Do.	Special duty	2nd " 1877.	5th Dec. 1878.	2 0 0	Retired from 31st Dec. 1878.
Colonel W. H. Burton, R.E.	Do.	Do.	Do.	15th Jan. 1878.	31st "		Services placed at the disposal of Military Department.
Colonel A. S. Moberly, R.E.	Do.	Do.	Furlough, p.a.	9th April "		1 0 0	Retired while on furlough.
Major J. W. Hindle, M.S.O.	Do.	Do.	Do.	13th July "	12th July 1880.	2 0 0	
Naylor A. C. Smith, R.E.	Do.	Do.	Do.	22nd June 1877.	7th June 1879.	2 0 0	
Mr. E. H. Pringle	Do.	Do.	Do.	20th May 1878.	24th Nov. "	1 0 0	
Captain D. McNeil Campbell, R.E.	Do.	Do.	Do.	29th April 1877.	22nd Mar. "	2 0 0	
Mr. G. R. Leggett	Do.	Do.	Do.	29th Sept. 1878.		2 0 0	
Mr. R. F. Nordmann	Do.	Do.	Do.	12th April "	12th May 1878.	0 1 0	
Mr. J. D. Grant	Do.	Do.	Do.	21st Oct. "	4th Aug. 1880.	2 0 0	
Mr. W. Hughes	Do.	Do.	Do.	17th April "	17th April "	2 0 0	
Mr. J. C. Larnie	Do.	Do.	Do.	12th Mar. 1877.	28th Jan. 1879.	2 0 0	
Mr. J. N. Grainger	Do.	Do.	Do.	1st June 1878.	5th Nov. "	2 0 0	
Lieutenant and Deputy Assistant Commissary G. E. Wiffen.	Assistant Engineer, 1st Grade	Do.	Do.	14th Mar. "	4th Jan. 1880.	2 0 0	
Mr. W. Jopp	Do.	Do.	Do.	16th May "	18th Dec. 1878.	0 7 1	Services placed at the disposal of Military Department.
Captain C. B. Henderson, R.E.	Executive Engineer, 2nd Grade (sub. pro tem.)	Do.	Military duty	22nd Dec. "	13th Oct. 1880.		
Lieutenant-Colonel H. Hunter, R.E.	Executive Engineer, 1st Grade	Do.	Furlough, p.a.	13th July 1878.	26th June 1878.	2 0 0	
Mr. A. C. Lawford	Do.	Do.	Do.	5th May "	30th April "	2 0 0	
Mr. P. O'Regan	Do.	Do.	Do.	29th April 1877.	1st Oct. 1879.	2 0 0	
Mr. W. A. Goodship	Do.	Do.	Do.	21st Aug. "	26th Aug. 1878.	1 0 0	
Mr. R. E. Norfor	Do.	Do.	Do.	13th Oct. "	17th April "	2 0 0	
Mr. G. D. Webster	Do.	Do.	Do.	22nd Sept. "	6th Oct. "	2 0 0	
Mr. J. W. Martin	Do.	Do.	Do.	1st June 1878.	20th May "	2 0 0	
Mr. J. M. Bell	Do.	Do.	Do.	5th May "	24th Mar. "	2 0 0	
Mr. R. Brinkwell	Do.	Do.	Do.	17th Aug. 1877.	12th May "	2 0 0	
Mr. C. B. Norfor	Do.	Do.	Do.	21st May "	23rd Aug. "	2 0 0	Deceased, 23rd August 1878.
Major-General C. V. Wilkinson, R.E.	Superintending Engineer, 1st Class	Do.	Do.	24th July 1878.			Re-transferred to Military Department.
Lieutenant P. B. Bellwin, R.E.	Assistant Engineer, 2nd Grade	Do.	Do.	24th July 1878.			
Absentees during the Year 1877.							
Mr. L. P. Parnier	Executive Engineer, 2nd Grade	Do.	Furlough, m.c.	11th Dec. 1878.	18th Oct. 1879.	1 0 0	Services placed at the disposal of Military Department.
Captain A. R. F. Doreward, R.E.	Do.	Do.	Military duty	22nd "	7th Nov. 1880.		Retired from 31st December 1878, and services placed at the disposal of Military Department.
Colonel E. J. Moberly, R.E.	Do.	Do.	Retired	31st "			Services placed at the disposal of Military Department.
Mr. A. W. Hunter	Assistant Engineer, 1st Grade	Do.	Dismissed	24th "			Services placed at the disposal of Military Department.
Lieutenant H. H. D. Love, R.E.	Do.	Do.	Military duty	4th Aug. 1878.	7th Aug. 1878.		Retired, 6th July 1878.
Lieut.-Colonel G. V. Law	Executive Engineer, 2nd Grade	Do.	Retired	26th April "	3rd May "		Services placed at the disposal of Military Department.
Roos-Thompson, R.E.	Do.	Do.	Military duty	8th Sept. "	5th Oct. "		Do. do.
Lieutenant R. E. Hamilton, R.E.	Do.	Do.	Do.	6th July "	9th Nov. 1880.		Do. do.
Captain C. C. Rawson, R.E.	(sub. pro tem.)	Do.	Do.	18th Dec. "	29th April "		Do. do.
Mr. H. F. Gully	Assistant Engineer, 2nd Grade	Do.	Do.	14th "	23rd Jan. 1881.		Do. do.
Lieut.-Colonel J. Goddard, R.E.	Executive Engineer, 1st Grade	Do.	Furlough, p.a.	13th April "		2 0 0	Retired under G.O. No. 8 of 1877.
Lieutenant and Deputy Assistant Commissary J. Lovett	Assistant Engineer, 2nd Grade	Do.	Do.	15th "			Transferred to the Finance Establishment, 20th January 1878.
Major-General G. W. Walker, R.E.	Chief Engineer, 1st Class	Do.	Do.	1st Dec. 1877.	20th Jan. 1878.		Tour of office is extended to 31st January 1877, and permitted to return to Europe on the 2nd April 1877.
Colonel E. A. Ford, R.E.	Do.	Do.	Do.	2nd April 1877.		1 11 25	Retired in England in 1877.
Lieut.-Colonel R. A. Roberts, R.E.	Superintending Engineer, 2nd Grade	Do.	Furlough	14th Aug. 1878.	7th April 1877.	2 0 0	
Mr. G. T. Walsh	Superintending Engineer, 2nd Grade	Do.	Furlough	22nd May "		2 0 0	
Lieut.-Colonel J. F. Fischer, R.E.	Executive Engineer, 1st Grade	Do.	Do.	17th Jan. 1877.		2 0 0	
Major-General C. V. Wilkinson, R.E.	Superintending Engineer, 1st Grade	Do.	Do.	22nd Feb. "	5th Dec. 1878.	2 0 0	Retired under G.O. No. 8 of 1877.
Mr. J. W. Rendall	Superintending Engineer, 2nd Class (temporary rank).	Do.	Furlough	2nd July 1877.	25th June 1878.	2 0 0	Deceased in 1878.
Mr. A. C. Lawford	Executive Engineer, 1st Grade	Do.	Do.	14th July 1878.	22nd May 1877.	2 0 0	
Major J. F. Fenwick, R.E.	Do.	Do.	Do.	22nd "		2 0 0	
Major J. W. Hindle, M.S.O.	Do.	Do.	Do.	23rd April 1877.	1st Oct. 1879.	1 10 0	
Mr. K. F. Nordmann	Do.	Do.	Do.	8th May 1879.	7th Sept. 1877.	0 0 0	
Mr. O. A. Hayne	Do.	Do.	Do.	10th Dec. 1878.	18th June "	1 4 14	
Mr. G. D. Wyckow	Do.	Do.	Do.	4th July 1877.	4th Aug. "	1 0 0	
Mr. R. E. Norfor	Do.	Do.	Do.	26th Oct. 1876.	17th Sept. "	0 0 0	
Mr. F. Brinkwell	Do.	Do.	Do.	12th Oct. 1877.	11th April 1878.	0 0 0	
	Do.	Do.	Do.	1st June 1876.	20th May "	2 0 0	
	Do.	Do.	Do.	22nd Sept. 1877.	6th Oct. "	2 0 0	
	Do.	Do.	Do.	6th May 1878.	1st May "	2 0 0	

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Statement showing year by year, from 1882, the number of officers of the Engineer Establishment absent from duty, &c. — (Continued).

No.	Names.	Rank.	Nature and cause of leave, &c.	Period of absence from duty.		Period of leave granted, &c.	Remarks.
				From.	To.		
Absences during the Year 1877.—cont.							
Mr. J. W. Martin	Executive Engineer, 3rd Grade	Do.	Furlough	10th Sept. 1876	4th Sept. 1878	1 11 25	Transferred to Pension Establishment.
Mr. J. O. Larnie	Do.	Do.	Do.	12th Mar. 1877	24th Jan. 1879	2 0 0	
Mr. J. M. Bell	Do.	Do.	Do.	20th Jan. 1877	20th Mar. 1878	2 0 0	
Mr. C. H. J. Norcor	Do.	Do.	Do.	17th Aug. 1877	17th May "	0 0 0	
S. Subroyachariar, R.E.	(Temporary) Assistant Engineer, 1st Grade	Do.	Do.	12th Dec. 1876	12th June 1877	0 0 0	Dec. 11th, December 1877.
Mr. H. F. Gully	Do.	Do.	Do.	11th June 1877	21st Sept. "	1 0 0	
Mr. J. E. Paul	Do.	Do.	Do.	18th May 1877	18th Aug. "	0 0 0	
Mr. P. O. Radigan	Executive Engineer, 3rd Grade	Do.	Furlough, m.c.	21st Aug. 1877	20th Aug. 1878	1 0 0	
Lieut.-Colonel H. Snoddy, R.E.	Do.	Do.	Do.	24th May 1878	24th Apr. "	2 0 0	Appointed Superintendent of Revenue Survey Department, 15th February 1877.
Major A. C. Smith, R.E.	Do.	Do.	Do.	22nd June 1877	7th June 1879	1 0 0	
Captain and Deputy Commissary F. Graham.	Do.	Do.	Do.	1st May 1877	11th Nov. 1877	0 0 0	
Lieutenant and Deputy Assistant Commissary J. Lever.	Do.	Do.	Do.	11th Dec. 1876	11th Dec. 1877	1 0 0	
Mr. A. J. Chancelor	Executive Engineer, 1st Grade	Do.	Do.	12th Feb. 1877	12th Feb. 1877	1 0 0	Resigned his appointment, 12th April 1877.
Lieut.-Colonel A. de C. Scott, R.E.	Do.	Do.	Do.	12th Apr. 1877	12th Apr. 1877	1 0 0	
Mr. A. O. Hayne	Assistant Engineer, 1st Grade	Do.	Do.	20th May 1876	1st May 1877	0 0 0	
Mr. E. O. Bowyer Smith	Superintendent Engineer, 1st Grade	Do.	Do.	12th June 1876	12th June 1877	0 0 0	
Lieut.-Colonel R. P. Oakes	Executive Engineer, 1st Grade	Do.	Do.	12th Aug. 1877	12th Aug. 1877	1 0 0	Dec. 11th, December 1877.
Mr. G. J. Drenier	Do.	Do.	Do.	1st Jan. 1878	1st Jan. 1878	1 0 0	
Colonel E. A. Peard, R.E.	Chief Engineer, 1st Class	Do.	Do.	14th Aug. 1876	7th Apr. 1877	1 11 25	
Colonel R. A. Roberts, R.E.	Superintendent Engineer, 3rd Grade	Do.	Do.	22nd May 1877	22nd May 1877	2 0 0	
Colonel J. Goddard, R.E.	Executive Engineer, 1st Grade	Do.	Do.	10th Apr. 1878	10th Apr. 1878	2 0 0	Dec. 11th, December 1877.
Mr. W. S. Harrington	Do.	Do.	Do.	17th May 1878	17th May 1878	1 0 0	
Mr. E. F. Chisholm	Do.	Do.	Do.	22nd May 1878	22nd May 1878	2 0 0	
Mr. J. W. Randall	Superintendent Engineer, 2nd Grade	Do.	Do.	22nd May 1878	22nd May 1878	2 0 0	
Major H. W. Wood, R.E.	Superintendent Engineer, 3rd Grade	Do.	Do.	1st June 1878	1st June 1878	2 0 0	Dec. 11th, December 1877.
Lieut.-Colonel P. Montgomery, R.E.	Superintendent Engineer, 3rd Grade	Do.	Do.	17th Mar. 1878	17th Mar. 1878	2 0 0	
Major J. W. Hinde, M.S.O.	Executive Engineer, 2nd Grade	Do.	Do.	18th Dec. 1878	18th Dec. 1878	1 4 2	
Mr. G. T. Walsh	Officiating Superintending Engineer, 3rd Grade	Do.	Do.	22nd Feb. 1878	22nd Feb. 1878	2 0 0	
Absences during the Year 1878.							
Lieut.-Colonel R. B. Kennedy, R.E.	Executive Engineer, 2nd Grade	Do.	Do.	2nd July 1878	20th May 1879	0 0 0	On special duty to Europe.
Captain A. Andry, R.E.	Do.	Do.	Do.	19th July 1878	19th July 1878	0 0 0	
Mr. H. Lyon	Assistant Engineer, 1st Grade	Do.	Do.	25th July 1878	25th July 1878	1 0 0	
Mr. E. Bowyer Smith	Do.	Do.	Do.	25th July 1878	25th July 1878	1 0 0	
Lieut.-Colonel C. J. Smith, R.E.	Executive Engineer, 1st Grade	Do.	Do.	16th Dec. 1878	16th Dec. 1878	1 0 0	Services placed at the disposal of Military Department.
Colonel H. L. Prendergast, R.E.	Superintendent Engineer, 1st Grade	Do.	Do.	13th May 1879	13th May 1879	2 0 0	
Colonel J. N. Hunter, R.E.	Executive Engineer, 1st Grade	Do.	Do.	19th July 1878	19th July 1878	2 0 0	
Major J. Pennington, R.E.	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Mr. K. F. Nordman	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	Do.
Mr. C. A. Harris	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Mr. G. P. Wybow	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Mr. F. Buckwell	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Mr. J. W. Martin	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	Services replaced at the disposal of Military Department.
Mr. J. M. Bell	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
S. Subroyachariar, R.E.	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Mr. H. F. Gully	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Mr. P. O. Radigan	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	Do.
Mr. A. W. Paynter	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Lieut.-Colonel H. Snoddy, R.E.	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Lieut.-Colonel R. P. Oakes, R.E.	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Lieutenant E. W. Cotter	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	Do.
Mr. J. M. Harkaway	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Lieutenant W. G. Brown	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Mr. R. Smith	Do.	Do.	Do.	25th July 1878	25th July 1878	2 0 0	
Absences during the Year 1879.							
Colonel W. J. F. Farwell, S.O.	Superintendent Engineer, 1st Grade	Do.	Do.	13th April 1879	6th Dec. 1879	2 0 0	Exchanged service with a Major of the Imperial Battalion.
Colonel E. A. Peard, R.E.	Chief Engineer, 1st Class	Do.	Do.	14th Aug. 1879	7th Apr. 1877	1 11 25	
Lieut.-Colonel R. P. Oakes, R.E.	Superintendent Engineer, 1st Grade	Do.	Do.	26th Sept. 1879	21st Sept. 1879	2 0 0	
Lieut.-Colonel R. A. Roberts, R.E.	Superintendent Engineer, 2nd Grade	Do.	Do.	22nd May 1879	22nd May 1879	2 0 0	
Major J. Verne, R.E.	Executive Engineer, 1st Grade	Do.	Do.	17th Feb. 1879	10th Nov. 1879	1 0 0	Do.
Lieut.-Colonel J. Goddard, R.E.	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Lieut.-Colonel C. J. Smith, R.E.	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Mr. E. F. Chisholm	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Mr. J. E. Beckley, R.E.	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	Do.
Mr. W. S. Harrington	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Lieut.-Colonel H. R. Mead, R.E.	Superintendent Engineer, 2nd Grade	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Mr. J. W. Randall	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Mr. P. O. Radigan	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	Do.
Major H. W. Wood, R.E.	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Mr. L. W. Paynter	Do.	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Lieut.-Colonel P. Montgomery, R.E.	Superintendent Engineer, 3rd Grade	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Lieutenant F. J. Howard, R.E.	Executive Engineer, 3rd Grade	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	Do.
Lieut.-Colonel P. Montgomery, R.E.	Superintendent Engineer, 3rd Grade	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Lieutenant F. J. Howard, R.E.	Executive Engineer, 3rd Grade	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	
Lieutenant F. J. Howard, R.E.	Executive Engineer, 3rd Grade	Do.	Do.	10th Mar. 1879	4th Mar. 1879	2 0 0	

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Statement showing year by year, from 1882, the number of officers of the Engineer Establishment absent from duty, &c.—(Continued).

No.	Names.	Rank.	Nature and cause of leave absence, &c.	Period of actual absence from duty.		Period of leave granted, &c.	Remarks.
				From.	To.		
Absentees during the Year 1875—cont.							
Major J. W. Hindle, S.C.	Executive Engineer, 2nd Grade	Do.	Furlough, p.a.	16th Dec. 1875.	18th June 1877.	1 6 2	
Mr. G. T. Walsh	Do.	Do.	Furlough in India	24th July 1877.	11th Aug. "	2 0 0	
Captain and Deputy Commissary F. Graham.	Do.	Do.	Furlough, m.o.	22nd Feb. 1876.	17th Jan. "	1 0 0	
Lieut.-Colonel R. B. Kennedy	Do.	Do.	Furlough, p.a.	11th July 1876.	10th July 1876.	1 0 0	
Mr. J. Hannan	Do.	Do.	Europe, special duty	2nd " 1875.	20th May 1876.	0 13 27	On special duty to Europe.
Mr. H. Lyon	Do.	Do.	Europe, special duty	22nd Oct. 1874.	23rd Jan. 1875.	2 0 0	
Mr. E. E. Bowyer Smith	Assistant Engineer, 1st Grade	Do.	Furlough, m.o.	8th Mar. 1876.	6th Aug. 1876.	1 0 0	
Major R. F. Morris, R.E.	Executive Engineer, 2nd Grade	Do.	Furlough, m.o.	23rd June "	14th Dec. "	1 0 0	
Lieut.-Colonel C. J. Smith, R.E.	Do.	Do.	Military duty	20th July "	13th Aug. 1875.	0 1 0	
Colonel H. L. Prndergast, R.E.	Superintending Engineer, 2nd Class.	Do.	Do.	16th Dec. "	6th Mar. 1876.	2 0 0	Services placed at the disposal of the Military Department.
Mr. W. C. Barton	Executive Engineer, 1st Grade	Do.	Furlough	27th April "	4th Nov. 1875.	2 0 0	Do.
Lieutenant J. Lever	Assistant do.	Do.	Furlough, p.a.	1st Sept. "	1st Mar. "	0 0 0	Extra in Madras Establishment
Mr. C. S. Sage	Executive do.	Do.	Services replaced	7th Mar. 1875.	"	2 0 0	Services replaced at the disposal of the Military Department.
Captain R. F. Taylor	Do.	Do.	Do.	20th Dec. "	"	2 0 0	Services placed at the disposal of the Military Department.
Lieutenant T. Greenway	Do.	Do.	Do.	6th April "	"	2 0 0	Services replaced at the disposal of the Military Department.
Absentees during the Year 1874							
Colonel C. V. Wilkinson, R.E.	Superintending Engineer, 1st Class.	Do.	Furlough, p.a.	1st April 1872.	17th Mar. 1874.	2 0 0	
Colonel W. F. Farewell, S.C.	Do.	Do.	Do.	3rd " 1874.	6th Dec. 1875.	2 0 0	
Major R. E. Oakes, R.E.	Executive Engineer, 1st Grade	Do.	Do.	20th Sept. 1873.	21st Sept. "	2 0 0	
Major A. de C. Scott, R.E.	Do.	Do.	Do.	9th June 1873.	20th May 1874.	2 0 0	
Major J. Veritas, R.E.	Do.	Do.	Do.	14th Feb. 1874.	10th Nov. 1875.	1 0 0	
Colonel H. L. Prndergast, R.E.	Superintending Engineer, 1st Class (temporary rank).	Do.	Furlough	30th April 1872.	21st Mar. 1874.	2 0 0	
Lieut.-Colonel C. J. Smith, R.E.	Executive Engineer, 1st Grade	Do.	Furlough, p.a.	10th Mar. 1873.	4th Mar. 1875.	2 0 0	
Colonel A. S. Moberly, R.E.	Do.	Do.	Do.	10th May 1872.	20th " 1874.	2 0 0	
Major T. Beckley, R.E.	Do.	Do.	Do.	10th Nov. 1875.	10th Nov. 1875.	2 16 0	
Major H. W. Wood, R.E.	Do.	Do.	Do.	1st May "	14th June 1874.	2 0 0	
Lieut.-Colonel H. R. Mead, R.E.	Do.	Do.	Do.	7th Aug. 1874.	4th Aug. 1875.	2 0 0	
Lieut.-Colonel P. Montgomerie, R.E.	Do.	Do.	Do.	11th Mar. "	9th Mar. 1875.	2 0 0	
Mr. P. O'Riagan	Do.	Do.	Military duty	22nd June 1875.	4th Feb. 1874.	2 0 0	Camp of Exercise
Mr. L. W. Painter	Do.	Do.	Do.	23rd May 1875.	11th June 1876.	2 0 0	
Lieutenant J. F. Downard, R.E.	Do.	Do.	Do.	23rd May "	24th May "	2 0 0	
Captain and Deputy Commissary F. Graham.	Do.	Do.	Do.	11th " 1874.	10th Aug. "	1 0 0	Joined Chatham Dock.
Absentees during the Year 1873							
Mr. J. Hannan	Superintending Engineer, 1st Class (temporary rank)	Do.	Military duty	23rd Oct. 1874.	10th Nov. 1875.	2 0 0	Services placed at the disposal of the Military Department.
Colonel H. L. Prndergast, R.E.	Do.	Do.	Do.	18th May "	2nd May 1875.	2 0 0	Do.
Lieut.-Colonel P. Montgomerie, R.E.	Executive Engineer, 1st Grade	Do.	Furlough in India	16th June 1874.	4th Feb. 1875.	0 3 0	
Captain L. Langley, R.E.	Executive Engineer, 4th Grade	Do.	Military duty	1st Jan. "	4th Feb. 1875.	1 0 0	Do.
Lieut.-Colonel H. R. Mead, R.E.	Superintending Engineer, 2nd Class	Do.	Furlough, p.a.	27th Aug. "	4th Aug. 1875.	1 0 0	Do.
Mr. W. C. Barton	Executive Engineer, 3rd Grade	Do.	Furlough	25th April "	2nd Jan. 1874.	2 2 0	Extra, Chief Engineer, Travancore State.
Mr. O. A. Hayne	Do.	Do.	Do.	6th July 1871.	6th July "	2 2 0	
Mr. W. B. Leggett	Do.	Do.	Do.	7th May 1872.	12th Feb. "	1 0 0	Furlough to Europe. Died 13th February 1874.
Captain W. Cunningham	Do.	Do.	Do.	9th " 1873.	12th Feb. "	2 4 0	Resigned his appointment, 1st April 1874.
Major G. V. Law, S.C.	Do.	Do.	Do.	12th " 1872.	1st Sept. "	1 2 0	Services placed at the disposal of the Military Department.
Mr. K. D. P. Roberts	Do.	Do.	Do.	1st April 1873.	1st April "	1 2 0	Do.
Mr. W. M. Montserrat	Superintending Engineer, 2nd Grade	Do.	Do.	30th Dec. 1872.	9th March "	1 5 0	Services placed at the disposal of the Military Department.
Colonel J. Bean	Do.	Do.	Do.	1st April 1874.	"	1 5 0	Do.
W. Fraser	Executive Engineer, 1st Grade	Do.	Deceased	17th " "	"	"	Deceased, 12th April 1874.
Captain A. R. Edgewood	Do.	Do.	Do.	27th May "	"	"	Deceased.
Lieutenant M. Greer	Do.	Do.	Services replaced	22nd June "	"	"	Exchanged service out of India with Lieutenant Greer, R.E.
Lieutenant and Assistant Commissary J. Lever	Assistant Engineer, 2nd Grade	Do.	Furlough, p.a.	1st Sept. "	1st Mar. 1875.	0 4 0	Deceased, 31st July 1874.
Ensign and Assistant Commissary Haddock.	Do.	Do.	Do.	31st July "	"	"	Services replaced.
Mr. G. J. Turner	Do.	Do.	Furlough, m.o.	21st May "	20th Sept. 1874.	0 4 0	
Lieutenant C. E. Wilkeson	Do.	Do.	Military duty	31st Oct. "	"	"	
Absentees during the Year 1872							
Colonel C. V. Wilkinson, R.E.	Superintending Engineer, 1st Grade	Do.	Furlough, p.a.	1st April 1872.	15th Mar. 1874.	2 0 0	
Major R. F. Oakes, R.E.	Do.	Do.	Do.	26th Sept. 1873.	21st Sept. 1875.	2 0 0	
Colonel H. L. Prndergast, R.E.	Do.	Do.	Furlough	8th April 1872.	31st Mar. 1875.	2 0 0	
Colonel A. S. Moberly, R.E.	Executive Engineer, 1st Grade	Do.	Furlough, p.a.	19th May "	20th " 1875.	2 0 0	
Lieut.-Colonel C. J. Smith, R.E.	Do.	Do.	Do.	10th Mar. 1873.	4th " 1875.	1 0 0	
Major A. de C. Scott, R.E.	Do.	Do.	Do.	9th June 1872.	24th May 1874.	2 0 0	
Major T. Beckley, R.E.	Do.	Do.	Do.	26th Jan. 1873.	10th Nov. 1875.	2 0 0	
Major H. W. Wood, R.E.	Do.	Do.	Do.	1st May "	10th June 1875.	2 0 0	
Major W. B. Leggett	Do.	Do.	Do.	7th " 1872.	6th July 1874.	2 2 0	
Captain W. Cunningham	Do.	Do.	Do.	13th " 1873.	13th Feb. "	1 0 0	
Major G. V. Law, S.C.	Do.	Do.	Do.	12th " 1872.	1st Sept. "	2 4 0	
Mr. P. O'Riagan	Do.	Do.	Do.	22nd June 1874.	17th June 1875.	2 0 0	
Mr. J. W. Painter	Do.	Do.	Do.	25th May "	24th May "	2 0 0	
Mr. K. D. P. Roberts	Do.	Do.	Do.	1st April "	1st April 1874.	1 0 0	
Lieutenant J. F. Downard, R.E.	Do.	Do.	Do.	7th July "	1st Nov. 1875.	1 0 0	
Mr. O. A. Hayne	Do.	Do.	Do.	6th " 1871.	22nd Jan. 1874.	2 2 0	
Mr. W. M. Montserrat	Superintending Engineer, 3rd Grade	Do.	Military duty	30th Dec. 1872.	9th Feb. "	1 2 0	Services placed at the disposal of the Military Department.
Lieut.-Colonel P. Montgomerie, R.E.	Do.	Do.	Do.	" 1873.	"	"	Proceeded to England on a tour of Home duty.
Major A. C. Smith, R.E.	Executive Engineer, 2nd Grade	Do.	Tour of Home duty	22nd Feb. 1871.	28th Nov. 1873.	"	Services placed at the disposal of the Military Department.
Major W. H. Oakes, R.E.	Do.	Do.	Furlough, m.o.	21st Jan. "	21st Jan. "	2 0 0	Resigned.
Captain O. V. Boddy, R.E.	Do.	Do.	Military duty	18th Nov. 1873.	17th Mar. "	"	
Major J. Penycuik, R.E.	Do.	Do.	Do.	13th May 1873.	"	"	
Captain W. H. Edgewood	Do.	Do.	Do.	"	"	"	

MADRAS,
1st August 1883.(Signed) D. O. GORDON,
Examiner, Public Works Accounts.

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ABSTRACT OF APPENDIX A.

ABSTRACT showing the proportion of Non-effectives to Effectives each year, from 1873 to 1882, on the Sanctioned Scale, and also on the number entered in Classified List.

1	Sanctioned strength as shown in Classified List	ABSENT EES.			Effectives 2-5.	Percentage of absentees.	Number of officers entered in Classified List.	Absentees as shown in column 8.	Effectives 8-9.	Percentage of absentees.	11
		Number of officers absent.	Number of months absent.	Number absent the whole year.							
1873	86	23	191	19 1/2	70	18.6	93	16	83	16.1	
1874	86	36	234	19 1/2	66	23.2	103	20	53	19.4	
1875	87	33	239	19 1/2	67	23	112	20	92	17.8	
1876	87	34	236	19 1/2	67	23	106	20	86	18.8	
1877	87	37	268	22 1/2	65	25.2	108	22	86	20.3	
1878	89	42	239	19 1/2	69	22.4	102	20	82	19.6	
1879	89	44	325	28 1/2	61	31.4	95	28	67	29.4	
1880	69	45	364	32	37	46.3	83	32	51	38.5	
1881	92	28	194	16 1/2	76	17.3	94	18	76	17.02	
1882	92	20	252	21	71	22.8	97	21	76	21.6	
Average	...	...	...	21.4	...	25.3	...	...	...	21.4	

APPENDIX B.

STATEMENT showing the Charges for Establishment during 1883-84 for Irrigation and Navigation Works (Imperial) calculated according to the recent orders of the Government of India.

Heads of Account.	Costs on Works and Repairs.	25 per cent. on Works and Repairs.	Direct Revenue Works Department.	10 per cent. on Direct Revenue, Public Works Department.	Civil Department Revenue.	5 per cent. on Civil Department Revenue.	Total Establishment Charges as now arrived at.	Estimate of Establishment Charges shown in Budgets.	Difference.
M. Expenditure on Productive Public Works, Capital Account—	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
54. Irrigation and Navigation ...	11,81,693	2,50,621	...	...	...	...	2,50,621	2,50,621	...
G. Expenditure on Productive Public Works, Revenue Account—	6,30,620	1,45,042	1,43,230	14,323	55,43,500	2,12,910	3,73,275	2,08,974	1,03,601
39. Irrigation and Navigation ...	...	...	...	...	...	...	...	...	...
H. Expenditure on Public Works not classed as Productive—	...	...	...	...	...	...	...	...	...
46. Irrigation and Navigation ...	...	...	...	...	...	...	...	...	...
Imperial.	...	...	...	...	...	...	...	...	...
Works for which Capital and Revenue Accounts are kept—	...	...	...	...	...	...	...	...	...
Capital ...	58,634	13,487	...	...	...	...	13,487	13,487	...
Revenue ...	38,119	8,767	420	42	...	...	8,809	8,809	...
Works for which Capital and Revenue Accounts are not kept ...	12,11,807	1,74,556	15,000	1,500	27,41,500	1,84,490	3,40,746	2,41,556	98,890
Agricultural Works ...	3,12,000	71,760	19,000	1,900	...	...	73,660	73,660	...
F. Famine Relief and Insurance ...	...	...	...	...	...	...	...	...	...
34. Protective Public Works—	...	...	...	...	...	...	...	...	...
Capital ...	64,000	(a) 1,23,500	...	...	...	...	1,23,500	1,23,500	...
Total ...	34,96,873	7,87,933	1,77,550	17,765	62,90,000	3,77,400	11,82,098	9,80,007	2,02,431

(a) Includes Rs. 1,12,000, the estimate cost of the actual establishment in project divisions.

(Signed) D. C. GORDON,
Examiner, Public Works Accounts.

MADRAS.
10th August 1883.

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STATEMENT showing the figures of Revenue (Civil Department) on which the Tables of Establishment Charges for Irrigation and Navigation Works during 1879-80, 1880-81, 1881-82, 1882-83, and 1883-84 were framed.

Systems.	1879-80.		1880-81.		1881-82.		1882-83.		1883-84.	
	Revenue due to Improve-ments.	Revenue due to old Irriga-tion.	Revenue due to Improve-ments.	Revenue due to old Irriga-tion.	Revenue due to Improve-ments.	Revenue due to old Irriga-tion.	Revenue due to Improve-ments.	Revenue due to old Irriga-tion.	Revenue due to Improve-ments.	Revenue due to old Irriga-tion.
Godavari Delta	RS. 16,98,133	RS. 1,31,223	RS. 16,28,069	RS. 1,29,700	RS. 15,33,710	RS. 1,26,131	RS. 14,31,217	RS. 1,25,184	RS. 15,92,000	RS. 1,20,000
Kistna do.	8,83,736	79,327	8,88,628	77,931	8,75,643	76,926	7,57,321	75,102	8,99,000	76,000
Pennar Ancient	98,244	1,08,118	1,01,469	1,13,304	1,02,462	1,13,944	1,14,607	1,20,350	1,17,000	1,13,000
Cauvery Delta	6,15,256	23,41,255	4,93,692	23,41,705	5,69,041	23,40,339	5,61,632	23,43,214	7,83,000	23,25,000
Srivaikuntham Ancient	81,027	77,519	79,518	77,510	82,364	77,534	91,959	77,942	72,500	97,500
Kurnool Canal	...	...	...	...	...	...	29,825	...	85,000	...
Total ...	35,76,336	27,37,503	31,86,976	27,39,250	31,63,220	27,33,074	29,88,701	27,41,492	35,48,500	27,41,500

The figures for 1879-80, 1880-81, and 1881-82 have been taken in the case of the following systems from the Proceedings of the Madras Government noted against them:—
Godavari Delta, 72 L. dated 31st January 1882, and 77 L. dated 27th October 1882.
Kistna do. 347 L. dated 24th April 1882, and 766 L. dated 27th September 1882.
Pennar do. 317 L. dated 6th July 1882, and 768 L. " 28th " " "
Srivaikuntham Ancient, 577 L. dated 2nd December 1882.

Cauvery Delta, 574 L. dated 31st July 1883.
For 1882-83 actually as reported by the Director of Revenue Settlement and Agriculture have been entered.
For 1883-84 the figures of the budget estimate, 1883-84, have been adopted.

MADRAS.
10th August 1883.

(Signed) D. C. GORDON,
Examiner, Public Works Accounts.

STATEMENT showing the Difference between the Actual Charges for Establishment on Irrigation and Navigation Works (Imperial) and those debitable for the same if recent ruling of Government of India had been in force during 1879-80.

Heads of Account.	Outlay on Works and Repairs.	23 per cent on Works and Repairs.	Direct Revenue Public Works Department.	10 per cent on Direct Revenue Public Works Department.	Indirect Revenue or Civil Department Receipts.	6 per cent on Civil Department Revenue.	Total Establishment Charges.	Actual Charges as per books.	Difference.
M. Expenditure on Productive Public Works, Capital Account—	RS. 73,747	16,962	...	...	...	...	16,962	1,34,316	— 1,17,554
54. Irrigation and Navigation	...	...	...	...	...	...	...	...	...
G. Expenditure on Productive Public Works, Revenue Account—	3,98,431	91,639	1,13,627	11,563	33,76,386	2,02,583	3,45,785	2,30,842	74,943
39. Irrigation and Navigation (Working Expenses).	...	...	...	...	...	...	...	...	...
II. Expenditure on Public Works not classed as Productive—	...	...	...	...	...	...	...	...	...
46. Irrigation and Navigation	...	...	...	...	...	...	...	...	...
Imperial.	...	...	...	...	...	...	...	...	...
Works for which Capital and Revenue Accounts are kept—	1,43,779	33,069	...	...	...	...	33,069	49,176	— 16,107
Capital	37,292	8,577	512	51	...	...	8,628	16,436	— 7,808
Revenue	7,25,374	1,66,836	2,508	271	27,37,562	1,64,250	3,31,857	2,64,818	66,939
Works for which Capital and Revenue Accounts are not kept.	1,98,652	45,690	10,726	1,072	...	...	46,762	69,441	— 22,679
Agricultural Works	...	...	...	...	...	...	...	...	...
Total ...	15,77,275	3,62,773	1,29,673	12,957	61,13,888	3,66,833	7,42,563	7,65,229	(c) — 22,666

(a) Charges on account of land compensation, &c., have been excluded as far as possible.
(b) Exclusive of the charges on account of Guaranteed Irrigation Works.
(c) Minus entries in this column indicate gain or profit to Imperial.

MADRAS.
10th August 1883.

(Signed) D. C. GORDON,
Examiner, Public Works Accounts.

STATEMENT showing the Difference between the Actual Charges for Establishment on Irrigation and Navigation Works (Imperial) and those debitable for the same if recent ruling of Government of India had been in force during 1880-81.

Heads of Accounts.	Outlay on Works and Repairs.	25 per cent. on Works and Repairs.	Direct Revenue, Public Works Department.	10 per cent. on Direct Revenue, Public Works Department.	Civil Department Receipts.	6 per cent. on Civil Department Revenue.	Total Establishment Charges.	Actual Charges as per books.	Difference.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
M. Expenditure on Productive Public Works, Capital Account—									
64. Irrigation and Navigation ...	1,68,280	24,904	...	...	...	...	24,904	26,903	- 2,059
G. Expenditure on Productive Public Works, Revenue Account—									
39. Irrigation and Navigation ...	5,25,366	1,20,834	1,48,466	14,647	31,86,976	1,91,219	3,26,700	2,49,042	77,658
H. Expenditure on Public Works not classed as Productive—									
46. Irrigation and Navigation ...	...	...	...	...	...	...	...	...	...
<i>Imperial.</i>									
Works for which Capital and Revenue Accounts are kept—									
Capital ...	4,27,213	98,266	...	...	...	...	98,266	1,22,356	- 24,090
Revenue ...	54,081	12,439	...	...	...	...	12,470	12,656	- 10,186
Works for which Capital and Revenue Accounts are not kept ...	4,12,083	95,094	6,753	675	27,33,250	1,64,355	2,00,634	1,99,686	1,20,348
Agricultural Works ...	2,14,261	49,230	8,712	871	...	...	60,151	63,469	- 13,318
Total ...	(a) 17,42,291	4,00,727	1,62,536	16,224	59,20,226	3,55,574	7,72,525	(b) 6,24,172	(c) 1,48,353

(a) Land charges have been separated wherever possible.
(b) Exclusive of charges for Guaranteed Irrigation Works.
(c) The minus entries in this column indicate gain or profit to Provincial.

MADRAS,
10th August 1883.

(Signed) D. C. GORDON,
Examiner, Public Works Accounts.

STATEMENT showing the Difference between the Actual Charges for Establishment on Irrigation and Navigation Works (Imperial) and those debitable to the same if the recent ruling of Government of India had been in force during 1881-82.

Heads of Account	Outlay on Works and Repairs.	25 per cent. on Works and Repairs.	Direct Revenue, Public Works Department.	10 per cent. on Direct Revenue, Public Works Department.	Indirect Revenue, Civil Department Receipts.	6 per cent. on Civil Department Receipts.	Total Establishment Charges.	Actual Charges as per books.	Difference.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
M. Expenditure on Productive Public Works, Capital Account—									
64. Irrigation and Navigation ...	2,76,220	68,554	...	...	...	...	68,554	69,080	- 5,526
G. Expenditure on Productive Public Works, Revenue Account—									
39. Irrigation and Navigation (Works and Repairs) ...	4,36,002	1,00,250	1,51,767	15,177	31,62,220	1,89,703	3,05,250	2,91,227	71,023
H. Expenditure on Public Works not classed as Productive—									
46. Irrigation and Navigation ...	...	...	...	...	...	...	...	...	...
<i>Imperial.</i>									
Works for which Capital and Revenue Accounts are kept—									
Capital ...	63,563	14,619	...	...	...	...	14,619	17,135	- 2,516
Revenue ...	71,325	18,405	...	...	...	...	18,431	25,838	- 9,407
Works for which Capital and Revenue Accounts are not kept ...	7,80,497	1,78,514	11,904	1,190	27,33,074	1,63,984	3,44,638	2,74,890	1,29,799
Agricultural Works ...	2,63,113	60,516	13,461	1,346	...	...	62,362	80,093	- 17,734
F. Famine Relief and Insurance—									
34. Protective Public Works—									
Capital ...	57,927	(a) 20,498	...	...	...	...	20,498	20,498	...
Total ...	(b) 19,28,947	4,55,386	1,82,392	18,239	58,96,294	3,53,777	6,27,492	6,61,764	1,65,638

(a) Represents the actual cost of establishment to project divisions.
(b) Exclusive of land charges, &c., wherever possible.

MADRAS,
10th August 1883.

(Signed) D. C. GORDON,
Examiner, Public Works Accounts.

Statement showing the Charges for Establishment during 1882-83 for Irrigation and Navigation Works, calculated according to the recent orders of the Government of India.

Heads of Account	Outlay on Works and Repairs	22 per cent. on Works and Repairs	Miscellaneous Public Works Department	10 per cent. on Direct Revenue, Public Works Department	Indirect Revenue or Civil Department Receipts	6 per cent. on Civil Department Receipts	Total Establishment Charges as now arrived at	Actuals of 1882-83	Differences
M. Expenditure on Productive Public Works, Capital Account—									
54. Irrigation and Navigation	7,15,261	1,54,510	...	...	...	...	1,64,510	1,64,510	...
G. Expenditure on Productive Public Works, Revenue Account—									
39. Irrigation and Navigation (Working Expenses).	3,94,787 (a)	1,10,964	1,33,976	18,307	(b) 29,88,701	1,79,322	8,08,593	3,33,452	...
H. Expenditure on Public Works not classed as Productive—	...	...	...	...	...	...	...	...	...
46. Irrigation and Navigation	...	...	...	...	...	...	...	...	...
Imperial.									
Works for which Capital and Revenue Accounts are kept—									
Capital	1,02,222	23,511	...	...	...	...	23,511	23,511	...
Revenue	64,939	14,936	...	...	...	...	14,971	14,971	...
Works for which Capital and Revenue Accounts are not kept.									
Agricultural Works	8,78,335	2,25,017	12,146	1,215	27,41,492	1,64,489	3,90,721	3,88,683	...
I. Famine Relief and Insurance—									
34. Protective Works, Irrigation—	4,52,735	1,04,129	10,130	1,013	...	...	1,05,142	1,05,142	...
Capital	3,563 (c)	57,943	...	...	...	...	57,943	57,943	...
Total	(d) 25,07,393	6,58,938	2,05,703	20,576	57,30,193	3,43,811	10,18,369	10,31,125	...

(a) Includes Karmool Canal Navigation Establishment charges to the extent of Rs. 20,153.
 (b) Do. do. Receipts (Civil Department) do. do. " 29,825.
 (c) Represents actual charges incurred in the project divisions.
 (d) Exclusive of land charges as far as possible and the purchase cost of the Karmool Canal.

(Signed) D. C. GORDON,
 Examiner, Public Works Accounts.

MADRAS,
 10th August 1883.

APPENDIX C.

From W. WILSON, Esq., M.A., Director of Revenue Settlement and Agriculture, Madras, to the Secretary to Government, Public Works Department, dated Camp Periyekulam, 24th August 1883, No. 41 A.

I have the honor, in reply to your letter, No. 1494 C., dated 9th current, and its accompanying extracts from a letter of the Government of India, dated 16th July 1883, No. 983 G., to inform you that the way in which 7.2 per cent. was arrived at as the proper charge to be made in this presidency for the collection in the Civil department of irrigation revenue is explained in Board's Proceedings, No. 2946, dated 17th October 1879. The percentage was determined on consideration of the total land revenue receipts and charges of the presidency during the five years ending with 1875-76. Receipts and charges on account of separate revenue, road-cess or village service establishment (which is provided for from a separate fund) were excluded from the figures. The receipt figures included land and irrigation revenue only. The charges included four-fifths of the salaries and allowances of Collectors, divisional officers, and of huzur and taluk establishments and contingent charges, but the salaries of the revenue process service establishment and contingent charges of a purely revenue nature were debited in full. The percentage is for the presidency generally and accurately represents the ratio between the two sets of figures compared. The Government of India think it "especially high." In my note of 8th May 1883 (G.O., No. 449 I., dated 6th June 1883) addressed to the Chief Engineer for Irrigation on the mode of charging the cost of collecting in the Revenue department the irrigation revenue derived from works in this presidency for which Capital and Revenue accounts are kept, I pointed out that for the years taken by the Board the ratio was much too high in the case of the Godavari, Kistna and Cauvery systems, the proper percentages calculated on district revenues for which were 4.1, 4.4 and 5, respectively, and was too high in the case of all other systems but the Palar and Chembrambakam tank, in which the ratios were 7.3 and 8.1 respectively.

The Government of India ask whether the percentage cannot be reduced. The answer to this must, I think, be that so far as reduction of charge means reduction of establishments, it is impossible, but that so far as reduction means a redistribution of charges between different heads of account it is perfectly possible. At present the salaries of district and taluk establishments and contingent charges generally are in this presidency distributed between "Land Revenue" and "Law and Justice" in the proportions of four-fifths and one-fifth. The total charges in the Civil department amount to 9 per cent. of the land revenue receipts, "Land Revenue" being debited with 7.2 per cent. and "Law and Justice" with 1.8. The ratio of the distribution of these charges is not uniform for all India; one province has one ratio, another, another. In other provinces the charges are equally divided between "Land Revenue" and "Law and Justice," and this Government some time ago proposed that in Madras they should be distributed in the proportions of two-thirds and one-third, but the Government of India refused to alter the existing distribution. If the charges were equally divided the result would for the Capital and Revenue account works on the figures given in the statement enclosed in my note of 8th May be an average on the whole of 3.9 per cent., the ratio varying from 2.9 for the Kistna to 5.5 for the Chembrambakam tank. If, again, the charges were distributed in the proportions of two-thirds to "Land Revenue" and one-third to "Law and Justice," the result would be a percentage of 5.1 on the whole, the ratio varying from 3.8 for the Kistna to 7.3 for the Chembrambakam tank.

	Godavari.	Kistna.	Nellore (Pannós).	Chingelput (Chembrambakam Tank).	North Arcot (Palar).	South Arcot (Palar).	Tanjore (Cauvery).	Trichinopoly (Cauvery).	Tinnevely (Sivakam).	Total.
At 4th	4.6	4.3	7.9	8.7	7.2	6.	5	3	7.3	6.2
Add 4th	1.1	1.2	1.9	2.2	1.9	1.5	1.2	2.	1.8	1.5
	5.7	5.5	9.8	10.9	9.1	7.5	6.2	5	9.1	7.7
At 4th	2.9	2.	4.9	5.5	4.9	3.7	3.1	6.	4.5	3.9
At 4th	3.8	4.	6.5	7.3	6.6	5	4.3	6.7	6	5.1

tions of two-thirds to "Land Revenue" and one-third to "Law and Justice," the result would be a percentage of 5.1 on the whole, the ratio varying from 3.8 for the Kistna to 7.3 for the Chembrambakam tank.

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APPENDIX D.

WORKS, 1883-84.

PROVISION FOR WORKS AND REPAIRS TO BE SUPERVISED BY THE PUBLIC WORKS DEPARTMENT IN 1883-84.	RS.	RS.	RS.
<i>Imperial.</i>			
Military—			
Revised budget	4,14,987		
Add for Bellary water-supply	3,900		
For stables at Bellary	8,032		
Grant tentatively withdrawn by Government of India.	56,800		
		4,83,719	
Civil Buildings—			
Roads and Services		2,10,450	
Irrigation—			
Productive Public Works, Capital Account, as per budget	11,81,693		
Deduct for land compensation (Rs. 90,230) and for expenditure in England (Rs. 1,800)	92,030		
		10,89,663	
Productive Public Works, Revenue Account, as per budget	6,30,620		
Add for Pennér works Rs. 10,000			
„ for Cauvery works „ 9,520			
	19,520		
		6,50,140	
Famine Relief Protective Works as per budget	64,000		
Deduct for land compensation (Rs. 10,000) and for project divisions (Rs. 4,000)	14,000		
		50,000	
Irrigation and Navigation and Agricultural Works as per budget	16,20,590		
Deduct expenditure in tank division Rs. 82,000	82,000		
		15,38,590	
Total, Irrigation		33,28,863	
Total, Imperial			40,22,532
<i>Provincial.</i>			
Civil Buildings—			
Roads and Services as per budget	11,07,421		
Add—			
Anticipated savings on establishment transferred to works	2,07,000		
Amount transferred from establishment to works on account of enhanced rate of contribution, as per Examiner's statement	2,02,491		
Amount allotted by the Financial department on account of jail works	50,000		
Amount allotted for Saidápet College	10,005		
Amount allotted for repairs to jail at Vellore	10,104		
Amount allotted for petty construction and repairs at Nilgiri	1,550		
	15,88,661		
		15,88,661	
Irrigation and Navigation as per budget		2,70,764	
			18,59,425

WORKS, 1883-84.—cont.

PROVISION FOR WORKS AND REPAIRS TO BE SUPERVISED BY THE PUBLIC WORKS DEPARTMENT IN 1883-84.—cont.	RS.	RS.	RS.
<i>Local.</i>			
Incorporated as per budget	43,160		
Deduct amount resumed	700		
		42,460	
Excluded as per budget	31,150		
Add grants since made	32,570		
		63,720	
			1,06,180
<i>Harbour.</i>			
Reconstruction as per budget submitted to Government of India	3,22,602		3,22,602
Grand Total			63,10,739
<i>ESTABLISHMENT, 1883-84.</i>			
Establishment Charges as shown in page 43 of the budget.		21,87,356	
Do. do. for Harbour Works		60,956	
		22,48,312	
Deduct—			
Debit to Local Funds for scrutinizing plans and estimates by Chief and Superintending Engineers	21,720		
Establishment on Tank Maintenance Division	65,600		
Do. on Protective Public Works	1,12,000		
Work done by Lithographic branch of the Public Works Secretariat	6,000	2,05,320	
Total, with Harbour Works			20,24,992
Do. without do.			19,82,036
Deduct 10 per cent. on Direct Revenue, Productive Public Works, Rs. 143,230	14,323		
Ten per cent. on Direct Revenue on Irrigation and Navigation Works other than Productive, Rs. 34,420	3,442		
Six per cent. on Indirect Revenue, Productive Public Works, due to old Irrigation, Rs. 27,41,500	1,64,490		
Six per cent. on Indirect Revenue, Productive Public Works, due to revenue on the systems, Rs. 35,48,500	2,12,910		
Ten per cent. on Direct Revenue from Provincial Irrigation, Rs. 1,29,000	12,900		
		4,08,065	
Five per cent. on revenue realized from Military Works, Rs. 30,000	1,500		
Five per cent. on revenue realized from Ordinary Public Works, Provincial, Rs. 2,00,000	10,000		
		11,500	
Deduct savings in establishment budget, Rs. 2,07,000— Rs. 50,000, Rs. 1,57,000	1,57,000		
		1,57,000	
(A) Total net charge including Harbour Works			14,66,427
(B) Do. without do.			14,05,471
(C) Total cost of works and repairs including Harbour	63,10,739		
(D) Total cost of works and repairs excluding Harbour	59,88,137		
Percentage of (A) on (C)	23.24		
Do. of (B) on (D)	23.47		

ing Engineers' Circles.

PROVINCIAL.

New Works.				Repairs.	Total.	
1	2	3. Amount.	Reserve.	Total.	Amount.	Amount.
		17			18	19
First Circle.						
		RS.	RS.	RS.	RS.	RS.
Ganjam ..	1	3,17	24,277	27,447	5,725	33,172
Vizagapatam	2	79,92	24,276	1,04,201	5,724	1,09,925
Godavari Eastern	1	44,72	24,276	69,000	5,724	74,724
Do. Western	1	1,45	24,276	25,726	5,724	31,450
Total	5	1,29,26	97,105	2,26,374	22,897	2,49,271
Second Circle.						
Kistna Eastern	2	21,85	32,368	54,218	7,632	61,850
Do. Western	1	14,520	32,368	46,888	7,632	54,520
Nellore ..	1	11,000	32,368	43,368	7,633	51,002
Sungam Project						
Total	4	47,371	97,105	1,44,470	22,897	1,67,372
Third Circle.						
Bellary			32,368	32,368	7,632	40,002
Cuddapah			32,368	32,368	7,632	40,000
Kurnool	1	20,000	32,368	52,368	7,632	60,000
Total	1	20,000	97,105	1,27,105	22,897	1,50,002
Fourth Circle.						
West Coast ..	5	69,53	24,277	94,147	5,725	99,872
Coimbatore ..	1	5,360	24,276	29,636	5,724	35,360
Salem ..	2	28,000	24,276	52,276	5,724	58,000
North Arcot ..	2	23,050	24,276	47,326	5,724	53,050
Total	10	1,26,230	97,105	2,23,386	22,897	2,46,282

sion, and Percent

WORKS

Works for which Revenue Account

-Capital.

Works. Estimate in

No. Amount. No. A.

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Statement showing the Numbers and Pay of Staff, Numbers and Cost of Works in each Public Works Division, and Percentage Charge under "Construction" arranged according to Superintending Engineers' Circles.

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Statement showing the Numbers and Pay of Staff, Numbers and Cost of Works in each Public Works Division, and Percentage Charge under "Construction" arranged according to Superintending Engineers' Circles—cont.

		Active Public Works.												Irrigation and Navigation and Agriculture Ordinary.															
		Irrigation and Navigation.						Agricultural Works.						Irrigation and Navigation.						Agricultural Works.									
		Capital Account.			Revenue Account.			Total.			Capital Account.			Revenue Account.			Total.			Capital Account.			Revenue Account.			Total.			
		Works.			Extension and Improvement.			Maintenance and Repairs.			Works.			Extension and Improvement.			Maintenance and Repairs.			Works.			Extension and Improvement.			Maintenance and Repairs.			
		No.	Amount.	Reserve.	Total.	No.	Amount.	Reserve.	Total.	No.	Amount.	Reserve.	Total.	No.	Amount.	Reserve.	Total.	No.	Amount.	Reserve.	Total.	No.	Amount.	Reserve.	Total.	No.	Amount.	Reserve.	Total.
		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
First Circle.																													
Ganjam					306	306			709	709		306	709	1,015															
Vizagapatam					306	306			708	708		306	708	1,014															
Godavari Eastern	13	1,21,405	2	5,000	307	8,307	96,670	708	95,708	15	1,29,712	95,708	2,35,420																
Do. Western	5	40,000	1	15,500	306	15,266	65,070	708	65,708	6	55,306	65,708	1,21,014																
Total	18	1,61,405	3	20,500	1,225	24,225	1,60,000	2,833	1,62,833	21	1,85,018	1,62,833	3,48,433																
Second Circle.																													
Kistna Eastern	7	1,55,643	1	5,000	307	6,307	75,070	709	75,709	8	1,61,950	75,709	2,37,659																
Do. Western	3	1,04,000	1	4,000	306	4,306	55,070	708	55,708	4	1,09,208	55,708	1,62,914																
Nellore					306	3,306	15,000	708	15,708	1	3,306	15,708	19,014	1	41,073														
Sanguin Project	2	3,74,550			306	306		708	708	3	3,74,836	708	3,75,544																
Total	12	6,35,123	2	13,000	1,225	14,225	1,45,000	2,833	1,45,833	16	6,49,348	1,45,833	7,95,181	1	41,073														
Third Circle.																													
Bellary					408	408			944	944		408	944	1,352															
Cuddapah					408	408			944	944		408	944	1,352															
Kurnool					408	408			944	944		408	944	1,352															
Total					1,225	1,225			2,833	2,833		1,225	2,833	4,058															
Fourth Circle.																													
West Coast					306	306			708	708		306	708	1,014															
Combarasa					306	306			708	708		306	708	1,014															
Saka					306	306			708	708		306	708	1,014															
North Arcot					307	307			709	709		307	709	1,016															
Total					1,225	1,225			2,833	2,833		1,225	2,833	4,058															
Fifth Circle.																													
South Arcot					409	409			945	945		409	945	1,354	2	15,618	1	1,500	10,000										
Chinglaput					408	408			944	944		408	944	1,352			1	500	2,600	1	48,520	11,637	60,157						
Buckingham Canal																													
Presidency					408	408			944	944		408	944	1,352															
Total					1,225	1,225			2,833	2,833		1,225	2,833	4,058	2	15,618	2	2,000	12,500	1	48,520	34,913	83,433	1,08,000					
Sixth Circle.																													
Trichinopoly					245	245			567	567		245	567	812															
Tanjore	2	15,067			245	15,252	30	567	30,567	2	15,252	30,567	48,819																
Nagapattinam	1	10,000			245	10,245	30	567	30,567	1	10,245	30,567	49,819																
Mattur					245	245			567	567		245	567	812															
Amravati					245	2,450	15,000	567	17,567	2	30,725	15,567	46,292																
Total					1,225	1,225			2,833	2,833		1,225	2,833	4,058															

Statement showing the Numbers and Pay of Staff, Numbers and Cost of Works in each Public Works Division, and Percentage Charge under "Construction" arranged according to Superintending Engineer's Circles—cont.

IRIGATION AND NAVIGATION AND AGRICULTURE					WORKS—cont.																			
Total.					PROVINCIAL.					EXCLUDED LOCAL.					INCORPORATED LOCAL.					GRAND TOTALS.				
Totals.					Navigation Works.					Original Works.					Original Works.									
					Capital.					Port Fund.					Local Funds.									
Works.					Repairs.					Repairs.					Repairs.									
No. Amount Reserve Total.					No. Amount Reserve Total.					No. Amount Reserve Total.					No. Amount Reserve Total.									
RS.					RS.					RS.					RS.									
34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
First Circle.																								
Ganjam ..	..	..	9,978	9,978	34,149	44,127	..	..	..	271	630	301	645	930	1,575	537	2,112	1	3,470	38,967	53,247	95,884	25-82	
Vinayapatnam ..	..	..	9,978	9,978	22,649	32,627	..	..	..	272	632	305	648	931	1,579	539	2,118	2	79,925	38,971	41,744	1,60,640	31-14	
Godavari Eastern ..	6	57,500	9,979	66,978	40,152	1,07,131	..	..	..	271	630	301	645	930	1,575	537	2,112	26	2,34,697	38,965	1,54,245	4,27,967	12-07	
Do. Western ..	2	19,426	9,978	29,404	26,149	55,553	..	..	..	271	630	301	645	930	1,575	537	2,112	5	75,876	38,963	1,10,242	2,25,087	14-21	
Total ..	8	76,926	39,957	1,16,883	1,24,099	2,59,433	..	..	..	1,085	2,523	3,008	2,583	3,721	6,304	2,150	8,454	38	3,93,668	1,55,866	3,59,478	9,00,012	17-52	
Second Circle.																								
Dist. Eastern ..	1	20,900	13,303	33,303	30,309	63,702	..	..	..	271	630	301	645	930	1,575	537	2,112	11	2,03,493	51,027	1,30,444	3,34,964	13-23	
Do. Western ..	..	..	13,303	13,303	33,199	56,503	..	..	..	271	630	301	645	930	1,575	537	2,112	5	1,28,420	51,022	1,01,241	2,76,683	13-40	
Nalluru ..	1	41,673	13,307	54,980	52,401	1,07,381	..	..	..	272	632	305	648	931	1,579	539	2,118	3	55,673	51,035	92,448	1,09,156	17-77	
Sangam Project ..	..	..	..	..	..	..	..	..	..	271	630	301	645	930	1,575	537	2,112	5	2,74,580	2,782	1,245	3,78,607	10-04	
Total ..	2	61,673	39,913	1,01,586	1,05,999	2,07,585	..	..	..	1,085	2,523	3,008	2,583	3,721	6,304	2,150	8,454	22	7,57,166	1,55,866	2,25,278	12,39,410	15-32	
Third Circle.																								
Bellary ..	1	15,000	13,303	28,303	0,199	78,592	..	..	..	363	841	1,204	861	1,241	1,102	718	2,820	6	62,330	51,950	75,663	1,89,932	19-76	
Cuddalore ..	1	8,000	13,307	21,307	1,201	62,598	..	..	..	361	841	1,202	861	1,240	1,101	713	2,817	1	3,000	51,956	56,659	1,26,615	21-26	
Kurupol ..	..	..	13,303	13,303	0,199	43,502	..	..	..	361	841	1,202	861	1,240	1,101	713	2,817	1	30,600	51,951	55,656	1,37,097	23-24	
Total ..	2	23,000	39,913	62,913	1,599	1,84,512	..	..	..	1,035	2,523	3,608	2,583	3,721	3,304	2,150	8,454	8	1,60,310	1,55,816	1,97,978	4,54,154	21-24	
Fourth Circle.																								
West Coast ..	..	..	9,978	9,978	7,149	27,127	..	..	..	272	632	305	648	931	1,579	539	2,118	10	1,18,955	38,975	36,248	1,94,108	30-55	
Coimbatore ..	1	10,900	9,978	19,978	5,149	1,05,127	..	..	..	271	630	301	645	930	1,575	537	2,112	2	14,360	38,963	1,04,242	1,58,595	19-53	
Salem ..	2	32,830	9,978	42,658	5,149	77,807	..	..	..	271	630	301	645	930	1,575	537	2,112	4	60,680	38,963	54,242	1,53,885	19-26	
North Arcot ..	1	3,000	9,979	12,979	1,152	1,03,131	..	..	..	271	630	301	645	930	1,575	537	2,112	4	28,850	38,965	1,09,246	1,77,061	22-82	
Total ..	4	46,680	39,913	85,593	2,259	3,13,192	..	..	..	1,085	2,523	3,608	2,583	3,721	6,304	2,150	8,454	20	2,23,775	1,55,866	3,02,978	6,83,619	23-72	
Fifth Circle.																								
South Arcot ..	3	17,118	13,307	30,425	1,120	1,41,626	..	..	..	361	841	1,202	861	1,241	1,102	716	2,818	7	54,328	51,612	1,36,602	2,42,602	28-30	
Chingleput ..	2	49,020	13,303	62,323	61,999	1,25,022	..	..	..	361	841	1,202	861	1,241	1,102	716	2,818	7	1,18,166	51,610	88,159	2,57,874	13-75	
Buckingham Canal ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1,72,943	..	68,635	2,41,578	27-02	
Presidency ..	..	..	13,303	13,303	2,199	36,502	..	..	..	363	843	1,206	863	1,243	1,106	718	2,824	17	1,44,360	52,856	42,664	2,45,680	29-00	
Total ..	5	69,138	39,913	1,08,651	1,999	3,03,159	..	..	..	1,085	2,525	3,610	2,585	3,725	6,310	2,150	8,460	24	4,80,780	1,55,878	3,42,120	9,87,734	24-39	
Sixth Circle.																								
Trichinopoly ..	..	..	7,982	7,982	8,121	93,103	..	..	..	217	507	724	519	745	1,264	430	1,694	2	28,800	31,178	1,00,399	1,60,877	25-71	
Tanjore ..	2	83,720	7,982	91,702	63,321	1,55,323	..	..	..	217	504	721	516	744	1,260	430	1,690	10	2,08,107	31,172	1,03,896	3,48,175	24-38	
Negapatnam ..	..	..	7,982	7,982	63,321	67,303	..	..	..	217	504	721	516	744	1,260	430	1,690	2	13,600	31,171	1,04,597	1,48,763	26-13	
Madurai ..	..	..	7,982	7,982	63,321	67,303	..	..	..	217	504	721	516	744	1,260	430	1,690	7	53,015	31,171	67,398	1,53,614	22-15	
Tinnevely ..	3	82,331	7,986	90,317	63,121	1,77,438	..	..	..	217	504	721	516	744	1,260	430	1,690	12	1,84,869	31,178	1,17,336	3,13,383	24-38	
Total ..	10	1,65,051	39,914	2,05,965	3,4305	5,53,279	..	..	..	1,085	2,523	3,608	2,583	3,721	6,304	2,150	8,454	33	4,00,761	1,55,970	4,98,688	11,24,517	18-01	

N.B.—The Staff is as it stood on the 1st July 1932. The Provincial undistributed reserve has been assigned ratably to each division.

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APPENDIX 4.

PART II.

Abstract of Statement showing the Numbers and Pay of Staff, Numbers and Cost of Works in each Public Works Division, and Percentage Charge under "Construction" arranged according to Superintending Engineers' Circles.

	STAFF.										WORKS.										PROVINCIAL.													
	ENGINEER ESTABLISHMENT.			UPPER SUBORDINATE ESTABLISHMENT.				Petty, Office, Temporary Establish-ment, Contingencies, and Travelling Allowance.	Total Construction.	IMPERIAL.					Other Services.					Total.	New Works.			Repairs.	Total.									
	Executive Engineer.	Assistant Engineer.	Total.	Sub Engineer.	Supervisor.	Overseer.	Total.			Military.			Other Services.		Total.	New Works.	Repairs.	Total.	New Works.		Repairs.	Total.												
										No.	Amount.	Reserve.	Total.	Amount.									Reserve.			Total.	Amount.	Reserve.	Total.					
																														No.	Amount.	Reserve.	Total.	Amount.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20															
No.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.															
I Circle	2	17,400	5	27,096	7	44,400	4	12,000	8	17,232	22	19,540	24	49,362	65,530	59,302	1	3,368	4,120	7,998	45,323	53,551	..	..	3,581	3,581	2,606	6,267	8	1,29,269	97,105	2,35,574	22,897	2,49,371
II do.	4	33,940	8	39,400	13	72,240	5	18,000	5	11,232	29	24,528	33	53,760	58,955	1,39,958	..	..	1,120	1,120	45,833	49,903	..	..	2,581	2,581	2,606	6,267	4	47,370	97,105	1,44,475	22,897	1,67,372
III do.	2	16,200	..	..	2	16,500	2	6,660	5	10,200	14	13,964	21	33,784	46,472	96,455	5	47,300	1,120	51,140	45,833	97,373	..	..	2,581	2,581	2,606	6,267	1	50,000	97,105	1,27,105	22,897	1,50,002
IV do.	5	40,030	3	13,950	5	53,850	4	15,720	5	10,710	18	21,103	23	47,344	60,710	1,03,134	5	35,280	1,120	42,632	45,833	88,231	1	13,327	1,551	17,109	2,606	49,774	10	1,26,283	97,105	2,23,388	22,897	2,46,282
V do.	3	19,260	4	20,403	7	60,500	19	47,316	7	16,512	26	27,180	43	91,008	80,378	2,40,586	10	1,06,513	1,120	1,42,848	45,833	1,58,453	2	17,840	2,581	20,921	2,606	23,001	15	1,37,300	97,105	2,34,406	22,898	2,57,304
VI do.	5	42,276	6	28,800	12	71,976	3	14,880	12	25,032	23	22,030	39	61,992	76,234	2,09,302	..	..	1,120	4,120	45,833	49,963	1	3,000	2,551	5,551	2,606	9,247	16	2,10,225	97,105	3,07,330	22,897	3,30,227
Architect	1	11,040	..	..	1	6,540	1	2,250	..	..	2	7,920	11,234	34,194	..	..	..	..	..	..	..	..	2	1,81,000	..	1,81,000	..	1,81,000	1	5,700	..	5,700	..	5,700
Totals	22	2,61,936	26	1,40,400	33	1,25,280	39	1,23,756	48	93,204	127	1,28,420	200	3,45,730	4,13,015	9,92,232	21	1,07,581	1,783	2,21,153	2,76,090	4,97,403	7	2,14,867	21,486	1,25,353	26,090	2,62,853	65	7,16,236	5,82,681	12,98,917	1,27,393	14,26,310

A

Abstract of Statement showing the Numbers and Pay of Staff, Numbers and Cost of Works in

Division, and Percentage Charge under "Construction" arranged according to Superintending Engineers' Circles—cont.

	Capital Account.	IRRIGATION PRODUCTIVE PUBLIC WORKS.										Works.	Repairs.	Total.	Work for which Capital and Revenue Accounts are kept.	Works for which neither Capital nor Revenue Accounts are kept.	Works for which neither Revenue nor Capital Accounts are kept.																																																																																																																																																																																																																																																																																																																						
		Revenue Account.																																																																																																																																																																																																																																																																																																																																					
		Extension and Improvement.					Maintenance and Repairs.																																																																																																																																																																																																																																																																																																																																
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No.	I Circle ..	Rs.	2	23,000	1,225	24,225	Rs.	1,60,000	2,833	1,62,833	21	1,85,630	1,62,833	2,48,463	Rs.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Abstract of Statement showing the Numbers and Pay of Staff, Numbers and Cost of Works in each Public Works

Page under "Construction" arranged according to Superintending Engineers' Circles—cont.

WORKS—cont.																									Remarks.			
IRRIGATION AND NAVIGATION AND AGRICULTURAL ORDINARY—cont.										PROVINCIAL.			EXCLUDED LOCAL.															
Totals.										Navigation Works.			Original Works.															
Totals.										Capital.	Revenue.	Total.																
Totals.													Port Fund.	Educa- tional.	Total.													
Works.										Works.																		
No.	Amount.	Reserve.	Total.	Amount.	Total.	No.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	New Works.	Repairs.	Grand Total, Works, Repairs.	Per- centage of Establish- ment (under "Con- struction") to Works.						
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51										
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.										
No. I Circle ..	8	76,426	39,913	1,16,339	1,23,699	2,39,438	..	..	..	1,085	2,523	3,608	183	7,721	8,304	2,150	8,454	18	2,93,688	1,84,368	3,38,056	9,04,913		17.52				
.. II do. ..	2	61,673	39,913	1,01,586	1,66,999	2,67,585	..	..	..	1,085	2,523	3,608	183	7,721	8,304	2,150	8,454	23	7,57,168	1,51,850	3,25,278	12,78,410		17.53				
.. III do. ..	2	23,000	39,913	62,913	1,21,539	1,84,512	..	..	..	1,085	2,523	3,608	183	7,721	8,304	2,150	8,454	8	1,09,319	1,23,860	1,93,278	4,34,144	21.34					
.. IV do. ..	4	46,680	39,913	85,593	2,27,509	3,13,102	..	..	..	1,085	2,523	3,608	183	7,721	8,304	2,150	8,454	20	3,23,770	1,51,860	3,63,478	6,33,619	23.72					
.. V do. ..	5	66,138	39,913	1,06,051	1,97,099	3,03,150	1	160,443	68,635	2,29,978	1,085	2,523	3,610	183	7,721	8,310	2,150	8,460	24	4,99,796	1,51,878	3,64,120	9,57,784	24.39				
.. VI do. ..	10	1,06,061	39,914	2,05,965	3,47,305	5,53,270	..	..	..	1,085	2,523	3,608	183	7,721	8,304	2,150	8,454	33	4,69,761	1,51,879	4,98,680	11,24,317	34.41					
Consulting Architect ..	..	..	..	..	..	..	..	..	..	..	1,085	2,523	3,608	183	7,721	8,304	2,150	8,454	..	..	..	..	..					
Total ..	31	4,38,968	2,39,479	6,78,447	11,22,700	18,01,147	1	160,443	68,635	2,29,978	6,510	15,140	21,650	1,150	22,320	37,820	12,900	50,750	148	26,21,388	9,35,213	30,27,618	45,84,038	19.56				

Statement showing the Number, the Area irrigated, and the Revenue derived from Irrigation Works under the charge of the Public Works Department.

APPENDIX B.

PRODUCTIVE PUBLIC WORKS						IRRIGATION AND NAVIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.					IRRIGATION AND NAVIGATION WORKS FOR WHICH CONSUMPTION RECORDS EXPENDITURES BEING OF MINUTE.					OTHER IMPERIAL WORKS.					TOTAL.					REMARKS.
Districts.	Number of Acre-feet.	Number of Channels.	Number of Tanks.	Area Irrigated.	Revenue.	Number of Acre-feet.	Number of Channels.	Number of Tanks.	Area Irrigated.	Revenue.	Number of Acre-feet.	Number of Channels.	Number of Tanks.	Area Irrigated.	Revenue.	Number of Acre-feet.	Number of Channels.	Number of Tanks.	Area Irrigated.	Revenue.	Number of Acre-feet.	Number of Channels.	Number of Tanks.	Area Irrigated.	Revenue.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Ganjam ..				ACR.	RS.				ACR.	RS.				ACR.	RS.				ACR.	RS.				ACR.	RS.	The figures in columns showing area and revenue may be accepted as fairly accurate, those relating to Productive Public Works and Irrigation and Navigation Works for which Capital and Revenue Accounts are kept are taken from the latest returns by Mr. W. Wilson, Special Officer in charge of Irrigation Accounts, and others from the latest Proceedings of Government. The numbers of works given are, in some cases only approximate. This remark particularly applies to channels under the Productive Public Works systems other than the Godavari and Krishna where the component works are yet incomplete. As regards numbers of tanks these are correct for those districts for which the of Imperial and Minor Works have been completed, for a few districts these figures are incomplete, and in these cases the numbers are only approximate.
Vengalatom ..											10			408	89.		85	87	ACR.	RS.				ACR.	RS.	
Godavari ..	1	6	608		501,803									0.27	42,714		81	81	26,036	1,05,835	10	81	81	54,239	1,14,540	
Kistna ..					284,371												85	85	26,745	1,20,284		668	85	27,698	25,32,729	
Nallari ..	18	72		87,162	5,72,597												44	44	18,061	51,080	1	466	44	508,095	17,41,774	
Cuddapah ..																	14	295	162,246	6,72,482	1	27	277	225,493	9,69,670	
Kurnool ..														1			38	69	54,962	2,40,815		38	39	55,062	2,40,815	
Bellary ..																	62	62	76,814	96,297			63	22,648	1,33,616	
Chimantoot ..						1	2	2	31,163	1,14,2,669	2	2	3	151	82,147			151	82,147	4,53,993			151	82,147	19,33,635	
North Arcot ..						1	1	270	41,943	1,78,042	2	8	300	10,523	94,524		74	682	240,323	8,96,669	3	73	557	294,428	19,81,652	
South Arcot ..						1	16	14	3,948	16,434	16	69	119	19,46	1,32,421		17	143	31,016	1,91,374	3	169	673	30,399	1,91,374	
Balea ..														2	64,535		187	64,535	3,83,190	11	65	313	216,576	1,81,652		
Coimbatore ..											16	25	1	148,57	7,31,962		11	94	28,357	1,31,763		14	27	20,690	1,37,256	
Tanjore ..	1	1	89		528,190	34,04,560								78	1,730		21	49	29,601	1,46,267	18	46	41	75,983	2,65,935	
Trichinopoly ..	1	1	1		12,890	2,17,360								47,93	3,40,889			69	39,257	1,00,535	1	89	69	83,367	1,00,535	
Madras ..																	44	62	110,856	4,82,499	1	45	62	153,655	7,00,920	
Tinnevely ..	1	33	22	12,856	1,81,107						7	7	158				40	191	192,188	4,62,691		40	191	192,188	4,62,691	
Total .. (c)	6	1,215	94	781,536	79,33,234	2	28	286	79,044	3,37,198	47	191	638	266,236	20,17,423		438	2,198	1,130,613	49,92,432	58	1,667	3,116	4,257,330	1,52,91,357	

APPENDIX C.

Statement showing the Number, the Area irrigated, and Revenue derived from Irrigation Works under the charge of Collectors.

Districts	Number of		Area Irrigated.	Revenue.	Remarks.
	Channels.	Tanks.			
1	2	3	4	5	6
Ganjam	...	2,061	213,937	3,18,378	N.B.—The figures for columns 2 and 3 have been taken from the Revenue Board's Proceedings, No. 1706 of 1901, November 1880. The figures for columns 4 and 5 have been obtained by deducting from the figures shown in the Revenue Board's Proceedings, No. 1724 of 6th July 1882, the totals for works under the charge of the Public Works Department as shown in Appendix B, but in the case of the Godavari District the figures have been got by deducting the figures in columns 2 and 3 of Appendix B from those shown in G.O. No. 681 of January 1881 for the non-delta works in the Godavari District. The amount of revenue due to the Godavari Delta system as calculated by Mr. Wilson is more than that included in the amount shown by the Board of Revenue for the whole District, and therefore the former cannot be adopted to deduce the amount of revenue due to works under the charge of Collectors.
Vizagapatam	...	370	126,776	1,55,907	
Godavari	...	928	81,003	1,22,655	
Kistna	...	406	44,926	75,359	
Nellore	...	537	104,010	1,44,813	
Cuddapah	396	906	181,659	6,12,933	
Kurnool	103	248	16,896	58,682	
Bellary	...	675	88,535	2,79,963	
Chingleput	...	1,474	198,749	3,66,491	
North Arcot	675	1,897	215,187	8,68,892	
South Arcot	...	2,201	193,567	8,65,386	
Salem	...	1,338	81,527	3,21,003	
Coimbatore	38	79	27,275	1,47,283	
Tanjore	...	398	128,830	2,32,476	
Trichinopoly	...	651	54,994	98,682	
Madura	...	1,878	71,161	1,34,533	
Tinnevely	...	2,038	104,271	2,85,915	
Total	1,212	13,685	1,936,684	50,29,402	

APPENDIX D.

Public Works Divisions sanctioned under the Normal Scale (See Appendix A, G.O., 14th July 1881, No. 1725 W.) with the corresponding Civil Districts.

Superintending Engineer's Circle	Public Works Divisions	Corresponding Civil Districts or parts of Districts
No. I	1. Ganjam	Certain works in parts of the Ganjam District.
	2. Vizagapatam	Do. Vizagapatam District.
	3. Eastern Godavari	Only the irrigated portion of the Godavari District and the river with banks as far up as Damagudem.
	4. Western do.	Do. as Damagudem.
	5. A. Project Division	Headquarters at present in Ganjam, but will soon move elsewhere.
No. II	6. Eastern Kistna	Only the irrigated portion of the Kistna District.
	7. Western do.	Do. as Damagudem.
	8. Nellore	Certain works in parts of the Nellore District.
	9. Sangam Project	Also in the Nellore District.
	10. Bellary	Certain works in parts of the Bellary District.
No. III	11. Cuddapah	Do. Cuddapah do.
	12. Kurnool	Most of the Kurnool District, the department here being still in charge of Local Fund Works.
	13. Kurnool Canal Division	Certain works in parts of the Kurnool and Cuddapah Districts.
	14. C. Project Division	Do. Bellary and Cuddapah Districts at present.
	15. West Coast	Till lately work extended over Malabar, Canara, and Nilgiri Districts, and portion of Cochin.
No. IV	16. Coimbatore	Till lately occupied part of the Coimbatore District.
	17. Salem	Certain works in part of the Salem District.
	18. North Arcot	Do. North Arcot District.
	19. B. Project Division	Till lately engaged in Salem and is now in Coimbatore.
	20. South Arcot	Most of the South Arcot District.
No. V	21. Chingleput	Do. Chingleput do.
	22. Buckingham Canal	Runs through the Chingleput, Nellore, and Kistna Districts.
	23. Presidency and Bangalore	Part in the Madras District and part in Mysore.
	24. Trichinopoly	Most of Trichinopoly District, as the department here still retains Local Fund Works.
	25. Tanjore	Certain works in part of the Tanjore District.
No. VI	26. Negapatam	Do. do. do.
	27. Madura	Do. Madura do.
	28. Tinnevely	Do. Tinnevely do.
	29. Consulting Architect	Chiefly in Madras District.
	30. D. Project Division	In office of Chief Engineer for Irrigation.

Remarks

Of the sanctioned thirty Public Works Divisions, it will be observed that only two (Kurnool and Trichinopoly) are quite coterminous with the Civil Districts; others occupy parts as required by the works in hand, and others again, e.g., Nos 5, 13, 14, 15, 19, 22, 23, and 29, have work extending over parts of two or more Civil Districts.

Quite lately much of the work belonging to the West Coast in the Canara and Malabar Districts and the Native State of Cochin has been transferred to Coimbatore, and the size of the West Coast Division reduced to the Nilgiris and parts of Wynad. None of the three newly proposed divisions, e.g., the Central Godavari, Central Kistna, and Cauvery Regulators occupy any but fractional parts of Civil Districts, and their limits have been solely decided by the requirements of the works.

It may also be noticed that in letter to the Government of India, No. 1697 W., dated 9th July 1881, on the subject of the new normal scale, after showing how certain Superintending Engineers' Circles were to be formed, it was added, paragraph 11, that "all the other circles have been made out strictly with reference to the actual works in progress and proposed." No other principle has in fact been observed in the distribution of the charges, whether Superintending Engineers' Circles or Executive Engineers' Divisions.

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APPENDIX B.

Memorandum on the Percentage Charge for Establishment in the Madras Public Works Department as compared with Outlay on Works.

To all acquainted with the varying conditions under which the work of a department like that of this Presidency, where operations of every conceivable character, large and small, concentrated and scattered, have to be provided for by a single establishment, the difficulties of applying the percentage charge as a test of economical and efficient management are such as call for great caution in application.

2. Where work is concentrated, funds supplied abundantly and all the conditions are favourable, the percentage charge is, or ought to be, small, and where to such ordinary advantages there is the additional facility of obtaining the materials to be employed in construction in a finished manufactured form from England or elsewhere, as generally is the case with railway work, iron bridges, pipes for water-supply works, &c., the charges for superintendence should be reduced to a minimum.

3. It has been shown for instance that on the work of the State Railways under the Government of India, the charge for establishment is not much more than nine per cent. The Madras Harbour Works affords even a more marked example. Here as proved by the figured statement which will be found lower down, the establishment charge for construction was only 6.8 per cent. in 1878-79, 4.3 in 1879-80, 4.9 in 1880-81. In 1881-82 with the self same establishment but owing to diminished outlay, the charge rose to 10.7 per cent., and in the year from a continuance of the same cause, the charge may very probably be as high as 20 per cent.

4. With an establishment, the strength and pay of which must in great measure remain unavoidably fixed, this question of the supply of funds is vital as affecting the percentage charge, as may at once be seen from what has occurred here in the last and present years. In 1881-82, the outlay on works being only Rs. 42,47,430, the unexpended charge was 30.9 per cent., though the cost of establishment owing to previous reductions was only Rs. 16,85,442, but in the current year, although from the late sanction of the increased normal scale of establishment the cost has risen to Rs. 20,93,314, the incidence is much less, being only 34.7 per cent., from the fact that it has been found possible to raise the outlay on works to Rs. 60,45,290.

5. The more fact of difference in price of labor prevailing in one part of India as compared with another will of itself "*pro tanto*" alter the incidence of establishment charge. Where labor costs two, three or four times more in one place than it does in another, the percentage charge for the self same kind of work must necessarily be in inverse ratio to these numbers; e.g., if in Burma, where labor is probably three times as dear as in Madras, the fair charge for the supervision of any specific operation be 15 per cent., it follows that 45 per cent. would be the correct equivalent in Madras, as the pay of members of the establishment does not vary with the province.

6. As regards the concentration or otherwise of the work, the Government of India has in Circular XX, P.W., dated 29th September 1881, fully recognised the effects on the incidence of the establishment charge. Here (paragraph 33) it is observed that "experience and inquiry show incontestably that petty and scattered works of the general nature of local works entail expense in respect of supervision if supervised professionally from three to six times as great as works that are concentrated or in large stations, however great the professional skill that the latter may demand."

7. In other words, if 9 per cent. as shown to prevail on the highly concentrated and otherwise favourably placed work of State Railways be accepted as fair in the one case, from 21 to 54 per cent. would be the corresponding rate in the case of scattered works.

8. But quite apart from these and other considerations of a general character, which more or less affect all branches of the department in India, there are special duties devolving on members of the department in Madras which places its establishment in a class by itself.

9. The first of these is the need for the development of irrigation and other works, suitable for either prevention of famine or for execution during famine. It is needless after all that has been said and written by the Famine Commission, by this Government and by the Government of India, to prove the absolute necessity for special arrangements being made as regards projects of this kind, Madras having notoriously suffered more than any other province in India from destructive famines. Suffice it to say that in full recognition of the requirements in this respect four full divisions of officers and subordinates (some not as yet however completely manned. See Appendix A) have throughout a great portion of the past year been engaged exclusively in the preparation of projects of the above character. Colonel Hasted's services were for several months similarly engaged, in bringing up the completion estimates for the Godavari system. Major Pennycook has for the past three months been on special duty, in the preparation of the Perryaur Project—a protective work of great importance. Mr. Nordmann and a Sub-Engineer were also for a large portion of last year engaged in reconnoitring and surveying the country between Vizagapatam and Raipur, in view of the location of the proposed famine protective line of railway in this direction.

10. In these and all similar cases while there is a very heavy charge under Establishment there is absolutely no outlay under the head of "Works." Comparison is thus out of the ques-

tion, as the percentage charge would here be infinitely large. To mix up the cost of all establishment so employed is in fact misleading; yet from the method by which the charges are shown in the departmental accounts, this is what actually occurs in determining the percentage charges.

11. As shown by the correspondence in regard to famine works, the establishment thus specially set apart must yet for several years be engaged on the preparation of projects. Not only so; hardly a single Superintending or Executive Engineer but has some special work of a similar character to think of and devote some of his time to.

12. The next and much more important consideration in regard to the special duties devolving on the Madras Establishment, has reference to the care and maintenance of the existing irrigation works.

13. In this Presidency no less than 5,196,279 acres are classed as "Wet" land, the revenue under which is all dependent on irrigation works, of which the following are the numbers, omitting many very minor works:—

Tanks.				Numbers.
Irrigating below 200 acres each	...	...	...	18,685
Do. above do.	...	...	...	3,116
Total				21,801
Channels.				
Irrigating below 200 acres each	...	...	...	1,212
Do. above do.	...	...	...	1,867
Total				3,079

Animals. 56

14. In Appendices B and C other details are given showing more particularly the distribution of the works under the Public Works and Civil Officers, respectively, but the mere enumeration of so many thousands of tanks, channels or other works can by itself convey but little real appreciation of the duties devolving in practice on the establishment. No one whose service has not been devoted to the care of these works, or whose attention has not been called daily to their requirements, can form any adequate idea of the practical effects of such a charge in reference to establishment.

15. This condition of matters has, it may be said without exaggeration, no approach to a parallel in any other part of the world; consequently deductions made from the experiences in Northern India or anywhere else where the conditions are entirely different are altogether inapplicable.

16. It is in the discharge of duties, often apparently of the most trivial description in maintaining the irrigation works, that the value of a trained and efficient establishment is best shown, though for that very reason least demonstrable by figures.

17. An establishment of this kind costing a large amount per annum, may by the careful and intelligent expenditure of only a very small amount on repairs, prevent the loss of enormous amounts of revenue, while on the other hand an inefficient and comparatively costless establishment may after expending large sums, fail to prevent large remissions of assessment. An establishment whose percentage charge is perhaps as high as 100 may in other words, if thoroughly efficient, prove infinitely more economical than one whose cost is only 25 per cent. Nowhere is this truth more clearly shown than in this Presidency.

18. Where as in the case of the delta works it has been found feasible to maintain a moderately large and efficient establishment the results have as well known been most encouraging, and the profit far in advance of any of the irrigation works in Northern India.

19. Nothing has in greater degree struck the Engineers accustomed to the unpretentious but much more effective works of Madras, than the great expenditure incurred in the designs of such schemes as the Ganges Canal, the Sone works, and others of a kindred character; but a little reflection will show that the system of judging the value of an establishment by its small percentage charge, directly leads to such results. The officer who carries out "grand" works regardless of expense is enabled of necessity to show the smallest percentage charge on his "works" outlay, and a direct premium is thus held out to lavish expenditure of all kinds. In Bombay these results are even more marked.

20. The only valid test must, it is thought, be that of useful effect, and to ensure true economy we must *first* ascertain precisely the work to be done; *second*, train up the most efficient establishment for its execution.

21. Efficiency and whatever it may cost to reach the needful standard is in fact the only true test, and by so much as the establishment fails in reaching that, must the Presidency pay by loss of revenue. As well expressed by a very able predecessor, the late General Charles Oxley, cheap establishment means dear work.

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22. Here it may not be out of place to observe that no efforts have been spared to place the Madras branch of the General Public Works Department on a satisfactory footing. Its Code, forms of account and system of control have all been improved and are believed to be quite on a par with any other in India. The reductions effected in 1879-80 had a very beneficial effect on the "personnel" of the establishment (though leaving it too weak, unfortunately), and the late arrangement of the Superintending Engineers' Circles leaves little to be desired.

23. All now needed is (1) a more ample allowance than is at present admitted to provide against casualties from sickness, leave, &c., and (2) the gradual increase of the establishment under the head "Construction" "post pass" with the enhanced means which it is hoped may soon be placed at disposal.

24. Improvements are needed to the curriculum of the Civil Engineering College, and the lower grades of the department and some of the office establishments require both reorganization and strengthening. The details of these improvements have been carefully worked out, but it is needless to dwell on these matters further here.

25. Turning now to the actual cost of the establishment of this department as shown in figures, the following table gives all the available information for five years including that now current:—

Statement of Percentage Charge of Establishment, Madras Public Works Department, based on actuals for the Years 1875-76 to 1881-82 and in the Budget Estimate for Current Official Year.

Column.	Description.	1875-76.	1876-77.	1877-78.	1881-82.	1882-83. Estimated.	Remarks.
(1)	Total outlay on works under all heads of service, Imperial, Provincial, Local, including Harbour Works.	51,59,330	57,40,512	57,41,507	56,95,372	57,15,390	Figures in column (1) of (B) schedule have been given by the Government of Public Works Accounts, in which has been assumed on the application made to the Government of India, account of the Madras Public Works.
(2)	Madras Harbour Works.	7,75,409	11,86,512	12,86,194	6,62,908	6,53,000	
(3)	Total Outlay Works only.	43,83,921	45,54,000	44,55,313	50,32,464	50,62,390	
(4)	Total Outlay on Establishment under all heads of service, excluding Harbour Works.	24,74,378	28,55,778	24,45,193	25,32,907	24,62,479	Figures in column (1) of (B) schedule have been taken from a return furnished by Mr. W. Wilson.
(5)	Do. Madras Harbour Works.	54,096	56,166	55,431	71,005	56,850	Figures in column (1) of (B) schedule have been taken from a return furnished by Mr. W. Wilson.
(6)	Total Outlay Establishment only.	25,27,093	29,11,944	25,00,624	26,03,912	25,19,329	Figures in column (1) of (B) schedule have been taken from a return furnished by Mr. W. Wilson.
(7)	Percentage charge for Establishment without deduction of any kind.	49.0	50.9	43.4	50.4	44.1	Figures in column (1) of (B) schedule have been taken from a return furnished by Mr. W. Wilson.
Deductions.							
(8)	Direct Revenue under Imperial, Provincial, Local.	4,31,450	4,13,140	4,05,285	5,79,147	4,25,071	
(9)	Ten per cent. on same.	89,150	81,214	80,628	62,914	42,507	
(10)	Indirect Revenue Productive Works (Irrigation).	26,60,231	26,34,317	25,24,022	27,48,014	26,18,415	
(11)	Six per cent. on the same.	2,10,613	2,56,574	2,35,441	2,25,449	2,11,900	
(12)	Indirect Revenue on Irrigation and Navigation Works other than Productive.	70,00,000	70,00,000	70,00,000	70,00,000	70,00,000	
(13)	Three per cent. on the same.	2,10,000	2,10,000	2,10,000	2,10,000	2,10,000	
(14)	Total Deductions, columns (9) + (11) + (13).	5,18,503	4,87,548	4,96,969	4,98,494	4,63,977	
(15)	Correct Establishment charge, columns (6) - (14).	24,08,591	24,24,396	20,03,781	21,05,418	20,58,452	
(16)	Correct percentage charge of Establishment, column (15) on (3).	34.5	31.2	45.5	27.6	27.4	

26. In order to meet the financial rules of the Government of India the establishment charges have hitherto been distributed at certain fixed percentages over Imperial and Local works. This has had the effect of always leaving a large residuum to be met from "Provincial" funds, which thus at times have had to bear disproportionately heavy charges.

27. The system is a purely artificial one, and quite untrue in fact, as from there being no separation of duties among the members of the department work of all classes, whether Imperial, Provincial, or Local (now only very few), is, and has always been, carried out by one and the same establishment.

28. This being the case it has been considered advisable to set aside the artificial element in the above table, and by bringing together works under all heads of service, to show the true percentage ratably distributed over all equally.

29. It will be observed that without taking into account any deductions which have to be made the highest percentage charge in the five years, including "Direction," "Construction," and "Accounts," has been 42.0 and the lowest 29.4.

30. In the matter of deductions discussions with the Government of India have continued now over some years, and have as yet been only partially concluded.

31. As a provisional arrangement the Government of India has ruled that, ten per cent. of direct revenue of all kinds claimable by the department may be shown as a contribution towards the cost of establishment; also that six per cent. may similarly be credited on the indirect revenue of Productive irrigation works.

32. There has been no difficulty in deciding on the amounts of direct revenues for the years dealt with; but as regards the indirect revenue the matter has been otherwise. Here from the different system of land tenure prevailing in this Presidency from that in Northern India, it has only been found possible after long inquiry by a specially qualified Civil Officer (Mr. W. Wilson) to decide, first as to what portion of the total revenue collection could fairly be considered as the profits, or increase of revenue, due to the several Productive works carried out by the department, and second the share of enhanced land revenue, apart from the value of the water also due to them.

33. Mr. Wilson has only quite lately been enabled definitely to settle under both the above heads, the amount of profits claimable by the Godavari, Kistna, Canavery, Pennar, and Srivai-kuntham, works, and column 10 in the table gives the total figures ascertained for these systems.

34. This Government has also claimed that three per cent. should for analogous reasons be credited on account of the indirect revenue due to Imperial works of navigation and irrigation not classed as Productive, but as yet the Government of India have not been enabled to convey their assent, owing chiefly to the difficulties experienced in deciding on the precise amount of the revenue involved. It is not understood that any difference of opinion exists as to the propriety of the contribution, but merely as to its amount. The local Revenue authorities have as yet been unable to give the precise figures, but from the available evidence the amount cannot it is thought be approximately fixed at less than 70 lakhs per annum, which is accordingly the figure adopted provisionally in the table, as that on which the three per cent. may fairly be calculated, as a credit towards the cost of the Public Works establishments engaged on maintenance of the works.

35. Making the deductions above adverted to it will be observed that the maximum percentage cost of establishment in the five years has been 34.5 and the minimum 19.6.

36. It must not be supposed that the deductions as above claimed have been realized in the accounts of the several years to which they relate. As a fact they have not been so, and the figures given therefore merely indicate (excepting in the last official year, when a small instalment has been adjusted) how under a more equitable system than has hitherto prevailed the accounts should have stood, and that in defect of this Provincial has lost and Imperial gained not less than 22 lakhs of rupees in the period comprised. See column (14).

37. Again it must not be thought that such adjustments and deductions are in any way exceptional or unrecognized in the other provinces of the empire. The reverse is in fact the case. Not only have such contributions been admitted in the provinces of Northern India, but to a very much greater extent than has ever been even claimed in Madras.

38. From the following statement supplied by the late Inspector-General of Irrigation, it appears that on averages of the years 1875-76 to 1879-80 there has yearly been admitted as a charge against the revenue of the following works the sums below mentioned in addition to the 25 per cent. on works charged in the Public Works Department for establishment, viz.:—

Averages for Years 1875-76 to 1879-80 inclusive.

Canals.	Outlay on Works.	ESTABLISHMENT		Revenue.	Percentage of Column 4 on Column 5.	Percentage of Total Establishment Charges Column 5 + 4; if charged against Works only Column 2.
		25 per Cent. on Works.	Remainder.			
1	2	3	4	5	6	7
Permanent.						
	RS.	RS.	RS.	RS.	RS.	RS.
Ganges Canal	3,94,011	98,503	5,12,446	31,36,781	10.3	155.0
East Jumna	89,520	22,380	95,946	9,15,350	10.5	122.2
West Jumna	1,38,165	34,541	2,29,631	13,47,396	17.0	191.3
Barce Doab	2,41,562	60,391	1,99,783	9,00,259	22.2	107.7
Inundation.						
Upper Sutlej Canal	49,268	12,317	30,684	1,08,817	28.2	87.1
Indus	1,55,126	38,781	54,259	1,92,964	28.2	60.0

about table which I have added to the calculations given in General Order will show how the results under the selected works compare with those of the Presidency, and prove (1) how a really high percentage charge for establishment is imposed in other provinces, and (2) "paradoxically" that the Madras charges are very much less than of long since as has been asserted. It is true that the Public Works establishment charges under the Charges Canal and some others include cost of the revenue assessment though not of other items; but if the whole of the civil charges in the corresponding areas were taken into account in the different provinces, the balance in favor of Madras would be still more marked. This matter has in a previous communication been brought under the notice of the Government of India, but the Government has not yet been favored with any reply.

40. It may also be remarked that had an amount equivalent to that debited to the revenue of the Charges Canal as above shown (viz., 1894) been thus shown as a contribution to establishment in the Madras accounts, the actual relief on that account alone would have amounted nearly to Rs. 10 lakhs, to which adding the reductions claimable, columns (1) and (2), averaging Rs. 2,00,000 per annum the total relief afforded to Provincial in Madras would not have been less than Rs. 10,10,000 per annum. The cost of establishment estimated to be charged in various years would be a corresponding reduction to only Rs. 12,51,912 and the general percentages against works 20%.

41. On the whole it will not be too much to assume that were the Madras establishment placed on precisely the same footing as the corresponding establishments of Northern India, and were all the cost of officers and subordinates engaged exclusively on investigation of projects for public works struck out of the account, the actual charge as against "Works" would fall below 20 per cent. including all heady viz., "Construction," "Direction," and "Assessment."

Signed: R. H. SANKEY, General RR.

APPENDIX F.
Statement showing the probable loss of Revenue consequent on the neglected condition of Tanks and other Irrigation Works from
N. P.—All areas and values are expressed in Lakhs.

	1863-64.		1864-65.		1865-66.		1866-67.		1867-68.		1868-69.		1869-70.		1870-71.		1871-72.		1872-73.		1873-74.		1874-75.	
	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.
(a) Entire cultivable wet area in the Presidency ..	525	2169	525	2169	525	2169	525	2169	525	2169	525	2169	525	2169	525	2169	525	2169	525	2169	525	2169	525	2169
(b) Deduct Inam wet ..	82	310	82	310	82	310	82	310	82	310	82	310	82	310	82	310	82	310	82	310	82	310	82	310
Cultivable wet area belonging to Government.	443	1859	443	1859	443	1859	443	1859	443	1859	443	1859	443	1859	443	1859	443	1859	443	1859	443	1859	443	1859
Wet area under occupation according to Jambhandy statements.	319	1739	319	1739	319	1739	319	1739	319	1739	319	1739	319	1739	319	1739	319	1739	319	1739	319	1739	319	1739
(c) Land not brought under cultivation apparently for want of supply of irrigation.	94	350	114	419	94	350	94	350	94	350	94	350	94	350	94	350	94	350	94	350	94	350	94	350
Of the lands occupied, i.e., remissions granted owing to bad seasons or deficient water-supply, &c.	..	149	..	179	..	159	..	189	..	219	..	249	..	279	..	309	..	339	..	369	..	399	..	429
Total Loss ..	..	479	..	549	..	609	..	679	..	749	..	819	..	889	..	959	..	1029	..	1099	..	1169	..	1239

(a) Presumably some of the land thus assessed as "wet" would require considerable water being conveyed with some "run" in.
(b) Most of this land will probably be brought under irrigation when proper facilities are supplied.

(c) Part of this must not be eliminated as on the creation of a New Year.

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APPENDIX F.

Statement showing the probable loss of Revenue consequent on the neglected condition of Tanks and other Irrigation Works from 1863-64 to 1880-81.

N.B.—All areas and values are expressed in Lakhs.

1867-68.																												1868-69.																												1869-70.																												1870-71.																												1871-72.																												1872-73.																												1873-74.																												1874-75.																												1875-76.																												1876-77.																												1877-78.																												1878-79.																												1879-80.																												1880-81.																												Total.																												Remarks.																																																																																																																																																																																																																																																																																																																																																																														
Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.			Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.		Extent.		Assessment.	

* require considerable outlay being covered with stones "roh" &c. expense when proper facilities are supplied.

(5) The whole of this must not be eliminated as on the creation of improved facilities of water-supply some of the Inam lands may become liable to water-tax.
* Famine Year.

GOVERNMENT OF INDIA
PUBLIC WORKS DEPARTMENT.
GENERAL

1770
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The Secretary to the Government of Madras
Public Works Department.

Sunday, 9th July 1884.

In reply to your letter N^o 1502 W dated
16 June 1884, relating to the increase of Engineers
on the Madras Establishment, I am directed
to state that the Royal Indian Engineering
College Engineers who have just passed out
of College, and who will be available for
active work as Assistant Engineer in 1885
have already been allotted, and have been
given to Madras. The Government of India
will, however, consider the wants of the
Madras Presidency, in this
when making the distribution of the
Engineers who will pass of the College
that year. But it is not probable that a
appreciable increase can be made in a
number given to Madras.
2. With reference to para 3 of your letter
I am to state

Revised

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100 14 1/2 W 310-6-92
 20 1/2 W 16-10-92
 100 2 1/2 W 30-1-85
 10 1 1/2 W 24-6-89
 10 1 1/2 W 1-6-89
 100 1 1/2 W 11-6-89

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59/14
Boul. of 1884
PUBLIC WORKS.

(13)

19 July 1770

General Engineer Report

Letter from the Genl. Secy.
regarding the suggestions
of this report as to the
mode of filling up the
abandoned places recently
saturated for the
recovered.