Reference.

M.R.O. 1—32,409—22-11-20

MADRAS RECORD OFFICE.

Government of Madras.

Political DEPARTMENT.

Jan. 30 1857

G.O. No. 1236 Press Mis.

13-14

Dated 25-6- 1857.

Not to be folded or roughly handled

15.7.57.

1 K

Fort Saint George, Public Works Consultation of 30th June 1857.

No. 13. Read the following letter from Colonel C. E. FABER, Chief Engineer; to H. FORBES, Esq., Acting Secretary to Government, dated 8th May 1857, No. 189.

SIR,

I have the honor to acknowledge the receipt of Extract Minutes of Consultation No. 725 of the 20th Ultimo, enclosing copies of a correspondence between Lieutenant Colonel Baker and Lieutenant Colonel Baird Smith, upon the subject of establishments for the distribution of water from channels and reservoirs, with reference to an application from this Government for an establishment for the care and management of the Cheyaur annicut and channels.

2. Before entering upon a comparison of the cost of this establishment, and that of the charges for the same purpose as given in Lieutenant Colonel B. Smith's letter, I may observe that there has been a long correspondence on the subject already. The Government of India in their letter of the 4th July 1856, No. 3093, were of opinion, that some material reduction in the proposed establishment was necessary, basing their supposition on the idea, that this was one of the large class of works of which the management was being transferred from the Civil to the Public Works Department.

3. This was so far however an error, that the channel had hitherto been without any adequate establishment, and whether it had remained under the Collector, or had been transferred to the Engineer Department, the circumstance would not have diminished the necessity of the establishment applied for.

4. The Government of Madras in Extract Minutes of Consultation No. 1995, dated 29th October 1856, referred the matter back to me, to know whether the Superintendent or Overseer for the annicut might not be supplied from the then contemplated General Establishment, without an addition for this special purpose.

5. The Government of India as well as the Government of Madras, will I turst believe that in making the application for the Superintendent, I did so advisedly. I have read Lieutenant Colonel Baird Smith's paper, I shall shew that the establishment I have proposed is not exorbitant when compared with his, and as for the Superintendent, I consider in the state of affairs here, that such a functionary is necessary, the Cheyaur system of irrigation either by itself, or, if not of sufficient magnitude intrinsically, to be grouped with others, should have establishments to supervise and regulate the distribution of water, entirely distinct from the exclusively working executive of the District.

6. It is perhaps true that every similar establishment is ostensibly an actual extra cost, and one that the Government may be reluctant to recognise or support, but it is no less true that the present wasteful and too frequently wilfully wasteful* expenditure of water, is an appreciable loss really of much greater amount, and I therefore do not hesitate in the fulfilment of my duty, to recommend, that, as works come more and more under professional practical control, the enforcement of careful and economical distribution of water by such establishments as I again recommend, and sanction for which will I trust be no longer withheld.

* See Selections from Records of Madras Government No. X, Report on Public Works for 1852, page 84 para. 5.

7. Lieutenant Colonel Baird Smith in his letter under reply, gives in para. 3 a table of the comparative charge per mile in length of canal, and per cubic foot per second of volume of discharge on 9 different canals in the North West Provinces. In the first, the instance of cost per mile of canal, he assumes 1 as a standard which he states to be 94 Rupees, and the examples vary from 1 to 11·7 or from Rupees 94 to 1,099·8 Rupees. In the second instance of cost per foot of volume he assumes 1 as the standard, which he states to be Rupees 29, the examples range from 1 to 2·5 or from Rupees 29 to Rupees 72·5.

8. The cheapest managed of these canals are the Rohilcund, which costs per mile Rupees 94, and the Western Jumna canal, which costs per foot of water 29 Rupees.

9. The cost per mile of the Western Jumna is Rupees 131-6 showing an unfavorable comparison with the Rohilcund of nearly 40 per cent.

10. The cost per foot of water of the Rohilcund is 31·9, showing an unfavorable comparison of about 10 per cent.

11. These two canals are the most economically managed, but as an instance of the anomaly of the cost of establishments he adduces the fact, that, the Deyrah Doon canal 42 miles long, and discharging 94 cubic feet of water per second, costs 1·7 or 165·8 Rupees per mile, and 2·5 or 72·5 Rupees per foot of continuous discharge, whereas the Western Jumna canals carrying 24 times more water, costs but 117 Rupees a mile, and 1 Rupees 20 per foot per second.

12. In making calculations therefore as to the cost of the charge of the distribution of water, no comparison can be made, for example, between a channel or a tank, or between a work with a small area of Irrigation, extending for miles, and another with a compact area, the one with 30 or 40 sluices in as many miles, the other having only 3 or 4 in from 1 to 3 miles of length of embankment.

13. From this may be deduced as the only true methods of making a calculation for an establishment.

1st. The work to be done with reference to the number of sluices and their discharge.

2nd. The number of miles the different employees have to travel.

14. In para. 9 of his letter, Lieutenant Colonel Smith exemplifies the Eastern Jumna canal as a standard to be taken, and as one for the efficiency of which he can vouch, and from his experience of that work he deduces.

1st. That a Peon can watch the irrigation of 15 miles superficial, that is, 5 miles long and 1½ broad on each side of the channel, which he calculates to have an area of 1,750 cultivable acres; he calculates this acreage as representing the work for the whole year, and that the spring crops are to the autumn as 2 to 1. The pay of this one man is on an average Rupees 1-8.

2ndly. He calculates that one Sub Overseer can superintend within an area of 120 square miles, 12,000 acres, scattered unequally along from 30 to 40 miles of channel, the heads of which are spread along 18 miles in length of the channel of supply.

3rdly. With channels varying from 60 to 100 cubic feet of water per second, the area remains the same, but the length on main channel is reduced.

15. In para. 10 he states, that when larger volumes of water than a discharge of from 30 to 100 cubic feet per second are dealt with, they form parts of the canal or channel of supply, which is then used for distribution also, in such cases the charges are so variable, that it is difficult to give a standard, and he gives his ranges as varying from 12 to 20 miles, European Agency he considers as a separate cost.

16. In Section IV. para. 13 an example is given of a canal 110 miles long, having a volume of 1,100 cubic feet a second, with an area under it of 200,000 acres cultivated land, the cost of the establishment for which is 40,000 Rupees per annum.

17. In the subdivision of proportions of the above establishment I observe, that $\frac{1}{18.5} = \frac{1}{19.4}$ are allotted for collections only, the establishment must therefore be reduced by Rupees 2,110, leaving a balance for supervision and management of Rupees 37,890.

18. This is at the rate of 34·5 Rupees per cubic foot of discharge, and is as 1·2 compared with the standard of 1 presenting 29 Rupees, again it is at the rate of Rupees 268 per mile, which is as 2·8 when compared with the standard of 1, represented by 94 Rupees, and is higher than the rate of the Dheyrah Doon canal, which is represented by 2·5, and which is given as an example of excessive cost.

19. Lieutenant Colonel Smith in para. 16 and following, attempts to apply the foregoing to the special case of the Cheyaur irrigation, and from the imperfect data before him, he considers that an establishment as follows is sufficent.

1 Native Agent on	Rupees	35
4 Peons at 5 Rs.	,,	20
4 do. for annicut and head sluices...	,,	20
		75

Rupees seventy-five per mensem, which though only ⅓ of the proposed establishment, he still thinks very excessive. The length of main channel before the extensions were undertaken was 25 miles, its extensions are some 5 miles in addition, making a total of 30 miles of main channel, the area of ground below the channel (for there is cultivation on only one side) to be supervised is scattered over 60 square miles, and does not exceed probably 4,200 acres. This land is cultivated twice, and its revenue is 40,000 Rupees, the discharge of this channel is 336 cubic feet per second.

20. It may be objected that 336 cubic feet per second is a far larger supply than is required for irrigating some 4,200 acres of land; but it must not be lost sight of, that it is two crop land, that the river Cheyaur does not flow for probably more than 3 or 4 months, and that it is therefore necessary to store water in the tanks of the 41 villages under the influence of the channel, to carry on the cultivation during the other 8 months of the year, and further, that 3·5 times the quantity of water consumed per acre in the North West is required for cultivation in the Carnatic. Calculating then upon the quantity of water running per second, viz. 336 cubic feet, the cost of establishment being 2,604 Rupees per annum, the rate per foot is only 7·7 Rupees instead of 29, and calculating by the mile, it is 87 Rupees instead of 94 Rupees as in Colonel Smith's most favorable example.

21. Calculating upon the superficies as laid down in Section IV. para. 13, the cost per square mile is 25 Rupees for supervision, and in Section V. the cost of supervision per square mile for another example is given as 30 Rupees, whereas the cost of the Cheyaur establishment is 43 Rupees per mile, or an increase of 72 per cent. on the first, and 43 per cent. upon the second example.

22. It will be observed in the 1st method of calculation, that the establishment I have asked for is far *below* that which actually exists on any one of the Canals given in para. 3, whether we calculate by miles in length, or by cubic feet of discharge, whereas it is equally true, that in calculating by areas, the excess in cost is apparently very considerable, and this may be explained (as I have no doubt the differences shewn in the said 14 Canals are capable of being) by remembering first, that, whereas in the examples of area calculation given, the land is irrigated directly from continuous channels, and not as in this instance by water having to be conveyed to detached tanks, and that in a service of this kind, the distributers of water have to travel over a very much longer space of ground, than in the other. Again it must be remembered, that from the larger quantity of water required in Madras per acre, the minor channels in the latter, require more looking after, and are larger than those irrigating the same area in the North West Provinces.

23. Lieutenant Colonel Smith considers an establishment of 75 Rupees sufficient for these works, and pronounces supervision of a higher order, such as an European Overseer, unnecessary. If that functionary whose pay together with his Goomastah be taken away, the working establishment considered necessary amounts to Rupees 113, and consists of 3 Monegars, who would each have a beat of 10 miles in length of main channel, with two Peons† to assist each, one of whom would have to open and shut sluices, distribute water, &c., under the orders of the Monegar, the other together with the 4 Peons† allowed for the Overseer making in all 7, would manage the shutters of the Annicut and Head sluices. The question then narrows itself to an executive establishment of Rupees 113 per mensem, without an Overseer, or Rupeees 217 per mensem with an Overseer.

† The proper term would be Kumboo Cutties literally "tiers of the stick," but I have used peon as a term familiar to the Bengal Government.

24. I am afraid that I am occupying the time of the Government with certainly very tedious details, but I feel it to be necessary to set the matter at rest as far as this instance is concerned, and I here subjoin a table of the cost of Colonel Baird Smith's best examples, as compared with Cheyaur channels establishment.

Relative charge for establishment per mile in length of Canal.

Rohilcund Canal.....	Rupees	94
Cheyuar Canal.....	,,	87

Relative charge for establishment per cubic foot per second of volume.

Western Jumna Canal.....	Rupees	29
Cheyur Canal.....	,,	77

Example of cost of establishment by superficies as given in

Section IV. para. 14 per square mile..Rupees 25

Do. example in Section V..... „ 39

do. of Cheyaur..... „ 13

and the reason of this excess is shewn in para. 22 of this letter.

25. When the Cheyaur irrigation channels, which though now in existence only 7 years, and which have already returned 26 per cent. upon the outlay have been put into regular and thorough working order, the Overseer's sphere of supervision may be extended; but I cannot agree to the expediency of reducing the efficiency of the new establishment lately sanctioned on a scale which I consider insufficient for its duties.

26. The Government of course will sanction what they may now consider proper, and whatever their orders are, they will be strictly and resolutely carried out, I would point out that the rules laid down by Lieutenant Colonel Baird Smith are deduced from data, both too few and differing too widely in their results, to enable him to make them even generally, and far less universally applicable, or in fact to warrant their being called valid deductions at all.

27. It is almost needless to point out, that if the net out-turn of increased Revenue in reference to total expenditure for the Cheyaur Anicut and channels, be compared with the returns obtainable from the canals in the North West Provinces, the result would be far from unfavorable to the management by which such results are to be realized, a management not only, not extravagant and ruinous, but in some respects, actually less costly than those cited as examples of economy.

28. There is however one step in advance in the North West Provinces, the sale of water and collection of revenue from it by the Engineer Department, a system which I should like to see, where practicable, introduced in this Presidency, for though there is a regular establishment of Native Subordinate officials from the Tank Manager down to the actual Manager of the sluice, yet their duties are mixed up with half a dozen other calls upon their time, (for they are the regular Hereditary village officials) and there is a ruinous waste of water, except during seasons of scarcity.

29. On these unhappy occasions the whole village community meets and decides upon the number of hours water each cultivator is to enjoy, and the operations of the distributing servants are watched with the utmost vigilance by the Ryots themselves, I would propose some modification of the existing system which has been in use for centuries for the regulation of irrigation works; but until the Government may think proper to invest the irrigation Officers in this Presidency, with the same magisterial powers that have been conferred in Bengal, great difficulties will oppose themselves to its practical enforcement.

30. In conclusion I hope I may venture without impropriety to most respectfully observe, that it is the reverse of flattering to my position as head of the Department of Public Works in association with three of the ablest Civil Engineers at Madras, to find that the opinion of a Junior Officer of the Bengal Engineers should be deemed of sufficient weight to over-bear the recommendations of the District Engineer supported with our collective recommendation, and it seems to me a subject of not unreasonable regret, that the Supreme Government should have thought it advisable on such imperfect data, as are afforded by the example of the Canals enumerated by Lieutenant Colonel Baird Smith, to propose to establish an empirical law as an infallible standard for guidance in the Madras Presidency.

31. I assure the Government that after most careful consideration, assisted by the experienced officers granted as my professional advisers, I am unable to recommend any reduction being made in the proposed establishment for the Cheyaur Anicut and channels.

No. 11. Ordered in consequence that the following letter be despatched.

From H. FORBES, Esq., Acting Secretary to the Government of Fort Saint George; to Lieutenant Colonel W. E. BAKER, Secretary to the Government of India, D. P. W. dated 25th June 1857, No. 1236.

SIR,

Para. 1. I am directed by the Right Honorable the Governor in Council to acknowledge the receipt of your letter, dated 18th February 1857, No. 835, stating the inability of the Government of India to sanction the establishments proposed by this Government for the irrigation works dependent on the Cheyaur Annicut; and communicating a paper from Lieutenant Colonel Baird Smith, Superintendent of Irrigation Canals in the North Western Provinces, on the subject of the proper strength of establishments, which should be assigned for works of this description.

2. This letter, it is stated, fully bears out the views previously expressed by the Government of India, as to the excessive strength of the establishment proposed for the Cheyaur; and the attention of this Government is therefore called to the facts advanced by Colonel Smith, as well as to the scale of establishment laid down by him; and after an expression of the opinion of the Government of India, as to the correctness of the principles on which Colonel Smith's calculations are based, it is directed, that all applications for establishments from this Government, may be based on the rule followed by Colonel Smith, and that the data required for such application may be carefully got together, and clearly explained.

3. The Chief Engineer having been requested to submit a revised scale of establishment for the conservancy of the Cheyaur Annicut and channels, with reference to the observations communicated in your letter, has replied that he is unable to propose any reduction in the Establishment already recommended. A copy of his letter accompanies this despatch, it enters upon a lengthened explanation and a comparison of the establishment proposed for the Cheyaur works, with the charges for the same purpose given in Colonel Smith's letter, and shews that the relative charge for establishment for the Cheyaur, calculated by miles in length, is greatly less than that for the Rohilkund Canal; and calculated by cubic feet of discharge, less than that for the Jumna Canal; but that calculated by superficies the charge is higher than the examples given in Colonel Baird Smith's paper, para. 14, Sections IV. and V. The reasons of this excess are explained in para. 22. I am desired to solicit the serious attention of the Government of India, to the statements and deductions contained in this letter. The Governor in Council does not consider it necessary to recapitulate the details furnished by Colonel Faber, or to dwell upon them further than to observe that, in his view of the case, there appears sufficient evidence of the inapplicability of the rules or principles laid down in Colonel Smith's letter to the works on the Cheyaur.

4. In the printed Reports on Important Public Works for 1852, which formed No. X. of the Selections from the Records of this Government of which copies were furnished to the Government of India, a brief history is given of the Cheyaur Annicut, and the objects of its construction. The Chief Engineer has also in the letter now transmitted, referred to this document, as corroborating his statement of the "wilfully wasteful expenditure of water;" but it may be useful otherwise, to refer to it, and to other correspondence connected with the same subject, and I am desired to request that the attention of the Government of India, may be drawn to the information therein conveyed, as given in pages 83 to 85, and in the Appendices X. and Y. at pages 101 and 102, as well as to that contained in the papers from time to time laid before the Government of India.

To Government of India	7th December	1850	No.	1150.
From.....	do. 14th March	1851		
To.....	do. 13th June	„	No.	567
From.....	do. 2nd September	„	No.	1349

5. The annicut across the Cheyaur was originally designed to supply, by means of a channel, the tanks of certain villages in the Triruttoor, and Wandiwash Talooks of the North Arcot District, and to bring under wet cultivation certain lands till then unirrigated. The extent of cultivable wet land under the 22 tanks, which were to be thus supplied with water, was stated to be 1,902 Cawnies, charged with an Assessment of 24,671 Rupees; of this, the average culti-

vation was then only 1,114 Cawnies, yielding Rupees 14,085; leaving 788 Cawnies assessed at 10,586 Rupees, uncultivated. It was expected that all this land would be brought under tillage, besides 291 Cawnies of land classed as wet, but immemorially waste, and of dry land, capable, on irrigation, of producing wet crops, and it was calculated that the return would be Rupees 2,120.

6. The estimate for the annicut and channel amounted to Rupees 31,176; the work commenced in November 1851, and it was in full operation before the close of the year 1852. The number, description, and dimensions of the annicut channels, the sluices and other extraordinary masonry works then completed are to be found in Captain Collyer's Report printed at pages 83 and 84 of the Selections above mentioned. It is however not merely to these details that this Government would draw the attention of the Supreme Government, but to the fact more prominently brought forward by that Officer, in para. 5 of the same paper, viz. the losses sustained by Government by the want of care in the distribution of water, and by the indifference manifested by the Ryots to the interests of others.

7. Besides the expenditure noticed in the preceding paragraph, a further estimate of Rupees 2,644 was sanctioned in 1853; for works in furtherance of this project by which it was anticipated that 197 Cawnies of waste land would be brought under cultivation, and lead to an increase of Rupees 1,021 in the Revenue. In the same year a sum of nearly Rupees five thousand was laid out in the repairs of the annicut, which it would appear received some injury from a sudden flood which prevented the sluice shutters being raised in proper time.

8. In 1854, a further extension of the channels was sanctioned, at a cost of Rupees 12,668. At this time the beneficial influence of the Cheyaur works was experienced in 23 villages, and the advantages then present and prospective cannot be better described than by quoting the following statement given by Mr. Bourdillon, the Collector of the District.

	Extent Cawnies.	Assessment Rupees.
Ayacut or total cultivable land, ...	2064	27,264
Average of 8 years preceding the construction of the annicut, ...	0	14,431
Cultivation and Revenue of fusly 1262, ...	1318	19,539
Do. do. of fusly 1263, ...	1665	21,116
Remaining uncultivated in fusly 1263, ...	100	5,848

9. The estimate of Rupees 12,668, provided principally for two works, viz., the widening of the channel from its head to Poorsay, and its extension to Tetry. From the first, Mr Bourdillon, calculated that the 400 Cawnies above shewn as remaining waste would be brought into cultivation, and yield a revenue of 5,000 Rupees, while the conversion of 368 Cawnies of dry land into wet would add Rupees 2,000 more to that sum. From the second he computed that the gain in the first year or two would not be less than 2,000 Rupees, and ultimately not less than 7,000 Rupees.

10. On the 1st November 1856, a further extension of the Cheyaur project was proposed by the Chief Engineer and sanctioned by Government; four villages viz. Maddaray, Parasoor, Nelvoy, and Sheanthavunna, were stated to have lands capable of being cultivated, if they were provided with a sufficient supply of water; but that from their being entirely dependent upon local rains, this was not often the case. The estimate amounted to Rupees 3,270; the present annual revenue from the above lands was given at Rupees 1,367. It was stated that 99 Cawnies of land would eventually be brought under cultivation by means of the proposed channel, and that the increase of revenue in consequence, would be Rupees 1,076 or about 33 per cent. on the outlay.

Chief Engineer's Report No. 100, in Extract Minutes Consultation 16th December 1856, No. 2318.
Extract Minutes Consultation 6th May 1857, No. 872.

11. From what has been stated in the preceding paragraphs it will be seen that, to the present date, an outlay of Capital of upwards of half a lac of Rupees has been sanctioned for the express purpose of bringing large tracts of waste land into cultivation, and obtaining from them an increased amount of revenue. This expectation however can only be realized by a systematic and careful distribution of water, under proper supervision and regulation, so that all the

lands may have their fair supply without waste in any. No sooner did the annicut works come into operation than the necessity of having an establishment for the care of the new works became evident to the local Engineer and the Revenue Officers, at whose suggestion the Board of Revenue proposed the employment of

To Government of India 14th December 1852, No. 1185.
From do. 28th January 1853, „ 194.

1 Maistry and channel Monegar on... ... ...Rs.	12	0	0
2 Peons at 3¾... ... ... „	7	8	0
4 Coolies at do. ... ... „	15	0	0
Total.....	34	8	0

Describing the nature of the duties to be performed by these Officers, the Engineer stated that the Maistry and channel Monegar, would visit the whole channel at least once a fortnight; that one peon would have subordinate charge from the annicut to Mookoor, and the other from Mookoor to Poorsay; and that the four coolies would, during the monsoon, be at the annicut to open and close the sluices, and at other seasons be employed generally along the banks, two in each of the sub-divisions assigned to the two peons.

12. The Acting Collector of North Arcot, in recommending the estabilshment proposed by the District Engineer, stated that it was required to watch the works generally, and particularly to enforce the rules that the Engineer might prescribe for the management of the sluices. "Without some general superintendence of this kind, the works must," Mr. Brett observed, "be committed to the care of the village Monegars, and would be in constant danger of neg-"lect and mismanagement, through the indifference of each Monegar for any interests but those "of his own village, and the preference that each would give to those interests."

13. The establishment thus proposed was recommended to the Government of India on the 14th December 1852, and received the sanction of that authority on the 28th January following. But the necessity for a better paid and more efficient establishment soon became apparent, and on the 5th October 1854, Mr. Bourdillon pointed out that necessity in strong terms. The Governor in Council feels that he cannot do better than transcribe Mr. Bourdillon's own words, and commend them to the consideration of the Government of India.

(P. 16.) "I will add a few remarks on the subject of the last few paragraphs of Captain Collyer's letter, viz. the establishment to be maintained on the annicut and channels. It is undoubtedly true that great loss is now caused both to Government and to the people of the villages low down the channel, by the culpable conduct of those of the villages higher up, in surreptitiously taking more water than they are entitled to, or in negligently or maliciously permitting water to run to waste. This cannot be prevented without an efficient establishment on the works. The present establishment is quite inadequate both in number and in position. The head of it is a Monegar, who has two peons, of whom probably one as well as the four shutter-men, is required to be always at the annicut. If this is the case the Monigar is left with one Peon to attend to the whole of the channel, from the annicut to Poorsay, being about sixteen miles, with twenty-seven tanks, (including two in South Arcot) and a number of sluices and Calingulahs to be managed. I believe the Monegar to be an active and efficient man, but it is physically impossible that he should be able to do all this work."

(P. 17.) "Again as to his position. His salary, I believe is 14 Rupees a month, and occupying no higher place than an ordinary maistry, it is quite impossible that he should carry the influence with village and talook officers which is necessary to the due discharge of the duties committed to him. As to the suggestions made by Captain Collyer in para. 8, I apprehend there is no place for them. I am not aware that the Monegar is at present required to make any periodical reports to the Tahsildar or other Talook officer, whom I conceive Captain Collyer intends in speaking of the local Revenue authorities. His reports even to the Sub Collector or to myself are extremely rare, and so far as I know they are voluntary and not prescribed. As to authority to permit the unlawful taking or letting off of water, I apprehend that the existing Laws are sufficient; what is required is not more stringent Law, but prompt and reliable information of such offences and of the parties concerned."

(P. 18.) "There is another evil of a different kind, resulting from the low salary and position of the superintendent of the channel. The very existence of the offences complained of, proves that the water is highly valuable, it is therefore well worth paying for, and a few extra hours of supply, or a few additional inches of opening, would often command a high price. I

would ask the Board whether it is prudent or right to leave the power of distributing at will so valuable a commodity to the uncontrolled discretion, (for uncontrolled it is virtually) of a subordinate on 11 Rupees a month, and I would remind them that the more the influence of such an officer is increased, and the more independent he is made of any but his own immediate superior, the more safely could he abuse the trust confided to him. In this remark, I must add that I do not at all refer to any thing that I have observed or heard of the present Monegar. He appears to be zealous in his duties, but the general truth remains the same."

(P. 19.) "Valuable works of this kind, elsewhere are not thus neglected. The irrigation Canals of Italy and those of North India are both placed under efficient and trained superintendence, and so are the navigable Canals of England and other countries, though in their case there is little more to be done than to keep the works in repair. I am decidedly of opinion that a higher kind of superintendence is required for these works also, and I do not at all share in Captain Collyer's backwardness to recommend such expenditure, because I am sure that it is wise and necessary merely on the question of economy. The Cheyaur channels at present extend about sixteen miles, and with the extension now proposed will be twenty-four miles. They now supply twenty-seven villages; and so extended, will supply forty-three. The revenue now dependent on them is 21,000 Rupees, and will shortly be forty thousand. The cost of the whole of the works, including the extension, will have been about 30,000 Rupees; and to this is to be added the value of the tanks supplied, which may be estimated at fully three lacs of Rupees."

(P. 20.) "I am of opinion that an efficient European Overseer should be permanently appointed to the charge of these works; and that the channels should be arranged in divisions with a Monegar to each under the Overseer. The present works, with the extension now proposed, would form three divisions; one, the annicut and the channel as far as Mookkoor, a second from Mookkoor tank as far as Poorasy both included; and the third, the branch now proposed. Each Monegar would need a couple of Peons, and the Overseer would need about four, with one or two other servants. The cost of the whole would not exceed 2,500 Rupees a year. I am of opinion that the whole should be under the Civil Engineer; but it might be useful if the quantity of water entering the channel, or the depth at certain points, were regularly reported to the Collector."

(P. 21.) "The work to be done by this establishment would be as follows. First, they would exercise efficient control over the distribution of the water, taking care that all the tanks were supplied in their proper order and their proper proportion, so that all the water entering the channel should be turned to the best account. Second, they would attend to the works, annicut channels, tanks, sluices, &c. would see that none were wilfully damaged, that tanks were not endangered, by the carelessness of village Monegar or Tolies, in neglecting to open the calingulahs &c. would preserve the banks of the channels from encroachment; and would take care that the beginnings of dilapidation to any part of the works were arrested. Third, they would execute all repairs and all improvements to the works, of which some must be almost always going on. Fourth, the Overseer would Superintend the further extensions and improvements of the channels, spoken of above in para. 14; the first mentioned of which at least, when completed, will form a fourth Division of the works. Fifth, if an active man, the Overseer would be able to attend occasionally to other unconnected works in the neighbourhood of the channels; both in making estimates and superintending the execution of works."

14. Having thus arrived at the conclusion of Mr. Bourdillon's representations, it is only necessary to observe that the water of the Cheyaur intercepted by the annicut, is available only during the freshes of the monsoon, or for three months of the year; and that during this period, prompt and energetic measures are required on the part of the establishment, as well for the careful distribution of the water, as to prevent it from running waste. This duty, though apparently simple at first view, is really rather more complicated, for it must be remembered that the main channel which receives its supply at the annicut will soon extend to 30 miles; and that the water will not be confined to this channel alone, but will be diverted into several subsidiary ones for ultimate conveyance through forty-three villages to be stored in the tanks or reservoirs belonging to them, and that from thence the water will again have to be distributed at the proper time for cultivation.

15. Considering the large amount of capital invested in the Public Works under the influence of the Cheyaur annicut and channels, estimated by Mr. Bourdillon at 3½ lacs of Rupees; the numerous sluices, Calingulahs and other masonry works which have to be looked after, the large amount of revenue dependent on them, which can only be fully realized by a careful and economical distribution of the water, and the range of duties and large amount of responsibility which will devolve on the establishment, it will be for the Government of India to decide with the representation from the Head of the Department Public Works of this Presidency now before them, whether it will be good policy to risk these large interests, by reducing the establishment to a scale fixed on principles, which however well they may apply to the irrigation works in the sister Presidency, appear to the Governor in Council to be ill-suited and inapplicable to the peculiar works which form the subject of the present communication.

94

Central Office of Public Works
Fort St. George 8th May 1857.

No. 189

From

The Chief Engineer

To

The Secretary to Government
Public Works Department

Sir,

I have the honor to acknowledge the receipt of Extract Minutes of Consultation No. 725 of the 20th Ultimo, enclosing copies of a correspondence between Lieutenant Colonel Baker and Lieutenant Colonel Baird Smith, upon the subject of establishments for the distribution of water from Channels and reservoirs, with reference to an application from this Government for an Establishment for the care and management of the Cheyaur Anicut and channels.

2. Before entering upon a comparison of the cost of this Establishment, and that of the charges for the same purpose as given in Lieutenant Colonel B. Smith's letter, I may observe that there has been a long correspondence on the subject already. The Government of India

in

in their letter of the 4th July 1856 No 3093 were of opinion, that some material reduction in the proposed establishment was necessary, basing their supposition on the idea, that this was one of the large class of works of which the management was being transferred from the Civil to the Public Works Department.

3. This was as far however an error, that the channel had hitherto been without any adequate establishment, and whether it had remained under the Collector, or had been transferred to the Engineer Department, the circumstance would not have diminished the necessity of the establishment applied for.

4. The Government of Madras in Extract Minutes of Consultation No 1515 dated 29th October 1856, referred the matter back to me, to know whether the Superintendent or Overseer for the annicut might not be supplied from the then contemplated General Establishment, without an addition for this special purpose.

5 ..... The Government of India as well as the Government of Madras will I trust believe that in making the application for the Superintendent, I did it advisedly. I have read Lieutenant Colonel Baird Smith's paper, I shall shew that the

the establishment I have proposed is not exorbitant when compared with his, and as for the Superintendent, I consider in the state of affairs here, that such a functionary is necessary, the Cheyaur system of irrigation either by itself, or if not of sufficient magnitude intrinsically, to be grouped with others, should have establishments to supervise and regulate the distribution of water, entirely distinct from the exclusively working executive of the district.

6. It is perhaps true that every similar establishment is ostensibly an actual extra cost, and one that the Government may be reluctant to recognise or support, but it is no less true that the present wasteful and too frequently wilfully wasteful expenditure of water, is an appreciable loss really of much greater amount, and I therefore do not hesitate in the fulfilment of my duty, to recommend, that as works become more and more under professional practical control, the enforcement of careful and economical distribution of water by such establishments as I again recommend, and sanction, for which will I trust be no longer withheld.

7. ..... Lieutenant Colonel Baird Smith in his letter under reply, gives in para 3 a table

* See selections from records of Madras Government No X report on Public Works for 1852 Page 84 para 5.

table of the comparative charge per mile in length of Canal, and per cubic foot per second of volume of discharge on 9 different canals in the North West provinces. In the first, the instance of cost per mile of canal, he assumes 1 as a standard which he states to be 94 Rupees, and the examples vary from 1 to 11.7 or from Rupees 94 to 1099. Rupees. In the second, instance of cost per foot of volume he assumes 1 as the standard, which he states to be Rupees 29, the examples range from 1 to 2.5 or from Rupees 29 to Rupees 72.5.

8. The cheapest managed of these Canals are the Rohilland, which costs per mile Rupees 94. and the Western Jumna Canal, which costs per foot of water 29 Rupees.

9. The cost per mile of the Western Jumna is Rupees 131.6 showing an unfavorable comparison with the Rohilland of nearly 40 per cent

10. The cost per foot of water of the Rohilland is 37.9, showing an unfavorable comparison of about 10 per cent

11. These two canals are the most economically managed, but as an instance of the Anomaly of the cost of establishments he adduces the fact, that the Dayrah Doon Canal

12

Canal 42 miles long, and discharging 94 cubic feet of water per second, costs 1.7 or 165.8 Rupees per mile, and 2.5 or 72.5 Rupees per foot of continuous discharge, whereas the Western Jumna canals carrying 24 times more water, costs but 147 Rupees a mile, and Rupees 20. per foot per second.

12. In making calculations therefore to the cost of the charge of the distribution of water, no comparison can be made, for example between a Channel or a Tank, or between a work with a small area of Irrigation, extending for miles, and another with a compact area. the one with 30 or 40 sluices in as many miles, the other having only 3 or 4 in from 1 to 3 miles of length of embankment.

13. From this may be deduced as the only true methods of making a calculation for an establishment.

1st the work to be done with reference to the number of sluices and their discharge

2nd the number of miles the different employees have to travel.

14. In para 9 of his letter, Lieutenant Colonel Smith exemplifies the Eastern Jumna Canal as a standard to be taken, and as one

for

for the efficiency of which he can vouch, and from his experience of that work he deduces.

1st That a peon can watch the irrigation of 15 miles superficial, that is, 5 miles long and 1½ broad on each side of the Channel, which he calculates to have an area of 1750 cultivable acres; he calculates this acreage as representing the work for the whole year, and that the spring crops are to the autumn as 2 to 1. The pay of this one man is on an average £ 4 — 8.

2nd He calculates that one Sub Overseer can superintend within an area of 120 square miles, 12000 acres, scattered unequally along from 36 to 40 miles of channel, the heads of which are spread along 18 miles in length of the channel of supply.

3rd With channels varying from 60 to 100 cubic feet of water per second, the area remains the same, but the length or main channel is reduced.

15. In para 18 he states, that when larger volumes of water than a discharge of from 30 to 100 cubic feet per second are dealt with, they form parts of the canal or channel of supply, which is then used for distribution also, in such case the charges are so variable, that it

it is difficult to give a standard, and he gives his ranges as varying from 12 to 20 miles, the European Agency he considers as a separate cost.

16 — In section IV para 13 an example is given of a Canal 140 miles long, having a volume of 1100 cubic feet a second, with an area under it of 200,000 acres cultivated land, the cost of the establishment for which is 40,000 Rupees per annum.

17. In the subdivision of proportions of the above establishment I observe that $\frac{6}{100} = \frac{1}{16.6}$ — are allotted for collections only, the establishment must therefore be reduced by Rupees 2410 leaving a balance for supervision and management of Rupees 37,590.

18. This is at the rate of 34.5 Rupees per cubic foot of discharge, and is as 1.2 compared with the standard of 1 representing 29 Rupees, again it is at the rate of Rupees 268 per mile, which is as 2.8 when compared with the standard of 1 represented by 94 Rupees, and is higher than the rate of the Dheyrah Doon Canal, which is represented by 2.5, and which is given as an example of excessive cost.

19. Lieutenant Colonel Smith in para 16 and following, attempts to apply the foregoing to

to the special case of the Cheyaur irrigation, and from the imperfect data before him, he considers that an establishment as follows is sufficient.

1 Native Agent on Rupees—35.
4 Peons at 5 Rupees——20.
4. Ds for Anicut and Canal Sluice—20.

75.

Rupees Seventy five per mensem, which, though only ⅓ of the proposed establishment, he still thinks very excessive. The length of main channel before the extensions were undertaken was 25 miles, its extensions are some 5 miles in addition, making a total of 30 miles of main channel, the area of ground below the channel (for there is cultivation on only one side) to be supervised is scattered over 60 square miles, and does not exceed probably 4200 acres. This land is cultivated twice, and its revenue is 40,000 Rupees, the discharge of this channel is 336 cubic feet per second.

20. It may be objected that 336 cubic feet per second is a far larger supply than is required for irrigating some 4200 acres of land; but it must not be lost sight of, that it is two crop land, that the river Cheyaur does not flow for probably more than 3 or 4 months, and that it is therefore necessary to store water in the tanks of the 41 villages under the influence of the channel, to carry on the cultivation during the other 8 months of the year, and further, that 3.5 times the quantity of water consumed per acre in the North West is required for cultivation in the Carnatic. Calculating then upon the quantity of water running per second, viz: 336 cubic feet, the cost of establishment being 2604 Rupees per annum, the rate per foot is only 7.7 Rupees instead of 29, and calculating by the mile, it is 87 Rupees instead of 94 Rupees as in Colonel Smith's most favorable example.

21. Calculating upon the superficies as laid down in Section IV para 13, the cost per square mile is 25 Rupees for supervision, and in Section V the cost of supervision per square mile for another example is given as 30 Rupees, whereas the cost of the Cheyaur establishment is 43 Rupees per mile, or an increase of 72 per cent on the first, and 43 per cent upon the second example.

22. It will be observed in the 1st method of calculation, that the establishment

I have asked for is far below that which actualy exists on any one of the Canals given in para 3, whether we calculate by miles in length, or by cubic feet of discharge, whereas it is equally true, that in calculating by areas, the excess in cost is apparently very considerable, and this may be explained (as I have no doubt the differences shewn in the said 14 Canals are capable of being) by remembering first, that whereas in the examples of area calculation given, the land is irrigated directly from continuous channels, and not as in this instance by water having to be conveyed to detached tanks, and thatina service of this kind, the distributers of water have to travel over a very much longer space of ground, than in the other. Again it must be remembered, that from the larger quantity of water required in Madras per acre, the minor channels in the latter, require more looking after, and are larger than those irrigating the same area in the North-West Provinces.

23. ..... Lieutenant Colonel Smith considers an Establishment of 75 Rupees sufficient for these works, and pronounces supervision of a higher order, such as an European Overseer, unnecessary. If that functionary whose pay together with his Goomastah be taken away, the working establishment considered necessary amounts to Rupees 113, and consists of 3 Monigars, who would each have a beat of 10 miles in length of main channel, with two Peons* to assist each, one of whom would have to open and shut sluices, distribute water &c. under the orders of the Monigar, the other together with the 4 Peons allowed for the Overseer making in all 7, would manage the shutters of the Anicut and Head Sluices. The question then narrows itself to an Executive Establishment of Rupees 113 per mensem, without an Overseer, or Rupees 217 per mensem with an Overseer.

24. ..... I am afraid that I am occupying the time of the Government with certainly very tedious details, but I feel it to be necessary to set the matter at rest as far as this instance is concerned, and I here subjoin a table of the cost of Colonel Baird Smith's best examples, as compared with the Cheyaur Channels Establishment.

Relative

*The proper term would be Kumbo cutties literally "ties of the stick" but I have used peon as a term familiar to the Bengal Government.

Relative charge for Establishment per mile in length of Canal.

Rohilland Canal _____ 9 ⅛ Rupees
Cheyaur Canal _____ 87 Do

Relative charge for Establishment per cubic foot per second of volume.

Western Jumna Canal _____ 29 Rupees
Cheyaur Canal _____ 11 Rupees

example of cost of Establishment by superficies as given in Section IV para 14 per square mile _____ 25 Rupees
Do example in Section V _____ 33 Do
Do of Cheyaur _____ 43 Do

and the reason of this excess is shewn in para 22 of this letter

25. When the Cheyaur irrigation Channels, which though now in existence only 4 years, and which have already returned 25 per Cent upon the outlay have been put into regular and thorough working order, the Circle's sphere of supervision may be extended; but I cannot agree to the expediency of reducing the efficiency of the new Establishment lately sanctioned on a scale which I consider insufficient for its duties.

26 The Government of course will sanction what they may now consider proper, and whatever their orders are they shall be strictly and zealously carried out. I would point out that the rules laid down by Lieutenant Colonel Baird Smith are deduced from data, both too few and differing too widely in their results, to enable him to make them even generally, and far less universally applicable, or in fact to warrant their being called valid deductions at all.

27 It is almost needless to point out, that if the net outturn of increased Revenue in reference to total expenditure for the Cheyaur Anicut and Channels, be compared with the returns obtainable from the Canals in the North West Provinces, the result would be far from unfavorable to the management by which such results are to be realized, a management not only not extravagant and ruinous, but in some respects, actually less costly than those cited as examples of economy.

28. There is however one step in advance in the North West Provinces, the sale of water, and collection of revenue from it by the Engineer Department, a system

system which I shall be glad to see introduced if practicable, introduced in this Province, for though there is a regular establishment of Native Subordinate Officials on the Tank Villages down to the actual Manager of the Sluice, yet this entails the necessity with very few days exception upon this class (for they are the regular Executive Village Officials) and there is a serious work at this except during seasons of scarcity.

29. On this as regards remission. the whole village community rate and decides upon the number of days work each cultivator is to give, and the selection of the distributing servants is left entirely with the utmost confidence in the good Manager. I would propose some modification of the existing system which has been in use for centuries for the remission of irrigation rates, but until the Government may think proper to invest the Irrigation Officers in this Presidency with the same magisterial powers that have been conferred in Bengal, great difficulties will oppose themselves to its practical enforcement.

30. In conclusion I hope I may venture

venture without impropriety to most respectfully observe, that it is the reverse of flattering to my position as Head of the Department of Public Works in association with three of the ablest Civil Engineers at Madras, to find that the opinion of a Junior Officer of the Bengal Engineers should be deemed of sufficient weight to over bear the recommendations of the District Engineer supported with our collective recommendation, and it seems to me a subject of not unreasonable regret, that the Supreme Government should have thought it advisable on such imperfect data, as are afforded by the example of the Canals enumerated by Lieutenant Colonel B. Smith, to propose to establish an empirical law as an infallible standard for guidance in the Madras Presidency.

31. I assure the Government that after most careful consideration, assisted by the experienced officers granted as my professional advisers, I am unable to recommend any reduction being made in the proposa

Inform all concerned that the Brigade
Orders and Standing

Central Office Perth
Fort Stirling Camp
5th May 1852

Orders will in future be
dated
from
Head Quarters Fort Stirling

Lieut. Colonel
Commanding Officer

Lieut. Gardiner
5th Regt. Madras Native Infantry
Orderly Officer

12 Copies Received

P.W.D

No 1236

To

Lieutenant-Colonel W. E. Baker.

Secretary to the Government

of India.

Sir,

I. I am directed by the Right Honorable the Governor in Council to acknowledge the receipt of your letter, dated 18th February, 1857, No 835, Mate= =ing the inability of the Government of India to sanction the Establishment proposed by this Government for the irrigation works dependent on the Cheyam= =mount; and communi= =cating a paper from Lieut= Colonel Baird Smith, Superintendent of Irrigation Canals in the North Western Provinces

P.W.D.

No 1236

From

The Chief Engineer

&c.

The Secretary to Government

Public Works Dept.

Dated 2nd May 1857

Rec'd 7th do

No

Dated 30th April 1857

Subject Irrigation Works

Sir,

I have the honor to forward herewith 20 copies of a Report No 29 dated 30th April 1857 containing a Memorandum by Lieut Colonel Baird Smith on the Cheyam Embankment with the accompanying Estimate and working Plan Elevation and Channels in Chunar Pergunnah

6 Copies Rec'd

Provinces, on the subject of the proper strength of Establishments which should be assigned for each of their Presidencies

2 This letter, it is stated, gives more extensive views respecting the Government of India, as to the necessary strength of the Establishments proposed for the Presidency and the attention of this Government is therefore called to the facts advanced by Colonel Smith, as well as to the Scale of Establishments laid down by him; and after an expression of the opinion of this Government

5

of India, as to the correctness of the principles on which Colonel Smith's calculations are based, it is directed, that all applications for Establishments from this Government, may be based on the rule followed by Colonel Smith, and that the data required for such application may be carefully got together, and clearly explained.

3 The Chief Engineer having been requested to submit a revised Scale of Establishment for the Conservancy of

of the Cheyair Anicut and channels, with reference to the observations communicated in your letter, has replied that he is unable to propose any reduction in the Establishment already recommended. A copy of his letter accompanies the despatch, it enters upon a lengthened explanation and a comparison of the Establishment proposed for the Cheyair works, with the charges for the same purpose given in Colonel Smith's letter and

and shews that the relative charge for establishment for the Cheyar, calculated by miles in length, is greatly less than that for the Rohilkund Canal; and, calculated by cubic feet of discharge, less than that for the Jumna Canal, but that calculated by superficies the charge is higher than the examples given in Col. Baird Smith's paper para 11 Sections IV & V. The reasons of this excess are explained in para 22. I am desired to solicit the serious attention of the Government of India to the statements and deductions contained in this letter. The Governor in Council does not consider it necessary to recapitulate the details furnished by Col. Faber, or to dwell upon them

Hence further thus be seen that, on his own of the cases, there appears supposed evidence of the incompleteness of the rules as formerly stated there in C.C. Smith's L.H. ~~will explain~~ L.H. rules on the Cheyam.

4 See the printed Reports on irrigation Tables Works for 1852, which formed Nº X of the selections from the Records of the Government of which copies were furnished to the Government of India; a brief history is given of the Cheyam Channel, and the objects of its construction. The Chief Engineer has also in this letter mentioned, referred to this document, as corroborating his statement of the "wilfully wasteful expenditure of water," that it

To Govt of India 7th December 1850 Nº 1150
From -- do -- 11th March 1851
To -- do -- 13th June " " 567
From -- do -- 1st Septr -- 1349

it may be useful otherwise, to refer to it, and to other correspondence connected with the same subject, and I am desired to request that the attention of the Government of India may be drawn to the information therein conveyed, as given in pages 53 to 55, and in the Appendix XIY at pages 101 and 102, as well as to that contained in the papers from time to time laid before the Government of India.

5 The Annicut across the Cheyam was originally designed to supply, by means of a channel, the tanks of certain Villages in the Trivattoor and Wandiwash Taloks of the North Arcot District, and to bring

under

under wet cultivation estimates
lands till then unirrigated.
The extent of cultivable waste
land under the 22 tanks ..
which were to be thus supp-
plied, with water was stated
to be 1902 Cawnies, charged
with an assessment of
24671 Rupees; of this, the
average cultivation was then
only 1111 Cawnies, yielding
Rupees 11,085; leaving 798
Cawnies assessed at 1956
Rupees, uncultivated. It
was expected that all this
land would be brought under
tillage, besides 241 Cawnies of
land classed as wet, but
immemorially waste, and of
dry land, capable, on irrigation
of producing wet crops, and
it was calculated that the
returns would be Rupees
2120.

The

6 The Estimate for
the Annicut and Channel
amounted to Rupees 31476;
the work commenced in
November 1851, and it was
in full operation before
the close of the year 1852.
The number, — description
and dimensions of the Anni-
cut channels, the Sluices and
other extraordinary Masonry
works then completed, are
to be found in Captain
Collyer's report printed at
pages 83 & 84 of the Selections
above mentioned. It is
however not merely to these
details that the Govern-
ment would draw the
attention of the Supreme
Government, but to the
fact more prominently
brought

brought forward by that Officer, in pursuance of the same paper, viz.ª the losses sustained by Government by the want of care in the distribution of water, and by the indifference manifested by the ryots to the interests of others.

7 Besides the expenditure noticed in the preceding paragraph, a further estimate of Rupees 26th was sanctioned in 1853 for works in furtherance of this project, by which it was anticipated that 197 Candies of waste land would be brought under cultivation, and be to an increase of Rupees 1091 in the Revenue. In the same year a sum of nearly Rupees four thousand was laid out in the repairs of the

the Annicut, which it would appear received some injury from a sudden flood which prevented the Sluice Shutters being raised in proper time.

8 In 1854, a further extension of the Channels was sanctioned, at a cost of Rupees 12,668. At this time the beneficial influence of the Cheyar works was experienced in 25 Villages, and the advantages then presented and prospective cannot be better described than by quoting the following statement given by Mr. Brandillon the Collector of the District.

	Estimate.	Supposed Sec.
Extent of total Cultivable Land	2064.	27,264.
Average of 5 years preceding the construction of the Annicut		11,434.
Cultivation and Revenue of fasly 1262	1518.	19,539.
do do of fasly 1263	1665.	21,416.
Remaining uncultivated in fasly 1263	400.	5,848.

9 The estimate of

of Rupees 12,668 provided
principally for two works
Viz: the widening of the
Channel from its head
to Toorvay, and its extension
to Velvy. From the first-
Mr Bourdillon calculated
that the 400 Cawnies
above shewn as remaining
waste would be brought
into cultivation, and
yield a Revenue of
5000 Rupees, while
the conversion of 365 Cawnies
of dry land into wet
would add
Rupees 2000 more to that
sum. From the second
he computed that the gain
in the first year on
two would not be
less than 2000 Rupees, and
ultimately not less than
7000 Rupees.

on

10 On the 1st November
1856 a further extension of
the Cheyam project was
proposed by the Chief Engineer
and sanctioned by Government
Four Villages Viz. Chandavay,
Parasoor, Velvoy, and Cheruta
=vanum, were stated to have
lands capable of being culti
=vated, if they were provided
with a sufficient supply
of water, but that from their
being entirely dependent upon
local rains, this was not
often the case. The Estimate
amounted to Rupees 3270, the
present annual revenue
from the above lands was
given at Rupees 1367. It
was stated that 99 Cawnies
of land would eventually
be brought under cultiva=
=tion by means of the proposed
Channel

Public Consultations for 6th-10th Dec
Extract Dt 15th December 1856-No 2318
Extract from Diary 1857- No 872.

channel, and that the increase of revenue in consequence, would be Rx 1,076 or about 32 per cent on the outlay

11 From what has been stated in the preceding paragraphs it will be seen that, to the present date, the outlay of Capital of upwards of half a lac of rupees has been sanctioned for the express purpose of bringing large tracts of waste land into cultivation, and obtaining from them an increased amount of revenue. This expectation however can only be realized by a systematic and careful distribution of water, under proper supervision and regulation, so that all the lands may have their fair supply without waste in any. No sooner did the Government works come into operation, than the necessity of having an establishment for the care of the new works became evident to the local Engineer and the Revenue Officers, at whose suggestion the Board of Revenue proposed the employment of

To Govt of India No 1852 dd 11th Dec 1852
From — do — 28th Janry 1853 — 194.

1 Ministry & Channel Mungar on Rx 12.

2 peons @ 3¾ Rx — 7-8

2 Coolies at do — 15-

34-8

describing the natures of the duties to be performed by these officers the Engineer stated that the

Ministry

Ministry, and channel Monegour, would visit the whole channel at least once a fortnight; that one peon would have subordinate charge from the Sluice to Mootoor, and the other from Mootoor to Poorvay; and that the four Coolies would, during the Monsoon be at the Sluices, to open and close the Sluices, and at other seasons be employed generally along the banks, two in each of the Sub-divisions assigned to the two Peons.

The

12 The acting Collr. of North Arcot, in recommending the Establishment proposed by the District Engineer, stated that it was required to watch the works generally, and particularly to enforce the rules that the Engineer might prescribe for the Management of the Sluices. "without some general superintendence of this kind, the works must" "Mr. Brett observed, be "committed to the care of "the Village Monegours, and "would be in constant "danger of neglect and Mis-"-management, thro' the indefference

indefference of each Mone-
=yar for any interests
"but those of his own
"Village, and the preference
"that each would give
"to those interests."

13 The establishment thus proposed was recommended to the Government of India on the 14th December 1852, and received the sanction of that authority on the 28th January following. But the necessity for a better paid and more efficient Establishment soon became apparent, and on the 5th October 1854 Mr. Bourdillon pointed out that necessity in strong terms. The Governor in Council feels that he cannot do better than transcribe Mr. Bourdillon's own words, and command them to the consideration of the Government of India.

(¶ 16). "I will add a few remarks on the subject of the last few paragraphs of Captain Collyer's letter, Viz the establishment to be maintained on the Orient and Channels. It is undoubtedly true that great loss is now caused both to Government and to the people of the villages low down the Channel, by the unstable conduct of those of the villagers higher up, in surreptitiously taking more water than they are entitled to, or are negligently or even maliciously permitting water to run to waste. This cannot be prevented without an efficient establishment on the works. The present establishment is quite inadequate both in number and in position. The head of it is a Jemadar, who has two peons, of whom one probably ought as well as the four Sirdarmen, is required to be always at the Orient. If this is the case the Jemadar is left with one Peon to attend to the whole of the channel from the Orient to Boorisaey, being about sixteen miles, with twenty seven tanks, (including two in South

Arcot)

Arrest) and a number of Sluices and Calingadahs to be managed. I believe the Monigar to be an active and efficient Man but it is physically impossible that he should be able to do all this work."

107. "Again as to his position. His salary I believe is 10 Rupees a month, and occupying no higher place than an ordinary Ministry, it is quite impossible that he should carry the influence with the village and Salook Officers which is necessary to the due discharge of the duties Committed to him. As to the suggestions made by Captain Colleyer in Para 8, I apprehend there is no place for them. I am not aware that the Monigar is at present required to make any periodical reports to the Tahsildar or other Salook Officer whom I conceive Captain Colleyer intends in speaking of the local Revenue authorities. His reports even to the Sub Collector or to myself are extremely rare, and so far as I know they are voluntary and not prescribed. As to authority to permit the [illegible] taking or letting off of water,

I apprehend that the existing laws are sufficient; what is required is not more stringent law, but prompt and reliable information of such Offences and of the parties concerned."

108. "There is another evil of a different kind resulting from the low salary and position of the Superintendent of the Channel. The very existence of the offences complained of proves that the water is highly valuable, it is therefore well worth paying for, and a few extra hours of supply, or a few additional inches of opening, would of his command a high price. I would ask the Board whether it is prudent or right to leave the power of distributing at will so valuable a commodity to the uncontrolled discretion, (for uncontrolled it is virtually) of a Subordinate on 10 Rupees a month, and I would remind them that the more the influence of such an Officer is increased, and the more independent he is made of any but his own immediate Superior, the more safely could he be

he abuse the trust confided to him. In this remark I must add that I do not at all refer to any thing that I have observed or heard of the present Manager. He appears to be zealous in his duties, but the general trust remains the same."

(19). "Valuable works of this kind elsewhere are not thus neglected. The irrigation Canals of Italy and those of North India are both placed under efficient and trained superintendence, and so are the navigable Canals of England and other countries, though in their case there is little more to be done than to keep the works in repair. I am decidedly of opinion that a higher kind of superintendence is required for these works also, and I do not at all share in Captain Colby's back-wardness to recommend such expenditure, because I am sure in that it is wise and necessary merely on the question of economy. The Canals at present extend about sixteen Miles, and with the extension now proposed will be twenty four Miles. They now supply twenty seven villages, and so extended, will supply forty three. The Revenue now dependent on them is 21,000 Rupees, and will shortly be forty thousand. The cost of the whole of the works, including the extension, will have been about 50,000 Rupees; and to this is to be added the value of the lands supplied, which may be estimated at fully three lacks of Rupees."

(20). "I am of opinion that an efficient European Overseer should be permanently appointed to the charge of these works; and that the channels should be arranged in divisions, with a Manager to each under the overseer. The present works, with the extension now proposed, would form three divisions, one,

one, the Ancient, and the Channel as far as MookKoor, a second from MookKoor tank as far as Poorisay bottu included; and the third, the branche now proposed. Each Mainigar would need a couple of Peons, and the overseer would need about four, with one or two other Servants. The cost of the whole would not exceed 2000 Rupees a year. I am of opinion that the whole should be under the Civil Engineer, but it might be useful if the quantity of water entering the Channel, or the depth at certain points, were regularly reported to the Collector."

(¶24) "The work to be done by this establishment would be as follows. First they would exercise efficient control over the distribution of the water, taking care that all the tanks were supplied in their proper order and their proper proportion, so as that all the water entering the Channel should be turned to best account. Second they would attend to the works, Ancient, Channels, tanks, Musics, &c. would see that mounds were sufficiently damaged, that tanks were not endangered by the carelessness of Village Managers or Ryots, or neglecting to open the Calingolahs &c.; would preserve the banks of the Channels from encroachment; and would take care that the beginnings of dilapidation to any part of the works were arrested. Third they would execute all repairs and all improvements

improvements to the works, of which some must be almost always going on. Fourthe. The Overseer would superintend the further extensions and improvements of the channels, spoken of above in Para 14; the first mentioned of which at least, when completed, will form a fourth Division of the works. Fifthe If an active man, the Overseer would be able to attend occasionally to other unconnected works in the neighbourhood of the channels, both in making estimates and superintending the execution of works.

5 [illegible]

14. Having thus arrived at the conclusion of Mr Bourdillon's representations, it is only necessary to observe that the water of the Cheyour intercepted by the Annicuts, is available only during the freshes of the monsoon, or for three months of the year, and that during this period, prompt and energetic measures are required on the part of the establishment, as well for the careful distribution of the water, as to prevent it from running

running waste. This duty, though apparently simple at first view is really rather more complicated, for it must be remembered that the main channel which received its supply at the — — — Amritsar will soon extend to 30 miles; and that the water will not be confined to this channel alone but will be diverted into several subsidiary ones for ultimate conveyance through forty three Villages to be stored in the tanks or

or reservoirs belonging to them, and that from thence the water will again have to be distributed at the proper time for cultivation.

15. Considering the large amount of Capital invested in the public works under the influence of the Cheyaur Amritsar and Channels, estimated by Mr. Bourdillon at 3½ lacs of Rupees; the numerous sluices, &c. singulahs and other masonry Works which have to be looked after the large amount of Revenue

revenue dependant on them, which can only be fully realized by a careful and economical distribution of the water, and the range of duties and large amount of responsibility which will devolve on the Establishment, it will be for the Government of India to decide with the representation from the Head of the Department Public Works of this Presidency now before them, whether it will be good policy to risk these large interests, by reducing the establishment to a scale fixed on principles, which, however well they may apply to the irrigation works in the older Presidency, appear to the Governor in Council to be ill suited and inapplicable to the peculiar works which form the subject of the present communication.—

Fort St. George
25th June 1857

R G

Public Works 1857 Deptt.
Dr to Cons: 30th June.

No 1236.

To the Secretary to the
Government of India.
D. P. Ws

No 25th June 1857.

From D. of 16th Septr 58.
C No 2350 in Cons: 29th Octr
No 2473.

Passing observations on a
letter from the Govt of India stating
their inability to sanction the Estabts
proposed by this Govt for the irriga-
tion works dependent on the
Cheyaur Annicut & submitting,
whether it will be good policy
to risk the large interests under
the influence of the Cheyaur An-
nicut & Channels, by reducing
the Establishment to a scale fixed
on principles, inapplicable to the
peculiar works which form the
subject of this communication.

No 1344.