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MADRAS RECORD OFFICE.

Government of Madras.

Public Works **DEPARTMENT.**

G.O. No. 2955	Press ~~Mis.~~
115-16	
Dated 6 . 12	1370 .

Not to be folded or roughly handled

MS

No. 115. Read the following letter from the Acting Superintending Engineer, 1st Division, to the Secretary to Government, Public Works Department, dated Dowlaishweram, 12th October 1870, No. 2,366 :—

WITH reference to paragraph 8 of G. O., of the 28th ultimo, No. 2,335, I regret very much to find the Government should consider I have not paid that attention to the instructions conveyed to me from time to time by the Acting Chief Engineer for Irrigation in all cases which is necessary. I beg therefore to be allowed to submit the following explanations, particularly as the note by that Officer printed with this G. O. calls for some reply on matters generally.

2. PARAGRAPH 4.—A comparison here is attempted to be made of the areas as given by three several authorities, and it is observed, "it is not stated how this information was obtained;" on this, I beg to remark, I cannot tell how the Revenue Authorities make up their accounts. Captain Ryves took his from the Irrigation Registers, as these had been prepared by the Range Officers, and on my learning that these accounts had never been checked by any of the Revenue Authorities I rejected them altogether, and applied to the Collector for the necessary information; this was furnished to me at so late a period it was practically of no use in revising the scheme, and as the Range Officer's corrected Irrigation Registers corresponded pretty well with the areas given by the Revenue Authorities allowing for Mamool Pullum, this was taken as the basis of the scheme. It is to be regretted Captain Ryves' figures have been entered in the comparison at all; if any reliance whatever could be placed on them they exhibit an increase of cultivation of 42,000 acres as compared with the Revenue Accounts, and 24,000 acres as compared with our Registers, and this we know not to be the case. I am at a loss to understand the concluding sentence of this paragraph; it is implied that I had failed in a matter in which my duty was clear, and in an appended note it is said the required particulars are unobtainable. Such information as I could obtain from the Collector I made use of and sent up for reference, I have no power to coerce that officer; but I frequently applied to him for the information required for a series of years of the revenue and irrigated areas, and a few days ago I received a statement for the five Delta Talooks; this gives the information for two talooks for ten years, and for the other three talooks for eight years only. I will send this up with the Central Delta project in a short time, but here I would deprecate neglect of duty being attributed to me on such very poor grounds.

3. PARAGRAPH 6.—With reference to the concluding sentence of this, I beg to observe it has been already pointed out how very dangerous this proceeding would be, as it necessitates the removal of a heavy face wall and cutting into some large arches of many years' standing, this occurs in paragraph 3 of my letter printed in G. O., of the 3rd March last, No. 687; I beg to add therefore I would certainly never recommend its being adopted.

4. PARAGRAPH 8.—It is observed in this "one of the smaller cross sections (No. 143) has 29 square yards of water-way, and the full discharge of this reach being 14,168 cubic yards an hour, the velocity would be about 0.41 feet per second. This being the case, the surface fall per mile 1.63 inches, allowed in the longitudinal section, should be reduced to three-fourths of an inch, and the upper gate

"and side walls of the Covoer lock at the $20\frac{1}{2}$ mile should be adjusted accordingly, "otherwise they will be dangerously near the water surface." I must confess myself at a loss to understand how one cross section in a canal 10 miles long should cause this danger. One of the elementary propositions in Hydraulics is:—"If a fluid run through a canal or river or pipe of various widths, always filling it, "the velocity of the fluid in different parts of it will be reciprocally as the transverse sections in those parts." Under these circumstances, if all the other cross sections for this reach are correct, it is not evident why this little one alone should affect its principal masonry work so disastrously. Paragraph 11 of the Memorandum No. 234, here referred to, required us to give longitudinal section of $20\frac{1}{2}$ miles to Cocanada: the whole length of this canal is 32 miles, and a longitudinal section to tide water below the Covoer lock at the $29\frac{1}{2}$ mile was sent; the rest of the canal is a mere tidal creek, in which no works are proposed to be constructed, and I certainly did not expect to find a section of this was necessary, and I should consider a Surveyor's time had been wasted if he had been put on such work, unless some object were in view; a frequent comparison is instituted between Captain Ryves' estimates and those sent up by us, but it is never shown on what data he had prepared his. In this instance $20\frac{1}{2}$ miles of canal are admitted to be without proper sections, and this is not the only one to which reference can be made, yet such basis are taken as affording good means of comparison.

5. PARAGRAPH 9.—Objections are urged in this to an alteration I had made in an hydraulic formula, as it disagrees with some tables alleged to have been prepared by Lieutenant-Colonel Stoddard from Du Buat's formula. I beg to observe that Officer took almost the whole from Neville's Hydraulics, errata and all, in the first edition of his pamphlet, so that I do not see what great reliance can be placed on his authority. I adopted Extelyein's formula when I found how easy it was to use Neville's tables with it, and if I erred at all in this matter I can only say I had Colonel Anderson's authority for so doing, for he uses the same formula in the tables he calculated for one of the Civil Engineering College Manuals. As that Officer is believed to possess some qualifications in estimating the value of Hydraulic tables, I trust it will be admitted I committed no very great offence in adopting his ideas.

6. PARAGRAPH 10.—The instructions sent to me in July 1869 were of a very general nature, and it is even now admitted that it was open to me to bring forward any objections for consideration, and as I had given this matter of the dimensions of locks very considerable attention, I came to the conclusion that when canals, such as these, are likely to be frequently used as alternate lines, as in the case of repairs being executed, etc., it was inexpedient to have the locks of such widely different capacities, and not only because they would not suit paddle-wheel steamers; as regards the use of twin-screws with the weeds we have in our canals these are almost out of the question, and the stern-wheel appears to be the best arrangement to adopt for them; of course the locks of smaller dimensions are as applicable here as for the twin-screws; but it appears the dimensions of first and second class locks were determined with reference to the space it was desirable to afford for passing several boats at one time, with a view of course to economy in the use of the water: it therefore follows the locks on second-class canals should be of the same

size, or nearly so as those on the first-class, as those canals generally convey less water, and so cannot afford to lose much by lockage. The arrangements I suggested provided for this, the cost was estimated out and compared, and as this was not excessive to obtain the object—for the outlay for any work of this kind varies far more in the lift than in the area it actually occupies—I submitted the plans accordingly, stating, at the time, if disapproved of no increase of cost would be incurred in making any alterations for less dimensions if ordered.

7. PARAGRAPH 11.—Until the plans, etc., are returned to me, I cannot account for the differences of bed level here noted, probably it was some error made by the Draughtsman—the water surface levels are too insignificant to require any particular notice.

8. PARAGRAPH 12.—The instructions sent to me in July last, regarding weirs in general, are the following:—"It is thought the design should be re-cast as follows," and nothing more, and on this, it is alleged, I had put aside instructions sent for my guidance, for there is absolutely nothing else. My own experience, fully confirmed by the works executed in this Delta, had convinced me the principle adopted in the North West Provinces was incorrect, and the success of their works is not so well known as to warrant any recommendation of their proceedings being adopted by officers of this Government, who would hardly accept as an explanation, in case of failure, that the plan was the same as they had used in the North West Provinces, to say nothing of the inadvisability of directing officers not to study for themselves, and so acquire knowledge of their work as well as experience and confidence in themselves, but to rely on the results obtained in a distant province, of which they can get no particulars. It is alleged my objections to the plan of these weirs were contained in a letter not addressed to the Acting Chief Engineer for Irrigation, and therefore no notice was taken of the matter; but that very letter was referred to him, and his notes thereon are printed with G. O. of the 3rd March last, No. 687, and in these the matter is not referred to at all. It is very true Major Mullins did address to me a demi-official note on the subject of the weirs, and I replied to it, to which he makes no reference; but when the above G. O. came out subsequently no objections were taken to my proceedings. I can only regret Major Mullins should now consider I had acted with impropriety and discourtesy, demi-official correspondence is not usually preserved for reference, and I have no copies to submit for the consideration of Government, as I was not prepared for such a charge being preferred against me; but, as far as I recollect, Major Mullins merely asked why I had so unhesitatingly condemned the plans when they appeared to have been well considered, and I replied giving my reasons, which appeared to be satisfactory, as no further notice was taken of the matter; I can therefore only say I am heartily sorry it has been considered necessary to make such an imputation against me, but I believed from the instructions I had I was at liberty to make some use of my own judgment.

9. PARAGRAPH 13.—I must again express my regret Captain Ryves' figures and estimates have been brought up as affording any means of comparison. If they are sufficiently trustworthy for this purpose, they must have been equally so when he submitted them last year to Government, and should have then been recom-

mended for adoption, with a vast saving in time, labour, and money; when returned to me for revision many errors in levels were discovered, many alterations in those had been made by him without any reference to Range Officers, or their own levels, and the imperfect details sent to us showed at once it was better to work out the scheme afresh, particularly as no reliance could be placed on the areas given by him for the present extent of cultivation or that expected; we had some 28,000 acres additional land to provide for, and this of itself necessitated the alteration of every canal. There is a well-known saying about comparisons, and I beg respectfully to submit these have been forced on me in no very considerate terms, and I must therefore go into the matter, though I have endeavoured to avoid the thing altogether. The bank canal, as returned to me, was altogether incorrect, and it had been proposed by Captain Ryves, where the Coringa canal takes off to raise its bed two feet, which could only result in silting the head of that canal, it was found that even without the Coringa island, a much larger area of land had to be provided for, and the project was revised accordingly. I beg to observe I do not leave the last 8 miles of the canal unregulated. The Executive Engineer had explained this as follows:—"At the 30th mile a calingulah to discharge 24,000 cubic yards per hour has been put to convey surplus into drain, and another of the same size put across the canal to pass irrigation water to Yanam, and, if necessary, to Coringa island." And this was further noted in the tables of discharges. It is easy enough to see that by this arrangement, if too much water was going towards Yanam, the surplus weir could be opened and the water discharged into an adjacent drain. As regards the concluding sentence of this paragraph, I beg to observe the water at the head sluice is said, in paragraph 5 of the note under reply, to be usually at +30.93, allowing for slope of canal at the 3rd mile in the Coringa canal this would be about +36.00. Now the Anicut is at +34, and we must allow for the river rising at least 16 feet above this in any extraordinary fresh, as we know from the records it rose 17½ feet on the Anicut in 1852-53, when this was at its original level +32. The surface fall of the river is about a foot a mile, and, therefore, in any such season the water in it at the 3rd mile above-mentioned would be +47, and the water in the canal +36, thus exhibiting a difference of level of 11 feet between water surfaces in extraordinary years and from 7 to 8 feet in ordinary seasons, and this in a soil which has a good deal of sand in it with a canal running through it, most dangerously near a great river's bank. I did intend to propose altering this head altogether, but the expense appeared too great, and so I was obliged to adopt another expedient, though unsatisfactory to myself.

10. PARAGRAPH 14.—As one canal after another was worked out, it so happened the Bank canal came before me after I had received G. O. of the 10th March last, No. 755, and, in considering this matter of irrigating the Coringa island, I came to the conclusion it was better to omit it altogether, as the only economical plan for carrying out this scheme was to put up the bund the Government had disapproved of; we had already more land available for irrigation than we wanted, and as the expense of adding to this sum 5,000 and 6,000 acres was very considerable without the bund, which, I respectfully submit, could not be put up for conveying water to the island, without, at the same time, shutting up the Yanam river as I had proposed, and which had been disapproved of by Government, I could see no alternative but to omit its consideration altogether at present, particularly as we

should have the benefit of the advice of the Marine Engineer from England by and by. The two projects are so intimately connected one with the other, it was, as far as I could judge, impossible to separate them.

11. PARAGRAPH 16.—Here, again, comparisons are made at the same time that it is admitted the data on which one set of estimates have been prepared are incomplete or incorrect. I simply adopted a thorough navigation, because it appeared to suit the views of the Acting Chief Engineer, and the Range Officer expected a very great increase of traffic. I regret to say I am unable to say definitely, without the plans, if the difference of the 1-10th of a foot in one arrangement is more suitable than that proposed in another, and, in fact, I have had no time for the purpose in office hours, and at home I can usually occupy myself far more agreeably; but I will give the matter my best considerations nevertheless. What here requires observing is that, if no locks are to be built on this canal, the earth-work's estimate recommended, namely, Rupees 12,850, is wholly insufficient, and should be about trebled to allow for proper embankments on either side below the site of the first lock, and I beg further instructions on this matter may be sent to me.

12. In conclusion I have only to notice the complaint made, that I had not used mean sea level as datum; in a memorandum sent to me in August last, No. 240, paragraph 4, by the Acting Chief Engineer, in reply to some remarks of mine on this subject he says, "It is in some respects quite immaterial whether the datum used for the exhibition of levels be fixed arbitrarily or with reference to some convenient and well-known standard. It is also not at all necessary that the plans of the Godavery improvements should be altered." As twenty years' experience and observation had fully confirmed the correctness of the levels fixed originally by Sir A. Cotton, and many a lock had been built and been in use for years in connection with tide-water, it is impossible to see why tidal locks cannot now be fixed correctly without the mean sea level. Besides the officers and subordinates are now all thoroughly used to the levels we have always used, and as it would take four or five years' observations of wind, weather, and tide, to fix the mean sea level according to the instructions lately sent to me, and as I had been told that it was not at all necessary the plans for these improvements should be altered, and knowing how desirous the Government were these should be completed as early as possible, I took the most direct course to do so, leaving all matters of no importance to be attended to after the first requirements of the district had been provided for, and as we had so correct a datum to work upon here, I do not consider I should have been justified in giving a day's thought to altering this with the certainty of disarranging every level in the whole Delta, particularly as I had the option to prevent this confusion.

DRAINAGES.—I find some explanation as regards these is also required. In paragraph 8 it is observed: "In Captain Ryves' scheme for this canal a waste weir was provided at the 7½th mile. The estimate for this work has been transferred to the Tooliabaga drain, at the head of which it is intended to be placed." As the points in our several schemes, at which this work is proposed, are identically the same in the same canal, there has been no alteration in Captain Ryves' design, nor was I ever made aware I was forbidden to make any changes in his proposals; on the contrary, many had been suggested as improvements, but

*Proceedings of the Madras Government, Public Works Department,
6th December 1870.*

were never ordered. Paragraph 17 admits Captain Ryves' estimates for drainages were only rough ones, and those now sent up had been regularly worked out; to this I beg to add no complete designs or estimates for any of the canals, as prepared by Captain Ryves, were returned to me, all had to be revised nearly if not quite as much as the drainages; if then these have been satisfactorily worked up, I am at a loss to know why so much distrust of the others should be expressed. I must again declare I have been forced entirely against my own wishes and inclination to dispute the validity of the comparisons instituted; but justice, if only to the Range Officer who prepared the estimates, necessitated this however distasteful to myself. As far as I am personally concerned it matters little whose designs are adopted. I have worked out the project to the best of my ability and judgment, not perhaps correct to the decimal or fraction of an inch, and I should be sorry indeed to pretend to achieve any such accuracy with any ordinary levelling instruments when chance only, more than anything else, could make two of them give similar results in such matters; but I am quite willing to abide the judgment of another day, and of a much Higher Power, who expects us to maintain, at least in all our dealing, real fairness of mind and honesty of heart and purpose.

P.S.—I beg to add I have returned to the Acting Chief Engineer for Irrigation Captain Ryves' original reports on the Eastern and Western Deltas, and will send the plans, etc., if required to do so by the first steamer. I have no papers or plans of his regarding the Central Delta which I could forward.

No. 116. ORDER THEREON, 6th December 1870, No. 2,955.

IRRIGATION, No. 9.

THE Government see no reason to modify the remarks contained in paragraph 8 of the Order of the 28th ultimo,

No. 2,335. On the contrary Major Fischer's present letter shows that those remarks were not unnecessary, and that he is too much disposed to adhere to his own views, irrespective of the instructions which he may receive from the Acting Chief Engineer for Irrigation. It is obvious that this cannot be permitted with due regard to the authority of the Chief Engineer, and it is the duty of Major Fischer to act upon the instructions of that Officer in all matters which may properly be decided by him; while, should it be necessary to obtain the orders of Government on any question which cannot be finally disposed of by the Chief Engineer, the Superintending Engineer's representations should be submitted through that Officer.

2. The Acting Chief Engineer will reply to those parts of the Superintending Engineer's letter which relate to details of the Eastern Delta works.

(True Extract.)

Colonel, R.E.,

Secretary to Government.

To the Acting Superintending Engineer, 1st Division.
" Chief Engineer for Irrigation.
Exd. S. T. Augustin.

N. 2366

Superintending Engineer (Office)
Dumfries 12th Dec 1870

From,

Major J. Fischer, R.E.

19. Superintending Engineer, 1st Div.

Colonel C. A. Orr, R.E.

Secretary to Government, P.W.D.

Madras.

Sir,

1. With reference to para 8 of G.O. of the 28th ultimo No. 2335. I regret very much to find the Government should consider I have not paid that attention to the instructions conveyed to me from time to time by the A.C. Chief Engineer for Irrigation in all cases which is necessary. I beg therefore to be allowed to submit the following explanations particularly as the note by that Officer printed with this G.O. calls for some reply in matters generally.

2. Para 4.—A comparison here is attempted to be made of the areas as given by three several authorities and it is observed, "it is not stated how this information was obtained." On this I beg to remark I cannot tell how the Revenue authorities make up their accounts. Captain Ryves

The Revenue authorities do not refer to the areas generally but to the detailed statement of the 207 villages, which did not of course include the area of the riverine portion which differed from the information given by Revenue Officers

Ryner took his from the Irrigation registers
as these had been prepared by the Range Officers
and on my learning that these accounts had
never been checked by any of the Revenue
Authorities I rejected them altogether and
applied to the Collector for the necessary in-
formation - this was furnished to me at so late
a period it was practically of no use in verifying
the scheme and as the Range Officers' corrected
irrigation registers corresponded pretty well with
the areas given by the Revenue Authorities al-
lowing for Manor & Pulliam, this was taken
as the basis of the scheme. It is to be regretted
Captain Ryner's figures have been entered in the
comparisons at all, if any reliance whatever
could be placed on them they exhibit an increase
of cultivation of 42000 acres as compared with
the Revenue accounts and 24000 acres as com-
pared with our registers and this we know
not to be case. I am at a loss to understand
the concluding sentence of this para it is implied
that I had failed in a matter in which my
duty was clear and in an appended note
it

on the strength of
the sub. in the
letter
Major Fisher stated
of this a direct
of the collector's
information from
the collector's
into the Revenue
Bureau & said the
information could
hardly be obtained
all the while in the
state of the case for
giving this opinion
the subject was in
a neglected & un-
settled manner
to obtain the in-
formation

it is said the required particulars are un-
obtainable. Such information as I could
obtain from the Collector, I made use of and
sent up for reference, I have no power to coerce
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days ago I received a statement for the 3 Deltas
talgus - this gives the information for 2 talgus
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 14 - Para 8 - It is observed in this one of
 the smaller cross sections (No 1143) has 29 square
 yards of water way, and the full discharge
 of this reach being 11,168 cubic yards an hour,
 the velocity would be about 0.41 feet per second.
 "Thus being the case, the surface fall per mile
 1.68 inches allowed in the longitudinal section,
 should be reduced to $\frac{3}{4}$ of an inch, and the
 siphon gates and side walls of the Concor Rock
 at the 29 $\frac{1}{4}$ mile should be adjusted accordingly,
 otherwise they will be dangerously near the water
 surface. I must confess myself at a loss
 to understand how one cross section in a canal
 40 miles long should cause this danger. One
 of the elementary propositions in Hydraulics
 is "If a fluid run thro a canal or river
 or pipe of various widths, always filling it,
 the velocity of the fluid in different parts of
 it will be reciprocally as the transverse sections
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 if all the other cross sections for this reach

are -
 The smaller the
 cross section the
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 fall per mile, and
 given any one of
 them with one
 of the smaller cross
 sections the fall
 allowed was found to
 be too great, in
 fact it was too
 great for the
 section. The
 instructions were
 given to the
 S.E. to not to
 be too far from
 the section.

It was not
 because, though the
 work was not
 finished, the channel
 was efficient. The
 S.E. should have
 been given such
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 was not finished.

are correct it is not evident why this little and
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 disastrous - Para 11 of the Memo No 234
 here referred to required us to give longitudinal
 section of 20 $\frac{1}{2}$ miles to Cocanada - the whole
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 A frequent comparison is instituted between
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 5 Para - 9. Objections are urged in this

to an alteration I had made in an hydraulic formula as it disagreed with some tables alleged to have been prepared by Lieutenant Colonel Stedman from Du Buat's formula - I beg to observe that Officer took almost the whole from Neville's Hydraulics, errata and all in the first edition of his pamphlet, so that I do not see what great reliance can be placed on his authority - I adopted Escalpin's formula when I found how easy it was to use Neville's tables with it, and if I erred at all in this matter I can only say I had Colonel Anderson's authority for so doing for he uses the same formula in the tables he calculated for one of the Civil Engineering College Manuals. As that Officer is believed to possess some qualifications in estimating the value of Hydraulic tables I trust it will be admitted I committed no very great offence in adopting his ideas.

Para - 10 The instructions sent to me in July 1869 were of a very general nature and it is now now admitted that it was open to me to bring forward any objections for consideration

The question was whether the major Friction was higher in straight locks or in locks on a curve. I am authorized by Colonel Anderson to state that the latter did not sanction any such change. It is an issue which should not be made without due consideration.

This is not the case. The words have been "It is considered that all new locks should be built free from things that are likely to be objectionable."

150x20 + 2nd class
105x15 - These dimensions were said after consultation with Colonel Orr, conclusion that when canals such as these, are not accepting British Rivers' provisions in the case of repair & being executed it was in the regard to such locks were found

and as I had given the matter of the dimensions of Locks very considerable attention I came to the conclusion that when canals such as these, are likely to be frequently used as alternate lines as in the case of repair & being executed it was in the regard to such locks were found inexpedient to have the Locks of such widely different capacities and not only because they would not suit paddle-wheel Steamers; as regards the use of twin screws with the weeds we have in our canals these are almost out of the question and the stern-wheel appears to be the best arrangement to adopt for these of course the Locks of smaller dimensions are as applicable as for the twin-screws; but it appears the dimensions of 1st & 2nd Class locks were determined with reference to the idea it was desirable to

allowing of water in winter to be with the matter in most cases, as the water was above locks is partly the irrigation water which has to be put down - I have the "follows" in the position named what major Friction says here

afford for passing several boats at one time, with a view of course to economy in the use of the water, it therefore follows the Locks on 2nd Class canals should be of the same size as nearly so as those on the 1st Class as those canals generally convey less water and so cannot

cannot afford to lose much by Coekage the
arrangements I suggested provided for this,
the Coek was estimated out and compared
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to me I cannot account for the differences of
level here noted. probably it was some
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8 Para - 12 The instructions sent to me in
July last regarding weirs in general are the
following. It is thought the design should
be such as follows - and nothing more
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I cannot not, as
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The working of the
water should be
the explanation
was not made, but
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7th July, 1880
The instructions sent for my guidance for the
weir, but as absolutely nothing else. My own experience
is fully confirmed by the works executed in the
the principal Delta had convinced me the principle adopted
was the same - in the North West Provinces was incorrect and
the success of their works is not so well known
as to warrant any recommendation of their
proceedings being adopted by officers of this
Government who would hardly accept as an
explanation in case of failure that the plan
was the same as they had used in the N.W.
Provinces, to say nothing of the inadvisability
of directing officers not to study for themselves
and to acquire knowledge of their work as well
as experience and confidence in themselves but
to rely on the results obtained in a distant
Province of which they can get no particular
information. It is alleged my objections to the plan of these
weirs were contained in a letter not addressed
to the Acting Chief Engineer for irrigation and
therefore no notice was taken of the matter -
but that very letter was referred to him and
his notes thereon are printed with G.O. of the
3rd

In March last No 687 and in this the matter
is not referred to at all. It is very true Major
Mullins did address to me a demi-official
note on the subject of the weir and I replied
to it to which he makes no reference, but when
the above G.O. came out subsequently no
objections were taken to my proceedings. I
can only regret Major Mullins should now
consider I had acted with impropriety and
disrespectfully, demi-official correspondence is
not usually preserved for reference and I
have no copies to submit for the consideration
of Government as I was not prepared for
such a charge being preferred against me but
as far as I recollect Major Mullins merely
asked why I had so unhesitatingly con-
demned the plans when they appeared to
have been well considered and I replied
giving my reasons which appeared to be sa-
tisfactory as no further notice was taken
of the matter. I can therefore only say
I am heartily sorry it has been considered
necessary

the demi-official
correspondence
has subsequently
been destroyed
Major Mullins
has stated in
objection to my
opinion that
my explanation
that might have
been given - but
of doing so has
treated them as
of no value in
Council to find
any consideration

which appears to
refer to the
instructions
without reference
to instructions

the confusion
has been made
without any doubt
Major Mullins does
not refer to the
instructions
which have been
made for the
distinction of the
instructions

necessary to make such an imputation against
me but I believed from the instructions I
had I was at liberty to make some use of my
own judgement -
9 Para - 13. I must again express my
regret Captain Ryves figures and Estimates
have been brought up as affording any means
of comparison, if they are sufficiently trustworthy
for this purpose they must have been equally
so when he submitted them last year to go-
vernment and should have then been recom-
mended for adoption with a view to saving in
time, labor and money, when put into
for revision many errors in levels were dis-
covered, many alterations in those had been
made by him without any reference to Range
Officers or their own levels and the imperfect
details sent to us showed at once it was better
to work out the scheme a fresh particularly
as no reliance could be placed on the area
given by him for the present extent of cultivation
or that expected, we had some 28,000 acres
additional

8 They to observe I do not leave the last
8 Miles of the canal unregulated - The
Oriental Engineer had explained this as
follows - At the 3rd Mile a Calingalah
to discharge 24,000 Cubic yards per hour -
has

Captain [unclear]
 says the [unclear]
live [unclear]
 [unclear] [unclear]
 a different [unclear]
 to the quantity of
 water, which [unclear]
 being [unclear]

has been put to convey surplus into drain and another
of the same size put across the canal to pass irrigation
water by an aqueduct if necessary to Corinza island—
And this was further noted in the tables of discharges.
It is easy enough to see that by this arrangement if
too much water was going forward in the surplus
weir would be opened and the water discharged into
an adjacent drain. As regards the concluding
sentence of this para. I try to observe the water at the
Great Sluice is said in para. 5 of the Note under-
reply to be usually at $+36.93$, allowing for slope
of canal at the 2^d mile in the Corinza Canal
this would be about $+36.00$. Now the Urickut is
at $+34$ and we must allow for the river rising
at least 16 feet above this in any extraordinary
fresh, as we know from the records it rose 17 feet
on the Urickut in 1852. So it here this was at its
original level $+32$. The average fall of the river is
about a foot a mile and therefore, in any such season
the water in it at the 2^d mile above mentioned
would be $+47$ and the water in the canal $+36$ thus
exhibiting a difference of level of 11 feet between water
surfaces in extraordinary years and from 7 to 8 feet
in ordinary seasons and this in a soil which had a
good deal of sand in it with a canal running thro'
it, most dangerously near a great river bank. I did
intend to propose altering this head altogether but
the expense appeared too great and so I was obliged
to adopt another expedient the unsatisfactory to
myself —

~~If~~ so the average
height shown in
the upper portion
of the interval as
there is no bank
on the right side
of the Canal to
keep out the river
water & I believe
the Bank Canal
shown is immediately
under the river
bank.

Para 14. As one canal after another was worked out it so happened the Rank Canal came before me after I had received G. O. of the 10th March 1885 and in considering this matter of irrigating the Loringa island I came to the conclusion it was better to omit it altogether as the only economical plan for carrying out this scheme was to put up the bund the Government had disapproved of; we had already more land available for irrigation than we wanted and as the expense of adding to this sum \$86000 was very considerable without the bund which I respectfully submit could not be put up for conveying water to the island without at the same time shutting up the Garam river as I had proposed and which had been disapproved of by Government, I could see no alternative but to omit its consideration altogether at present, particularly as we should have the benefit of the advice of the Marine Engineer from Quez and byz and byz. The two projects are so intimately connected one with the other it was as far as I could judge impossible to separate them

Para

I have mentioned the Rank Canal in the G. O. of the 10th March 1885 and in considering this matter of irrigating the Loringa island I came to the conclusion it was better to omit it altogether as the only economical plan for carrying out this scheme was to put up the bund the Government had disapproved of; we had already more land available for irrigation than we wanted and as the expense of adding to this sum \$86000 was very considerable without the bund which I respectfully submit could not be put up for conveying water to the island without at the same time shutting up the Garam river as I had proposed and which had been disapproved of by Government, I could see no alternative but to omit its consideration altogether at present, particularly as we should have the benefit of the advice of the Marine Engineer from Quez and byz and byz. The two projects are so intimately connected one with the other it was as far as I could judge impossible to separate them

Para 16. Being again disappointed in the results of the same time that it is admitted the data in which one set of Estimates have been prepared are incomplete or incorrect, simply a despatch a thorough navigation because that no one apart from the Government it appeared to suit the views of the Acting Chief Engineer and the range officer expected a very great increase of traffic. I regret to say I am unable to say definitely without the plans if the difference of the 1/10 of a foot in the arrangement is more suitable than that proposed in another and in fact I have had no time for the purpose in office hours and at home. I can usually occupy myself far more agreeably but I will give the matter my best considerations nevertheless what requires observing is that if no locks are to be built on this canal the earthworks Estimate recommended viz Rs 12850 is wholly insufficient and should be about twice as much. I am unable to say definitely without the plans if the difference of the 1/10 of a foot in the arrangement is more suitable than that proposed in another and in fact I have had no time for the purpose in office hours and at home. I can usually occupy myself far more agreeably but I will give the matter my best considerations nevertheless what requires observing is that if no locks are to be built on this canal the earthworks Estimate recommended viz Rs 12850 is wholly insufficient and should be about twice as much.

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side of the

✓ Captain
Ryder plans will
be called for &
instructions sent
after they have
been compared with
the revised doc.

Revised plans will be called for & instructions sent after they have been compared with the revised design.

the instructions
Practice them." As
now, most of the
... ..

with the sign, and as this is convenient to use the sign looks as the station - No

moreover mean to
and is the only first
level of the sea, while
it is also that level
with reference to which

the beds of Canals in
communication with the
lks. of trial locks, &c.
as found at trial

...advantages to be
obtained this means
a local Council,
then to note the...

between it & the other
H.W.L. datum, formerly
used, with the change of
level to require that

all have been

marks shall be
referred to
I don not
appear to
be any
difficulty in par

entweder an
Ment, hier Cam
elementar Auf
h. introduct

I don't care if ever
 getting Magic
 Frickles to make
 it a little better

instructions, d
 arguments up to
 within a class
 the university

Dear Lord
 Father, H.W.L.
 X Certainly, he

although it was
noting on them
Mr S L are on
disjunct.

10
No delay must
arise

No disagreement
whatsoever

as I had the option to prevent this confusion & description
 Drainages - I find some explanation
 as regards these is also required in para 8.
 it is observed In Captain Ryves's scheme,
 for this canal a waste weir was provided
 at the $7\frac{3}{8}$ mile. The Estimate for this work
 has been transferred to the Loolabaga Drain,
 at the head of which it is intended to be placed.
 As the points in several schemes at
 which this work is proposed are identically
 the same in the same canal there has been
 no alteration in Captain Ryves's design nor
 was I ever made aware I was forbidden
 to make any changes in his proposals on the
 contrary every thing had been suggested as im-
 proper but were ^{never} ordered - Para 17.
 I admit Captain Ryves's estimates for drainages
 were only rough ones and those now sent up
 had to be regularly worked out, to this I
 beg to add no complete designs or estimates
 for any of the canals as prepared by
 Captain

Captain Ryves were returned to me, all 10
 had to be revised, nearly if not quite as
 much as the drainages if then these have
 then submitted been satisfactorily worked up I am at a
 no distant - the
 papers submitted has to know why so much distrust of the
 some completely others should be expressed, I must again
 be allowed to
 the evidence, declare I have been forced entirely against
 appeared immediately
 on - when the my own wishes and inclination to dispute
 evidence was submitted the validity of the comparisons instituted
 the estimates were but justice, if only to the range officer who
 accepted, where
 otherwise the fact prepared the Estimates, necessitated this
 was noticed - how ever distasteful to myself; as far as
 Captain Ryves's &
 Major's Estimates were
 whose designs are adopted, I have worked
 alike subjected out the project to the best of my ability and
 to scrutiny, and judgment not perhaps correct to the decimal
 approved or otherwise
 according to the or fraction of an inch and I should be
 apt to be mistaken to pretend to achieve any such
 thing as to be accurate according to any ordinary rule when
 attempting such work - I am sure I could make
 false to discover the error more than anything else could make
 plans & discharge
 I think not only
 better than the
 the Government's
 matters but I am quite willing to abide
 the

the judgment of another day and of
a much Higher Power who expects us to
maintain at least in all our dealing real
fairness of mind and honesty of heart
and purpose.

for each is but
what I do blame
the former for
is the inattention
to instruction is
for considering
himself at liberty
to set them aside
except them
just as he pleases

Have the honor to be

Sir

Your Most Obedt Servt

Wm H. Fisher Major R.E.

Chief Engineer
1st Division

P.S. I have handed the papers submitted to the Ag-
ricultural Commission for the Eastern and Western
Deltas and will send the Plans &c if re-
quired to do so by the French Government. I
have no papers or plans of his regarding
the actual Delta which I will forward.

Wm. H. Fisher

Public Works Department
 No 2955
 Proceedings of the Madras Government
 Under date the 6th Decr/70
 Read the following
 1167
 From Ag. Supg Engineer 1st Div. (H.E. No 2366 of 12th Oct 1870)

From
 Major J. Fischer R.E.
 As Superintending Engr
 1st Division
 To Colonel C. A. Orr R.E.
 Secretary to Govt. of Madras.
 Madras.

2/12th October 1870
 Received 18th

Offerring with reference
 to G.O. No 2335 of the 28th ult
 certain explanations on the re-
 marks of the Chief Engineer
 for Irrigation on the Eastern
 Delta Completion Project.

No 2955-6 Decr/70

No 115
 16 24 Oct/70 R. 25 Decr/70

The Government see
 no reason to modify the
 remarks contained in para
 8 of the order of the 28th
 ultimo No. 2335. On the
 contrary Major Fischer's
 present letter shows that
 those remarks were neces-
 sary, and that he is
 not unwisely
 too much disposed to adhere to his
 own views irrespective
 of the instructions which
 he may receive from the
 Acting Chief Engineer for
 Irrigation. This cannot
 be

It is shown that

to the extent of the authority of the Chief Engineer
be permitted, and ~~major~~ it is the duty of Major
Fischer ~~not~~ act upon
the instructions of the ~~Chief~~
Chief Engineer in all
matters which may pro-

perly be decided by the ~~Chief~~
latter officer while should
it be necessary to obtain
the orders of Government
on any questions which
cannot be finally disposed
of by the Chief Engineer
the Super Engineer's repre-
sentations should be
submitted through that
officer.

The Acting Chief
Engineer will reply to
those parts of the Super
Engineers letter which
relate

13
relate to details of the
Eastern Delta works.

W. 20/10/70

Abb

2 2
3
L.

The Super Eng. 1st Div.

Chief Eng. for Irrig.

W. 27/12/70

Chubb

Govt. of (1870) Madras.

PUBLIC WORKS.

Chief Supt. of Public Works
1st Division

Col.

Further No. 1177 of 18-4-51

Date

Recd.

Ref.

G. O. 6 Decr 1870, No. 2955.

Nos. 159116

Eastern Delta Project. Papers

Orders on the letter from the Chief
Engr of the 1st Div. Submitting
explanations on the remarks of
the Chief Eng for Irrigation
on the Eastern Delta Project.