MR. O. 1—82,000—16-10-29.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No. 3050 Press
81-82 Mis.—
Dated 7th December 1982

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department, 7th December 1868.

No. 81. Read the following Proceedings of the Madras Government in the Public Works Department:—

Passing orders on papers relative to the improvement of the Calingaroyen Channel, in the Coimbatore District. (Here enter 27th November 1868, No. 3,712.)

No. 82. ORDER THEREON, 7th December 1868, No. 3,050.

Irrigation, No. 2.

Communicated to the Revenue Board.

(True Extract.)

(Signed) F. BRANDT,
Under Secretary to Government.

To the Board of Revenue, with Proceedings Public Works Department, No. 3,712.

Exd. W. Cranston.

Govt. of 1868 Vol. III.

To

REVENUE.

THE BOARD OF REVENUE.

Dated December, 7th.

Recd.

Read.

G. O., 7th December 1868, No. 3,050.

DECEMBER

Nos. 81-82.

Calingarayen Channel in Coimbatore District.—Orders on papers relating to its improvement, communicated to Revenue Board.

Proceedings of the Madras Government, Public Works Department, 27th November 1868.

No. 583. Read the following letter from the Superintending Engineer, 7th Division, to the Chief Engineer for Irrigation, dated Bhowany, 10th October 1868, No. 127 :—

1. I have the honor; herewith, to forward for disposal by you a Memorandum on the Calingaroyen Channel, together with plans and estimates for providing it with permanent sluices. I send also, for your information, printedcopies of Government Order, No. 355, of 8th March 1856, and of Government Order, No. 2,317, of 21st July 1866; also Colonel Bell's Draft Report of 14th January 1856, and copy of Colonel Cotton's Report of 12th November 1850, the latter of which should, I think, be printed for facility of record and reference.

1. One Memorandum with Plans and Estimate, No. Rupees.
2. Six old plans, two old reports, and two old Government Orders, No. 355, of 8th March 1856, and No. 2,317, of 21st July 1866.

2. Five sheets of the survey of the Calingaroyen Channel, and of its proposed extension to Noyle river, are sent, with reference to your Circular Memorandum, No. 64, of 9th September, together with plan of its head-sluice. But should the Irrigation Range, discussed between us, be established, it would, I think, be more satisfactory to have fresh surveys of our large channels and of the subsidiary works on them, or proposed for them, made out in the new office, under instructions, as to scales and other details, from your office.

Memorandum on the Calingaroyen Channel.

1. In reply to a letter and Memorandum printed with Government Order, No. 2,317, of 21st July 1866, I was ordered to submit, in a complete and detailed form, proposals for the improvement of the Calingaroyen Channel.

2. I have not been able to come to any other conclusions than those arrived at by General F. C. Cotton in 1850, by Colonel P. M. Francis in 1855, and by Mr. Grant in 1866, *viz.*, that the thorough repair and extension of the channel as it exists should be taken in hand, rather than that time should be lost in elaborately planning a new channel on a more perfect trace; and I find all the essential improvements embodied in the papers, of which an abstract was given in my Memorandum above alluded to, and is condensed as follows, *viz*:—

		Rs.
1.	Thorough repair of embankments	25,726
2.	Minor masonry improvements to bridges and aqueducts	9,254
3.	Clearing away rocky obstructions in the channel bed	3,000
4.	607 sluices	20,598
5.	Extension to the Noyel river	4,342
6.	Contingencies	1,978
	Total amount sanctioned in G. O., No. 1,405, of 12th August 1856	64,898

3. The crying want of the channel, from which its efficiency continues to be as greatly impaired as in the times of Generals Ludlow and Cotton and

Colonel Francis, being permanent sluices, in lieu of three to four times as many cuts in the bank, through which so much wastage occurs as under present native management to necessitate annual remissions for failure of water at the lower end of the channel, I submit, for immediate sanction, an estimate of Rupees 50,168 for 607 sluices, whereof it is proposed to build 342 at a cost of Rupees 26,558 to be provided in the Budget of 1869-70.

4. The channel banks have, from time to time, been improved to a certain extent, but not to that contemplated, *viz.*, a uniform top width of four yards, and a height above full channel level of two yards on the upper, one and a half yards in the central, and one yard in the lower divisions of the channel. I look upon this and the removal of obstructions in the channel bed as maintenance works to be carried out from year to year by a mileage allowance at the rate of one Anna per running yard, or Rupees 110 per mile, for which I request permission to make the following special entries in the Budget of 1869-70, under the head of "Agricultural Repairs":—

			Rs.
1.	Calingaroyen channel, 55 miles	....	6,050
2.	Thadapully do. 70 do.	... ...	7,700
3.	Arkencotta do. 30 do.	... ...	3,300

5. This brings me to a proposal already discussed with, and approved by the Chief Engineer for Irrigation, viz., the formation of these three main channels of the Coimbatore District into an Irrigation Range, together with the Nerinjeepet Channel Project, under Mr. Wiffen now engaged on the latter, and whose simultaneous advancement to the grade of Assistant Engineer would be only a fitting reward for his zealous performance of all duties, and recognition of his ability and experience as an Irrigation Officer. No extra expense need be incurred, as it will suffice to reduce the classes of Caroor and Collegal Range Offices from 1st to 2nd, to provide Rupees 70 for an Irrigation Range Establishment as follows, *viz*:—

		Rs.
1	Surveyor and Draughtsman	40
1	Accountant and Writer	30
	Total ..	70

And the extra Overseer of the Coimbatore District may be permanently attached to it. I presume also that all existing establishments for distribution of water in these channels will be put under the Irrigation Range Officer. With adequate subordinate superintendence and office establishment placed at his disposal for the special duties of the Nerinjeepet Project, I do not consider that the charge will be too extensive for one Officer, provided that no extension of his duties be made to take in the Cooramboo channels of the Cauvery, and the lowest Amravathy anicut channel, in Caroor Talook, which can best be managed by the Range Officer, with head-quarters in their immediate vicinity.

6. Till the organisation above advocated be introduced, I would defer planning and estimating for the bridge-work required across the channel and along its bank, and for alterations to existing aqueducts. Still more would I defer the extension of the channel to the Noyel river, till it is seen how effectually the new

sluices shall have economised the existing supply of water. My own belief is that, conjointly with better management, it will prove to suffice not for a mere extension from the present channel terminus, but for taking a high level branch off at a point further up, so as considerably to enlarge the proposed irrigable area north of the Noyel.

BHOWANY, *10th October* 1868.

(Signed) G. W. WALKER, Colonel, R. E., *Superintending Engineer, 7th Division.*

No. 84.

MEMORANDUM.

THE Government in their Order, No. 2,317, dated 21st July 1866, called upon the Superintending Engineer of the 7th Division to submit a complete report on the proposed improvements of the Calingaroyen Channel. A project had been drawn up by Captain (now General) F. C. Cotton in the year 1850 for the improvement of this important channel. It comprised the strengthening of the banks, removing rocky obstructions, about fifty bridges, and upwards of 600 irrigation sluices. The estimates, which amounted to Rupees 1,05,000, were subsquently reduced by Captain Francis to Rupees 64,898 by a modification of the plans of the sluices, and the latter amount was sanctioned by Government for entry in the Budget of 1856-57; but financial difficulties prevented the works from being put in execution. The condition of the channels was thus described in the report of this Government to the Government of India: "Not only were the banks much worn away, so as to make it necessary to admit only a diminished supply of water; but under the lax system of management which had prevailed, individual ryots had been permitted to go on making openings for themselves to take water, till there were no fewer than two thousand such openings, all of them much larger than necessary. As a consequence, there was enormous waste of water, and the quantity admitted into the channel irrigated a much smaller extent than it was capable of watering. It has been ascertained by actual measurement, that from the head of the channel at Bhowany, and the aqueduct at Errode, about ten miles distant, a quantity of water is wasted sufficient to irrigate 10,000 cawnies of land, whereas the whole extent actually watered by the channel in its course of fifty-two miles, is not above 5,000 cawnies. There is no doubt, therefore, that the measures now proposed for strengthening the embankment, and substituting efficient sluices for the present wasteful openings, will greatly increase the irrigating power of the channel. The present proposed extension will command at least 300 cawnies of additional land, the revenue from which will be about 3,000 Rupees, and the economising of water will also save the large remissions annually necessary on some of the lower lands, thus there will be a total direct increase of revenue of about 5,000 or 6,000 Rupees."

1 Cawny = 1·32 acre.

2. Colonel Walker now reports that he has not been able to come to any other conclusions than those arrived at by his predecessors, *viz.*, that the repair and extension of the channel as it exists should be taken on hand, rather than that time should be lost in designing a new channel on a more perfect trace; and he submits for sanction estimates and plans for the 607 sluices originally proposed, but with rates altered to those now in force. The banks of the channel have been improved

to a certain extent; and it is proposed to bring them up to the proper standard by means of an annual maintenance grant of Rupees 110 per mile; but Colonel Walker is of opinion that the working of the channel cannot be put on a proper footing until the present wasteful system of distributing the water, is put a stop to by the substitution of masonry sluices for the existing palmyrah spouts and openings at the heads of the field channels.

3. From the accompanying plans and sections, it appears that the channel is extremely tortuous, and that the tract of land between it and the Cauvery, which it irrigates, is nowhere so much as two miles in width, while in many places there is an interval of only two or 300 yards between the channel and the river. The channel follows pretty closely the southern limit of a strip of alluvial land which extends along the margin of the river. Beyond this the ground rapidly rises, and the soil is gravelly with rock cropping up here and there. The fall of the channel is extremely irregular, ranging from six and a half feet per mile to almost nothing; the average fall along the whole length of channel now open, *viz.*, fifty-five miles being about one and three-quarters feet per mile; and at various points where the change of fall is abrupt, the surface of the water must be raised considerably to allow of the required supply being carried forward; or, if the embankments are not sufficiently high for this purpose, (as would appear to be the case) part of the water must be turned off to waste. The channel is particularly defective in this respect in the vicinity of Errode, and at the forty-fourth mile, at both of which points considerable drainages are carried across the channel, and at which falls of six and a half and five feet per mile are followed by a dead level in one case, and by a fall of nine inches per mile in the other.

4. Allowing that various improvements may have been effected since Colonel Cotton's report was submitted, the amount of work still required to be done is not likely to be under what is provided for by Captain Francis's estimates submitted in 1855, of which a summary is given by Colonel Walker in the above Memorandum. As it now appears that the sluices, which were then estimated to cost 20,598, would, at present rates, cost 50,168 Rupees, it may be assumed that the total outlay required to place the channel in proper order will not be much under 1,50,000 Rupees. This amount may even be insufficient, for several masonry works, not provided for in the estimates, would appear to be requisite, for overcoming the irregularities of fall above described.

5. I conclude that Government will not be willing to incur so large an outlay, unless it can be shown that the revenue will be improved by it. The reports on this part of the subject in my possession are of old date. Colonel Ludlow in 1854 furnished a statement of the nunjah cultivation under the channel for a period of thirty years, from which I learn that the average assessment was 85,368 Rupees, the loss from remissions and other causes, Rupees 5,660, and the expenditure on repairs, Rupees 1,705 per annum. It would appear necessary that the particulars of revenue and loss occasioned by an insufficient supply of water should be furnished up to date, and that the estimate of the increase of revenue to be derived from the improvements of the channel should be revised. I have been informed that there are four rates of assessment prevailing, namely, 24, 22, 20, and 12 Rupees

per cawny, and I conclude that the gradation is due not so much to the difference of quality in the soil, as to the inequality of the water supply at different points between the head and terminus of the channel. Should this surmise be correct, any improvement of the channel, which should result in an equalisation of the supply of water to lands now assessed at different rates, might reasonably be followed by an equalisation of the assessment; and thus there would appear to be some hope of making out a good case for the proposed works. But it would, in my opinion, be premature for Government to sanction the considerably large outlay proposed by the Superintending Engineer. Not only does the number of sluices appear to be excessive, being at the rate of one to every 150 yards, but it would be impossible to place them at the proper levels until after it is decided to what extent the fall of the channel is to be rectified. While, however, I think it likely that the number of sluices may be reduced, I should explain that the interval between them must be inconsiderable, in consequence of the narrowness of the strip of country between the channel and the river, and of the cultivation extending every where close to the channel bank.

6. Instead of spending a large sum in improving the Calingaroyen Channel, there is the alternative indicated by the Superintending Engineer of forming an entirely new line through the higher ground to the southward. Though a considerable time would necessarily be occupied in the investigation of this project, still it is better that there should be delay, rather than that there should be a chance of carrying out work, which, if the new project were even sanctioned, might prove to have been unnecessary. The ground is certainly not of a promising character, for it rises so rapidly from the present line of channel that a new line with an uniform fall of one foot per mile would gain but an almost inappreciable extra width of land for cultivation in the first twenty-five miles of its course, and from the twenty-fifth to the fifty-fifth mile the average width gained would probably not exceed half a mile, equivalent in area to about 300 acres to the mile. Moreover, rock would be encountered in the cuttings in various places. The project would nevertheless seem worthy of investigation. If it were found to be of a favorable character, as regards its remunerative results, and compared with those to be derived from the contemplated outlay on the old channel, it would have the advantage over the latter in allowing of the water being distributed much more simply and efficiently than would be possible under existing arrangements, for the old channel might then be divided into isolated sections, each three or four miles in length, which length would be supplied by a single sluice on the new channel.

7. On the above considerations, I would recommend that Mr. Wiffen be placed in charge of the irrigation channels under the Bhowany river in addition to the Nerinjeepet Channel Project, as proposed by the Superintending Engineer; and that as soon as possible after he has completed the estimates for the latter work, he should turn his special attention to the Calingaroyen Channel, and prepare plans and estimates for the works necessary to turn the supply available at its head to the best account for irrigating the land commanded by it.

8. As regards Colonel Walker's proposal to enter maintenance allowances for the three principal channels from the Bhowany in the Budget for the ensuing year,

I would beg to state that I see no objection on principle to this arrangement, and would recommend it forthe approval of Government, subject to any future modification which further investigation may show to be necessary.

9. It would appear from the report already quoted that the average assessment of the Thadapully and Arkencottah channels, for a period of thirty years, amounted to Rupees 85,922 and 19,793, and the loss by remissions to Rupees 18,149 and 4,456, respectively per annum.

FORT ST. GEORGE,
29th October 1868.

(Signed) J. C. ANDERSON, Colonel, R. E.,
Chief Engineer for Irrigation.

No. 584. ORDER THEREON, 27th November 1868, No. 3,712.

IRRIGATION, No. 26.

1. With his Memorandum above recorded, the Chief Engineer for Irrigation submits a report by the Superintending Engineer of the 7th Division on the improvement of the Calingaroyen Channel in the Coimbatore District.

2. The condition of this channel, and the measures that appeared to be necessary for more largely developing its usefulness, were brought under the notice of Government by Captain (now General) F. C. Cotton so far back as November 1850. He showed that the work had been allowed to fall into considerable decay, and that, in consequence of individual ryots having been permitted to take water by means of cutting openings in the banks, there was a large waste of water, and consequently a proportional diminution of the area irrigated. As a remedy, it was proposed to strengthen and raise the channel embankments, to provide a number of small masonry sluices in substitution of the cuts made from time to time by the ryots, and to extend the channel to the Noyel river in order to bring under irrigation a large extent of land for which ample water would, by these improvements, be made available. An estimate of Rupees 64,898 for carrying out these proposals was approved for entry in the Budget of 1856-57, but, owing to the restrictions imposed by the Government of India upon expenditure in the following year, the project was held in abeyance, until, in July 1866, the Superintending Engineer, having again brought it forward for consideration, he was requested to submit it, after revision, in a complete form.

3. The report which the Superintending Engineer now furnishes is in compliance with those instructions. Giving it as his opinion that the channel is badly designed, Colonel Walker is nevertheless unable to come to any other conclusion than that arrived at by his predecessors, that it will be better to improve and extend the present channel than to attempt to remake it on a new alignment, and he accordingly resubmits Colonel Francis's proposals for the construction of 607 masonry sluices on revised estimates amounting to Rupees 50,168. Colonel Walker would leave the remodelling of the embankments, and general improvement of the channel to be worked out gradually under a maintenance grant, which he suggests should be allotted, not only to this, but to the Thadapully and Arkencottah channels, at the rate of Rupees 110 per mile.

4. In reviewing Colonel Walker's recommendations, the Chief Engineer for Irrigation points out that as the channel skirts the narrow strip of alluvial land

which borders the river to a breadth ranging from two miles to a few hundred yards it is naturally very tortuous, and that, having been made to follow very much the natural fall of the country, it has a very irregular slope, the bed having in some places a fall of six and a half feet per mile, and in others being level. The result is that at the foot of the rapid falls it has been necessary to provide escapes, through which a great deal of water, that might be carried onward down the channel, is returned to the river.

5. To correct this state of things, it will be necessary to rectify the slopes, and to raise and strengthen the embankments at the low parts to such an extent as to involve a very great outlay. Colonel Anderson is of opinion that not less than Rupees 1,50,000 will be required, and he hesitates to recommend so large an expenditure without some better assurance than has yet been furnished that it will make some return. He therefore suggests that, before any determination is come to, statements should be obtained from the Revenue authorities of the particulars of revenue under the channel, and of the loss occasioned by an insufficient supply of water, and that a thorough investigation should be made of the channel in order to ascertain whether it will be economically practicable to make an entirely new canal on a higher level, or, if not, to obtain data from which a correct estimate may be prepared of the cost of putting the present channel into a thoroughly effective state.

6. For the better carrying out of these investigations, and for the more careful supervision of the important irrigation works under the Bhowany, Colonel Anderson supports the Superintending Engineer's recommendation to constitute the Calingaroyen, the Thadapully, and the Arkencottah channels a separate Irrigation Range, and to attach to it the Nerinjeepet Anicut Project.

7. The Government concur with the Chief Engineer. They do not doubt that the improvement of the Calingaroyen channel in the manner proposed would be very beneficial; but while all the money they have at their disposal for irrigational purposes can be advantageously and profitably laid out, they are not disposed to sanction the expenditure of so large a sum as Rupees 1,50,000 on the channel without full information of the probable effect of the outlay on the extension of cultivation, and on the returns to be expected.

8. The plans and estimates received from the Superintending Engineer of the 7th Division will be returned to him, and he will take immediate measures for establishing the new Irrigation Range in the manner he has suggested, forwarding a statement showing the distribution of Officers, subordinates and office establishments in the Coimbatore District under the present and proposed arrangements, and the talooks attached to each Range.

9. As the ground to the westward of the channel is probably rugged and with a rapid rise, it does not seem likely that a new channel, parallel to the present one, with a more favorable and regular fall, can be economically excavated in that direction, but the point is worth examination, and ought to be carefully determined in the preparation of the plans and estimates for all the works which may be necessary to turn the supply of water entering the head of the channel to the best account for irrigating the land commanded by it. In submitting those plans and estimates, Colonel Walker will be careful to furnish full returns showing the parti-

culars of revenue, the loss occasioned by an insufficient supply of water, and the increase likely to be derived from the improvement of the channel.

10. The consideration of the question of a maintenance allowance for the channel will be deferred, pending the submission of the estimates now called for.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
,, Chief Engineer for Irrigation.
,, Controller of Public Works Accounts.
,, Revenue Department.

Exd. F. R. Bantleman.

Rd. 3050.
Comm^d to the
Revenue Board.

7^c. Decr. 68.

14 Copies to the Ch^f Engr. for Irrig^n Dis. and 2 to 7/72
2 to P.W.

Revenue Dept.
No. 3779.

Govt. of {1868} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

7th Division.

&c. &c. &c.

Dated November, 1868.

Read 4th December

Exd.

G. O., 27th November 1868, No. 3,712.

NOVEMBER.

Nos. 583-584

Re. 81-82

Calingaroyen Channel.—Passing orders on papers relative to the improvement of the Calingaroyen Channel, in the Coimbatore District.

No. 3050-7 Dec.

With order