M.R.O. 14—13,000—27-9-24.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No. 95 — Press ~~Misc.~~

1824-1855

Dated 15-1-~~19~~-1864

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department, 15th January 1864.

No. 184. Read the following letter from Colonel S. O. E. LUDLOW, Acting Consulting Engineer for Irrigation and Canal Company, to Colonel C. A. ORR, R. E., Secretary to Government, Public Works Department, dated Saint Thomé, 11th September 1863, No. 62 :—

SIR,

1. I have the honor to forward for the consideration of Government two letters, one from the Chief Engineer and the other from the Collector of Kurnool, relative to the questions touched upon in paragraphs 6 to 10 of my No. 164, dated 20th April 1863.

2. With respect to the distributing channels, I am induced by the reasons stated in paragraphs 5 and 6 of Mr. Minchin's letter to modify the opinion given by me in paragraph 8 (of my No. 164), and to recommend that the main irrigation channel for each village should be excavated and repaired by the Company in the same manner as would be done by Government in such cases.

3. As regards the quantity of water required per acre there is, as I expected, much diversity of opinion. Colonel Cotton without stating the grounds on which he bases his opinion, considers (1) one cubic yard per hour per acre to be sufficient.

4. Neither Mr. Minchin nor the Deputy Collector, though the latter has probably had better opportunities of observation than most men, ventures to state even approximately the quantity that would be sufficient. When it is known, however, that during the hot season the mere evaporation from the surface of water varies from ¼ to ½ inch per day, I cannot but conclude that one cubic yard per acre per hour will be much less than is sufficient.

5. I fully concur, however, with Mr. Minchin in thinking that the notion of measuring the cubical amount of water to be supplied (by which I understand that the supply should be *limited* to any given quantity) should not be entertained, any reliable data on which to fix such quantity even on an average being wanting, and the requirements of the different cases being in practice so variable. Every field under irrigation is unquestionably entitled to receive a sufficient quantity of water to bring the crop to maturity, and all that is necessary is to see that this is done and that none is wasted.

6. It appears that *wanton* waste of water is punishable under the New Code, in such cases the Magisterial Officers would act ; but it will be necessary to determine what authorities are to decide in disputed cases the question of sufficiency or non-sufficiency.

7. With reference to paragraph 21 of Mr. Minchin's letter and paragraph 2 of Colonel Cotton's, it appears to me that the extent of land for which water is required being once made known to the Company's Officer, that area should be paid for whether the water be used or wasted, provided always that a sufficiency of water is supplied throughout the season to bring the crop to maturity. If the Company fail to do this, to the partial or total loss of the crop, a deduction should of course be made from their water-rate proportionate to the loss incurred.

Referred to the Revenue Department, with reference to the Order in this Department No. 1,167, dated the 8th May 1863.

Chepauk,
15th September 1863.

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government, D. P. W.

No. 185. ORDER THEREON, 15th January 1864, No. 95.

The Government consider that one cubic yard of water per hour per acre would be altogether insufficient, but the question is one that can only be settled by actual experiment. Colonel Ludlow is requested to make arrangements with Colonel Cotton, the Superintending Engineer and the Collectors of the Districts through which the Irrigation Company's Canal will pass for a series of careful experiments, as soon as water is available. Meanwhile, every precaution should be taken to prevent wilful waste of water by the Ryots.

(True Extract.)

(Signed) J. D. SIM,
Secretary to Government.

To the Consulting Engineer, Irrigation and Canal Company.
„ Board of Revenue.
„ Department Public Works.

Exd, S. T. Augustin.

No 1a

Madras 30th April 1863

To,
J. Ogilvie Esquire
Agent
&c &c &c

No 427

Dear Sir, With reference to Colonel Ludlow's letter of the 20 instant regarding the distribution of Water from the Company's Channel, I beg you will explain that I quite agreed with him that it is expedient the water should be delivered by the Company's Officers at each village Boundary in such quantity as is required for the lands under Irrigation in that Village.— The further distribution to fields or holdings should be undertaken by the Village Officers.

2 To carry out this arrangement notice should be given to the Company's Superintendent of Irrigation, or other deputed Agent, of the breadth of land requiring water for the season, and this area should be paid for, whether the water is used or wasted.

3. The quantity of water per acre to be supplied by the Company, is certainly a very important Question. But experience convinces me that for first crops, if the water is fairly applied; Bread if the Setting it on the land is properly attended to, and wanton waste not allowed

1" Cubic yard per acre per hour in the height of the Season, is sufficient, and more would injure the Crops.

4. The crops of a Village will not be all in the same stage at the same time, and all through the Season there will be some Lands in those stages before and after the period when most water is necessary, which will not require, and not bear the full supply, so that the allowance of all times of one cubic yard per acre per hour is not a fixed limit, but abundance.

5. When second crops alone a greater supply of water is required, and I think it may be that at times 2½ or 3 cubic yards would be required on an acre, but this by no means constantly.

6. At present and until our Reservoirs are constructed there will be no second crops, and I would urge the suspension of discussion with respect to second crop Irrigation, until we are prepared to supply water for it. This will give time to prove what I have stated above as the result of full experience.

7. I should see no objection in order to satisfy the minds of those who are disposed to doubt the sufficiency of 1 Cubic yard, that during the hot weather season, from plants and made of the water being insufficient, an examination of the Villages should take place and should it be found that the Crops are not thriving through a scarcity of water, and no wastage is allowed, a greater supply should at once be afforded.

8 It must be considered that the first stage of irrigation is the flooding of the land before ploughing, requiring the Sudden Application of from 4 to 6 Inches of water or at most 800 Cubic Yards per acre. Perhaps one acre in 20 will require this as the ploughing proceeds and it may be questioned that this flooding will continue on the land without needing a further supply say 1 to complete the cultivation 40 hours - there no require then the full cubic yard per acre per hour.

The Natural Examination and growth of grain in the Seed bed, quickly overcome the necessity of a full supply of water there, as Evaporation is almost suspended and it is after the plant has been transplanted that begins the necessity of the full watering. The plant does not then cover the ground, and Evaporation is at its height, but at this time the great work of transplanting is proceeding, and but a portion of the Village is actually in crop, so that more than the standard Quantity can be laid on the newly planted Lands, and

one cubic foot per acre per hour on the whole would fully suffice

10. As the Crops advance shading the Ground, less water will be evaporated and consumed, and when the Crop is in full ear, it requires to be allowed to become dry or the Grain will be light and inferior.

11. Land of various characters, and cultd under the various systems of Culture no doubt require more or less water and in a newly irrigated Country, as that will be, which Comes under the influence of our works, the want of Experience, will enhance the demand for water. This we should be well able to make up for, by increasing the supply per acre, till the full Extent of land is prepared to receive it, but it will be equally necessary from the first to make the Cultivators aware of the necessity of husbanding the supply, and Caution will be necessary while securing good Crops, on the one hand, not on the other hand to give so lavish a supply of water, as would induce a System of Carelessness and waste.

Sam[l] C

Signed J H C Cotton
Chief Engineer

True Copy

J Mc Dodd
Chief Accountant
for the Agent

L.S.

MADRAS IRRIGATION AND CANAL COMPANY,

Madras, 7th May 1863.

No 89

From,
J Agnew Esqre
Agent & Sec[y] to I & Co

To,
Lieut-Col S.C.E. Ludlow R.E.
Ag Consulting Engineer for I & Co

Sir,

Replying to your letter No 427 of the 20th Ultimo, I have the honor to forward Copy of one from the Chief Engineer, Con[l] No 94 of 30th April, his views on the subject of the distribution of the water under the Company's Canal, and the other questions noticed in your letter under acknowledgment.

I have the honor to be
Sir
Your most obed[t] Servant
J Mc Dodd
Chief Accountant for Agent

L.S.

Extract of a letter from Dy. Collector
R. Ragoonath Rao on Special duty dated
29 June 1863 No. 1,181.

× × ×

4. As regards the quantity of water that ought to be allowed for an acre of land, I quite agree with Colonel Ludlow that no definite rule can be made. So much standard has been fixed for Government Irrigation and I do not see any necessity for doing it in the case of that of the Company. I think that it is almost impossible to define the quantity of water which may be actually necessary for an acre. It depends upon various circumstances as it is indeed admitted by the Chief Engineer in para 11 of his letter to the Agent of the 30th April 1863.

5. I am unable to follow that Officer's arguments to prove that certain defined quantity of water is sufficient at particular periods.

6. The best and the only possible rule which can be enforced appears

To the Collr. of Kaira
2nd Recd. 6th Aug. 63
Encl.
Copy & Extract
Sd/ [illegible]

Dy. Collr. Nadiad
Recd. 8th Aug. 63
Encl. Copy & Extract
Sd/ [illegible]

Asst. Collr. Kaira
Recd. 8th Aug. 63
Encl. Copy & Extract
Sd/ [illegible]

Asst. Collr. Kaira
Recd. 22nd Aug. 63
Encl. Copy & Extract
Sd/ [illegible]

Asst. Collr. Kaira
Recd. 8th Aug. 63
Encl. Copy & Extract
Sd/ [illegible]

Asst. Collr. Kaira
Recd. 8th Aug. 63
Encl. Copy & Extract
Sd/ [illegible]

appears to me to be to let in water without any nice mathematical calculation into the Irrigation Channel, and to permit the officers of the Company to watch and see whether it is not wasted, and to bring to the notice of the proper Revenue authorities any waste with a view that it may be checked and the party who may have wantonly wasted it, punished under the Penal Code.

7. Any thing more rigid &c, will, I am afraid seriously impede the growth of crops and be a suicidal measure to the interests of the Company itself.

× × × I have the honor

(Sd) R. Lyons Hadow
Deputy Collector

(True Extract)

James Innes Minchin
Collector

Sd Thos. Malcolm
Head Asst

Thoon C.S.

No. 242. Collector's Office
28th July 1863

From,

James Innes Minchin Esquire
Collector of Thoon

To,

Lieut. Colonel D. A. C. Pulton R.E.
Consulting Engineer M.D. & C.
Company

Sir,

I have the honor to reply to your letter of the 13th May, No. 8, calling for my views on the distribution of water under the Company's Canal, especially as to the extent to which it should be carried out by the Company's officers, and the average quantity of water to be supplied per acre.

2. With reference to the first point, I concur in the broad principle you have laid down, that the Company's officers should only provide water to the village in the gross, and that the after distribution to fields should be under the control of the village authorities.

3. As already remarked by the Board of Revenue, it appears to me that the wording of Para 8 of your letter to Government dated 20th April last, No. 164 will require to be modified in laying down any rule on the subject. Although the Company will be free from all responsibility in the distribution of water to the various fields, it will be necessary that

that the main Irrigation Channel for the whole village be dug by them, and their duty cannot be considered fulfilled when they have brought water to the boundary of a village—

4. Were the expense of Constructing the whole of the Irrigation channels in a village, left to the ryots, the result would be that no demand would be made for the water, and doubtless at first good policy will require that much greater assistance be offered to the villagers to induce them to take up Irrigation, though finally the repairs of the main channel alone in each village, should be kept up by the Company, and the rest be left to the Cultivators.—

5. As the Government make over to the Company the whole profits to arise from Irrigation under these works, which will be collected from the Ryots by their own officers, they are bound in the interests of the people to insist on the performance of such duties as they would themselves perform in like cases.—

6. In all Government works the main Irrigation Channels are made and repaired at the expence of Government, whose duties must be here accepted by the Company.—

7. The subject of the average quantity to be supplied per acre, is one on which I regret not to be able to supply really reliable information. I have endeavored to obtain it in all quarters of the District, where wet cultivation is now carried on, but Correct measurements of flowing water have never yet been made, and even statements of the necessary depth of water to be let into the fields at each flooding are of the most vague description.—

8. The favorite mode amongst natives of Calculating the quantity of water requisite per acre, is to state the length of time for which a channel should be allowed to run water into it. The size of the channel, and depth of water running in it are stated, but the slope of the channel, and Consequent rate at which the water flows per hour is never taken & hence the Cubical quantity of water used cannot even be approximately arrived at.—

9. The Cultivators under the Nundial Tank say that a channel 18 inches wide, and 6 inches deep, must flow for six hours to irrigate properly an acre of lowly situated land, and for eight hours if the land is on a higher level. Such a flooding must be repeated every fourth day, and if the exact slope of the channel were known, I believe that the Cubical extent of the water might be calculated, though not so from the data given.—

10. In the same way the Ryots of Nundiattahoor Taluk state that a channel two feet by one will irrigate an acre in two hours: but these Ryots demand Irrigation daily, to a depth of three inches

over

over the field for four months.—

11. For an inferior kind of cultivation now Carried on partly under rain alone, at least for the first two months, the Ryots state that for the last four months, the field should be flooded to a depth of three inches every six days, making a daily average of half an inch.—

12. With such differences of Statement made in good faith by different practical Agriculturists, it appears to me that it would be the height of rashness to lay down any amounts as exactly sufficient, and to enact in Consequence stringent rules for the grant of such a supply, and no more by the Company. A mistake in such a calculation might be ruinous, and were the allotted supply scanty, the Ryots would justly Consider that they had been imposed upon, and induced to take up Irrigation on false promises.—

13. The Deputy Collector Rajagopalacharlu is a large land holder in the Tanjore District, he has therefore a real practical acquaintance with paddy Cultivation, and he informs me that he is utterly unable to Calculate the daily extent of water, required throughout a season, to irrigate an acre of land. I beg to append an extract from his reply to my requisition on this subject, which I Consider puts fairly the only mode in which waste Can be prevented, namely by the Careful watch, and prosecution under the Penal Code of all parties alleged to have been guilty of waste of water, by the officers of the Irrigation Company.

14. The Chief Engineer on the other hand seems to have no doubt upon the subject, but Confidently asserts his Conviction that one Cubic yard per hour, per acre, is amply sufficient, and that in the height of the season more water would injure the crops.—

15. I am ignorant what may be the actual experience of paddy cultivation on which the Chief Engineer founds the above Conviction. I find that one Cubic yard per acre, per hour, amounts to less than one fiftieth of an inch depth of water daily over the field. The Correct fraction is 0.178, which is a little less than nine fiftieths of an inch. In other words it would allow not quite nine inches depth of water over the field in fifty days, or nine tenths of an inch in five.—

16. When we find the most moderate demand of the native agriculturist, amounts to three inches in six days, or half an inch daily, it is clear that the amount stated by the Chief Engineer as sufficient must be Calculated on too niggardly a scale.—

17. In truth we possess at present no data upon which to found the required Calculation, while even if measurements of water be now made for

for the purpose, the results can never be accepted with Confidence, until experiments for a series of years will permit a fair average to be struck.—

18. It is clear that a fall of ten inches of rain during the four months of the Cultivation being Carried on, will do away with the necessity of Irrigation to that extent: and the number of Cubical yards that might be sufficient in a rainy year, would be totally inadequate in a dry one.—

19. It is chimerical to suppose that one Cubic yard per Crown, per acre, measured out with mathematical accuracy would have sufficed for wet Cultivation in this District during the late two months of drought.—

20. I am of opinion that the whole notion of measuring the Cubical amounts of water to be supplied, should be abandoned. It is a system hitherto unknown in India, and the arrangements sanctioned for Collecting the dues of the Company have hitherto Contemplated solely the extent of Irrigated land, and never the quantity of water supplied to it.—

21. I have perhaps failed to take in its intended light, the proposition Contained in Para 3 of the Chief Engineer's letter of the 30th April, that the extent of land for which water is required being once made known to the Company's Officer, that area should be paid for, whether the water be used or wasted in course

of Course such would be the Case, if a sufficiency of water be supplied.—

22. The Company Contract to supply the land with irrigation, so as to bring the Crop to maturity. A failure of water for the last months of Cultivation will destroy the Crop, and render a remission of the whole assessment necessary.—

23. The Company must be paid their rates for Irrigation, exactly as the Government is paid in all other Cases. Where they supply sufficient water to bring the crop to maturity, they will obtain their rate; where they fail in their Contract they will obtain nothing for that year from the land, the Crop on which is destroyed by want of water.—

24. Waste of water by the Ryots is a penal offence, the party guilty of it can, and should be punished for his act; but it would be unjust to visit his sin, upon his neighbours: to stint their supply on account of his extravagance, and to inflict loss upon a whole Community for the deeds of one or more amongst them.

25. I Concur fully with all that is set forth in Para 11 of the Chief Engineer's letter under notice. If the proceedings of the Company's Officers are carried on in that spirit, there will be nothing to object to, but we may depend upon it that the Ryots will not take water at all, if it is to be measured out to them mathematically by the Cubic yard.—

I &

26. It must be remembered also that there is no real reason for illiberal, or even careful dealing in this matter. The Canal during the months when fixed Crop Cultivation is Carried on, will always be able to supply more water than will for many years be wanted, and when once past the watershed, waste water will be hardly possible. any quantity that may be taken in excess for Cultivation, must run down the surplus channels, and be returned to the Company's Canal. The whole drainage of the Country from the watershed to the boundary of the District, is utilised by it as far as required, and its own wastage above, cannot escape from it below.—

27. I Cannot but Consider that the idea of measuring out the water to be granted per acre, is a mistaken one, which may have very mis=chievous results, and I trust that it will be abandoned until experiments Carried out for a long series of years, may afford data on which to arrive at a sounder decision than is now possible on the subject.—

I have the honor to be,

Sir,

Your most Obedient Servant,

James Dean Pritchin

Collector

Lt Col. R. Wilcocks
Head Quarters

officer that are a should be paid for whether the water be used or wasted, provided always that a sufficiency of water be supplied throughout the season to bring the crops to maturity – If the Company fail to do this, to the partial or total loss of the crops, a deduction should of course be made from their water rate proportionate to the loss incurred.

I have the honour to be
Sir
Your most obedient Servt
J. B. Hudson Colo
As Consulting Engr for Mills

Compd
C. S.

Copy Report of Col. Hudson
dated 4th March 1863

1863 Dept
From the Collector of
Customs
To the Commissioner of Crown Lands
Quebec

Dated 28th March 1863
Received 31st March 1863
in office 31st March 1863
No. 242.

Collector's
Rec'd 2203/63.

Copy of Minute on
the above Report
by the Secretary
under the
instructions
of the Commissioner
of Crown Lands

Canal Department

Proceedings of the Madras Government
Under date the 15th September 1863.

Read the following
Letter from the Acting Chief
Engineer for Irrigation &
Canals Bombay

Forwards for the consideration
of Government two letters,
one from the Chief Engineer of
the Company and the other from
the Collector of Kurnool relative
to the distributing Channels and
the quantity of water required per
acre.

From the Government
Secretary Bombay
Dated 11th Sept 1863
Rec'd 16th
No 62

The Government
consider that one cubic yard
of water per hour per acre
would be altogether insuf-
ficient - but the question
is one that can only be
settled by actual experi-
ment. Colonel Ludlow
is requested to make
arrangements with local
Contractors, the Superintending
Engineer and the Collectors
of the Districts through
which the Irrigations
Company

R Po 15 May 63 No 1743.

Referred to the Revenue Department with reference to the order in this Depart No 1167 dated the 8th May 1863.

Chief Secy
Colr R. E.
Secy to Govt. P.W.D.

Chepauk
15th Sept 1863
No 87

No 1814

Dated 3rd October R. 3 Oct 63 Rec'd 6 Oct 63

1863 Depatch
Rev
Pro: of Govt for
No 2203
From
Colr J. W. Ludlow
Agt Consulting Engr for
Irrigation
To
Colr C. A. Orr R. E
Secretary to Government
P.W.D.

Dated 11 Sept 1863
Rec'd 16
Enclosures 2
No 96 15 Encl

Forwards for the consideration of Government two letters one from the Chief Engineer of the Company & the other from the Collector of Kurnool relative to the distributing Channels & the quantity of water required per acre

Colr Orr

with an Order.

The allowance suggested by Capt Cotton, viz. a cubic yard only per hour, would be quite insufficient, but I think Capt Cotton will be satisfied with a much smaller quantity than that.

For Orders.

I think Col Cotton's Dept to charge put with 10 cubic yards per acre, leaving put as they like thereafter - But in the absence of all reliable information as to the quantity of water really required on an average discussion is mere waste of time - I see no thing for it but to order some put experiments to be instituted under trust-worthy agency as soon as water is available & meanwhile the Co must be content with taking precautions to prevent waste. I do

Company's
Canal will pass for a
series of careful experi-
-ments, as soon as water
is available. Meanwhile
every precaution should
be taken to prevent wilful
waste of water by the
ryots.—

J. D. S

&c To the Consg Engr I & C Company Dr. 18 Janry.
14— B of Dr. Dispt. 5 Feby.
21— M C M

Revenue 1864 Dept.
Pro: of Govt for Jany:

No 95

Pro: of the Madras Govt
15 January 65.

From the Com Engr for
N W C 24 December 1864.

Col Sadleir thinks
it most arrangements
for a series of careful
experiments in supplying
the water to Poyalo by
the D & C Company.

No 184 & 185.