

(1) Number of pages _____
(2) Date of repair _____
(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	1972-73	Press
B.P. No.		Mis.
Dated	2-8	1876.

Not to be folded or roughly handled

No. 53. Read the following letter from Colonel C. H. DICKENS, R.A., Secretary to the Government of India, Public Works Department, (Account—Irrigation,) to Major-General G. W. WALKER, R.E., Secretary to the Government of Madras, Public Works Department, (Irrigation Branch,) dated Simla, 29th May 1876, No. 218 A—I:—

I AM directed to acknowledge receipt of your letter, No. 697, dated 17th March 1876, furnishing further information in connection with the application made by the Government of Madras for an increase to the ordinary grant for irrigation works, and in reply to say that the representation made will receive due consideration in the distribution of the allotments for 1877-78. But I am to point out that the distribution and appropriation of the grant for 1876-77 would be irrespective of unforeseen and exceptional needs, the guide for what would be allowed for the year following.

2. In order to admit of a decision on the sum that should be allowed for special purposes, the Government of India will require to be furnished with the particulars called for in Public Works Department letter, No. 214 A—I, dated 21st July 1875, regarding the several groups of tanks and the revenue dependant on their efficient maintenance so as to ensure that the grant is assigned with due regard to the requirements of existing works and of unforeseen and unexceptional works. It is observed that one of the items comprised in the amount which the Government of Madras consider should be fixed as the normal grant for irrigation works ranges from three lakhs to one lakh per annum for works classed as non-irrigation. Before this sum can be allowed from Imperial Funds, the Governor-General in Council has no alternative with due consideration to the state of the finances, but to ask that the works to which this sum is to be devoted should be specified, and the liability of Imperial Funds to bear the charge made clear. The works probably consist of embankment and drainage works, the charge for which is apparently one that should be provided for from Provincial and Local Funds. On this point I am to invite the attention of the Government of Madras to the orders issued on the subject as quoted in the margin.

3. The promise made that the information required in regard to customary labor has been noted. But I am to ask that the Revenue Department may be urged to hasten the submission of the report on the subject which was promised more than three and a half years ago.

No. 54. ORDER THEREON, 2nd August 1876, No. 1,972.

IRRIGATION, No. 9.

Account.

ORDERED that the foregoing letter be communicated to the Financial Department, with reference to paragraph 3 of G.O., No. 2,840, of the 2nd October 1875, and to the Revenue Department and other departments and officers concerned

*Proceedings of the Madras Government, Public Works Department,
2nd August 1876. No. 1,973.*

in connection with paragraph 4 of the same order. Also in connection with customary labor, the attention of the Revenue Department will be drawn to the orders as per margin, and an early communication, for the information of the Government of India, of the conclusions which may be arrived at will be requested. It must, however, be observed that the obligation of customary labor for the partial repair of the old irrigation works of this Presidency can in no way affect the necessary expenditure on the descriptions of work for which an increase of the ordinary grant has been solicited.

2. The Government observe that the most pressing requirement of the irrigation works of this Presidency generally, apart from those large works or schemes which have to be separately dealt with, is the provision of adequate means of disposing of surplus and next, though in a minor degree, the supersession of irregular methods, such as cuts in the bunds of tanks, of drawing off water for irrigation, by the provision of suitable distribution sluices. This subject must be again pressed on the attention of the Government of India, and in order that this may be done effectually it is essential that the most complete information which can be obtained should be brought forward in the reply to the letter above recorded, which will be transmitted in due course. The numerous estimates for the repair and improvement of irrigation works which have been reviewed and sanctioned during the past two years, afford very good data for exhibiting the former and intended circumstances of these works in a clear manner, and for showing how important are the measures which are being taken, and which it is desired greatly to extend and hasten, for ensuring their safety and efficiency. The Chief Engineer for Irrigation will, therefore, arrange to have such information got ready as soon as possible. It will be desirable that this subject should be laid before the Government of India distinctly on its merits, and independently of the question of the increase of the Ordinary grant for other purposes, and this will be done directly the necessary data for a further and more complete representation of the circumstances than has hitherto been made are forthcoming.

3. The proposed normal grant of from three lakhs to one lakh for Agricultural works classed as non-irrigation is intended principally for—

1. River Conservancy.
2. Flood embankments.
3. Drainage.
4. Statistical information and data.

The proposed grant even if taken at the highest figure named is of course but a very small sum if considered in reference to the extent of this Presidency, and it will manifestly admit of the carrying into execution of only a few well considered and demonstrably highly necessary improvements. It may be noticed with regard to—

1. *River Conservancy* that, as a rule, the many rivers of this Presidency must be left to take their natural course without interference, and only when Government interests of importance are concerned or when moderate outlay will secure great proportional benefits can general conservancy be attempted. On the other hand those rivers which are Deltaic in their circumstances, and from which the spill in ordinary

*Proceedings of the Madras Government, Public Works Department,
2nd August 1876. No. 1,973.*

or high freshes leaves the regular river channel and finds other outlets, expenditure on conservancy to a greater or less extent appears to be essential to the avoidance of waste of money in other directions, and this expenditure will necessarily come under Original Works or Repairs according to the description and character of the work to be done. For such work as should be treated as Repairs no special provision by way of increase of the ordinary grant is requested, but for Original works of this kind the Government have at present no funds at their disposal, and must remain without any until in the grant the necessary provision may be made.

2. *Flood embankments.*—The interests involved are numerous. There are to be protected, first, irrigated lands and the works connected with them; secondly, lands under dry cultivation; thirdly, the communications of the country generally; fourthly, villages. The cultivated lands again belong to Government, to Zemindars, to Inamdars, or other private individuals. The roads are made and maintained from Provincial and Local Funds. In the majority of cases it would apparently be impracticable to distribute the incidence of the charge among all these different interests, and even were this done the Government would frequently be powerless to exact contributions from Zemindars and other persons. Again, the assessment of the value of protective works to the roads and communications, including railways, of a tract of country is a very difficult matter, though as these communications multiply, as they are doing in all those parts of the country in which expenditure of importance on embankments is likely to be proposed, the need and value of protection will be readily understood. Practically what has to be considered is whether the Government interests concerned render expenditure expedient. There is the further consideration that in the majority of cases schemes of flood embankment are proposals for rendering old systems of embankment, which have been demonstrated to be inefficient, secure. The Government however consider that there is no valid reason for omitting to show in all cases as clearly as may be practicable what are the nature and extent of the several interests involved, and to exhibit these on a map, showing the tract of country to be protected, the extent and position of irrigated and unirrigated lands, the position and extent of all considerable Zemindaries, the roads, railways, &c., will present no difficulty if it be understood from the first that such information is in its degree as requisite as the determination of flood levels and the ascertainment of the levels of the country to be protected. Whenever also the Zemindary lands bear a considerable proportion to the whole area it must be clearly shown whether the embankments proposed are throughout their intended length requisite, independently of any special protection of Zemindary lands. Small private holdings such as Inams, &c., cannot be exhibited on the map, but it may and should be stated thereon what is their extent in the gross, and information on this point can be obtained from the Revenue Officers. It will then rest with the Government to decide whether in any particular case it is desirable or necessary that public bodies or private persons whose properties will be benefited should be called upon to contribute to the cost of the protective works.

3. *Drainage.*—Special information has been called for with reference to the circumstances of the drainage of villages in the Godavery Delta, and it will be

G.O., No. 2,840, 2nd October 1875.

determined in due course from what funds, other than Imperial, any work not rendered necessary by the irrigation works or the development of irrigation, shown to be required, is to be provided for village drainage there and elsewhere is, however, not by any means the chief work of this kind which will have to be carried out. Drainage works ordinarily are required not to secure wholly or chiefly sanitary advantages, but in the interest of agriculture both irrigated and unirrigated. The need of drainage is naturally more especially felt in the alluvial lands which have been formed by the great rivers, and is more or less requisite to the efficient cultivation of the land with either wet or dry crops. Hitherto the proper incidence of charges on account of the drainage of land for agricultural purposes has not been sufficiently considered, and as a result the drainage works on any considerable scale hitherto carried out, such as the main drainage of the Godavery Delta, have been charged exclusively to the Capital Account of the Delta irrigation works. It remains to be decided how such charges should be distributed. The subject will be remitted to the Revenue Department with a view to the early consideration of the best way of determining the proper incidence of cost of drainage works undertaken in the interests of agriculture. It is to be observed that the presence of Zemindary on proprietary estates in any particular tract of country will not necessarily affect the question. No special works will of course be undertaken for the benefit of such estates except at the expense of the proprietors, and the main drainage, although it may affect them beneficially indirectly, will be undertaken only when the Government interests are of sufficient importance to warrant the outlay shown to be necessary.

4. *Statistics.*—The expenditure under this head will never be large, but it nevertheless is of much importance that it should be understood definitely by all District Officers that they are expected to work on proper data, and that where these are deficient or unsatisfactory, measures should be brought forward for sanction for making them sufficiently complete for practical purposes. Among the more important subjects needing careful attention and investigation are—

(1.) The quantities of water required and used for irrigation, respectively, with the determination of the proper quantity required for given conditions, such as soil, climate, subsoil, water level, &c.

(2.) The flood discharges from catchment basins of different areas, from those of large rivers to those of ordinary tanks. Upon such information must depend the economical and efficient arrangement of all drainage works and surplus works, &c.

(3.) The discharges during a limited period of rivers and streams of moderate size or having moderate drainage basins, as compared with the recorded rainfall of the same period within or in the immediate neighbourhood of the basin concerned. Upon such information and on reasonable deductions therefrom, combined with annual records of rainfall, will depend the determination of the area which the drainage from a basin of any given size may be expected to irrigate.

(4.) The settlement of co-efficients of discharge over surplus or regulating weirs under different ordinary conditions of form of crest, and of its level in respect of channel of approach and of outfall. Until more is known on this point than at present arrangements must continue to be based on very imperfect data; and there are several

other subjects, the difficulty of dealing properly with which in the absence of better data than have yet been made available is patent to all members of the department who have endeavored to do their work thoughtfully. Experiments on the best way of using materials when not specially connected with particular works should also come under this head of expenditure. The need of experiment with a view to make the best use of the materials, available in the several districts or parts of districts, needs it is thought no demonstration.

4. The grouping of irrigation works has recently been provided for in a systematic manner by the Chief Engineer for Irrigation, whose instructions Circular No. 76, dated 26th June 1876. will, it is anticipated, lead to the completion of this very necessary work within a moderate time. The progress made hitherto with this grouping generally has been from several causes less rapid than is satisfactory, and the most prominent of these causes has been the necessity for saving revenue and rendering cultivation practicable by the immediate repair of the large numbers of works, which were severely injured by the storms of May and October 1872, and October, November, 1874. At the same time the Government are assured that the importance of the subject has not been lost sight of, neither have its requirements been ignored. As far as practicable the connection of individual works with other works has been noticed, and the requirements have been considered in this connection, and so far as the current and pressing demand for repairs in all directions would admit, attention has been given to tanks by groups. It has not been possible under the circumstances to insist upon the complete observance of the rules laid down for the treatment of groups of tanks, but attention to them has been required whenever the public interests would allow of systematic treatment. It is to be observed in connection with this grouping of irrigation works that its completion will not of itself indicate, as seems to be supposed by the Government of India, what amount it is necessary to spend on the maintenance and improvement of such works. The main object of the grouping is to ensure proper and systematic management with due consideration of the real circumstances of the works. The number of tanks in the several districts of this Presidency, the irrigated area under them, and the revenue dependent upon them, have been already given in the Proceedings of

Total number ...	...	...	38,982
" acreage ...	...	...	4,583,888
" revenue ...	...	...	192,23,465

the 14th October 1875, No. 2,931, which were transmitted to the Government of India, and the division of these tanks into groups will effect no essential alteration of the conditions to be satisfied. It has already been arranged to expend annually upon Repairs proper about 8 per cent. of the revenue, and the grants for Repairs in 1875-76 and for the current year approximate to that percentage. To make this expenditure, however, really beneficial to its full extent, it is essential that concurrently the improvements required to render the tanks safe, and which repair alone cannot possibly do should be carried out, and these improvements will be unattainable until the Minor New Works grant is materially increased.

5. Ordered that a copy of these Proceedings be forwarded for the information of the Government of India, in anticipation of further information being furnished on

Proceedings of the Madras Government, Public Works Department,
2nd August 1876. No. 1,973.

the subject of customary labor, incidence of drainage charges and of the grants required
for improvements (Minor New Works) New Works, Non-irrigation.

(True Extract.)

(Signed) G. W. WALKER, Major-General, R.E.,
Secretary to Government.

No. 55.

DOCKET No. 1,973, dated 2nd August 1876.
Copy of the above forwarded to the Government of India.

(True Extract.)

Colonel,
Offg. Under Secy. to Govt., P.W.D.,
for Secretary to Government.

Exd. W. H. French.
Spare Copies

All communications
should be addressed
to the Secretary.

No. 218 A. J.
GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.

ACCOUNT

Simla, 29 May 1876.
The Secretary to the
Government of Madras,
Public Works Department.
Irrigation Branch.

I am directed to acknowledge receipt
of your letter of 6th March 1876, furnis-
ing further information in connection with the
application made by the Government of Madras
for an increase to the ordinary grant for
Irrigation Works and in reply to say that the
representation made will receive due consideration
in the distribution of the allotments for 1877-78.
But I am to point out that the distribution and
appropriation of the grant for 1876-77 would be
irrespective of unforeseen and exceptional needs,
the guide for what would be allowed for the
year following.

2. In order to admit of a decision on the
sum that should be allowed for special purposes
the Government of India will require to be furnished
with the particulars called for in Public Works
Department letter No. 214 dated 21st July 1875 regarding
the several groups of tanks and the revenue

defendant

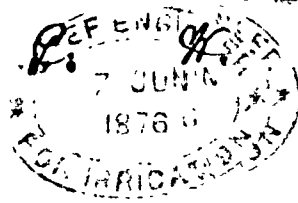
dependant on their efficient maintenance so as
to ensure that the grant is assigned with
due regard to the requirements of existing works
and unforeseen and exceptional works. It is
observed that one of the items comprised in
the amount which the Government of Madras
consider should be fixed as the normal
grant for irrigation works ranges from 3 lakhs
to 200 lakhs per annum for works classed
as new irrigation. Before this sum can be
allowed from Imperial funds the Governor General
in Council has no alternative with due considera-
tion to the state of the finances, but to ask
that the works to which this sum is to be devoted
should be specified, and the liability of Imperial
funds to bear the charge made clear. The works
probably consist of embankment and drainage
works the charge for which is apparently not
that should be provided for from Provincial
and local funds. On this point I am to invite
attention of the Government of Madras to the
orders issued on the subject as quoted in the
margin.

3 The promise made that the information
required in regard to customary labour has been
provided. But I am to ask that the Revenue
Department may be urged to hasten the
submission of the report on the subject which
was promised more than 3 years ago.

P.O. D. L. No. 26212
20th July 1875.

I have the honor to be
Sir
Your most obedient servant
Dickens Colonel R.A.
Secretary to the Govt of India

C.H.
21.7.76.



1876 D. F.

2
88. 55 66

2.3 05 2004
df.d-7

FORMER CASES.

No. 1445 of 1876

vide G.O. No. 214-21 July 1875
see G.O. No. 2931 dated 29/5/75

Form No. 29. 1876 Department
Receipt No. 264
From The Govt of India
No. 5566

Receipt No. 264
Dated 7 June 1876

No. 218 A.I.
Dated 29 May 1876
Received 11 August 1876

LATER CASES.

No. of 187

Subject: - Increase of Budget grant for Ordinary Expenditure

Sent to Government with No. 18 W. of
Printed with G. O. No. dated

To. E. I.
7-6-76
ENCLOSURES. 1

REMINDEES RECEIVED.

No. 1, dated 187
" 2, "
" 3, "
" 4, "
" 5, "

Orders and Proceedings in file.			
No.	Date.	No.	Date.
69717	17.6.76		
69617	do.		
47817	7.6.75		
282102	2.6.75		
293114	do.		
1804	17.6.76		

KEEP-WITHS.

No. 53 -

Recd from -
Recd - 27.7.76 Ptd 2.8.76
Recd - 8.7.76 Ptd 26.7.76

Explanatory Memorandum

Submitted with reference to the remarks of the Honble Sir W. Robinson on the 2nd page of the draft order in letter from Government of India No. 218 A.I. of 29th May 1876.

The letter of the Government of India refers to the increase of the Ordinary grant, and that increase is in part due to a larger amount being necessary for maintenance and repairs than was the case formerly. The repair grant has been increased considerably viz from 11 or 12 to 15 1/4 lakhs this year and some increase of the Ordinary grant generally has resulted owing to the Government of India considering in

Thanks
1/8 W.D.

The latest likely to be available and entered up in the District Registers.

6. The list in the District forms may be furnished as follows:—
 Form A. group by group completed
 Form B. do do do do do
 Form C. for each tract of country

(wide remarks on Form A)

Form B. complete as to all the key should be sent to this office in duplicate and one copy after examination will be transmitted to the Examiner of Accounts.

7. The progress of this work of grouping will be roughly ascertainable from the area and revenue accounted for in the list, and accordingly quarterly a return to the Subjoined form showing the progress made will be due in this office on the 15th of April, July, October.

A. ...
 B. ...
 C. ...

+ average of 5 years.

primary of each year.

Irrigated area of District
 Acres—

— " — revenue do —

Area under irrigation works for which Capital & Revenue Accounts are kept
 Acres—

Revenue of do. do —

Area under irrigation works of which a continuous record is maintained
 Acres—

Revenue do. do —

Total acres

Balances

		Imper
		Imper
		Imper
		Imper

distributing the grants
generally to India generally
the grants and expenditure
of the preceding two or
three years, but it may
be said that the additional
outlay on repairs does
affect the amount available
for the other classes of
works, and no doubt
more customary labours
re introduced more generally
there would be more money
for the other classes of
works referred to. The
proposed addition to para
1 of the draft order has
therefore been written as
shown for approval.

W.

Lt. Colonel Lt.
Joint Secretary to Govt
P.W.D.

Astacumund,
21st July 1873

Circular No. 76

Grouping of
Irrigation
Works.

The classification of irrigation
works under G.O. No 1102 & 1030
of the 30th April 1872 & 3rd April
1873 will, it is probable, be either
materially modified or possibly abol-
ished altogether, each classification having
been ordered in connection with the
Capital and Revenue Accounts, the
scope of which has been altogether
altered.

2. The grouping of irrigation
works for administrative purposes
and for professional treatment
remains ~~however~~ necessary as
ever, and the information which
has been collected in classifying
works will be of much assistance in
carrying out the grouping.

3. Besides the irrigation works
or systems of irrigation for which
Capital and Revenue Accounts
have been ordered to be kept, and

G.O. No 1504
dated 17 June 76

de these for which a continuous record
of expenditure is to be maintained
and its results recorded which
latter works are referred to and
the information required for which
is detailed in this office, No. 11
dated 11/11/00

There are the
numerous irrigation works of
the several districts to be dealt
with, and of these those which are con-
nected have to be grouped, and
hereafter dealt with with due con-
sideration of this connection.

4. In order that a uniform
system of recording the groups
may be adopted, that the progress
of the grouping may be regular,
and that the results may be made
available as the work proceeds
for immediate use, the forms appended
to this circular have been drawn
up. The irrigation works of the
kind referred to fall naturally under
four descriptions.

Form A

1st Irrigation works supplied by rivers
and streams.

Form B

2nd Tanks in groups.

Form C

3rd Isolated tanks &c.

Form D

4th Miscellaneous irrigation works
including spring ponds and
channels and any other works
from which Revenue may be
derived.

The forms should be printed with
much blank on the left side for
filing, on foolscap, hand made,
and a first supply of forms will
accompany this circular, and
other supplied can be obtained on
application to this office.

5. Instructions for the filling in
of the forms and for the use of
certain of the information in connection
with estimates will be found on the
forms appended to this circular.
The areas and revenues in all cases
should be the averages of the last
5 years, say up to 1875-76. Total 1285.

The latest likely to be available and entered up in the District Registers.

6. The lists in the several forms may be forwarded as follows: Form A... group by group and completed in B... do... do... do... and C... for each tract of country (vide remarks re forms) and completed and sent to the District... they should be sent to this office in triplicate and one copy after examination will be transmitted to the Examiner of Accounts.

7. The progress of this work of grouping will be roughly ascertainable from the area and revenue accounted for in the list, and accordingly quarterly a return in the subjoined form showing the progress made will be due in this office on the 15th of April, July, October and

A...
B...
C...
D...

+ average of 5 years.

January of each year.

Irrigated area of District
Acres.

— " — revenue do —

Area under irrigation works for which Capital & Revenue Accounts are kept
Acres.

Revenue of do. do —

Area under irrigation banks of which a continuous record is maintained
Acres.

Revenue do. do —

Total acres

Balances

		Supers
		Supers
		Supers
		Supers
		Supers

Progress of grouping for the quarter ended

Particulars	Irrigation Sinking & Streams		Groups of Tanks		Isolated Tanks		Miscellaneous works		Total		Remarks
	Area	Revenue	Area	Revenue	Area	Revenue	Area	Revenue	Area	Revenue	
To end of last quarter											
In present quarter											
Form A lists 800											
1" B. do "											
" C. do "											
" D. do "											
Totals											
Balance of grouping											

The general abstract of the irrigation of the District showing the area and disbursements to be brought to account in this form. A to D may not be capable of compilation for some time to come, and until this information becomes available each entry as cannot be filled in can be left blank. The balance of grouping at foot of progress statement will be shown in the total column only as the particulars will not be known until the grouping is finished when it will become blank.

8. In future Budget estimates, Part IV. the intended outlay under Revenue - maintenance and repairs; will have to be exhibited separately for each irrigation work for which Capital and Revenue accounts are kept by the prescribed main heads and subheads.

Ordinary Agricultural : Repairs Irrigation.

1. Individually for works for which a continuous record is maintained; and the area and revenue should be mentioned against each.
2. Collectively for each of the following descriptions:
 - (a) - Irrigation by Rivers & streams { area
Revenue
 - (b) - Groups of Tanks { area
Revenue
 - (c) - Isolated Tanks { area
Revenue
 - (d) - Miscellaneous works { area
Revenue
 - (e) - Other works { area
Revenue

all the above refer to irrigation works which form a subdivision of Ordinary Agricultural works, other subdivisions being river conservancy, river embankments or flood banks, &c. The entry "other works" will cease as soon as the whole of the irrigation works

* These subdivisions are by the Account Department termed "Objects of Works"

of a District have been grouped under their proper descriptions until then they will correspond to the "balance of grouping"

9. For every group in Forms A and B and for every tract of country for the works in Forms C and D a map will be required, showing every individual work entered in the lists, with in the case of connected works the supply and surplus channels &c. These maps should be parts of Revenue Survey maps when available of the size of sheets or half sheets of Imperial paper the portion appertaining to the group being distinguished by a margin of colour along the boundary or by a light shade of colour all over. The individual works should have their D. I. R. Nos. noted. The map should be headed with the number of the group and the number

* Scale 1 inch or 2 inches to the mile.
* 30 x 22
@ 15 x 22

Form A. Circular No. dated 26th June 1876 of Chief Engineer for Irrigation.
 List No. of Irrigation Works supplied by rivers or streams. District.

Name of river, group or stream	Name of river channel	Name of branch channels	Name of tank supplied	District	Individual		Group
					Area	Perennial Area	

N.B. The group number, Col. 2, will be attached to the river channel, and should be consecutive for each river. When there is direct joining of two rivers, the river channel should be written in column 3 or 4 as the case may be and the words "direct irrigation" should be written in column 3 or 4 as the case may be and the area and perennial in Col. 7, in the case of Col. 3 after all the branch channels and tanks under them have been indicated, and in the case of column 4 after all the tanks of the branch have been indicated in the order of their off-takes.

Col. 9 is total of Col. 7. Col. 8 will give the total of the tanks. The group numbers, Col. 2, should be given in the order of the off-takes of the river channels from the head of the river, or from its entrance into a district, when the courses are not in the district.

The numbers in Col. 6 will refer to channels or tanks, if a river channel has a number a line will be drawn from 3 to 6 to indicate this and the first entry in Col. 4 will be made below this line.

of the list in which its particulars are to be found.

When Revenue Survey maps are not available enlargements of the Atlas sheet (4 or 8 times) or any other suitable maps may be made use of.

Supply channels should be clearly marked by narrow dark cobalt lines, surplus channels by a sepia line. Tanks by a light shade of cobalt.

These maps will be lithographed for general use, and it will not be necessary therefore to prepare more than one copy in the districts.

10 It should be understood that it will greatly conduce to the convenience of all concerned if the work to be done be submitted to this office in the manner indicated, [†]parab above so that each portion may be disposed of by itself and that there may be no accumulations

of returns. Similarly if group maps be sent one by one they will be lithographed and copies furnished in the order in which they may be received without delay.

Dotacamund
26th June 1876

/signed/ John Mullins Lt. Col. R.E.
Chief Engr. for Irrigation

Every estimate for works of this description should be headed

District

Primary, Agricultural, or other description

Referring to original document

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

The names of the works of this description should be given in the following order: (1) the name of the work, (2) the name of the place, (3) the name of the district, (4) the name of the country, (5) the name of the world.

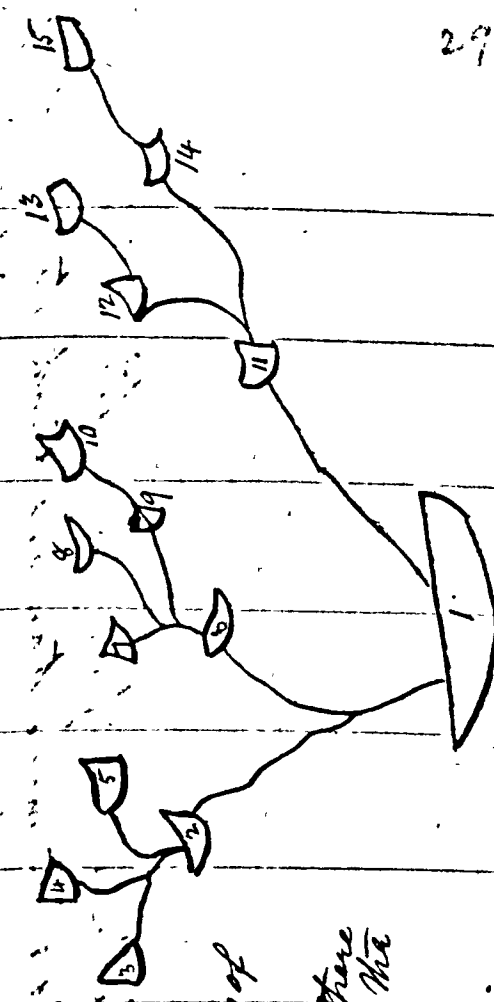
Form B Circular No. dated 26th June 1876 of Chief Engineer for Drainage
List No. of Tanks in groups. (revised)

District
Taluk

Number of Group	Name of Group	Name of Subgroups	Names of Tanks	District Engineer's Office		Individual Tanks		Subgroups		Groups	
				Number	Area	Number	Area	Number	Area	Number	Area

N.B. The group numbers should be consecutive for each district. The subgroups should be taken in their order from left to right looking up the basin of the group from the terminal tank, e.g. 1 is the terminal tank giving its name to the group. 2, 3, 4, 5 are the terminal tanks of subgroups which should be entered in the order of their numbers against 2 in Col. 3 would be entered in Col. 4. The names of tanks 2, 3, 4 & 5 in the order 3, 4, 5, 2. Tank 1 will be the last entry in Col. 4 & opposite to it there will be the entry of its area and perimeter in Col. 5 and of the area & perimeter of the whole group in Col. 6.

When some of the tanks of a group are situated in one and some in another District, the District Engineer in whose District the terminal tanks is situated will obtain from the other District the number of tanks in that District, and the total area and perimeter under them, and he will then enter on the first line, in column 4, — tanks in — District and in column 5 the area and perimeter of three to bring them into his total. Similarly he will furnish to the Upper District the number of tanks and the area and the perimeter in the lower



District, for entry as the last line of this group in the upper district.

The heading of every estimate for works of this description will be District

Taluz or Taluzo.

Ordinary Agricultural

Original Works vs. Repairs

Group number

"Rain"

Name of Tank (if only one be provided for in the estimate) with S.D.R. No. at end, or if the estimate deals with more than one tank the heading will end at the group name and the names of tanks with their S.D.R. Nos. will be entered each at the head of the part of the estimate belonging to it.

In the appendices to estimates the Group Revenue will always be noted. If more than one bank of a subgroup be dealt with the Revenue of the subgroup and of each bank ~~subgroup~~ should be noted.

[Faint handwritten notes, possibly bleed-through from the reverse side.]

下
子
子
子
子

Form C. Circular No.

Dict 90.

of isolated tanks (rained)

Number	District Bridgman Register Number	Names of Yachts.	Individual Yachts		Location
			Area	Perimeter	
1	2				

女

Cal: 1. The numbers should be consecutive for Saluzo.
It will be best to diminish the numbers.

It will be best to divide the District for these isolated tanks into the areas bounded by considerable streams or rivers and to enter them generally according to their longitude and from west to east in the country draining each, and also tanks in the same or nearly the same longitude should be entered from south to north. Without some such system there will be risk of confusion and difficulty in finding particular tanks.

Every estimate for works of this class is

Beibich

Ordinary Agricultural

Repaired or Original works

name of tank (Col. 3)

Description of work to be done.

District, for entry as the last line of the group in the upper District.

The heading of every estimate for works of this description will be District

Salug or Talug.

Ordinary Agricultural

Original Works or Repairs

Tanks in groups

Group number

" name "

Name of Tank (if only one be provided for in the estimate) with S.D. No. at end, or if the estimate deals with more than one tank the heading will end at the group name and the names of tanks with their S.D. Nos. will be entered each at the head of the part of the estimate belonging to it.

In the appendices to estimates the Group Revenue will always be noted. If more than one tank of a sub-group be dealt with the Revenue of the sub-group and of each tank taken up should be noted.

of tanks in groups (ranged)
of tanks in groups (ranged)
of tanks in groups (ranged)
of tanks in groups (ranged)

of tanks in groups (ranged)

Form C. General No. dated 26 June 1896 of Chief Engineer for Irrigation
List No. of isolated tanks (ranged)

District
Salug.

Number	District Irrigation Number	Names of Tanks.	Individual Tanks		Position
			Area	Revenue	
1	2	3	4	5	6

A. H. Col. 1. The numbers should be consecutive for Salugs.

It will be best to divide the District for these isolated tanks into the areas bounded by considerable streams or rivers and to enter them generally according to their longitude and from west to east in the country draining each, and from east to west when the outfall of the general drainage is westward. Also tanks in the same or nearly the same longitude should be entered from south to north. Without some such system there will be risk of confusion and difficulty in finding particular tanks.

Every estimate for works of this description should be headed

District
Ordinary Agricultural
Repairs or Original Works
Name of Tank (Col. 3)
Description of work to be done.
Salug.
Number (Col. 1)
S. D. No. (Col. 2)

Form 1-1-0

[Faint, mostly illegible handwritten notes in the left margin, possibly related to the circular's subject matter.]

[Handwritten notes in the middle margin, including "Circular No. 1876" and "Chief Engineer for Irrigation".]

[Handwritten notes in the right margin, including "Circular No. 1876" and "Chief Engineer for Irrigation".]

Form II Circular No. 1876 dated 26 June 1876 of Chief Engineer for Irrigation
Dist. No. of Miscellaneous Irrigation works.

District
Salug

Number	District	Description of Works	Individual Works		Position
			Area	Revenue	
1			Acres	Latitude	Longitude
			4	5	

N.B. Col 1. The numbers should be consecutive for Salugs.

Every estimate for works of this description should be headed District

Ordinary Agricultural

Repairs or Original Works

State of Work. (Col. 3)

Description of work to be done.

No. 1. W { Number (col. 1)
 D.I.R.M. (col. 2)

Public Works Department.

PROCEEDINGS of the MADRAS GOVERNMENT.

UNDER date the

Read the following:—

Gate of India H.E. No. 218 A.S. d/29th May 1876

Ordered that the foregoing letter be communicated to the Financial Department, with reference to para 3 of G. O. No. 2840 of the 2^d October 1875, and to the Revenue Department and other Departments and officers concerned in connection with para 4 of the same order. Also in connection with customary labour the attention of the Revenue Department will be

5566

Handwritten signature/initials

Handwritten signature/initials

Handwritten signature/initials

Handwritten signature/initials

Handwritten notes in Tamil script, vertical orientation

Recd. 26-7-76
Cui 27-76
5076
Vile 26-7-76

and sanctioned during the past 2 years, afford very good data for exhibiting the former and intended circumstances of these works in a clear manner, and for showing how important are the measures which are being taken, and which it is desired greatly to extend and hasten, for ensuring their safety and efficiency. The Chief Engineer for Irrigation will, therefore, arrange to have such information got ready as soon as possible. It will be desirable that this subject should be laid before the Government

39
of India distinctly on its merits, and independent of the question of the increase of the ordinary grant for other purposes, and this will be done directly the necessary data for a further and more complete representation of the circumstances than has hitherto been made are forthcoming.

3. The proposed normal grant of from 3 lakhs to one lakh for Agricultural works classed as non-irrigation is intended principally for

1. River Conservancy
2. Flood embankments
3. Drainage
4. Statistical information

and sanctioned during the past 2 years, afford very good data for exhibiting the former and intended circumstances of these works in a clear manner, and for showing how important are the measures which are being taken, and which it is desired greatly to extend and hasten, for ensuring their safety and efficiency. The Chief Engineer for Irrigation will, therefore, arrange to have such information got ready as soon as possible. It will be desirable that this subject should be laid before the Government

of India distinctly on its merits, and independently of the question of the increase of the ordinary grant for other purposes, and this will be done directly the necessary data for a further and more complete representation of the circumstances than has hitherto been made are forthcoming.

3. The proposed normal grant of from 3 lakhs to one lakh for Agricultural works classed as non-irrigation is intended principally for

1. River Conservancy
2. Flood embankments
3. Drainage
4. Statistical information

and data. The proposed grant, even if taken at the highest figure named is of course but a very small sum if considered in reference to the extent of this Presidency, and it will manifestly admit of the carrying into execution of only a few well considered and demonstrably highly necessary improvements. It may be noticed with regard to 1. River Conservancy that as a rule the many to rivers of this Presidency should be left to take their natural course, as far as possible, without interference, and only when Government interests of some

importance are concerned, or where moderate outlay will secure great proportional benefits to the general conservancy be attempted. On the other hand those rivers which are deltaic in their circumstances, and from which the spill in ordinary or high freshes leaves the regular river channel and finds other outlets, expenditure on conservancy to a greater or less extent appears to be essential to the avoidance of waste of money in other directions, and this expenditure will necessarily come under Original Works or Repairs according to the description

and character of the work to be done. For such work as should be treated as Repairs no special provision by way of increase of the Ordinary grant is necessary but for Original Works of this kind the Government have at present no funds at their disposal, and must remain without any until in the grant the necessary provision may be made.

1. Flood embankments. The interests involved are numerous. There are to be protected, first, irrigated lands and, then, works connected with them, 2^{ndly} lands under dry cultivation, 3^{rdly} the communications of the country.

Reg.
C.

generally, 4^{thly} Villages. The cultivated lands again belong to Government, to Zemindars to Imindars, or other private individuals. The roads are made and maintained from Provincial and Local funds. In the majority of cases it would apparently be impracticable to distribute the incidence of the charge among all these different interests, and even were this done the Government would frequently be powerless to exact the contributions from Zemindars and other persons, [shown to be fairly due by them for the benefits which would result to their

omit the words scored through in blue pencil

by

omit

and character of the
work to be done. For
such work as should
be treated as Repairs
no special provision by
way of increase of the
Ordinary grant is necessary
but for original works
of this kind the Govern-
ment have at present
no funds at their dis-
posal, and must re-
main without any int'l
in the grant the necessary
provision may be made.

2. Flood embankments.
The interests involved
are numerous. There are to
be protected, first, irrigated
lands and other works
connected with them, 2^{ndly}
lands under dry cultiva-
tion, 3^{rdly} the communica-
tions of the country.

Re-
C-

omit the words scried through in blue
pencil

omit.

generally, 4^{thly} Villages.
The cultivated lands
again belong to Govern-
ment, to Zemindars to
Imindars or other
private individuals.
The roads are made
and maintained from
Provincial and Local
funds. In the majority
of cases it would ap-
parently be impracticable
to distribute the incidence
of the charge among
all these different interests,
and even were this done
the Government would
frequently be powerless
to exact the contributions
from Zemindars and
other persons, [shown to
be fairly due by them
for the benefits which
would result to their

prosperities. Again, the assessment of the value of protective works to the roads and communications, including Railways, of a tract of country is a very difficult matter, though as these communications multiply, as they are doing in all those parts of the country in which expenditure of importance on embankments is likely to be proposed, the need and value of protection will be readily understood. Practically what has to be considered is whether the Government interests concerned render expenditure expedient. If so, it would be unwise to reject the proposals

because others who do not contribute will benefit. There is the further consideration that in the majority of cases schemes of flood embankment are proposals for rendering old systems of embankments which have been demonstrated to be inefficient, secure. The Government however consider that there is no valid reason for omitting to show in all cases as clearly as may be practicable what are the nature and extent of the several interests involved, and to exhibit these on a map, showing the tract of country to be protected,

the extent and position
of irrigated and unir-
rigated lands, the position
and extent of all con-
siderable Zamindari,
the roads, railways &
will present no difficulty
if it be understood from
the first that such informa-
tion is in its degree as
requisite as the determination
of flood levels and the
ascertainment of the
levels of the country to
be protected. Whenever
also the Zamindari lands
bear a considerable pro-
portion to the whole
area it must be clearly
shown whether the em-
bankments proposed are
throughout their intended
length requisite independently
of any special protection

Rec
C

47
of Zamindari lands.
Small private holdings
such as *Swams* & cannot
be exhibited on the map,
but it may and ~~should~~ⁱⁿ
be stated therein what
is their extent in the
grain, and information
on this point can be
obtained from the
Revenue officers. It
will then rest with the
Government to decide
whether in any particular
case it is desirable or
necessary that Public
bodies or private persons
whose properties will
be benefitted should
be called upon to con-
tribute to the cost of
the protective works.
3. Drainage. Special in-
formation has been called

G.O. No 2840. 2^d Octr. 1875

the extent and position
of irrigated and un-
irrigated lands, the position
and extent of all con-
siderable Remindaris,
the roads, railways &
will present no difficulty
if it be understood from
the first that such informa-
tion is in its degree as
requisite as the determination
of flood levels and the
ascertainment of the
levels of the country to
be protected. Whenever
also the Remindari lands
bear a considerable pro-
portion to the whole
area it must be clearly
shown whether the em-
bankments proposed are
throughout their intended
length requisite independently
of any special protection

Rec.
C.

of Remindari lands.
Small private holdings
such as Swams & cannot
be exhibited on the map,
but it may and should
be stated therein what
is their extent in the
gross and information
on this point can be
obtained from the
Revenue officers. It
will then rest with the
Government to decide
whether in any particular
case it is desirable or
necessary that Public
bodies or private persons
whose properties will
be benefitted should
be called upon to con-
tribute to the cost of
the protective works.
3. Drainage. Special in-
formation has been called

P.O. No 2840. 2^d Octr. 1875

for with reference to the
circumstances of the
drainage of villages
in the Godavary Delta
and it will be determined
in due course from
what funds, other than
Imperial, ^{any} such work
not rendered necessary
by the irrigation works
or the development
of irrigation, as may
be shown to be re-
quired, is to be provided
for. Village drainage
there and elsewhere is
however not by any
means the chief work
of this kind which will
have to be carried out.
Drainage works ordinarily
are required not to
serve wholly or chiefly
sanitary advantages,

49
but in the interest of
agriculture both irrigated and
and unirrigated. The
need of drainage is
naturally more especially
felt in the alluvial lands
which have been formed
by the great rivers, and
is more or less requisite
to the efficient cultivation
of the land with either
wet or dry crops. Hitherto
the proper incidence of
charges on account
of the drainage of land
for agricultural pur-
poses has not been
sufficiently considered,
and as a result the drain-
age works on any con-
siderable scale hitherto
carried out, such as the
main drainage of the
Godavary Delta, have

seem charged exclusively
to the Capital Account
of the Delta irrigation
works. [This arrangement
is clearly not right, and]
It remains to be decided
how such charges may
be distributed [with on
the one hand a fair
approximation to accuracy,
and on the other without
a waste of time and
money on minute in-
vestigations.] It would
seem that there need be
no great difficulty in
working out a satisfactory
arrangement. The whole
area of any tract of
country to be drained,
the area of irrigation
existing or intended,
the area of dry cultivation,
and the area of arable

Ground of the
irrigation works

Ground of the
irrigation works

water likely to be brought
under dry cultivation
if facilities be afforded,
would be the data to
be used, and it is thought
that if to these be applied
the average wet and dry
assessments of the
locality, so as to give
the average value from
a Revenue point of
view of the several
areas at the wet and
dry rates, the cost of
drainage may fairly
be divided between
irrigation and non-
irrigation respectively
in the proportions thus
determined.] The subject
will be permitted, however,
to the Revenue Depart-
ment with a view to the

early consideration of the best way of determining the proper incidence of cost of drainage works undertaken in the interests of agriculture. It is to be observed that the presence of boundary or proprietary estates in any particular tract of country will not necessarily affect the question. No special works will of course be undertaken for the sole benefit of such estates except at the expense of the Proprietors, and the main drainage, although it may affect them beneficially in the a - directly will be undertaken only where the Government interests

are of sufficient importance to warrant the outlay shown to be necessary.

4. Statistics. The population under this head will never be large, but it nevertheless is of such importance that it should be understood definitely by all District officers that they are expected to work on proper data, and that where these are deficient or unsatisfactory, measures should be brought forward for sanction for making them sufficiently complete for practical purposes. Among the more important subjects needing careful attention and investigation are

(1) the quantities of water required and used for irrigation, respectively, with the determination of the proper quantity required for given conditions, such as soil, climate, subsoil, water level &c.

(2) the flood discharges from catchment basins of different areas from those of large rivers to those of ordinary tanks. Upon such information must depend the economical and efficient arrangement of all drainage works and surplus works &c.

(3) the discharges during a limited period of rivers and streams of moderate size or having moderate drainage basins, as compared with the

recorded rainfall of the same period within or in the immediate neighbourhood of the basin concerned. Upon such information and on reasonable deductions therefrom combined with annual records of rainfall, will depend the determination of the area which the drainage from a basin of any given size may be expected to irrigate.

(4) the settlement of coefficients of discharge over surplus or regulating ~~works~~, under different ordinary conditions of form of crest and of its level in respect of channel of approach and of outfall. Until

(1) The quantities of water required and used for irrigation respectively, with the determination of the proper quantity required for given conditions, such as soil, climate, subsoil, water level &c.

(2) The flood discharges from catchment basins of different areas from those of large rivers to those of ordinary tanks. Upon such information must depend the economical and efficient arrangement of all drainage works and surplus works &c.

(3) The discharges during a limited period of rivers and streams of moderate size or having moderate drainage basins, as compared with the

recorded rainfall of the same period within or in the immediate neighbourhood of the basin concerned. Upon such information and on reasonable deductions therefrom combined with annual records of rainfall, will depend the determination of the area which the drainage from a basin of any given size may be expected to irrigate.

(4) The settlement of coefficients of discharge over surplus or regulating ~~works~~ under different ordinary conditions of form of crest and of its level in respect of channel of approach and of outfall. Until

- (1) the quantities of water required and used for irrigation, respectively, with the determination of the proper quantity required for given conditions, such as soil, climate, subsoil, water level &c.
- (2) the flood discharges from catchment basins of different areas from those of large rivers to those of ordinary tanks. Upon such information must depend the economical and efficient arrangement of all drainage works and surplus works &c.
- (3) the discharges during a limited period of rivers and streams of moderate size or having moderate drainage basins, as compared with the

recorded rainfall of the same period within or in the immediate neighbourhood of the basin concerned. Upon such information and on reasonable deductions therefrom combined with annual records of rainfall, will depend the determination of the area which the drainage from a basin of any given size may be expected to irrigate.

(4) the settlement of coefficients of discharge over surplus or regulating ~~works~~ under different ordinary conditions of form of crest and of its level in respect of channel of approach and of outfall. Until

more is known on this point than at present arrangements must continue to be based on very imperfect data; and there are several other subjects, the difficulty of dealing properly with which in the absence of better data than have yet been made available is patent to all members of the Department who have endeavored to do their work thoughtfully. Experiments on the best way of using materials when not specially connected with particular works should also come under this head of expenditure. The need of experiment with a view to make

Circular No. dated
26th June 1876

26th June 1876

the best and most use of the materials available in the several districts or parts of districts needs it is thought no demonstration. The grouping of irrigation works has recently been provided for in a systematic manner by the Chief Engineer for Irrigation, whose instructions will, it is anticipated, lead to the completion of this very necessary work within a moderate time. The progress made hitherto with this grouping generally, has been from several causes less rapid than is satisfactory, and the most prominent of these causes has been the necessity for saving

revenue and rendering cultivation practicable by the immediate repair of the large numbers of works, which were severely injured by the storms of May and October 1872 and October, November 1874. At the same time ^{we assured that} the importance of the subject has not been lost sight of neither have its requirements been ignored. As far as practicable the connection of individual works with other works has been noticed, and the requirements have been considered in this connection, and so far as the current and pressing demand for repairs in all directions would

the Government are assured that,

admit, attention has been given to tanks by groups. The Chief Engineer ^{It has not been possible} for ~~irrigation~~ ^{irrigation} could not under the circumstances insist upon the complete observance of the rules laid down by him for the treatment of groups of tanks, but attention to them has been required whenever the public interests would allow of systematic treatment. It is to be observed in connection with this group of irrigation works that its completion will not of itself indicate, as seems to be supposed by the Government of India, what amount it is necessary to spend on the maintenance and

information of the Govern-
ment of India, in antici-
pation of further informa-
tion being furnished on
the subject of

Customary labour.
Incidence of drainage charges
and of the grants required for
Improvements (Minor new works)
New works. Non-irrigation

by 5/12
H.E. No. 4/

Full Dept
Rev Dept
C. & P. I
St. Eng. Co
Sanitary Comm
C. P. & A. - C. P. & A.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 2 Aug 76

Read the following:-

From

The Govt of India

Sl. No. 218 D. I. 29 May 76

Ordered that the
foregoing letter be com-
municated to the Financial
Department, with reference
to para 3 of G.O. No. 2840
of the 2nd October 1875,
and to the Revenue De-
partment and other
departments and officers
concerned in connection
with para 4 of the same
order. Also in connection
with customary labour,
the attention of the Revenue
Department will be

drawn to the orders G.O. No. 2931-14 Oct/75
as per margin, and an " " 696-17 March/76

early communication,
for the information of
the Government of India,
of the conclusions which
may be arrived at, will
be requested. It must
however be observed
that the obligation of
customary labour [has
at no time extended to
more than ^{the} partial
repair of the old irrigation
works of this Presidency
and ^{can} could in no way
affect the necessary
expenditure on the other
descriptions of work for
which an increase of the
Ordinary grant has been
solicited.

2. The Government
observe that the most

It is to be noted that
labour is not to be
disturbed.

65
pressing requirement
of the irrigation works
of this Presidency generally,
apart from those large
works or schemes which
have to be separately dealt
with, is the provision of
adequate means of dis-
posing of surplus and, next,
though in a minor degree,
the suppression of irregular
methods, such as cuts
in the heads of tanks,
of drawing off water
for irrigation, by the
provision of suitable dis-
tribution sluices. This
subject must be again
pressed on the attention
of the Government of
India and in order
that this may be done
effectually it is essential
that the most complete

dra information which can
 as, be obtained should be
 ear brought forward in the
 far reply to the letter above
 the, recorded, which will be
 of 1 transmitted in due course.
 may the numerous estimates
 be, for the repair and im-
 how-provement of such in-
 that-igation works which
 are have been reviewed and
 at 2 sanctioned during the
 one past 2 years, afford
 rep very good data for ex-
 war-hibiting the former and
 an intended circumstances
 aff of these works in a clear
 by manner, and for showing
 des how important are the
 wh measures which are being
 be taken, and which it is
 so desired greatly to extend
 2. and hasten, for ensuring
 sh their safety and efficiency.

The Chief Engineer for
 Drigation will, therefore, en-
 arrange to have such in-
 formation got ready in
 as soon as possible. It will
 be desirable that this sub-
 ject should be laid before
 the Government of India
 distinctly on its merits,
 and independently of the
 question of the increase
 of the ordinary grant for
 other purposes, and this
 will be done directly the
 necessary data for a
 further and more com-
 plete representation of
 the circumstances than
 has hitherto been made
 are forthcoming.

3. The proposed normal
 grant of from 3 lakhs to
 to one lakh for Agricultural
 works classed as non-

irrigation is intended
principally for

1. River Conservancy
2. Flood embankments
3. Drainage
4. Statistical information
and data.

The proposed grant even
if taken at the highest
figure named is of course
but a very small sum if
considered in reference
to the extent of this Presidency,
and it will manifestly
admit of the carrying into
execution of only a few
well considered and de-
monstrably highly necessary
improvements. It may be
noticed with regard to

1. River Conservancy that
as a rule the many rivers
of this Presidency must be
left to take their natural

course without interference,
and only when Govern-
ment interests of importance
are concerned or when
moderate outlay will
secure great proportional
benefits can general
conservancy be attempted.
On the other hand those
rivers which are deltaic
and in their circumstances,
and from which the
spill is ordinary or
high freshes leaves the
irregular river channel
and finds other outlets,
expenditure in conservancy
to a greater or less
extent appears to be
essential to the avoidance
of waste of money in
other directions, and this
expenditure will necessarily
come under Original

Works or Repairs according to the description and character of the work to be done. For such work as should be treated as Repairs no special provision by way of increase of the Ordinary grant is requested but for Original Works of this kind the Government have at present no funds at their disposal, and must remain without any vote in the grant the necessary provision may be made.

Flood embankments. The interests involved are numerous. There are to be protected, first, irrigated lands and the marshes connected with them. 2ndly lands under dry cultivation, 3rdly the communications

71
of the country generally, 4thly villages. The suitably lands again belong to Government, to Zemindars to Dandars or other private individuals. The roads are made and maintained from Provincial and Local funds. In the majority of cases it would apparently be impracticable to distribute the incidence of the charge among all these different interests, and even were this done the Government would frequently be powerless to exact contributions from Zemindars and other persons. Again, the assessment of the value of protective works to the roads and commun-

communications, including
Railways, of a tract of
country is a very difficult
matter, though as these
communications multiply,
as they are doing in all
those parts of the country
in which expenditure of
importance on embank-
ments is likely to be
proposed, the need and
value of protection will
be readily understood.
Practically what has to
be considered is whether
the Government interests
concerned render ex-
penditure expedient.
There is the further con-
sideration that in the majority
of cases schemes of flood
embankment are proposals
for rendering old
systems of embankment,

973
which have been de-
monstrated to be inefficient
secure. The Government
however consider that
there is no valid reason
for omitting to show
in all cases as clearly
as may be practicable
what are the nature and
extent of the several in-
terests involved, and to
exhibit these on a map,
showing the tract of
country to be protected,
the extent and position
of irrigated and unir-
rigated lands, the position
and extent of all con-
siderable boundaries,
the roads, railways &c
will present no difficulty
if it be understood from
the first that such informa-
tion is in its degree as

requisite as the determination
 of flood levels and the
 ascertainment of the levels
 of the country to be pro-
 tected. Whenever also the
 Zemindary lands bear a
 considerable proportion
 to the whole area it must
 be clearly shown whether
 the embankments proposed
 are throughout their intended
 length requisite, independently
 of any special protection
 of Zemindary lands.
 Small private holdings
 such as Dams to cannot
 be exhibited on the map,
 but it may and should
 be stated thereon what
 is their extent in the
 gross, and information
 on this point can be
 obtained from the Revenue
 Officers. It will then rest

G.O. No 2840. 2^d Oct. 1875

10
75
 with the Government
 to decide whether in any
 particular case it is de-
 sirable or necessary that
 Public bodies or private
 persons whose properties
 will be benefited should
 be called upon to con-
 tribute to the cost of
 the protective works.
 3. Drainage. Special informa-
 tion has been called for
 with reference to the cir-
 cumstances of the drainage
 of villages in the Godavery
 delta, and it will be de-
 termined in due course
 from what funds, other
 than Imperial, any work
 not rendered necessary
 by the irrigation works
 or the development of
 irrigation, shown to be
 required, is to be provided

for Village drainage there
and elsewhere is however
not by any means the chief
work of this kind which
will have to be carried
out. Drainage works ordinarily
are required not to secure
wholly or chiefly sanitary
advantages, but in the interest
of agriculture both irrigated
and unirrigated. The need
of drainage is naturally
more especially felt in
the alluvial lands which
have been formed by the
great rivers, and is more
or less requisite to the
efficient cultivation of the
land with either wet or
dry crops. Hitherto the
proper incidence of
charges on account of the
drainage of land for
agricultural purposes has

77
not been sufficiently con-
sidered, and as a result
the drainage works on any
considerable scale hitherto
carried out, such as the
main drainage of the Godavari
Delta, have been charged
exclusively to the Capital
Expenditure of the Delta ir-
rigation works. It re-
mains to be decided how
such charges should be
distributed. The subject
will be presented to the
Revenue Department with
a view to the early con-
sideration of the best
way of determining the
proper incidence of cost
of drainage works under-
taken in the interests
of Agriculture. It is to be
observed that the presence
of Zemindary or proprietary

estates in any particular tract of country will not necessarily affect the question of special works will of course be undertaken for the benefit of each estate except at the expense of the Proprietors, and the main drainages although it may affect them beneficially indirectly, will be undertaken only when the Government interests are of sufficient importance to warrant the outlay shown to be necessary.

4. Statistics. The expenditure under this head will never be large, but it nevertheless is of much importance that it should be understood definitely by all district officers that they are expected to work on proper

data, and that where these are deficient or unsatisfactory, measures should be brought forward for sanction for making them sufficiently complete for practical purposes.

Among the more important subjects needing careful attention and investigation are

- (1) the quantities of water required and used for irrigation, respectively, with the determination of the proper quantity required for given conditions, such as soil, climate, subsoil water level &c
- (2) the flood discharges from catchment basins of different areas, from those la

of large rivers to those
of ordinary tanks. Upon
such information must
depend the economical
and efficient arrangement
of all drainage works
and surplus works to
13/ the discharges during
a limited period of
rivers and streams of
moderate size or having
moderate drainage basins,
as compared with the
recorded rainfall of
the same period within
or in the immediate
neighbourhood of the
basin concerned. Upon
such information and
on reasonable deductions
therefrom, combined with
annual records of
rainfall, will depend
the determination of

81 13
the area which the drain-
age from a basin of
any given size may be
expected to irrigate.
14/ the settlement of co-ef-
ficients of discharge
over surplus or regulating
weirs under different
ordinary conditions of
form of crest, and of
its level in respect of
channel of approach
and of outfall. Until
more is known on this
point than at present
arrangements must con-
tinue to be based on
very imperfect data;
there are several other
subjects, the difficulty
of dealing properly with
which in the absence
of better data than have
yet been made available

of large rivers to those of ordinary tanks. Upon such information must depend the economical and efficient arrangement of all drainage works and surplus works to
13/ the discharges during a limited period of rivers and streams of moderate size or having moderate drainage basins, as compared with the recorded rainfall of the same period within or in the immediate neighbourhood of the basin concerned. Upon such information and on reasonable deductions therefrom, combined with annual records of rainfall, will depend the determination of

81 13
the area which the drainage from a basin of any given size may be expected to irrigate.
14/ the settlement of coefficients of discharge over surplus or regulating weirs under different ordinary conditions of form of crest, and of its level in respect of channel of approach and of outfall. Until more is known on this point than at present arrangements must continue to be based on very imperfect data; & there are several other subjects, the difficulty of dealing properly with which in the absence of better data than have yet been made available

last eight of either have
its requirements been
ignored. As far as practicable
the connection of individual
works with other works
has been noticed, and the
requirements have been
considered in this connection,
and as far as the current
and pressing demand
for repairs in all directions
would admit, attention has
been given to tanks by
groups. It has not been
possible under the circum-
stances to insist upon
the complete observance
of the rules laid down
for the treatment of
groups of tanks, but
attention to them has been
required whenever the
public interests would
allow of systematic treat-

total number . . . 38,982
" acreage . . . 4,583,888
" revenue . . 192,23,465

ment. It is to be observed
in connection with this
grouping of irrigation works
that its completion will
not of itself indicate,
as seems to be supposed
by the Government of
India, what amount
it is necessary to spend
on the maintenance and
improvement of such works.
The main object of the group-
ing is to ensure proper
and systematic manage-
ment with due consideration
of the real circumstances
of the works. The number
of tanks in the several
districts of this Presidency,
the irrigated area under
them, and the revenue de-
pendent upon them, have
been already given in the
Proceedings of the 14th October

is patent to all members
of the Department who
have endeavoured to do
their work thoughtfully.
Experiments on the
best way of using
materials when not
specially connected with
particular works should
also come under this
head of expenditure.
The need of experiments
with a view to making
the best and most use
of the material avail-
able in the several
districts or parts of
districts, needs it is
thought no demonstration.

The grouping of
irrigation works has re-
cently been provided for
in a systematic manner
by the Chief Engineer for

Circular No 76 dated
26th June 1876

53 4
Irrigation, whose instructions
will, it is anticipated, lead
to the completion of this
very necessary work
within a moderate time.
The progress made hitherto
with this grouping generally
has been from several
causes, less rapid than is
satisfactory, and the most
prominent of these causes
has been the necessity for
saving revenue and
rendering cultivation prac-
ticable by the immediate
repair of the large num-
bers of works, which were
severely injured by the
storms of May and October
1872 and October, November
1874. At the same time the
Government are assured
that the importance of
the subject has not been

1875, No. 2931, which were trans-
mitted to the Government
of India, and the division
of these tanks into groups
with effect no essential altera-
tion of the conditions to be
satisfied. It has already
been arranged to expend
annually upon repairs
proper about 8 per cent
of the Revenue, and the
grants for repairs in
1875-76 and for the current
year approximate to that
percentage. To make this
expenditure, however, really
beneficial to its full
extent, it is essential that
concurrently the improve-
ments required to render
the tanks safe, and which
repair alone cannot possibly
do, should be carried out,
and these improvements

will be unattainable until
the minor new works grant
is materially increased.

5 Ordered that a copy
of these Proceedings be for-
warded for the information
of the Government of India,
in anticipation of further
information being furnished
on the subject of
Customary labours.

Incidence of drainage charges
and of the grants required for
Improvements (minor new works)
New Works - non irrigation

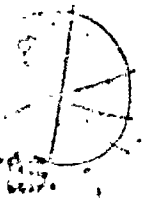
H. E. No. 1973 d/2 Aug/76

My. 24/7

Finl. Dept. 7 ✓
Rev. Dept. 2 ✓
Ch. for J. 5 ✓
St. Ings. 8 ✓
Sanitary Comm. 3 ✓
Ex. P. W. 8 ✓
C. & P. 8 ✓

Doc No 1973 d/2 Aug/76
Copy of the above forwarded
to the Govt of India.

5566



Govt. of 1876 Madras.

PUBLIC WORKS.

To

The Financial Dept

Date

Issued

Recd

Encl.

Cancelled draft
Circular No 76
Supply Memo
in Ld. Dept

P. No. 5

5-8-76

G. O. 2 dated 1876, No. 1972-1973

No. 53 + 54.

Forwarding copy of
Proceedings passed
in letter from the Govt.
of India recommending
on the application
of this Govt. for an
increase to the Gra-
grant for Irrigation

Increase ^{to the ordinary} ~~of~~ grant
for ~~irrigation~~ Irrigation
Works - Passing orders
on letter from the Govt.
of India ~~offering~~ recommending
on ^{The} application for
an ———

But. in By
19-8-76