

Proceedings of the Madras Government, Public Works Department,
3rd November 1875.

Read the following.—

No. 64. From the District Engineer, Madura, dated 14th October 1875, No. 2,890,

No. 65. ORDER THEREON, 3rd November 1875, No. 3,119

IRRIGATION, No 3

This letter will be recorded with the remark that Lieutenant-Colonel Fischer has been already instructed* as to the way in which the irrigation under the Vigay and the irrigation works generally of the Madura district are to be dealt with, and he has been informed that the Government have neither the means nor the intention of providing at present for the investigation of new projects.

(True Extract.)

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

To the District Engineer, Madura
" Chief Engineer for Irrigation.

No 2890

District Engineer's Office
Madurai 14 October 1875

From

Lieut Colonel J. Fischer R.E.

District Engineer, Madurai

To

Major General G. W. Walker R.E.
Secretary to Government D.O.

Sir,

Enclosure 1

Map.
sent separately

I have the honor to acknowledge receipt of L/O, of the 8th September 1875 to 2568, and to request you will be good enough to submit the following explanations to the Government, as my views in regard to the Vaypary river and water supply for irrigation, have not been presented to them at all in the form in which I had prepared and submitted them, and I am solicitous to exonerate myself from blame for apparently troubling

them unnecessarily - in this matter:
for it has been made to appear
as if I had sent up the proposals
without taking all points as much
as possible into due consideration
both as regards the interests of the
Government and the welfare of
the District.

2/ On first forming the District
I saw at once from the natural
capacity of the Vygar and its
drainage area and the average
annual rain-fall that very
much more water must be received
into its bed every year than was
supposed, and none of the tanks
in existence could by any possibility
hold all the available water supply,
and I applied for the sanction
of an establishment to keep up
registers with, on this being refused
and having the Madras Govern

ment supply to attend to, I obtained
the means of registering the water
in the Vygar at the causeway
during October, November, and
December last, and was surprised
to find how closely this agreed
with what I had expected, viz. that
from a drainage area of
1200 square miles of exceeding steep
hilly country and a rainfall of
over 30 inches the annual supply
of water in the river would not
be less than 1200 million cubic
yards: my registers, calculated from a
section of the stone causeway
across the river and the fall per mile
in its bed for 21 miles, gave over
900 million cubic yards for its discharge
in 3 months, from a rainfall of 21
inches in this time, as registered
at Peracolum, thus showing that
 $\frac{2}{7}$ of this or nearly one half had

run off the drainage area, a very large proportion indeed, and fully confirming the steep character of the valley whence the supply is obtained, and as I had reported all this I do not know why it is alleged that "in the absence of the requisite data" these could not be examined, or that it would have been better to register at the Pyranay and Shuttanay Aricuts, when the establishment for this purpose was refused, and I had no means of checking these as I had at the houseway personally; and the registers formerly maintained at these works have been found to be wholly untrustworthy by the observations of last year, and all local traditions regarding the flow of water in this river. I had observed several freshes in the river during the prevalence of the

South West Monsoon and I enquired from the Officers of the Railway, who had been employed on the line and in constructing the bridge across the Tygar, who confirmed my views in this matter stating that though there had been no heavy freshes in the river in 1874, the flow of water in the river had been more steady and uniform, and that it was constant in the months of October, November and December. I had thus very good grounds for considering my estimate of its water supply was by no means exaggerated but on receipt of L.C. of the 30 April 1875, No 1193, I was very glad to find that so high an authority as the late Major Ryves &c more than confirmed all I had expected, for he writes "My belief is that sufficient water for more than double

the present area of irrigation does flow
down the Vygar but that $\frac{3}{2}$ of the
annual supply passes down the river
at 3 times the rate at which all
the channels can draw off from it,
so that if the big freshes could be
detained so as to be spread over
30 days, instead of running off at
3 times the rate in 20 days, it would
be found that there would be water
enough (if the tanks could contain
what it would be necessary to store)
for double the present area of rice crop.
In the previous sentence he had
stated the drainage area and the
annual rainfall to be much the
same as I had taken it to be,
and taking 1200 million cubic yards
of water to be probably run off in
a year he supposes, this would be
sufficient for 3 times the extent of
paddy crop now raised which on

an average appears to under 38,000 acres
and should therefore be improved
to 80 or 120,000 acres of land in the
opinion of an Officer of long experience
in District and in whose judgment
and knowledge the Government
placed every confidence, I am quite at
a loss therefore to account for why
it should be represented to the
Government that "the late Major Hayes
opinions by no means support
my views as to the value of the Vygar
at very short prices under the influence
of the North East Monsoon only, is
not a reliable source of irrigation".
I would respectfully submit that
on all main points we agree entirely
1. as to quantities of water flowing into the Vygar
2. as to annual rainfall
3. as to drainage areas
4. as to increasing the area of irrigation
to double or treble the present extent.

- 5 as to great loss of water by the present arrangements of disposing of available water supply.
- 6 as to great loss of water by evaporation from numberless shallow reservoirs
- 7 as to the importance of storing the waters of the Vygar so that they do not rush off in a few days.

and as regards the available water supply of this river our opinions are confirmed by the Railway Engineers employed for 1 or 5 years on the large bridge over the Vygar for the line between Madura and Tuticorin. I have only to add that the Chittanay and Peranay Anikuts supply two tanks only in the District as described by Major Ryles, the Sirkaray and Padagaray tanks irrigating 1900 and 4400 acres & the best and as the drainage area supplying water to these tanks

by the Anikuts is upwards of 12 square miles of very steep hilly country. It is quite apparent the water cannot be disposed of by these works and the question arises what becomes of it? Major Ryles supposed a great deal was lost by evaporation in the shallow reservoirs below Madura and Mana Madura and in this he is doubtless correct in part, at first I thought to this cause might be added absorption in the vast sandy bed of the river but a more careful inspection and examination of the physical features of the country and the map has convinced me all the losses can be fully accounted for by the way the water is taken off from the Vygar to the numberless shallow reservoirs supplied by it.

3 An inspection of the accompanying map will perhaps make this clear, it will be observed that below Madurai, on its right bank, the river assumes a deltaic formation and receives no local drainage but runs on a ridge, all the tanks supplied from the river by channels led from it are situated in valleys draining directly to the sea so that all surplus from these tanks cannot by any possibility return to the Veyar but must find their way to the sea by the mouths of the subsidiary valleys in which they are situated. on the left bank of the river this formation of the country does not occur till below Mana Madurai where exactly the same thing takes place and the Veyar may be described as an irregular delta

river which can be as easily irrigated from as the Cauvery, Godavary or any other delta, if its waters are properly and scientifically disposed of and not allowed to go to waste, Major (a) Ryves evidently held this opinion when he wanted to retain the fishes for 60 days instead of allowing them to run off in 20 days and I believe a reservoir for the purpose can be constructed near Gollaturam as already reported, my estimate for this was not however too low which includes the cost of 2 navigable canals to the coast without which the irrigation alone will not be $\frac{1}{10}$ of the value it ought to be. And on this point I would beg to offer a few remarks to show I had not left the matter

The estimate
has not been
based on
any other
than a guess

to chance only but have endeavored
to base the project on such sound
economic data as could be obtained.
I assume we can distribute 1200 million
million cubic yards of water from
the Vaggar in any ordinary season
and if the Perryour is cut into
the District 900 million cubic yards
more will in all probability be
obtained making a total of 2100
million cubic yards of water which
at 700 cubic yards per acre for one
crop is enough for 3000 acres
of land. The railway have paid
from Rupees 300 to Rupees 700 an acre
for such land irrigated from the
Vaggar and taken up for their line,
the average cost then is Rupees 300
per acre, but allowing that for a
large area of new lands being taken
up and the expenses attendant
thereon perhaps Rupees 400 an acre
is enough, but

value of such lands, the water
then which might cost 60 lacs
to store and distribute or at the rate
of 300 cubic yards for the Rupee
would be worth $17\frac{1}{2}$ cubic yards
at Rupee in the permanent enhanced
value of the land or 20 times
its cost of obtaining but as this
does not include the cost of the
Perryour works it will be enough
to pay the value of the Vaggar
water at 12 times the probable
cost of any works required for
its proper management and
distribution without taking the
value of the navigation into
account which will certainly
be very great as there is a large
sea-faring population ready to
use the canals as soon as opened
but in this hereafter.

To estimate probable
returns from irrigation I ascertained

• summary •

the average return for stock in the
bazaars and found this to be 12
per cent; for landed property then
8 per cent is quite sufficient
to allow as the return on the
capital invested in it, and as
this sum is probably Rs 1.00
the annual income would be
Rupees 32 per acre, and as
money can be obtained by the
Government in this country now
at 4 per cent there is every probability
that for such property as this
in land yielding such a return
the occupiers would be well able
to pay Rupees 5 an acre as a
water rate; for 30,000 acres the
total enhanced value of land
would be 1200 lacs, yielding
an annual income of 96 lacs
at 8 per cent from which less than
1/2 or 15 lacs has to be deducted.

for water rent, if the whole outlay
there were 100 lacs this would be
a return to Government of 12 per
cent after providing 3 per cent
for maintenance and other expenses
and amply sufficient to cover
the expenses of a loan - In this
outlay of 100 lacs I have included
the probable cost of the Perryapur
works: if this river bed is only
169 feet below the gorge referred
to in para 5. of Genl Colonel Oakes
report, it is quite evident that
by a dam 120 feet high at this
point and by putting down
the gorge to feet at summit
the whole river could be turned
into the Taryar, and there is no
occasion to store its waters at all
and construct any expensive
distributing works for it. so that
is the country at the outlet of

and such cutting that the whole
discharge of this river could be
sent through it to be stored in
the Vyany for the use of the District.
I have purposely avoided saying
much about the Expenditure, as I
believe the Government do not
wish me to interfere at all in
this matter, and I have therefore
only alluded to it in connection
with a scheme for better utilizing
the waters of the Vyany as this
bears on a point which it is
alleged it had wholly omitted,
not attending to the interests of
existing proprietors of land and
the Zemindars: but having shown
the actual cost of such lands to
the Railway Company, having ascer-
tained the probable returns for stock
in the Bazaars and thence deduced
the probable returns to the Government

and the owners of land after providing
for all expenses, I trust it will be
allowed I had not omitted such
an important element in a project
of this kind: it remains now to show
how an increase of rent with enhanced
means to the cultivators can be
obtained by incurring the cost
of the navigation works. supposed
to cost nearly one half of the
proposed outlay.
7. It will be necessary to
premises that the value of all freely
produced commodities in all
conditions of society, depends on
the quantities of labor required
to produce them and to convey
them to market in other words
on the cost of labor almost entirely.
To reduce this cost in production
only in the present production
of Agriculture in this country would
be to reduce the wages of labor only

and as well as I have been able
to ascertain there is very little margin
for this: as already reported the
average earnings of a cooly ~~man~~ for
the year is not more than 2 annas
a day and his cost of living for
himself only is upwards $1\frac{1}{2}$ to $1\frac{2}{3}$
annas a day according to present
prices of food & so that his family
have as little means as possible
except they earn something additional
for themselves. I do not think I am
far wrong in this estimate and
a increase of prices here leads to
a increase of crime in the shape
of dacoity, cattle lifting &c - and
so ignorant a state of the population
it is impossible to expect any great
reduction of the cost of labor by improved
methods of cultivation, this is difficult
and backward enough in far more
civilized countries according to

all accounts, there remains then
no other source but to reduce the
cost of labor to the smallest possible
sum in the conveyance to markets.
I find the cost of this for bandies
here is 4 annas a ton a mile
and by canals it certainly
would not be more than 3 pice
a ton a mile, so that if the
average distance produce has
to be carried is 60 miles to the
coast, the cost in the one case is
Rupees 15 and in the other less than
at Rupee 1. I find the average
weight of produce from an acre
of paddy land is about half a ton
so that a saving of Rupees 7 an
acre can at least be effected by
this means or 21 lacs on the whole
area which may be irrigated
and the whole water-rate will
probably be more than covered

by this saving and 6 lacs a year
left to be added to the 81 lacs already
shown to be the probable returns from
the enhanced value of the lands:
in a year; after paying the 15 lacs
water rate to the Government. And
this estimate I have taken the
mere weight of produce from one
acre without at all considering
other articles which could go by
canals such as salt, sugar, tobacco
or passengers but to show that
such an income can be obtained
it is only necessary to look at the
account of the Godavery navigation
as given in the annual Administra-
tion report for 1873-74 para 101, the
tonnage was 8,69,888 and the ton
mileage 31,091,461, at 3 pice a ton
a mile the cost to the District would
be under 5 lacs, but if this traffic
had to be conveyed by handies

at 4 annas a ton a mile the cost
would be nearly 80 lacs hence, it
may be judged what a vast
reduction in the cost of labor in
production can be effected by
cheapening the cost of conveyance
to the lowest sum possible - the
water rate for irrigation in the
Godavery for this year was probably
not more than 24 lacs and the
District ^{thus} saved ^{24 lacs} 50 lacs in the con-
veyance of its produce by canals
or more than double the sum
it pays for irrigation alone - And
Madura then with only half the
extent of irrigation it is not at
all improbable that with the same
means we should save 21 lacs in
the cost of conveyance at the least,
for prices are very much higher -
I trust then I have shown that
I had good grounds for submitting
this scheme for the consideration

and orders of the Government and
that I have given the subject due
thought and consideration, I have
on the accompanying plan marked
the outline of the project which I
would recommend to be taken up
for this District and am quite
willing to give every assistance
in my power to any Officers who
may be appointed to work it out.
I have endeavored in this report
as well as I am able to show
cause that such a project is
well worth looking into, not from
any loose data of unscientific
works and the failures attending
them, but ^{by means of} based on actual obser-
vation of physical phenomena,
supported by the judgment and
experience of Officers long connected
with the District and others,
by the results obtained in the most
successful works of the kind in

this Presidency in which the utmost
care was taken by the original
designer to see that the fundamental
principles relating to labor, land,
and capital in the matter of
production were duly provided
for, and I trust that the Govern-
ment will be pleased to secure
my troubling them further on
this subject which I would certainly
not have presumed to do if
it had been shown to them on
any substantial grounds that
the project would not bear looking
into, but when every element
of improvement is ignored
because only of failures on works
which have evidently been
carried out on wrong principles
scientific & economic, I could
not but feel that I ought to solicit
the favor of a further hearing
particularly as I have gone far to

establish the opinion entertained by
the late Major Ryves that the Teyary
river in this District is capable of
irrigating from 2 to 3 Annas the extent
of land it does at present and
from the prices paid now for such
lands it is quite apparent there
has been a loss of from 160 to 320
lacs on the value of such property
and of income varying from 12
to 24 lacs a year since he
wrote, which is far in excess of
anything proposed to be obtained
from the Panyaur only after so
much labor had been spent in
the preparation of that project
in which this most important
feature was wholly omitted, and
no attempt made to establish
the probable returns from it
on any satisfactory or reliable
data in the event of any improvements

being carried out in right hand,

I have the honor to be

Yours Most Obedt^{ly} Servant
W. T. Tucker District Engineer

District Engineer

488 Sept 175 No 170-171
 " 18 March " 450-452 with its
 " 1st July " 12-14. original
 " 16 " " 390-391

MDW 1895 Sept.
 to 2990
 No: 6579

From
 The District Engineer
 Madurai

To
 The Secretary to
 Government MDW

Dated 11th October 1895
 Received 16th

Enclosure 1

Submitting further
 report in regard
 to the utilization
 of the waters of
 the Vay river -

G O No 3119 - 3.11.75

No. 3119 Pub Works Dept
 Proceedings of the Madras Government
 Under date the 3rd Nov 75
 Read the following:

From
 The District Engineer
 Madurai (188 No 2890 d/14 Oct 75)

This letter will be recorded
 with the remark that

* By the Chief Engineer for Irrigation
 in L.M.G. No 2005, 11th July 1895
 - 1st - No 2562, 8th Sept 1895

MDW
 Dist^l Engr. Madurai - 6
 Chief Engr. Irrig. 5

Dispa: 18.11.75
 Signed stop here

For MDW

Lieutenant Colonel
 Tucker has been already
 instructed as to the way
 in which the irrigation under
 the Vay and the irrigation
 works generally of the Madurai
 District are to be dealt with,
 and he has been informed
 that the Government have
 their the means nor the inten-
 tion of providing at present
 for the investigation of new
 projects. [Colonel Tucker will
 attend to his instructions and
 refrain from writing any more
 letters on these subjects, until

29-10-75
 26-10-75

he has fully carried out the
orders he has received. He will
further take care to address
all communications on mat-
ters connected with irrigation
to the Chief Engineer for that
branch, and the latter officer
will use his discretion as to
the letters to be brought under
the consideration of Government.

Aug 25/10

AMW

that, in preparation for
the coming season, the
various districts and
divisions in the State
of Arizona, D. C.
under No. 756
18th March - June
the various parts
to the District Engineer
may be found in
his own hands. The
Secretary of the
Board of Irrigation
Affairs, however,
should be aware
that the various
divisions in the State
are now in the hands
of the various
divisions.

He is to be
in the hands
of the District
Engineer
of the various
divisions in the
State of Arizona,
D. C.
under No. 756
18th March - June
the various parts
to the District
Engineer
may be found in
his own hands. The
Secretary of the
Board of Irrigation
Affairs, however,
should be aware
that the various
divisions in the
State are now in
the hands of the
various divisions.

6599



Govt. of Madras

PUBLIC WORKS.

G. E. Madras

Dist.

T. 63

No.

G. O. 3rd Nov 1875 No 101

Nos. 166-168

irrigation under the Vignay
Madras District
report on the — recorded
with the remark that Mr
Lush has been instructed
as to the way in which the
— and irrigation works
under the are to be dealt