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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 2606	Press
398-400	Mis.
Dated 20-8.	1866.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department
20th August 1866.

Read the following papers:—

No. 398. From the Controller of Public Works Accounts, to the Secretary to Government, Department Public Works, dated Madras, 2nd August 1866, No. 1,247.

1. With reference to G. O. of the 26th ultimo, No. 2,369, I have the honor to submit, for the consideration and orders of Government, a report showing the projects formerly prepared by us in the Bellary District, as it may be of some assistance to the local authorities in giving out work for the relief of the distressed inhabitants. Plans and estimates for most of these works should be amongst the records of the late District Engineer's Office.

2. In the Sub-Collectorate there is the road from Anantapur, via Singanamullah to Tadpatri, which requires to be completed; this road is a very important Railway feeder, and a branch from it taken from near Singanamullah, via Doogannury, towards Tandunury and Durmaveram, was projected by us with a view to enhance its importance in this respect, this line passes over very easy country, and could be opened out at small expense.

3. In the same Taluq it was proposed to construct a large reservoir at Bookacherlah, and cut a supply channel to it from the Pennar river. Government have taken exception to the section of the projected anicut, and also to the channel, as surveyed out by us; but as Mr. Gray has now returned to the District, and is well acquainted with the part of the country through which this passes, he could revise this part of the scheme; no exception has, I think, been taken to the site of the reservoir, and in fact it would be difficult to find a much better one, where it is possible to construct a work of this kind without interfering in any way with vested interests. I am not aware if the extension of this project, by the construction of an anicut at or near Somandody, so as to distribute again the waste waters from the fields immediately irrigated by the main reservoir, and so embrace the large area of good land lying above the Singanamullah tank, has ever been investigated; but this will add very much to the value and importance of the work if it is possible to be carried out, and I do not know why it should not be so.

4. In the Durmaveram Taluq there is the Gottoor tank project, for which plans and estimates have been long ready, and which the more wealthy inhabitants of Durmaveram were willing to construct themselves, if certain concessions were made to them by the Civil authorities; from this Cusbah station the road should be extended to the large and important tank at Bookaputnam.

5. In Pennacondah there is the project for supplying the Ruddun large tank from the Pennar river, and improving this reservoir, for which plans and estimates had been prepared, and which promised to be a very remunerative work; from this Cusbah roads had been opened out towards Hindoopoor and Mudduckserah with our Local Funds, and these might now be put in hand and completed and very much extended in this latter Taluq towards the Mysore territories, near Muddody and Annapoor, with great advantage.

6. In Hindoopoor there is the project for supplying some of the tanks about that Cusbah with water from the Pennar river, but the land under these has been so destroyed by the sand blown up by the heavy westerly winds which prevail for

months in that District, I do not attach much value to it, but I mention it as one which may be called for, but to it there is this very serious objection existing, and as this has been well investigated, and it was found very little increase of revenue could be obtained, it may save time and trouble to others, to be devoted to more important duties, and so I mention it.

7. In Raidroog Taluk there is the project for constructing an anicut across the Huggry river, at or near Joonjaramunhully, where abundance of stone is procurable close to the work, and taking off channels on either bank, on the right, one of these might be carried as far as Bellagoopah to supply a reservoir which can be constructed near there; but on this side, so entirely does the country consist of black cotton soil, it would not be advisable to extend the channel to supply other tanks, sites for which exist everywhere about, but in such soil these silt up so rapidly they are useless in a few years; at the site proposed, however, this objection does not apply so much, being on red soil nearer the hills; on the left bank a channel is to be taken off to supply the Kenchunhully, Yaparmel, and Andiganhully tanks, and these works improved so as to hold water enough for all the lands under their bands and between them and the river bank down to the Cunnakull tank, this channel is now to be continued on to the Hoshully tank, and this can be raised some 35 or 40 feet so as to be converted into an important reservoir, but one small village, Poolamanhully, will be submerged, a sluice is to be built as low as possible in the present bed of the tank, and a channel taken from it so as to command all the lands lying in the fork of these rivers, and between its head and Coodloor on the Chinna Huggry, the project on this side is very important; there is a very large area of land which can all be irrigated from the proposed reservoir, if this is improved so as to hold water enough to supply the land during those days in which there is little water in the river. As far as I could ascertain there is usually a fair supply of water in this during the prevalence of the south-west monsoon, with freshes twice or three times a month, but the great supply is furnished by the north-east monsoon, when the tanks would be all filled for the hot weather. Mr. Blacker was employed in investigating this project, and the plans and estimates should be in the Office.

8. For Bellary itself, there is the project for supplying its reservoirs by a channel taken off near Courtinny, but the Government, (see G. O., dated 22nd June 1864, No. 1,813,) have already called for this; and in this Taluk as well as in Hospett there are several lines of road already in existence which would be taken in hand and completed.

9. In the Western Taluqs, besides the roads already partially opened out and which could be completed, there is the project for the great trunk road from Roodlighee via Cottoor and Herpunhully to Hollal, on the Toongabuddra river, near the Dharwar frontier, for this work plans and estimates had been prepared, the extension of this road via Chunoor, Goad towards Herahah on the Bellary and Bangalore road had also been surveyed, but I did not approve of this line, and preferred bringing the road via the valley of the Avinmuddagoo tank and by Sutraipoor to the Kanaganhulla bridge on the Bellary and Hospett road, but all this could be further investigated whilst the portion from Roodlighee westward was constructing.

10. In these Taluqs it was also proposed to construct a large reservoir across the Chinna Huggry river, near Bomanhully, on the Hospett and Harpenhully road, the plans and estimates for the work had all been prepared, and it had been ascertained that a very large area of land could be commanded from it, but the Civil authorities objected to it on the ground of the water-spread destroying so many (nine) villages, and also that probably the water-supply would be insufficient in some years, of this there can be no doubt, for in a District like Bellary where I have known 14 inches of rain to fall in 20 days in one season, and only six inches in 365 days in another, it is utterly impossible to give any very correct idea of what the rain-fall is likely to be; but still in such a country I should submit it is better to construct works so as to enable us to utilize as much as possible the means of raising food whenever these come to hand, than to let year after year go by threatening us with famine each season, without making an effort to avert or mitigate its horrors.

11. For the Taluqs of Hospett, Bellary, Auloor, and Adoni, there is the project for the canal from the Toongabuddra river, and after five years' constant examination of the country, very often with a levelling instrument, I have no doubt as to the line a channel should take, and it but remains to provide the funds and that work could be put in hand at once fully three-fourths million of acres of land can be irrigated and the revenue from this, for water rate alone at Rupees 4 per acre, would be thirty lacs, and I believe the work can be executed for hundred and twenty lacs, and here there is not the shadow of a doubt as regards the water supply being abundant for one crop in the year for this extent of land. I have irrigated new lands from this river under the Royal Calwah for which the Ryots agreed at once to pay Rupees 5 per acre, so that fixing the water-rate at Rupees 4 per acre I think I am within the mark, the more so as Rupee 1 per acre for dry land, except it is very good indeed, is an high average rate for Bellary, but this margin has been allowed.

No. 399. Proceedings of the Board of Revenue, dated 31st July 1866, No. 5,243.
Read the following letters:—

From the Collector of Bellary, to the Acting Secretary to the Board of Revenue, dated 12th July 1866, No. 140.

1. Having lately returned to Bellary in the capacity of Collector, I have the honor to forward transcript of a letter, which I addressed in August 1863, to the Revenue Secretary to Government, on the subject of the extreme importance of carrying out an irrigation project for the benefit of this District.

2. After an interval of three years, I find that no further progress has been made beyond the preliminary steps of survey and levels, and am given to understand that even these are at a stand-still for want of funds.

3. Unless early measures are taken for the promotion of this scheme for the improvement of this District, I fear that the continuously recurring bad seasons will have a most detrimental effect on this very extensive province; even the wells

are failing, though dug to great depths, and the distress of the people is increasing.

* A reference to the price lists will show that prices are higher in Bellary than in any other province in the Madras Presidency.

square mile, or six acres to each person,

Bellary, square miles	...	...	11,351
Population	...	...	1,234,674
Tanjore, square miles	...	...	3,736
Population	...	...	1,652,170
Tinnevely, square miles	...	...	3,809
Population	...	...	1,307,221

Had this been a populous, instead of a thinly peopled District, the pressure of high prices* would have been still more felt. The population is only 109 to the 442 to the square mile, or 1.4 people to the acre.

4. There are extensive tracts of rich soil which only requires water to render it most productive. As it is, the crops are scanty; the rain-fall most precarious, and unequally distributed. Scarcely any benefit is derived from the south-west monsoon, although it supplies the Toomboodra river, which forms the western and northern boundary of the District, and which is already partially availed of by dams and channels along its banks.

5. The flood waters of the river might be greatly utilized by a canal of greater length, which can be carried round the corner of the western range of hills, which divides the province, and causes a considerable variation of climate; except a heavy rock cutting in one place, I am not aware of any engineering difficulty, or unusual cause of expense, beyond the considerable length the canal must be cut to reach the land required to be watered.

6. The cost of the undertaking is estimated to be under one million sterling.

7. The value of agricultural produce has increased so much of late years, both from the extraordinary amount of specie remitted to this country, in exchange for cotton, fibres, oils, indigo, and other products, peculiar to this country, as well as

† That this last has had a most important influence on prices, is proved by the comparison of the price of grain with salt; the latter, which is an unvarying supply, remains stationary, while the former has increased 500 per cent.

the amount which ruled in the *famine* year

‡ From the want of forage and water the cattle are dying off fast, and the survivors rendered unfit for work, so that agricultural operations will be necessarily circumscribed in future years.

crops also fail, and the resource of the people is in wells; the cost of raising water from these is alone a charge far above any wet rates hitherto fixed; as, besides the ordinary charges of ploughing and manure, incurred for irrigated lands, there is the cost of bullocks, and mechanical appliances, for raising the water. The necessity of raising food, at whatever cost, and the excavation of wells for this purpose, has led to the fact being overlooked, that well-irrigation, when the water is far below the surface, (in this District from thirty to forty feet,) is a most expensive process; when a general remission was made on Sir Thomas Munro's assessment of the Ceded Districts, the remission accorded to well-irrigation was one-third;

whereas other lands assessment was lightened by a quarter; and in the District of Tinnevely, the charge for water, mechanically raised and applied from a Government source, was one-half of the charge for simply irrigated land.

8. As no person would go to the outlay of sinking a well, and incurring heavy expense of raising water, when it could be afforded him by a canal, the demand for all land, likely to be irrigated by the proposed river channel, will be great; and there can be no doubt that great profit will result from the project. The greatly enhanced value of all land likely to be commanded by the Kurnool Irrigation works, is a proof of the all-important value of water, both to secure a crop, and to produce one of greater value and amount. The value of an irrigated crop per acre in this District, ranges from Rupees 150 to Rupees 200.

9. From the high price of food, arising from scarcity, great distress prevails.*

Unless there is a good season this year, of which, at present, there seems little prospect, I fear that a very lamentable state of things will prevail. The District, as it is, is but thinly populated; with irrigation, it might support a manifold greater population; even its sparse population cannot obtain the means of subsistence; crime has increased; except that the Railway and other works, now progressing, afford employment, the laboring classes, for whom there is more than sufficient work, in favorable seasons, would be still more pressed to exist.

10. Literally, there requires only the expenditure of a million sterling, to convert a large tract of country, which now resembles a desert, into a garden. This may be done by utilizing the floods or freshes, which otherwise would run to the sea. The scheme is practicable, it will most likely be profitable; even if not, it is a necessary outlay of five years' revenue, for the benefit of the country. It will both directly and indirectly increase the revenue; as irrigated cultivation extends, a more humid atmosphere is created, which, in its turn, attracts the rain-fall.

11. Clouds are not found to rain on an arid desert, whereas they are condensed, when passing over a humid surface. Railways are made at a cost of £8,000 per mile. They cannot keep the cattle supplied with forage. They return less than five per cent.; a canal costing £15,000 a mile, will preserve the means of subsistence, and return greater profits.

12. I would, therefore, recommend most strongly that the plans and estimate for the proposed canal should be expedited, and that the scheme should receive the early consideration of Government, and their recommendation for its speedy execution.

13. In Government Proceedings, lately published in reference to the Kurnool Irrigation works, Rupees 50 is taken as the original cost of the works, which are to supply the water, per acre irrigated. The Kurnool works, it is well known, were complicated with navigation; expense incurred for that object, which is unnecessary, for simple irrigation; if we have a rocky cutting of a few miles between Camalapur and Darojee; against this item, must be set the expense of the Hindree aqueduct; money spent at the wrong place, Kurnool and by the Mettacondah cutting, before the site of the ancient was fixed at Sonkesala; but if even the cost of

Proceedings of the Madras Government, Public Works Department.
20th August 1866.

the Bellary works were double those of the Kurnool, and the original charge of supplying irrigation were Rupees 100 per acre, I shall show that this is a less prime cost charge than is actually incurred by the people for an inferior sort of irrigation, without even considering the current expenses of maintaining the latter, which the former is free from.

14. The land, which will be commanded by the canal in Bellary, is in the Hospettand Bellary, and Alur Taluqs, mostly of the black soil description; a superficial soil of this kind requires a well (which is the only other irrigated cultivation available) to be *faced with stone; the black soil overlies, in most places, lime-stone; the water derived from wells is consequently frequently brackish; it is not suitable for all produce; not certainly for rice or sugar-cane; in fact, for the superior crops. Consequently, the productive crops cannot be cultivated in this locality, under wells, whereas under river irrigation they flourish.*

15. To construct wells for the sake of raising the inferior produce, will cost, at present rates of labor, and depths to be excavated, of the soil, in question, from Rupees 1,000 to a minimum of Rupees 300.

16. The expense of these wells, the defective quantity of the water generally yielded by them, added to their great working expense, has much prevented their being undertaken; and every one acquainted with the Ceded Districts will bear testimony to the industry of the people, when possible profits were to be made.

17. I say then, to procure water by wells in the tract to be irrigated, by the proposed canal, will entail at the lowest computation, an original cost of Rupees 100 per acre, for no well will water more than three acres.

18. The charges of raising a crop by well cultivation are as follow:—

A well to water three acres, minimum cost price Rupees 300, twelve per cent. interest on this	Rs. 36
Interest on half cost price of two pairs of bullocks at Rupees 100 each (this is cheap for well bullocks) at twelve per cent.	12
Feeding the same for four months, at 20 Rupees	160
Deduct value of other work done by them on hire. Value of their manure, &c.	100
This is a liberal deduction, because away from towns and roads, hire may not always be available.	
Hire of men to work the bullocks, in raising the water, paid either in money or grain	Net ... 60
Yearly cost of well apparatus	15
	15

For three acres, or Rupees 46 an acre... 138

19. These charges are peculiar to well-irrigation; they are entirely over and above the other charges of irrigated cultivation, ploughing, manure, seed, &c. If it be objected that the Rupees 60 charged for the bullocks working the well, *i.e.*, their feeding expenses is too high, as they would also plough, I reply that the well bullocks cannot do other work during the days they draw water.

20. It takes two days full work to water three acres once a week. It takes thirty days watering at $1\frac{1}{2}$ acre per diem, to bring a three-acre crop to maturity or

Proceedings of the Madras Government, Public Works Department.
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fifteen waterings per acre; the hire of a pair of bullocks is Rupee one per pair per diem, Rupees $2 \times 30 =$ Rupees 60.

21. As the crop raised cannot vie in productiveness with river-irrigated land, which in sugar-cane produces Rupees 300, and in rice Rupees 150 per acre, or a net profit on the first of Rupees 200, and in the next of Rupees 100 per acre, the return from well cultivation will stand thus—

The produce of three acres under well, raghy or cholam, will be Rs. 200 Grain.
50 Straw.

	Rupees... 250
Charges of raising the water, Rs. ...	138 or 75 per cent. of the total charges.
Other agricultural charges " ...	40
	178

Net profit 72

or Rupees twenty-four per acre. If it be asked, why do people pursue so expensive a cultivation, I reply, how else can they live. I am happy to say that I got the assessment of the well cultivation of the Ceded Districts reduced to a maximum of Rupees 3 per acre, when the land had been abandoned, from inability to pay as high a charge as sometimes Rupees 20 per acre, which extinguished profit.

22. Happy is the man who owns land under a Government channel of irrigation, who gets his water (in some Districts) at a maximum of Rupees 9 per acre, and who could well afford to pay Rupees 30 for it; but unfortunate Districts like Bellary have little irrigation, in proportion to the cultivation dependent on rain-fall.

23. A system has been going on of assessing all Districts alike. It has been decreed that Rupees 9 is a maximum tax for irrigated land; but the fact is that water is valuable, exactly in proportion to its scarcity. The value of irrigation in

	Acres.	Bellary, where the extent of irrigated land is to the unirrigated as 1 to 23, is far above the rates adopted for other Districts, in their revision of the assessment, or 2 to 1.
Nunjah	210,253	
Punjab	4,788,464	

24. I have shown that land in Bellary irrigated by the proposed canal would bear an original cost of Rupees 100 per acre, in regard even to the original cost of the works, compared with the only alternative of well-cultivation. Not only would it bear a double cost of outlay, but from the comparative advantages of channel over well-irrigation, which I have enumerated, its greater economy, its greater productiveness, its more valuable crops, point out the certain advantages, to the land, the people, and Government, from the execution of the proposed works which, moreover, are the only safe-guard against future calamity.

ENCLOSURE No. 1.

ABSTRACT.—Letter from the Collector of Bellary, to the Revenue Secretary to Government, dated 15th August 1863, No. 36.

From the same Officer, dated, 25th July 1866, No. 157.

1. With reference to my letter, reporting on the state of the District, dated 23rd instant, No. 155, I have the honor to state that the only measure which will

save this District from a recurrence of bad seasons, which are now the rule and not the exception, is the Toongabuddra Canal scheme. The estimated amount I learn from Mr. Gordon, the Madras Irrigation Company's Engineer is, without the reservoirs for the *second* crop, 95 lacks, or under one million sterling. The interest on this sum, if guaranteed by Government at five per cent., would amount to Rupees 4,75,000, or £47,500 annually. In 1854, there was actually lost in this District about four times that amount, by hurried expenditure on famine roads £130,000, and in remissions on waste £60,000; total £190,000; besides the loss to the people of their crops and cattle, which cannot be calculated, probably not under half a million sterling. I submit that to guarantee the District against famine by an insurance of £50,000, all of which would not require to be given at once, but spread over several (say five) years, would be an economic arrangement. The decrease of revenue this year will not be less than £25,000 as at present calculated, but if the season continues bad, it will be much more.

2. There is water enough in the Toongabuddra to water three millions of acres, flowing to waste; one-sixth of this available water would, if utilized, irrigate ground commanded by the canal 250,000 acres, for which an additional rent of Rupees 10 per acre might easily be given, and great profits* made by the cultivator, and twenty-five per cent. to the share-holders.

* At least 100 Rupees an acre.

3. The scheme is beyond the resources of Government in so far as they arise from surplus revenue, but a guaranteed interest would call forth private capital, and would enhance twenty-fold the value of all, at present, dry land likely to be commanded by the water, and increase the value of any irrigated land, whose supply was thereby rendered certain, instead of casual, and precarious, as at present. Nothing but irrigation can save this District from periodical famines; loss of valuable stock, dying for want of fodder, and distress which† high prices entail on the great mass of the people.

390 Square miles.

4. The agriculturists are now bartering their gold ornaments, their capital made by cotton, for grain to exist upon; their cattle are dying in thousands for want of straw, which irrigation would furnish; grass has disappeared.

5. The improvement of the climate which would follow the opening of the canal, and the spread of tree-plantations, which would render rain-fall possible, would, in itself, be a good ground for guaranteeing the interest of the money.

6. This District has the largest area of cotton cultivation in the Presidency; with a more humid atmosphere, which the canal would create, the yield of cotton would be immensely increased, a better quality grown, instead of twenty or thirty lbs. an acre, 100 lbs. would be the yield. The importance of a good cotton supply is one which it is not possible to over-rate.

7. The failure of the cotton crop in this District is almost invariably attributable to the want of moisture; there is equally good land both in the west and

east of this District; the west has a moister climate, and produces American long-stapled cotton, the east is dry, and produces a stunted indigenous cotton plant, about four inches high, with a single boll to a plant, often not worth the trouble of picking; were it not that the rent of the land is the merest trifle, about a Rupee an acre, and the expenses confined to the outlay of seed, and scratching the surface of the soil with a crooked stick, it would hardly be worth sowing. But the deepest ploughing, and highest farming would not furnish the great desideratum, which is water.

8. In fact, no guaranteed interest of a million of money could be laid out to more universal advantage.

9. It is a matter which concerns the welfare of a million of people.

1. The Board observe that the project to which Mr. Wedderburn refers was taken into consideration by Government in Proceedings, dated 24th September 1863, No. 2,773, Public Works Department, and deferred owing to the difficulty of their providing for the necessary survey of the country and examination of the details of the scheme.

2. The Board, therefore, resolve to request that, with reference to the distress which the District is now again suffering from drought, the project may again be taken into serious consideration in order that, if proved to be feasible, some special effort may be made to secure its execution with the least possible delay, and thus to ward off, to a considerable extent, the misery to which the inhabitants are now periodically exposed.

(True Copies and Extract.)

(Signed) W. HUDLESTON,
Secretary.

No. 400. ORDER THEREON, 20th August 1866, No. 2,606.

CIVIL WORKS, No. 57.

1. The Government are well aware that the only certain and effectual mode of supplying the means of irrigation to the plains of Bellary is the construction of a sufficiently capacious canal from the Toombuddra at or near Wallabhapooram; but this project, though originally investigated by members of the Department of Public Works, with a view to its being undertaken by the Government, forms part of the "Toombuddra project" referred to in the preamble of the Madras Irrigation and Canal Company's contract, and is held in abeyance pending the completion of the works which the Company have in hand below Kurnool. There is, it is believed, nothing in the contract between the Company and the Secretary of State to preclude the Government from itself undertaking new irrigation schemes with the waters of the Toombuddra, but as the Secretary of State has decided that to do so would scarcely be equitable, in so far as it might interfere with the Company's operations or the diversion of water which it is part of their plan to utilize, the Government are unable at present to take any steps towards the prosecution of the work.

2. The present state of Bellary, however, shows that no more time can with safety to the District be lost in carrying out some extensive scheme for the

Proceedings of the Madras Government, Public Works Department.
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improvement of its irrigation, and as the only one likely to be successful is that of the Toombuddra Canal from Wallabhapooram, an appeal will at once be made to the Secretary of State to call upon the Company to begin that part of their enterprize which consists of the conveyance of water for irrigation from the Toombuddra to Bellary by means of a canal from Wallabhapooram; or, upon their inability so to do, at once to authorize the canal being undertaken by this Government.

3. The Government are much obliged to Captain Fischer for his letter above read, which will be communicated to the Superintending Engineer of the 3rd Division.

20th December 1864, No. 3,638.
31st August 1865, ,, 2,541.

4. In the Orders, as per margin, the Government expressed themselves unable to judge of the expediency of carrying out the Bookacherla reservoir project with the imperfect information before them, and in calling attention to the necessity of thoroughly investigating it, they requested the Superintending Engineer to inspect the locality and to report upon the undertaking. Major Moberly replied to this call in his letter of the 21st December 1865, No. 186, in which he stated that the scheme held out every prospect of being very remunerative. This having been ascertained, the Government are of opinion that if Mr. Gray, who was recently posted to the Bellary District, has no special work, he may be advantageously employed in the investigation of the project, and on its completion he may similarly be deputed to conduct the further examination of the Yeparal scheme which formed the subject of the correspondence noted in the margin.

From Government, 8th February 1853, No. 173.
To do. 17th December ,, ,, 8,950.
From do. 15th January 1867 ,, 103.
To do. 15th do. ,, ,, 9,500.
From do. 20th do. ,, ,, 211.

5. The Government are unable to make any assignment for the Gootloor tank project, for which an estimate of Rupees 39,400 was sanctioned in G. O. No. 3,255, dated 9th November 1863, but the Superintending Engineer will enter the work in his Budget for the ensuing official year.

(True Extract.)

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

To the Board of Revenue.

Superintending Engineer, 3rd Division.

To Captain J. F. Fischer, R. E.

To the Consulting Engineer, Madras Irrigation and Canal Company.

Exd. T. O'Connor.

No. 5,243.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 31st July 1866.

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* A reference to the price lists will show that prices are higher in Bellary than in any other province in the Madras Presidency.

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5. The flood waters of the river might be greatly utilized by a canal of greater length, which can be carried round the corner of the western range of hills, which divides the province, and causes a considerable variation of climate; except a heavy rock cutting in one place, I am not aware of any engineering difficulty, or unusual cause of expense, beyond the considerable length the canal must be cut to reach the land required to be watered.

6. The cost of the undertaking is estimated to be under one million sterling.

7. The value of agricultural produce has increased so much of late years, both from the extraordinary amount of specie remitted to this country, in exchange for cotton, fibres, oils, indigo, and other products, peculiar to this country, as well as from the competition of these exportable products with cereals; and also from the recurrence of bad seasons,† that the selling price of the staple food of the people is now from three to four times the amount

† That this last has had a most important influence on prices, is proved by the comparison of the price of grain with salt; the latter, which is an unvarying supply, remains stationary, while the former has increased 500 per cent.

which ruled in the famine year of 1854. Forage is scarcely procurable. Straw sells now for 12 Annas a bundle;‡ in 1854 it sold for less than 3 Annas; a water rate of even 10 Rupees, or more, per acre, would be gladly paid by the people; when the seasons are bad, dry crops

‡ From the want of forage and water the cattle are dying off fast, and the survivors rendered unfit for work, so that agricultural operations will be necessarily circumscribed in future years.

also fail, and the resource of the people is in wells; the cost of raising water from these is alone a charge far above any wet rates hitherto fixed; as, besides the ordinary charges of ploughing and manure, incurred for irrigated lands, there is the cost of bullocks, and mechanical appli-

ances, for raising the water. The necessity of raising food, at whatever cost, and the excavation of wells for this purpose, has led to the fact being overlooked, that well-irrigation, when the water is far below the surface, (in this District from thirty to forty feet,) is a most expensive process; when a general remission was made on Sir Thomas Munro's assessment of the Ceded Districts, the remission accorded to well-irrigation was one-third; whereas, other lands assessment was lightened by a quarter; and in the District of Tinnevely, the charge for water, mechanically raised, and applied from a Government source, was one-half of the charge for simply irrigated land.

8. As no person would go to the outlay of sinking a well, and incurring heavy expense of raising water, when it could be afforded him by a canal, the demand for all land, likely to be irrigated by the proposed river channel, will be great; and there can be no doubt that great profit will result from the project. The greatly enhanced value of all land likely to be commanded by the Kurnool irrigation works, is a proof of the all-important value of water, both to secure a crop, and to produce one of greater value, and amount. The value of an irrigated crop per acre in this District, ranges from Rupees 150 to Rupees 300.

9. From the high price of food, arising from scarcity, great distress prevails.* Unless there is a good season this year, of which, at present, there seems little prospect, I fear that a very lamentable state of things will prevail. The District, as it is, is but thinly populated; with irrigation, it might support a manifold greater population; even its sparse population cannot obtain the means of subsistence; crime has increased; except that the Railway and other works, now progressing, afford employment, the labouring classes, for whom there is more than sufficient work, in favorable seasons, would be still more pressed to exist.

10. Literally, there requires only the expenditure of a million sterling, to convert a large tract of country, which now resembles a desert, into a garden. This may be done by utilizing the floods or freshes, which otherwise would run to the sea. The scheme is practicable, it will most likely be profitable; even if not, it is a necessary outlay of five years' revenue, for the benefit of the country. It will both directly, and indirectly, increase the revenue; as irrigated cultivation extends, a more humid atmosphere is created, which, in its turn, attracts the rain-fall.

11. Clouds are not found to rain on an arid desert, whereas they are condensed, when passing over a humid surface. Railways are made at a cost of £8,000 per mile. They cannot keep the cattle supplied with forage. They return less than five per cent.; a canal costing £15,000 a mile, will preserve the means of subsistence, and return greater profits.

12. I would, therefore, recommend most strongly that the plans and estimate for the proposed canal should be expedited, and that the scheme should receive the early consideration of Government, and their recommendation for its speedy execution.

13. In Government Proceedings, lately published in reference to the Kurnool irrigation works, Rupees 50 is taken as the original cost of the works, which are to supply the water, per acre irrigated. The Kurnool works, it is well known, were complicated with navigation; expense incurred for that object, which is unnecessary, for simple irrigation; if we have a rocky cutting of a few miles between Camalapur and Darojee; against this item, must be set the expense of the Hindree aqueduct; money spent at the wrong place, Kurnool and by the Mettacondah cutting, before the site of the anicut was fixed at Sonkesla; but if even the cost of the Bellary works were double those of the Kurnool, and the original charge of supplying irrigation were Rupees 100 per acre, I shall show that this is a less prime-cost charge than is actually incurred by the people for an inferior sort of irrigation, without even considering the current expenses of maintaining the latter, which the former is free from.

14. The land, which will be commanded by the canal in Bellary, is in the Hospett and Bellary and Alur Taluks, mostly of the black soil description; a superficial soil of this kind

requires a well (which is the only other irrigated cultivation available) to be faced with stone; the black soil overlies, in most places, lime-stone; the water derived from wells is consequently frequently brackish; it is not suitable for all produce; not certainly for rice, or sugar-cane; in fact for the superior crops. Consequently, the productive crops cannot be cultivated in this locality, under wells, whereas, under river irrigation, they flourish.

15. To construct wells for the sake of raising the inferior produce, will cost, at present rates of labour, and depths to be excavated, of the soil, in question, from Rupees 1,000 to a minimum of Rupees 300.

16. The expense of these wells, the defective quantity of the water generally yielded by them, added to their great working expense, has much prevented their being undertaken; and every one acquainted with the Ceded Districts will bear testimony to the industry of the people, when possible profits were to be made.

17. I say then, to procure water by wells in the tract to be irrigated, by the proposed canal, will entail at the lowest computation, an original cost of Rupees 100 per acre: for no well will water more than three acres.

18. The charges of raising a crop by well cultivation are as follow:—

A well to water three acres, minimum cost price Rupees 300, twelve per cent.	rs.
interest on this	36
Interest on half cost price of two pairs of bullocks at Rupees 100 each (this is cheap for well bullocks) at twelve per cent.	12
Feeding the same for four months, at 20 Rupees	160
Deduct value of other work done by them on hire. Value of their manure, &c.	100
This is a liberal deduction, because away from towns, and roads, higher may not always be available.	Net... 60
Hire of men to work the bullocks, in raising the water, paid either in money or grain	15
Yearly cost of well apparatus	15

For three acres, or Rupees 16 an acre... 138

19. These charges are peculiar to well-irrigation; they are entirely over and above the other charges of irrigated cultivation, ploughing, manure, seed, &c. If it be objected that the Rupees 60 charged for the bullocks working the well, i. e., their feeding expenses is too high, as they would also plough, I reply that the well bullocks cannot do other work during the days they draw water.

20. It takes two days full work to water three acres once a week. It takes thirty days watering at 1½ acre per diem, to bring a three-acre crop to maturity or fifteen waterings per acre; the hire of a pair of bullocks is Rupee one per pair per diem, Rupees 2 × 30 = Rupees 60.

21. As the crop raised cannot vie in productiveness with river-irrigated land, which in sugar-cane produces Rupees 300, and in rice Rupees 150 per acre, or a net profit on the first of Rupees 200, and in the next of Rupees 100 per acre, the return from well cultivation will stand thus—

The produce of three acres under well, raghy or cholom, will be Rupees ...	200 Grain.
	50 Straw.
	Rupees... 250
Charges of raising the water, Rupees	138 or 75 per cent. of the total charges.
Other agricultural charges	40
	178
Net profit...	72,

Exd. J. Wright.

Office of the Controller of
P.W. Accounts.
Madras, 2nd August 1866.

No. 1247.

From, The Controller of P.W. Accounts.

To, The Secretary to Government. D.P.W.
Fort St. George.

Sir,

With reference to G.O. of the 26th ultimus
No. 2369, I have the honor to submit for the considera-
tion and orders of Government a report shewing
the projects formerly prepared by me in the
Bellary District, as it may be of some assistance
to the local authorities in giving out work for
the relief of the distressed inhabitants. Plans and
Estimates for most of these works should be
amongst the records of the late District Engineer
Office.

2. In the sub. collectorate, there is the
road from Anantapur via Singana-mulla to
Tadpatri which requires to be completed, this
road is a very important railway feeder and a
branch from it to Penn from near Singana-
mulla via Doodamurthy towards Tanjore
and Durnoveram was projected by me with a
view to enhance its importance in this respect.
This line passes over very easy country and
could be opened ^{out} at small expense.

3. In the same taluk, it was proposed
to construct a large reservoir at Boorachulachi
and cut a supply channel to it from the
Pennar river. Government have taken exception
to the section of the projected annicut and
also to the channel as surveyed out by me, but
as Mr. Gray has now returned to the District
and is well acquainted with the part of the
country

Copy in as submitted by
J. S. C. Aug. 6. 1866

P. J. M. S. D. C.
Secy to Govt. of P. W. Accounts
1866. Department

No.
PROCEEDINGS OF THE BOARD OF REVENUE.

No. 5243.

Dated 31st July 1866.
Secy to Govt. of P. W. Accounts
P. J. M. S. D. C.

Requesting that the Toongabudra Canal scheme
proposed by Collector of Bellary may be again
taken into consideration with reference to the
distress which that district is now again suffering
from drought.

10th August 1866 C. 135

20th August 1866 C. 135

country through which this passes he could revise this part of the scheme. no exception has I think been taken to the site of the reservoir and in fact it would be difficult to find a much better one, where it is possible to construct a work of this kind without interfering in any way with vested interests. I am not aware if the extension of this project by the construction of an amrit at or near Somandoddy so as to distribute again the waste waters from the fields immediately irrigated by the main reservoir and so embrace the large area of good land lying above the Singanav-mulla tank, has ever been investigated but this will add very much to the value and importance of the work if it is possible to be carried out and I do not know why it should not be so.

4. In the Durmavaram taluk, there is the Gotton tank project for which plans and estimates have been long ready and which the more wealthy inhabitants of Durmavaram were willing to construct themselves, if certain concessions were made to them by the civil authorities. From this tank station the road should be extended to the large and important tank at Voot Rappuram.

In Pennecodah, there is the project for supplying the Puddum large tank from the Purnar river and improving this reservoir. for which plans and estimates have been prepared and which promised to be a very remunerative work. From this tank station a road had been opened out towards Hindoo-poor and Muddoddy with our Local funds

22
funds and these might now be put in hand and completed and very much extended in this latter taluk towards the Mysore territories near Muddoddy and Annapoor with great advantage.

6. In Hindoopoor, there is the project for supplying some of the tanks about that tank with water from the Purnar river but the land under these has been so destroyed by the sand blown up by the heavy westerly winds which prevail for months in that District, I do not attach much value to it, but I mention it as one which may be called for, but to it there is this very serious objection existing and as this has been well investigated, it may some time and trouble to others, to be devoted to more important duties, and so I mention it.

7. In Purodoo taluk, there is the project for constructing an Amrit across the Kugger river at or near Joonjaremmully where abundance of stone is procurable close to the work and taking off channels on either bank - on the right, one of these might be carried as far as Bellagoopah to supply a reservoir which can be constructed near there, but on this side, so entirely is the country consist of black cotton soil, it would not be advisable to extend the channel to supply other tanks, sites for which exist every where about, but in such soil these silt up so rapidly they are useless in a few years, at the site proposed however this objection does not apply so much

much, being on red soil nearer the Hills - on the left. Bank or channel is to be taken off to supply the Panchmully, Yaparumel and Indigamully tanks, and these works improved so as to hold water enough for all the lands under their tanks and between them and the river bank down to the Kanna Pull tank, this channel is now to be continued on to the Pashully tank and this can be raised some 35 or 40 feet so as to be converted into an important reservoir, but one small village Pochamamully will be submerged - a sluice is to be built as low as possible in the present bed of the tank and a channel taken from it so as to command all the lands lying in the foot of these rivers and between its head and Goodloor on the Kanna Anggry - the project on this side is very important, - there is a very large area of land which can all be irrigated from the proposed reservoir, if this is improved so as to hold water enough to supply the land during those days in which there is little water in the river: as far as I could ascertain there is usually a fair supply of water in this during the prevalence of the South West Monsoon with freshes twice or three times a month but the great supply is furnished by the North East Monsoon when the tanks would be all filled for the hot weather. Mr. Blacker was employed in investigating this project and the plans and Estimates submitted to the office.

8. For Bellary itself, there is the project for supplying its reservoir by a channel taken off near Courtimij but the Government, see G.O. dated 22nd June 1864 No. 1813, have already called for this, and in this taluk as well as in Hospett there are several lines of road already in existence which could be taken in hand and completed.

9. In the western taluk, besides the roads already partially opened out and which could be completed, there is the project for the great trunk road from Roodthighee via Battor and Hampmully to Hallal on the Tungabhadra river near the Dharwar frontier, for this work plans and estimates had been prepared, the extension of this road via Chunnor, Good towards Sierahch on the Bellary and Bangalore road had also been surveyed, but I did not approve of this line and preferred bringing the road via the valley of the Avimundagoos tank and by Suttainpoor to the Kanagamhulla bridge on the Bellary and Hospett road but all this could be further investigated whilst the portion from Roodthighee westward was constructing.

10. In these taluks, it was also proposed to construct a large reservoir across the Chunnor Anggry river near Womamully on the Hospett and Hampmully road, the plans and estimates for the work had all been prepared and it had been ascertained that a very large area of land could be commanded from it, but the civil authorities objected to

to it on the ground of the water-spread destroying so many (9) villages, and also that probably the water-supply would be insufficient in some years, of this there can be no doubt for in the District of Bellary where I have known 14 inches of rain to fall in 20 days in one season, and only 6 inches in 365 days in another, it is utterly impossible to give any very correct idea of what the rainfall is, likely to be, but still in such a country I should submit it is better to construct works so as to enable us to utilize as much as possible the means of raising food whenever these come to hand than to let year after year go by threatening us with famine each season without making an effort to avert or mitigate its horrors.

For the taluqs of Hospett, Bellary, Huloor and Adoni there is the project for the canal from the Tungabuddra river and after 5 years constant examination of the country, very often with a levelling instrument, I have no doubt as to the line a channel should take and it but remains to provide the funds and that work could be put in hand at once. Fully $3\frac{1}{4}$ million of acres of land can be irrigated and the revenue from this, for water rent alone at Rupees 4 per acre would be 30 Lacs, and I believe the work can be executed for 20 Lacs and here there is not the shadow of a doubt as regards the water supply being abundant for one crop in the year for this extent of land. I have irrigated new lands from

from this river under the Royal sanction for which the ryots agreed at once to pay Rupees 5 per acre so that fixing the water rates at Rupees 4 per acre I think I am within the mark, the more so as Rupee 1 per acre for dry land, except it is very good indeed, is an high average rate for Bellary but this margin has been allowed.

I have the honor to be
Sir,
Your most obedient servant.

Captain P. S.
Controller of P. W. Accounts.

Compt. 13/11/01

Library Collectors Office
15th August 1863.

W. H. Meddemburn Esquire
Ap. Collector of.

J. D. Linn Esquire

Revenue Secretary to Government

Madras

St.

With reference to a project which has been mooted for utilizing the water of the Kombadra river, when in floods, in the months of June, July, August and part of September, the river being affected by the South West Monsoon, during these months, and flowing to a considerable depth, generally full up to the banks, and much of the water, it is believed, escaping to the sea, over anciently constructed lower down, I beg to represent that, supposing the practicability of the project to be ascertained by the necessary levels taken at a sufficiently high point of the river, a very large tract of land would be benefitted. The canal would be taken round the base of the Ramanamulla range through the gorge by Kaspetta, and in an Eastward direction there is good red soil by Coottitiny further East, towards the Kungay there is a large tract of Cotton soil which though not the best for

Coleridge as Letter to Englund
of 25. Aug. 1842 of 1866

[Handwritten signature]

The estates of J. H.

See account.

the day: not tomorrow.

John

Dr. H. H. George

Dated 2nd

Dec: 20
August 1866.

10-1247

of our working for
 consideration, or respect,
 allowing the subjects formed
 by Professor Hoke essential
 in the History District,
 but still left incomplete,
 that they may now be
 put in hand, as private
 announced for the
 following year.

Aug 1866 9.13m

212, 2606, 205 Aug 1886

irrigation of wholly of the black or regur soil, yet when mixed with sand, as is the case in many parts from the decomposition of granite, is called Mussamb, and its value is immensely increased by the facility of water. At present, in that locality, the people depend on well irrigation, the water being 10 yards and more below the surface, for whatever wet crop they may raise. were a channel carried for 40 or 50 miles from the Amint it would command a large plain to the north of the Town of Bellary, to which place, if water could be supplied during the month of the river's flood, an early wet crop might be raised.

2. The irrigable plain eastward of the Daroji Tank may be estimated at least at 100 square miles. the quantity of water obtainable would be the limit of irrigation, the benefit to a District, whose western range of hills appears to turn off the rain during the South West monsoon, and over which the North East monsoon is also very precarious, would be very great. Wells would be sunk along the sides of the channel even if it run below the level of the country in some places, reservoirs might be formed in convenient localities to store the

water, and the result would be to render cultivation less dependent on the local season, and to facilitate the production of more valuable crops, as well as more abundant in yield. The valuable staple of cotton would be much improved if means of irrigation were provided, to modify the aridity of the climate. It is known that the American Cotton introduced from Dhamar thrives in the Western Taluk which benefit by the South West monsoon, with a prospect of water, agricultural operations might commence at an earlier date than they now do, because the first ploughing depends at present on rain falling in June and July, and it often fails.

3. Therefore, both for the improvement of the present cultivation and for the introduction of new crops, the irrigation scheme would be an undoubted benefit.

4. From the successive failure of local rains, the District of Bellary has suffered much. In the year 1853/54 besides the loss of 6 lacs of Rupees of revenue 13 lacs of Rupees were spent on local roads, in many cases to little good owing to the want

part of supervision, and hurry of providing work and subsistence for the people. This was the last famine year, but in 1832 there was also a famine, though no funds were then expended.

But there was a great loss of population, Bellary, as a District, thinly peopled even now, but, if irrigation were supplied, population and comfort would increase as in irrigated Districts like Tanjore, every cubic yard of water which can be intercepted from running waste into the sea, and utilized, will aid cultivation and increase revenue, there is abundance of land to be watered, and it only remains to ascertain by a careful survey whether the project is feasible in an Engineering point of view, and for that object, I would respectfully urge the advisability of instituting the necessary preliminary survey.

6. The people would for irrigated lands gladly pay a consolidated cess of Rupees 5 per acre instead of Rupees $\frac{3}{4}$, the present average dry rate, on 60,000 acres, this would amount to an increase of Rupees 30,000 against which is the cost

of the ancient channel cutting and embankments. The work may be called the "Bellary Taluk local irrigation scheme" utilizing the surplus flood of river which runs 20 feet deep and has an average breadth of 300 yards for a quarter of the year. It has no connection with, and is supposed to be without prejudice to other irrigation projects.

I have the honor to be Sir

(Signed) A. Wedderburn
Acting Collector

Note. Since writing the above on conferring with the late Acting District Engineer Captain Babington on the subject I learn that the project has been already examined and found feasible and that Plans and Levels may be found in the Records of the Chief Engineer's Office drawn out by Captain Tyrell in the year 1856 or there about.

(True Copy)

A. Wedderburn
Collector

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(True Copy)

A. Wedderburn
Collector

№ 2606

Under decto the 20th Aug/86
Read the following

From

The Controller of
 P. W. Accounts (Here enter No. 1247 dated 2^d Aug. 1895)

Proceedings of the Board of
Revenue. — (H.B. No. 5243 dated 31 July 1883)

The Government are well aware that the only certain and effectual mode of supplying the means of irrigation to the plains of Pothohar is the construction of a sufficiently Capacious Canal from the Soom-
-buddia at or near Walla-
-Bhappooran; but this project, though originally investigated by members of the Department of Public Works with a view to its being undertaken by the

Enclosure No. 1 in a
letter from the Collector
of Bellary to the
Secretary to the Board
of Revenue Mysore
dated 3rd July 1866
No. 140

2/23/45

Letter 1st 36 dated
15th of August 1883 from
the Director of Colling
to the Revenue, Secre-
tary & Government
Madras.

Jan 16 1871

Government, ~~has been~~
~~created by the Secretary~~
~~of State to the Irrigation~~
~~and Canal Com-~~
~~pany, and is held in~~
~~obeyance by its spending~~
~~the completion of the works~~
~~which the Company has~~
~~in hand below Kurnool.~~
There is, it is believed,
nothing in the Contract between
the Company and the Secre-
tary of State to preclude
the Government from itself
undertaking new irrigation
schemes with the waters of
the Tumbuddra, but as
the Secretary of State has
decided that to do so would
scarcely be equitable, in-
as-far as it might interfere
with the Company's operations

forms part of the "Tombuddra project" referred to in the Preamble of the Madras Irrigation and Canal Company's Contract

at present to take any steps towards the prosecution of the work.

or the diversion of water which it is part of their plan to utilize, the Govt. are unable to ~~undertake~~ ~~the project being practicable to~~ ~~commence work of the kind for~~ ~~some time to come.~~

The present state of Bellary, however, shows that no more time can with safety to the District be lost in carrying out some ^{the improvement of} scheme for its irrigation, and as the only one likely to be successful is that ~~which the Government and the~~ ~~Company are following,~~ an appeal will at once be made to the Secretary of State to call upon the Company ~~not~~ to begin that part of their enterprise

of the Tombuddra Canal from Kallabha Poram

which consists of the conveyance of water for irrigation from the Jombudra to Bellary by means of a Canal from Wallaba-pooram, or ~~to transfer~~ ~~the right to do so to the Government.~~

The Government are much obliged to Capt. Fisher for his letter above read which will be communicated to the Supy Engineer of the 3^d Div.

In the order as per margin the Government expressed themselves unable to judge of the expediency of carrying out the Pookacherla Reservoir project with the imperfect information before them, and in calling attention to the necessity

P. W. 186 . Department.

No.

PROCEEDINGS OF GOVERNMENT.

upon their inability so to do
Dated to authorize the Canal being undertaken by this Govt.

20 Dec/64 - No 3538
31 Aug/65 - " 2541

of thoroughly investigating it, they requested the Eng^r to inspect the locality and to report upon the undertaking. Major Moberly replied to this call in his letter of the 21st Dec: 65, p 106, in which he stated that the scheme held out every prospect of being very remunerative. This having been ascertained, the Government are of opinion that if Mr Gray, who was recently posted to the Bellary District, has no special work, he may be advantageously employed in the investigation of the project, and on its completion he may similarly be deputed to conduct the further examination of the Geparal scheme which formed the subject of the

Correspondence noted in the margin.

The Govt are unable to make any assignment for the Goolloor Tanks project for which an estimate of Rs. 39400 was sanctioned in G. O. No. 3285 of 9 Nov 1865; but the Engr will enter the work in his Budget for the ensuing official year

P. W. 1866. Department.

From Govt & Govt 156-153
To Do 47 Dec 56 - 8950
From Do 15 Jan 57 - No. 103
To Do 15 Dec 56 - 9500
From Do 20 Dec 56 - 214

PROCEEDINGS OF GOVERNMENT.

Dated 20th Augt/66.

W. L.

Copy in a Letter to England of 25th Augt. No. 112 of 1866.

Rs. 390-399 & 400

10th Augt 1866. A. 1205.

To
The Board of Revenue ✓
" S. Engr 3^d Div ✓
1 Capt. J. F. Fisher R.E. ✓
4 " Comd Engr in S.C.C. ✓
Despd 21st Augt