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MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No.	2725	Press
B.P. No.		Mis. —
Dated	11 — 10 —	18,76 — 195 —

Not to be folded or roughly handled

Read the following papers:—

No. 153. From Lieutenant-Colonel J. F. FISCHER, R.E., District Engineer, Madura, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Sholavandan, 25th August 1876, No. 1,938.

In reference to the concluding sentence of the Chief Engineer's for Irrigation note in G.O., of the 20th July 1876, No. 1,826, I have the honor to observe that I purposely abstained from sending up any explanations in the returns of this district, as I had already in my letter of the 7th July 1876, No. 1,352, fully explained the uselessness of funds being laid out in the manner hitherto prevailing on the tanks of this district; since October last up to the very end of July great drought has prevailed here, so that irrigation or other works could not make much progress, and, as it would be necessary for me to enter into details for a full report which I would rather have avoided, but as the Chief Engineer for Irrigation is not satisfied, I beg you will be so good as to submit this letter for the consideration and orders of the Government.

2. Since December last, repeated orders and instructions have been sent to me to send Lieutenant Boddy and Mr. Davidson, as often as possible, to Kodicanal to Lieutenant-Colonel Law to work under him, and as these two officers have charge of four out of the six Government taluqs of the district in which alone irrigation works have to be repaired, and they were well aware what arrangements had been made for their own convenience, it is not surprising that they should not take much interest in works in a hot climate at the worst season of the year, and which entail a great deal of labor and exposure. The Government are aware by G.O., of the 14th March 1876, No. 659, that I have not much assistance from the officer in charge of the other two taluqs, in fact hardly a paper or estimate can be got from his office without half a dozen or more reminders; and as it is admitted the subordinate establishment, both imperial and local, is utterly inadequate for the size of the district, I trust it will be allowed I have enough to do almost single-handed, and as no opportunity is lost in reflecting on me to the Government the position is not one which is enviable; as these facts are well known to the Chief Engineer for Irrigation, I am quite at a loss to understand why he should now call for further explanations.

3. As it has been repeatedly brought to notice that the tanks of this district as existing are quite useless in general, that they do not hold enough water for the lands under them for one crop unless filled two or three times in the season, that the cultivation under them must under such circumstances be in the most precarious condition being dependant entirely on the ever varying character of the seasons, that the population of the district is one of the largest in India and rapidly increasing, so that any failure of the crops must entail very great distress, if not famine, on them in a very short time; this will be quite apparent if we compare this district with the Godavery on these points, in Madura we have 40 per cent. larger population and the price of rice 200 per cent. higher nearly than it is in the Godavery, and as the prices of labor here are no higher than up there if so high, and there is no such regular employment here as the works and cultivation up there afford, it is quite evident we are running the greatest possible risks in not securing the irrigation works at least in the most scientific and economical manner.

4. All local knowledge, judgment and experience are agreed in considering that the tanks of the district as existing are hardly worth keeping up, and the sooner they are abandoned in favor of works for storing the abundant available rainfall in large reservoirs the better, and nothing whatever has been advanced to invalidate these conclusions, but an arbitrary standard of average monthly outlay is put up based on the proceedings of former years, which all agree in thinking have been fruitless, and if the outlay does not come up to this, it is reported to the Government as a dereliction of duty on the part of the District Officers, whilst no attempt whatever is made to explain how better results could be obtained except a bold allegation that if the irrigation works of such and such a district were properly looked into probably something might be done for them; at the same time that we are forbidden to make any alterations or improvements without the previous sanction of higher authority and to furnish the most elaborate plans and surveys, estimates and reports with insufficient establishment as if some great project were really in hand, when all that is required is to afford a little more water to some petty village or another.

5. I trust the Government will be pleased to allow me to show that all this is great waste of time and money, and that the officers of the department can be far more usefully employed here at least; nearly twenty years ago when I took charge of the Bellary District, the first I ever had, I found the outlay on irrigation repairs averaged about Rupees 75,000 a-year, and this outlay had been going on, for a certainty, over a quarter of a century if not more, the works were in the most wretched condition, but it was very easy to see they could be vastly improved, and as the mutiny had put a stop almost entirely to all new works, arrangements were made to push on with these irrigation repairs and improvements as fast as possible; in the first year the outlay was only Rupees 80,000, in the second season Rupees 1,80,000, and in the third season Rupees 100,000, including in these Rupees 15,000 for the cost of maintenance of the Toongabudra river channels; but I was then able to reduce the Repair Grants to Rupees 35,000 a-year, of which some Rupees 20,000 only were required for the tanks to patch up for annual wear and tear; the works were brought to such order that breaches in them, formerly of annual occurrence, were quite unknown for many years, and the cultivation which in 1856-57 was only 80,000 acres was increased in 1862-63 to 166,000 acres; why this has now fallen to 125,000 acres or the repairs required each year amount to over Rupees 60,000 I do not know; but I trust I have shown that it is quite possible to lay out these Repair Grants so as to make the works not only far more efficient but to save at least half the annual Budget Repair Grant and greatly improve the condition of the cultivating classes and their means of paying rent.

6. Nothing whatever has been brought forward to show that similar results can be obtained from the tanks of this district, yet we are constantly urged to continue the expenditure at the same if not a higher figure, when both revenue and professional officers are agreed it is next to useless, and both are in favor of a radical change in this matter. Many sites have been pointed out where most valuable works can be constructed to utilize the rainfall of the district in the most economical manner, but to no purpose, and the time and means which if properly employed would confer lasting benefits on the country and teach young officers their profession are being thrown away, I must crave to say, in the most wasteful manner in endeavours to keep up to an average standard of outlay, arbitrarily fixed without

one thought about its utility or necessity, and in direct opposition to the knowledge, judgment and experience of all the local officers if it could be shown we were wrong and not studying the interests of the Government by applying right principles to these works and did not then change, we should indeed be guilty then of most culpable neglect and dereliction of duty, but I would most respectfully submit such charges should not be preferred to the Government, against us where absolutely nothing whatever is done to show how or where we are wrong, and all our proposals for greatly improving the irrigation of the district are simply ignored on the assumption that existing works require this outlay which everything tends clearly to prove is not the case.

7. I have endeavoured much against my own inclinations and entirely against my own convictions and professional opinion to maintain the outlay as near as possible up to the assumed average; I know no good whatever hardly has been done with it, and I believe very little can be got by expending money in such engineering in the dark for which there is also no necessity; we have acquired sufficient knowledge, experience, and skill in engineering at home in hydraulic works that there is really no occasion for us any longer to follow maramut maistries in their principles however good and useful some of their practices were, and by adopting these and projecting works on the scale that our enlarged experience at home enable us to do we can very easily bring the districts of the Presidency up to a much higher standard in irrigation matters, that is if proper care and attention is paid to the consideration of the fundamental principles required to be applied in each case, and not by assuming that a bare outlay of money to an average amount in each district will do all that is necessary; this is probably as easy a way of disposing of the matter as could be devised, but it is so utterly haphazard no good can possibly result from it.

8. In conclusion, I would beg to add I am endeavouring to save as much as I possibly can in these Repair Grants in the hope the Government will be pleased to let us expend this money in metalling the roads of this district, as this will benefit the cultivation far more than keeping up the standard of outlay to what it is imagined to be necessary. At present the roads here are mere gravel paths; in fact, there is not a yard of really well-made road in the whole district, and none whatever leading to the coast; the Government have taken from us some Rupees 50,000 in the Provincial Grant, so that our means are greatly crippled, but to show how well these irrigation Repair Grants could be utilized to benefit the cultivation by constructing good roads, it is only necessary to say that three bandies are required to move a ton here, and the cost of transport is $4\frac{1}{2}$ Annas a ton a mile; in other parts of South India two bandies will take a ton or more, and the cost of transport on good metal roads is seldom more than 2 Annas, and at the most 3 Annas, a ton a mile; by macadamizing our roads then at least one-third of the cost of transport could be saved; it would be necessary to keep only two-thirds of the number of cattle for draught purposes, and as these could be better fed and cared for, the saving will probably be much greater in a district like Madura where fodder is so scarce; as such roads would be passable throughout the year, a ryot will be able to take his produce to market at all times and when prices are best, of which he now has little or no knowledge; the traction in lbs. per ton on a level piece of good gravel road is 150 lbs., on a good macadamized one it is but 100 lbs., but on the former it is immediately increased to 250 or 300 lbs. per ton as soon

as any rain falls, whereas on the latter, if properly made, there is no difference hardly throughout the year; I trust then it is quite evident by what has now been urged that our bandies can be made to carry easily 1,000 lbs. or half a ton, and that as our products are chiefly agricultural, such a saving is well worth making by means of the Agricultural Repair Grants far more so than in wasting them on useless shallow banks which the experience of half a century or more shows can yield no benefits whatever to the cultivating classes or revenue to the Government.

9. I find with regret that I have omitted to remind the Government that from the physical conformation of this district, where the tanks generally exist, these must originally have been very shallow, on the plain unfaring surface on which they have been constructed; they have since silted up very much from natural and unavoidable causes, and they are so thickly clustered together it is impossible to increase the store of water in one without flooding cultivation above or depriving lower tanks of their full supply to which they have guaranteed rights. Under these circumstances when it has been found by the experience of many years no improvements can be made, and the maintenance of such works is very doubtful, an officer who is responsible to the Government for every rupee of outlay is bound to consider, I respectfully submit, that there shall be good grounds for his proceedings, and this I have endeavoured to do by a careful consideration of all the circumstances of this district, and as I have shown in the Bellary District that I had not neglected the interests either of the Government or the people in such matters, I trust it will be allowed I am not doing so now here.

10. After observing for more than two years all the circumstances of the irrigation in Madura, the character of its rainfall, the condition of its tanks and their capabilities, the highly unsatisfactory state of these as affording no means of fully maturing a crop, unless the seasons are very favorable, the enormous waste of water by not having this stored in sufficiently large reservoirs, the large areas of good land occupied by shallow tanks which could all be cultivated with good crops if proper means were only applied, the great cost of transport of raw agricultural products which can least afford the expense of transit, and the heavy charges the land has to bear on this account diminishing of course its capability to pay rent or revenue, the very large and increasing population for which food must be provided, and the excessive cost of labor and consequent waste, taking only these few chief points into consideration I hope the Government will be pleased to allow me to say that it is not very advisable to continue the practice so much insisted upon of late with irrigation works in this Presidency with Repair Grants, for example Bellary. I do not know of any district in which much if any good has been done with them, and from the example it is quite apparent that one-half or at least one-third of this annual cost of maintenance can be saved to the State, that is, if this were effected with proper care and judgment, these would be available for new works some 5 or 7 lakhs of rupees.

11. Again, it has been laid down from the experience of these irrigation works that only 30 acres to the square mile of drainage area can be obtained from the average rainfall, and the Vignay river was instanced as a case in point irrigating only some 33,000 acres of land from a basin of some 1,500 square miles; it now, however, appears from the Collector's last report that the area actually irrigated is upwards of 110,000 acres, if not more, and the records we have maintained of its discharge for

two years at the Madura causeway show that there is water enough even in ordinary years, if properly distributed for over 200,000 acres of lands, or 150 acres to the square mile, whilst it is actually less than 55 acres to the square mile of an available drainage area of some 2,000 square miles, the loss being thus upwards of 70 per cent. showing clearly how inefficiently our means are being utilized.

12. Also 30 acres of land require only about 200,000 cubic yards of water for irrigation purposes and two and a half inches of rainfall run off a square mile of drainage area would afford this quantity. The rainfall in the worst seasons is seldom under 18 inches in any district, and in many it is upwards of 36 inches in ordinary years and frequently more, so that in general we are not using one-twelfth of our available means for irrigation purposes with all the outlay which has been made on the existing works of the country, and as we know from the records of the Nagpore and Vehar water-works that upwards of seven-twelfths and nine-twelfths of the average rainfall may be relied upon as available for storage, it is quite evident that instead of providing gigantic escapes to works which are of little or no use, it is far more worth our while to project new works on entirely different principles so as to irrigate at least ten times as much land as is now supplied with water by the old works of the country; the very formulæ laid down for our guidance in constructing these escapes showing that the practice of the English Engineers to secure all available drainage water in large reservoirs is the correct one on all economical grounds; when a district then like Madura is only supplied with shallow tanks which do not hold water enough for one crop, I think I have shown that its existing works are hardly worth keeping up, and that it is wasting our time and means to maintain any longer the standard of outlay which it has been assumed, without any grounds being shown, is necessary, and that these funds if laid out on any of the new works which have projected for the district would certainly yield far more satisfactory results in every respect. So that to direct the attention of all officers to mere surplusage purposes instead of to providing better means of using all the available rainfall of the country, is a grand mistake and calculated to inflict lasting injury on the interests both of the State and the cultivating classes.

No. 208-W.

No. 153-A. Note by the Chief Engineer for Irrigation.

LIEUTENANT-COLONEL FISCHER's assumption that it is desired that money should be spent unprofitably on the repair or improvement of tanks which are virtually useless has no foundation. He has to ascertain in each group or other convenient limited tract of country what tanks are still worth maintaining, and to what extent they can be made to supersede other tanks which were either never worth constructing or which have deteriorated so far as not any longer to be worth keeping up. The undersigned entertains no doubt but that the moderate amount of money allotted to the Madura District for Repairs and Minor New Works can be most profitably spent if the District Engineer will take the trouble to examine into the circumstances of the existing irrigation works, and ascertain which should, and which should not, be kept up.

2. Though Lieutenant-Colonel Fischer has written so much on the subject of the inefficiency of existing tanks and on the uselessness of spending money on them he has

not, so far as the undersigned is aware, made any detailed investigation, and at any rate he has not made any proposals whatever, based on such an investigation for altering the arrangements for the water-supply of the lands under any group of tanks or in any limited area of country. Again, though so much of the water of the Vigay is stated to be unutilized he has not apparently turned his attention to the improvement, enlargement, or extension of existing channels therefrom, or to the construction of additional channels. This officer has recently recommended the construction of two reservoirs within the basin of the Vigay or its affluents, but he has not afforded even such information regarding their suitability as could have been obtained from a cursory examination, much less has he indicated in what particular localities he would propose to utilize the water which he would store.

3. To deal with the whole Madura District, and to turn to account the whole water-supply, would take a long time, and would need a considerable special establishment; but to divide the country into convenient geographical or hydrographical sections, and to deal with one or more of these at a time, appears to be a perfectly feasible method of treatment.

4. No beneficial action could be taken until the District Engineer turns his attention from general assertions to the investigation of the requirements of particular portions of the district in detail. If there is water to spare in the Vigay, it would seem that attention might with advantage be given to the improvement of existing irrigation, and its extension under the upper of the two anicuts on that river, including the selection and improvement of such tanks therefrom supplied as would suffice to store sufficient water for the efficient irrigation of the tract of country which can conveniently be irrigated from that anicut. Here there is a definite field for investigation, and, moreover, in connection with the Perryaur Project, a survey was made and levels taken which would afford a great deal of the preliminary information required. The atlas sheet, moreover, indicates that between the anicut and the eastern of two large tanks lying a little to the north of Sholavandan a large amount of drainage is received by the tanks and channels, and it is more than probable that a sum equal to the whole Repair and Minor New Works Grants of the district could be profitably spent on this one section of the Vigay irrigation, were its circumstances and requirements carefully ascertained. It will not be difficult to show what the wants of this section are or to demonstrate what can be done by improving the river supply, concentrating the storage, fixing the best level for the water in each tank to be retained, providing for the safe discharge of surplus after the tanks have filled, determining where this surplus is to go and what is to be done with it. Undoubtedly a certain area in this section can be effectively irrigated by means of a supply channel, local drainage, and a greater or less number of existing tanks more or less improved as may be found necessary. This area will also bear a certain proportion to the whole area of the section, and a deduction will then be possible as to whether it will be desirable or advisable to provide for a further supply of water to this section by the construction of additional reservoirs within or without the section.

5. It would be easy to indicate other tracts of country which need to be similarly dealt with. The water-supply of the Madura District is to be found, first in the Vigay basin which is made up of numerous smaller basins, each one of which no doubt

possesses some capabilities; one of the affluents is the Soorooligaur, which has already been turned to good account for irrigation; the Vigay proper has its head among similar hills just to the eastward. Secondly, in many other basins draining areas of greater or less extent, each of which is probably capable of irrigating effectually more land than is now watered.

6. Colonel Fischer may be perfectly right in his opinion of the uselessness of maintaining many of the old tanks. There may be hundreds which ought to be abandoned, but there are on the other hand at least scores which ought to be kept up, and it is part of his duty to see what and where these useful tanks are, and to place them in proper order out of the funds provided for the purpose.

7. Colonel Fischer must be perfectly well aware that (paragraph 8) money saved from Irrigation Repair Grants cannot be spent in metalling roads. If he cannot spend those grants usefully on irrigation works, the money will have to be transferred to other districts where it can be profitably made use of. The fault will lie not in the absence of useful work to be done, but with the present District Engineer who is, in the opinion of the undersigned, entirely unfit for the administration of any district in which there is irrigation work to be done requiring careful investigation and consideration.

OOTACAMUND,
2nd September 1876.

(Signed) JOHN MULLINS, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

To the Secretary to Government, Public Works Department.

No. 154. ORDER THEREON, 11th October 1876, No. 2,725.

IRRIGATION, Nos. 20 & 21.

THE District Engineer, Madura, will be informed that his continued inattention to the instructions which have been given to him, regarding the way in which the existing irrigation works of the district should be dealt with, is viewed by the Government with grave dissatisfaction. Colonel Fischer will without further comment proceed to carry out those instructions, taking up the irrigation works in groups or sections, and reporting with regard to each what tanks can be usefully retained and what should be abandoned or superseded, supporting also his opinions by complete information regarding water-supply, area of cultivation and revenue, cost of up-keep in the past, &c. A quarterly report of the progress made with these investigations will be submitted by Colonel Fischer to the Chief Engineer for Irrigation, and the first report should show the works the circumstances of which have been examined into up to the 31st December next.

(True Extract.)

Major-General, R.E.,
Secretary to Government.

To the District Engineer, Madura.
" Chief Engineer for Irrigation.
Exd. E. C. Shunker.
Spare Copies

Letter from
1938 of 25th

D.S. Madhup... 3rd
August

Submitted for order
with Memo. from
the Chief Engineer
for Drigation.

In para 2 Colonel
Diaper has again
gone out of his way
to impute to Colonel
Law an evil in-
fluence over the
Apt. Engrs. Hodge
& Davidson, so that
they neglected their
proper work while
on the Pulney -
a reference made
has elicited the
fact that those
young Officers
only spent the
Easter Holidays
at Kothicund.
These attacks are
most annoying
to all the Officers
concerned; and

Col. Fischer's letters are
exceedingly unsatisfactory as
the letter - but in the
General letter I do not trace
the disobedience of orders
which would call for the
punishment suggested -

The memo of Genl. appears
to have given rather wide
discussion to Mr. Hodge & Davidson.
They should be strictly confined to
the duty of their ranks - on
chance will always afford a
pretext at least for complaint or
grumbling -
I do simply send the letter

ought to have
been put in type
to by G.O. No. 1320
of 26th May. L.
Weddy transactions,
ally had to be
removed from the
District in con-
sequence of Col.
Discher's removal
city. It will be
observed from G.O.
No. 1325 of 26th May
that Col. Discher
himself recom-
mended Rodi
camel as the best
H. 2nd in the range

for Mr Davidson
in preference to I think also it would be
wisdom - with that I hope

As to Col. Fincher's he insisted that the
 method of dealing of Dec: is to supply it
 with information, which they can be spared with
 by making some ^{the D. Engrin} ~~the D. Engrin~~
 : being statements (this is what I had understood
 regarding what ^{of its meaning} ~~of its meaning~~ from the
 projects without ^{more immediate duties -}
 fixed data, and neglecting means.

24/1

Redoubt this. His Excellency
expressing no care of the
importance of clearing back
with

I turned over to Mr. [unclear]
under instruction from
Chief Engineer giving a detailed
report on Tanks in Atlantic
speaking those I should have
abandoned & those that were
to be improved.

facts
 abundant & there
 he expressed
 the fact that his wife
 had not been in the
 comfortable in the same
 it seems to be entirely
 without the fact -
 11/11

while ordinary repairs should be made. Improvements will be seen from the 2 old Fort. Orders put up that the habit is of old standing - G.O. n^o 1317 of 31st July 1856 relates to a proposal by Colonel Dyer to irrigate 300,000 acres of land in Bellary, made on the 28th June, he having relieved the undersigned of charge of the District only 16 days before, and having had no previous knowledge of it! Col. Dyer was informed by the undersigned at Madras in August 1856, that he had made a mistake in saying it be preferred, and the project turned out to be

utterly improper.
Cable - G.O. N.
653 of 12th April
1858 gives another
specimen of the
manner in which
Col. Discher has
constantly waste
ted his own time,
and that of his
Subordinates & of
Chief Engineers.
It is therefore re-
spectfully sub-
mitted that Govt.
have ample ground
for suspecting
their Chief Engi-
neers' pretence
against Colonel
Discher's captiousness
& obstructiveness.

Colonel Discher
his opinion that
Colonel Discher is
entirely unfit for
the administration
of any District
in which there is
irregular work to

be done, requiring
careful consider-
ation and invec-
tigation, Major
General Welles
concur - But it
is not the least use
moving him from
Madras at pre-
sent - So long as
his visionary pro-
jects are ignored,
he can do no little
harm there or
elsewhere - But,
in the opinion of
the undersigned,
it is fitting that
notice be taken of
his obstructiveness
and disobedience
of orders, and the
displeasure of Govt.
marked, by with-
drawal of the per-
sonal allowances
which, under the
orders of the Govt.
of India, he has
been allowed to
retain ever since

4. he was dismissed
by that Govt, for
65. similar conduct,
18. from the post of Sup. &
the Sup. for Sup. in
the Central Province.

It is considered
by the undersigned
that Col. Discher
has forfeited all
claims to further
indulgence; and
may with propriety
be restricted
to the ordinary
for Pay & Allowances
the office Department.
not rank, that
of Executive En.
since 1st grade
& 6.

Ch. Walter Marshall
Ch. Sup. & Secy to Govt D.P.W.
Col

Sir
The
of
23.9.76.
in

N^o 1938

District Engineer's Office,
Sholavandan 25 August 1876

From

Vincent Colonel of J. Fischer R.E.
District Engineer Madras

To

Major General L. W. Walker R.E.
Secretary to Government R.E.

Sir

In reference to the concluding
sentence of the Chief Engineer's
for Irrigation report in L. O. of the
20 July 1876 to 1826, I have the
honor to observe that I purposely
abstained from sending up any
explanations in the returns of
this District as I had already
in my letter of the 7 July 1876
No 1352 fully explained the
uselessness of funds being laid
out, in the manner hitherto pre-
vailing, in the tanks of this District:
since October last up to the very end
of July great drought has prevailed
here so that irrigation or other works
could not make much progress;
and as it would be necessary for

me to enter into details for a full report which I would rather have avoided; but as the Chief Engineer for Irrigation is not satisfied I beg you will be so good as to submit this letter for the consideration and orders of the Government.

2 Since December last repeated orders and instructions have been sent to me to send Quent Boddy and Mr. Davidson as often as possible to Rodicanel to Quent Colonel Vain to work under him, and as these 2 Officers have charge of 4 out of the 12 Government Talooks of the District in which alone irrigation works have to be repaired and they were well aware what arrangements had been made for their own convenience it is not surprising that they should not take much interest in works in a hot climate at the worst season of the year and which entail a great deal of labor and exposure. The Government are aware by G.P.

10 2
of the 14 March 1876 to 1879 that I have not much assistance from the Officer in charge of the other 2 Talooks in fact hardly a paper or estimate can be got from his Office without half a dozen or more reminders and as it is admitted the subordinate establishment both Imperial and Local is utterly inadequate for the size of the District I trust it will be allowed I have enough to do, almost single handed, and as no opportunity is lost in reflecting on me to the Government the position is not one which is enviable, as these facts are well known to the Chief Engineer for Irrigation I am quite at a loss to understand why he should now call for further explanations.

3 As it has been repeatedly brought to the notice that the tanks of this District as existing are quite useless in general, that they do not hold enough water for the lands under them for one crop unless filled 2 or 3 times in the season, that the

cultivation under them must under such circumstances be in the most precarious condition, being dependant entirely on the ever varying character of the seasons; that the population of the District is one of the largest in India and rapidly increasing so that any failure of the crops must entail very great distress, if not famine on them in a very short time; this will be quite apparent if we compare this District with the Godavery on these points, in Madras we have 1.0 per cent. larger population and the price of rice 200 per cent higher nearly than it is in the Godavery, and as the prices of labor here are no higher than up there, if so high, and there is no such regular employment here as the works and cultivation up there afford it is quite evident we are running the greatest possible risks in not securing the irrigation works at least in the most scientific & economical manner.

L. All local knowledge, judgment and experience are agreed in considering that the banks of

the District as existing are hardly worth keeping up and the poorer they are abandoned in favor of works for storing the abundant available rainfall in large reservoirs the better, and nothing whatever has been advanced to invalidate these conclusions, but an arbitrary standard of average monthly outlay is put up, based on the proceedings of former years which all agree in thinking have been fruitless, and if the outlay does not come up to this it is reported to the Government as a dereliction of duty on the part of the District Officers whilst no attempt whatever is made to explain how better results could be obtained except a bald assertion that if the irrigation works of such and such a District were properly looked into probably something might be done for them, at the same time that we are forbidden to make any alterations or improvements without the previous sanction of higher authority and to purchase the most elaborate plans and surveys, estimates and reports with insur-

cul. plant establishment as if some great
suc. project were really in hand when
pre. all that is required is to afford
en. a little more water to some petty
of village or another.

5. I trust the Government
will be pleased to allow me to show
so that all this is great waste of time
and money, and that the Officers
of the Department can be far
sh. more usefully employed here at
if least; nearly 20 years ago when
the I took charge of the Bellary District,
Mr. the first I ever had, I found the
outlay on irrigation repairs averaged
per about Rs 75,000 a year, and this
the outlay had been going on, for a
here certainly, over a $\frac{1}{4}$ of a century
if not more, the works were in the
req most wretched condition but it
an was very easy to see they could be
qu. easily improved and as the Mutinees
had put a stop almost entirely
at least to all new works, arrangements were
made to push on with these irrigation
repairs and improvements as far as
possible; in the first year the outlay

12
was only Rs 80,000 in the 2nd season
Rs 18,000. and in the 3rd season
Rs 10,000, including in these Rs 15,000
for the cost of maintenance of the
Tongabudra river channels;
but I was then able to reduce the
repair grants to Rs 35,000 a year
of which some Rs 20,000 only
were required for the tanks to patch
up for annual wear and tear,
the works were brought to such
order that breaches in them, formerly
of annual occurrence, were quite
unknown for many years, and
the cultivation which in 1856-57
was only 80,000 acres, was increased
in 1862-63 to 1,66,000 acres; why
this has now fallen to 1,25,000 acres
on the repairs required each year
amount to over Rs 60,000 I do not
know, but I trust I have shown
that it is quite possible to lay
out these repairs grants so as to
make the works not only far more
efficient but to save at least half
the annual Budget repair grant
and greatly improve the condition

of the cultivating classes and their means of paying rent.

6. Nothing whatever has been brought forward to show that similar results can be obtained from the banks of this District, yet we are constantly urged to continue the expenditure at the same if not a higher figure, when both Secrearies and Professional Officers are agreed it is next to useless and both are in favor of a radical change in the matter; many sites have been pointed out where most valuable works can be constructed to utilize the rainfall of the District in the most economical manner but to no purpose and the time and means which if properly employed would confer lasting benefits on the country and teach young Officers their profession are being thrown away. I must crave to say in the most humble manner, in endeavours to keep up to an average standard of outlay arbitrarily fixed without real thought about its utility or necessity, and in direct

13 5
opposition to the knowledge, judgment and experience of all the local Officers if it could be shown we were wrong and not studying the interests of the Government by applying right principles to these works and did not then change we should indeed be guilty then of most culpable neglect and dereliction of duty, but I would most respectfully submit such charges should not be preferred to the Government against us when absolutely nothing whatever is done to show how or wherein we are wrong and all our proposals for greatly improving the irrigation of the District are simply ignored on the assumption that existing works require this outlay which every thing tends clearly to prove is not the case.

7. I have endeavoured much against my own predilections and entirely against my own convictions and professional opinion to maintain the outlay as near as possible up to

the assumed average, I know no
good whatever hardly has been done
with it and I believe very little
can be got by expending money
in such engineering in the dark
for which there is also no necessity,
we have acquired sufficient knowledge
experience and skill in Engineering
at home in hydraulic works
that there is really no occasion
for us any longer to follow Marichemul
Maistries in their principles however good
and useful some of their practices
were and by adopting these and
projecting works on the scale that
our enlarged experience at home
enable us to do we can very easily
bring the Districts of the Presidency
up to a much higher standard
in irrigation matters; that is if proper
care and attention is paid to the
consideration of the fundamental
principles required to be applied
in each case and not by assuming
that a bare outlay of money to an
average amount in each District will
do all that is necessary. this is

How can I find
higher success
than Agriculture
has made
disentitled to

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probably as easy a way of disposing
of the matter as could be devised
but it is so utterly hap. hazard
no good can possibly result from it.
In conclusion I would
beg to add I am endeavouring
to save as much as I possibly
can in these Repair Grants, in
the hope the Government will
be pleased to let us expend this
money in metalling the roads
of this District as this will benefit
the cultivation far more than
keeping up the standard of
outlay to what it is imagined
to be necessary. At present the
roads here are mere gravel paths
in fact there is not a yard of
really well made road in the whole
District, and none whatever leading
to the coast, the Government
have taken from us some Rs 50,000
in the Provincial Grant so that
our means are greatly crippled
but to show how well these
irrigation repair grants could
be utilized to benefit the

cultivation by constructing good roads it is only necessary to say that 3 bandies are required to move a ton here, and the cost of transport is $4\frac{1}{2}$ annas a ton a mile, in other parts of South India. 2 bandies will take a ton or more and the cost of transport on good metal roads is seldom more than 2 annas and at the most 3 annas ^{per mile}. By macadamizing our roads there at least $\frac{1}{3}$ of the cost of transport could be saved: it would be necessary to keep only $\frac{2}{3}$ of the number of cattle for draught purposes, and as these could be better fed and cared for, the saving will probably be much greater in a District like Madurai where fodder is so scarce. As such roads would be passable throughout the year the ryot will be able to take his produce to market at all times and when prices are best, of which he now has little or no knowledge. The traction in this per ton on a level piece of good gravel road is 150 lbs on a good macadamized ^{one} it is but

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50 lbs but on the former it is immediately increased to 250 or 300 lbs per ton as soon as any rain falls, whereas on the latter if properly made there is no difference hardly throughout the year, I trust then it is quite evident by what has now been urged that our bandies can be made to carry easily 1000 lbs or $\frac{1}{2}$ a ton and that as our products are chiefly agricultural such a saving is well worth making by means of the Agricultural Repair Grants far more so than in wasting them on useless shallow tanks which the experience of $\frac{1}{2}$ a century or more shows can yield no benefits whatever to the cultivating classes or revenue to the Government.

I find with regret that I have omitted to remind the Government that from the physical

conformation of this District, where
the tanks generally exist, these
must originally have been very
shallow, on the plain unvarying
surface on which they have been
constructed; they have since
silted up very much, from the
natural and unavoidable causes
and they are so thickly clustered
together it is impossible to increase
the store of water in one —
without flooding cultivation about
or depriving lower tanks of their
full supply, to which they have
guaranteed rights, under these
circumstances when it has been
found by the experience of many
years no improvements can be
made and the maintenance of
such works is very doubtful
an Officer who is responsible to
the Government for every Rupee
of outlay is bound to consider
I respectfully submit, that there

shall be good grounds for his proceeding
ing, and this I have endeavoured
to do by a careful consideration
of all the circumstances of this
District, and as I have shown
in the Bellary District that
I had not neglected the interests
either of the Government or the
people in such matters I trust
it will be allowed I am not
doing so now here.

10. After observing for more
than 2 years all the circumstances
of the irrigation in Madurai,
the character of its rain-fall,
the condition of its tanks and
their capabilities, the highly
unsatisfactory state of these
as affording no means of fully
maturing a crop, unless the
seasons are very favorable, the
enormous waste of water by not
having this stored in sufficiently
large reservoirs, the large areas

of good land occupied by shallow
banks which could all be cultivated
with good crops if proper means
were only applied, the great cost
of transport of raw agricultural
products, which can least afford
the expense of transit, and the
heavy charges the land has to
bear on this account diminishing
of course its capability to pay
rent or revenue, the very large
and increasing population for
which food must be provided
and the excessive cost of labor
and consequent waste, taking
only these few chief points into
consideration I hope the Govern-
ment will be pleased to allow
me to say that it is not very
advisable to continue the practice
so much persisted upon of loading
with irrigation works in the
Presidency with repair grants;
for excepting Bellary I do not know

Calicut
does not have
has been done
in 1875

17 9
of any District in which much
if any good has been done with
them and from this example
it is quite apparent that one
half at least $\frac{1}{3}$ of this annual
cost of maintenance can be
saved to the State, that is if
these were effected with proper
economy and judgment there would
be available for new works some
Rs. 17 lacs Rupees.

Again it has been laid
down from the experience of
these irrigation works that
only 20 acres to the square
mile of drainage area can
be obtained from the average
rainfall and Tigris river
was instanced as a case in
point, as irrigating only some
3800 acres of land from a
basin of some 1300 square miles.
It now however appears from the
Collector's last report that the area
actually irrigated is upwards of

110000 acres, if not more, and the records we have maintained of its discharge for 21 years at the Madura Barrage show that there is water enough even in ordinary years, if properly distributed, for over 200000 acres of lands or 150 acres to the square mile while it is actually less than 35 acres to the square mile of available drainage area of some 2000 square miles the loss being thus upwards of 70 per cent. showing clearly how inefficiently our means are being utilized.

Also 30 acres of land require only about 20000 cubic yards of water for irrigation purposes and $2\frac{1}{2}$ inches of rainfall run off a square mile of drainage area would afford a this quantity. The rainfall in the worst seasons is seldom under 18 inches in any District and in many it is upwards of 36 inches in ordinary years and frequently more, so that

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in general we are not using $\frac{1}{12}$ of our available means for irrigation purposes with all the outlay which has been made on the existing works of the country and as we know from the records of the Nagpur and Velhar water works that upwards of $\frac{7}{12}$ and $\frac{9}{12}$ of the average rainfall may be relied upon as available for storage it is quite evident that instead of providing gigantic escapes to works which are of little or no use it is far more worth our while to project new works on entirely different principles so as to irrigate at least 10 times as much land as is now supplied with water by the old works of the country; the very formulae laid down for our guidance in constructing these escapes showing that the practice of the English Engineers to secure all available drainage water in large reservoirs is the correct

one on all economical grounds,
when a District such like Madina
is only supplied with shallow
banks which do not hold
water enough for one crop. I think
I have shown that its existing
works are hardly worth keeping
up and that it is wasting our
time and means to maintain
any longer the standard of
outlay which it has been
assumed, without any grounds
being shown, is necessary, and
that these funds if laid out
on any of the new works which
have projected for the District
would certainly yield far
more satisfactory results in
every respect. So that to direct
the attention of all officers to
mere surplusage purposes instead
of providing better means
of using all the available
rainfall of the country is a
grand mistake and calculated
to inflict lasting injury on the

19 11
interests both of the State and
the cultivating classes.

I have the honor to be
Sir
Your Most Obedt servant
W. T. Tucker District Engineer
District Engineer

12-2-76 No 389
 14-3-76 - 659
 20-7-76 - 1826
 21-4-76 - 996
 26-5-76 - 1328
 27-7-76 - 1826
 13-4-58 - 653
 31-7-56 - 1317
 26-5-76 - 1320

P.W.D.
 29/12/76

Report regarding the
 utilization of -
 works - submitted a
 Bill on migration
 No 1938

Dated 25th August 76
 P.W.D.

The District Engineer
 Madras
 P.W.D.
 Madras

Change No 1328 of 15/11/76

Order - 6.10.76 P.W.D. 11-10-76
 Cui 28.9.76 P.W.D. 28-9-76
 Dated 30-8-76

No 208-W. 2072

Note by the Chief Engineer for Irrigation
 Lt. Colonel Treacher's assumption
 that it is desired that money should
 be spent unprofitably on the repair
 or improvement of tanks which
 are virtually useless has no founda-
 tion. He has to ascertain in each
 group or other convenient limited
 tract of country what tanks
 are still worth maintaining, and
 to what extent they can be made
 to supersede other tanks which
 were either never worth constructing
 or which have deteriorated so far
 as not being longer to be worth
 keeping up. The undersigned enter-
 tains no doubt but that the
 moderate amount of money allotted
 to the Madras District for Repairs
 and minor new works can be
 most profitably spent if the District
 Engineer will take the trouble to
 examine into the circumstances of

the existing irrigation works, and ascertain which should and which should not be kept up.

2. Though Lt. Colonel Fischer has written so much on the subject of the inefficiency of existing tanks and on the uselessness of spending money on them he has not, so far as the undersigned is aware, made any detailed investigation and at any rate he has not made any proposals whatever based on such an investigation for altering the arrangements for the water supply of the lands under any group of tanks or in any limited area of country. Again though so much of the water of the Vigay is stated to be unutilized he has not apparently turned his attention to the improvement, enlargement or extension of existing channels therefrom, or

213
to the construction of additional channels. This officer has recently recommended the construction of 2 reservoirs within the basin of the Vigay or its affluents, but he has not afforded even such information regarding their suitability, as could have been obtained from a cursory examination, much less has he indicated in what particular localities he would propose to utilize the water which he would store.

3. To deal with the whole Madras District and to turn to account the whole water supply would take a long time, and would need a considerable special establishment, but to divide the country into convenient geographical or hydrographical sections and to deal with one or more of these at a time appears to be

a perfectly feasible method of treatment.

4 No beneficial action could be taken until the District Engineer turns his attention from general assertions to the investigation of the requirements of particular portions of the District in detail. If there is water to spare in the Nigay it would seem that attention might with advantage be given to the improvement of existing irrigation and its extension under the upper of the two amcuts on that river, including the selection and improvement of each tank therefrom supplied as would suffice to store sufficient water for the efficient irrigation of the tract of country which can conveniently be irrigated from that amcut. Here there is a definite field for investigation and moreover in

27 14
connection with the Periyar project a survey was made and levels taken which would afford a great deal of the preliminary information required. The atlas sheet moreover indicates that between the amcut and the eastern of two large tanks lying a little to the north of Sholavandan a large amount of drainage is received by the tanks and channels, and it is more than probable that a sum equal to the whole repair and minor new works grants of the District could be profitably spent on this one section of the Nigay irrigation, were its circumstances and requirements carefully ascertained. It will not be difficult to show what the wants of this section are or to demonstrate what can be done by improving

a the river supply, concentrating
 the storage, fixing the best level
 for the water in each tank to
 be retained, providing for the
 safe discharge of surplus after
 the tanks have filled, deter-
 mining where this surplus is to
 go and what is to be done with
 it. Undoubtedly a certain area in
 this section can be effectively
 irrigated by means of a supply
 or channel, local drainage, and
 in a greater or less number of ex-
 isting tanks more or less im-
 proved as may be found necessary.
 This area will also bear a certain
 proportion to the whole area of
 the section and a deduction will
 then be possible as to whether it
 will be desirable or advisable
 to provide for a further supply
 of water to this section by the
 construction of additional reservoirs
 within or without the section.

5. It would be easy to in-
 dicate other tracts of country
 which need to be similarly
 dealt with. The water supply of
 the Madura District is to be
 found in the Nagay basin
 which is made up of numerous
 smaller basins, each one of
 which no doubt possesses some
 capabilities; one of the affluents
 is the Perooligam which has
 already been turned to good
 account for irrigation; the
 Nagay proper has its head among
 similar hills just to the eastward.
 2ndly, in many other basins drain-
 ing areas of greater or less
 extent, each of which is probably
 capable of irrigating effectually
 more land than is now watered.
 6. Colonel Trecher may be
 perfectly right in his opinion
 of the uselessness of maintain-
 ing many of the old tanks. The

may be hundreds which ought to be abandoned but there are on the other hand at least scores which ought to be kept up, and it is part of his duty to see what and where these useful tanks are, and to place them in proper order out of the funds provided for the purpose.

Colonel Fischer must be perfectly well aware that (para 8) money saved from Irrigation repair grants cannot be spent in metalling roads. If he cannot spend those grants usefully on Irrigation works, the money will have to be transferred to other districts where it can be profitably made use of. The fault will lie not in the absence of useful work to be done but with the present District Engineer who is, in the opinion of the undersigned, entirely unfit for

the administration of any District
in which there is irrigation work
to be done requiring careful
investigation and consideration.

Wm. L. H. S. Colonel R.H.
Chief Engineer for Surge.

2nd Sept 1873

The Secretary to Govt. B. D.

P.W.D.

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from

The Chief Engineer for Irrig.
To The Secretary to Govt.
P. W. D.

Dated 2 Sept^r 76

Encls. 1

N. 208- W.

Irrigation Works - Madras
District - Note submitting
observations on the D.E.'s report
on the utilization of outlay
on —

G. I. Form No. 22.

25 17
No 2725

Public Works Department.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 11th Oct^r 1876

Read the following:—

From D. Engr Madras. L. N. 208/1938 dt. 25 Augt/76.

Note by the (Engr for Engr " 208. W dt. 2nd Sept^r 76.

The District En-
gineer, Madras, will be
informed that his con-
tinued inattention to the
instructions which have
been given to him, re-
garding the way in which
the existing irrigation
works of the District should
be dealt with, is viewed
by the Government with
grave dissatisfaction.
Colonel Fischer will
without further comment
proceed to carry out

These instructions, taking
up the irrigation works
in groups or sections
and reporting with
regard to each what
tanks can be usefully
retained and what
should be abandoned
or superseded, supporting
also his opinions by
complete information
regarding water supply,
area of cultivation and
revenue, cost of up keep
in the past & a quarterly
report of the progress
made with these investi-
gations will be submitted
by Colonel Fiecher to
the Chief Engineer for Irrigation
and the first report
should show the works
the circumstances of
which have been examined.

into up to the 31st
December next.

by 9/10
G.M.

S.E. Madan
C.E. for I.

Sep-28-78

~~737~~ 737

Gobt. of 1870 Madras.
PUBLIC WORKS.

To
Mr. D. B. M. S. S. S.

70
Pres.

Date

Level

Est.

Est.

G. O. No. 1180/1870 No. 2725

Nos.

End in 1870
20-10-1870

Irrigation Works

Madras Noting

with disapprobation the
inattention of the B. S. S.
to instructions regarding
the — and of issuing
certain instructions for
having effect to ~~the~~ the
works already passed on
subject.