

Report on the Irrigation and
Communications of the Dist. of Columbia
1854



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REPORT

ON THE

IRRIGATION AND COMMUNICATIONS

OF THE

DISTRICT OF GANJAM,

BY

CAPTAIN F. H. RUNDALL,

CIVIL ENGINEER, 9TH DIVISION.

DATED WALT AIR, 6TH NOVEMBER 1854.

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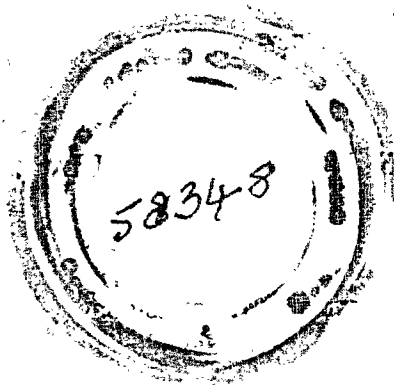
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REPORT ON THE IRRIGATION AND COMMUNICATIONS
OF THE DISTRICT OF GANJAM.

In considering the state of the Public Works in the Ganjam District, it will be most convenient to divide it into the Northern and Southern portions, as there is a long strip of intermediate country which is entirely composed of petty Zemindaries:—

The Northern portion contains 6 Amany Talooks viz., Goomsur, Hantgar, Sooradah, Moherry, Peobacondah, and Itchapora; of these the Moherry Talook has been but 8 years the property of Government, while that of Hantgar* has only just been purchased. The Southern portion forming the Sub Colledgeys contains the Wasadah Talook.

Out of a total land revenue of about 6 lacs of Rupees, Rs. 4,18,000 is derived from irrigated lands, Rs. 1,50,000 from other lands, and Rupees 32,000 from other sources.

The means of Irrigation described.

The means of Irrigation consist of channels taken from the rivers, which traverse the district, some of which are led to reservoirs, which store the water brought by the freshes, and some irrigate the fields at once.

Of the two portions the Southern is the best furnished with river channels, as it has the

* Nagavali.

Supplying Channel to Poor-	Rs.
shotpore Tank.....	9,918
Byree Dasey Bafay.....	15,418
The Garra and Quasvilly.....	8,262
The Calingapatam Channel.....	900
	34,318
The Polaki Channel.....	32,000
The Looklam Do.....	5,000
The Jallmoor Do.....	16,483
The Nagaricutum Channel....	6,804
Total.....	60,292

advantage of two large rivers from whence to draw its supply. From the Nungoolen* or Chicacole river, one large channel is taken off near the village of Nintoorladah, which runs for a distance of 20 miles, and waters land yielding a revenue of Rs. 31,000. From the Wumshadaura or Calingapatam river there are 4 channels taken off the right and 4 off the left bank. The former water lead to the amount of Rs. 34,500, the latter to that of Rs. 60,000.

On the left or Northern side of the Calingapatam river whatever land is not irrigated by the above mentioned channels is supplied from tanks wholly dependant on the local rains, with the exception of a small irrigation work lately constructed across the hill stream called the Gareeboola godda, from which a channel has been taken off supplying the tanks lying between the village of Pattalagan and the

coast at Magaveram, affecting at present land assessed at 4,500 Rs. and calculated to redeem a large quantity of waste and jungle.

The Itchapora talook, the next in order, to the northward contains about Rs. 30,000 irrigated land, which is supplied principally by 3 small channels taken off the Itchapora river, and the rest by tanks fed from hill streams of which that at the village of Monteraddy is the largest.

The Moherry talook has no river irrigation at all. There are very few large tanks in it, the principal one being close under the hills to the west of Berhampore at the village of Laity. Its wet lands however are assessed at 60,500 Rs.

The Peobacondah talook contains the principal irrigation work in the northern part of the district. This is the large channel taken off the Godhala nullah one of the feeders of the Ganjam river. Under this channel which runs nearly parallel to the southern bank of the river, there are according to the talook accounts 9,232 acres of land yielding a revenue of Rs. 26,372.

On the northern bank there is a small channel taken off the Ganjam river, at the village of Anamanapilly Agraharam for the supply of the Pollabilli tank at Poorshotpore and intended to irrigate 9 villages besides, the total revenue being Rs. 7,000. The rest of the lands in this talook are watered by tanks dependent on the local rains.

The Goomsur talook, the most extensive of all, has no main supplying channel, but a number of small ones taken off from the different streams that traverse it, there are no masonry Annicuts or sluices, the method hitherto pursued being to erect sand banks just after and before the rains, so as to catch the earliest rising of the river, a most precarious and unsatisfactory proceeding.

The principal channels are in the Pilepadah and Vistnoochakrum mootahs, each said to water about 10,000 Rs. worth of land, but as I have no authentic statement of the amount I cannot be sure. The rest of the channels affect comparatively small areas of land.

Of the Hautgur talook, I am unable to speak, as having only lately become the property of Government, I have never had an opportunity of inspecting it.

Having thus briefly sketched the means of irrigation possessed by each talook, I will now proceed to state the actual condition of the principal of these works as far as I have been able to inspect them.

The large channels in the Wadadah talook taken off the Nangoolea and Wumshadara rivers, are all old native works, they have been excavated with a great fall in their beds, and having been unprovided with head sluices or any masonry works to regulate the quantity of water entering them, these channels have gradually become much enlarged beyond their original dimensions, and consequently in high freshes convey a much greater quantity of water than is required, which is of course productive only of injury to the crops. Such of the channels as I have had already surveyed and levelled, have a fall of about 70 feet in a course of 20 miles, and for want of attention have at their lower ends become very crooked and winding.

Though very important works, as may be seen from the marginal* statement of the revenue dependent on them, their usefulness has been contracted by giving them so great a fall, for had advantage been taken of carrying them on, as a high level as possible, a great many more reservoirs might have been filled, which now only derive their supply from the local rains.

The tanks also in this Talook, both those filled by the river channels, and those dependant only on the rains are mostly unprovided with either calingulabs or sluices, in consequence of which the bunds are liable to be breached, while the Ryots are obliged to cut holes in the bank in order to obtain the water, and as these holes are seldom strongly repaired, they are almost sure to become large breaches during the ensuing monsoon. There are no annicuts across these two rivers, so that the water in very low freshes and in the summer season is lost to the country.

Exactly the same may be said of the channel and tanks in the northern talooks. The largest work there viz. the irrigating channel taken off the Goodhale nullah just from a want of knowledge of the simplest principles of Engineering is at times a source of great injury to the country affected by it on account of the enormous body of water which it conveys to the lower lands. The fall along this channel is also 3 feet a mile, and in one place 6 feet. The width at the head has enlarged to 60 yards, while at 2 miles lower down it is 40 yards. This is altogether disproportionate to the quantity of land requiring to be watered, and the bed has become so scoured out that sluices originally constructed in it have their floors 3 feet above the level of the bed.

The Heradaroo channel is the only one taken off the Rooshkoolea river itself. It is intended to fill the Dollabilli tank at Poorshotopore and to water 9 other villages; but these last complain that they are not properly supplied while the people at Poorshotopore complain of having too much water.

The principal channels in Goomsur, viz., the Dummurumma gedda and Mahanudee, are similar to the rest just described, invaluable in moderate freshes, but productive of injury in the high ones.

The defects of this system of irrigation thus are apparent. In the Wadadah talook a number of channels have been excavated independantly one of another, each having a separate head, and taken off from the level of the bed of the river. By this arrangement owing

to the constant changes which take place in the bed of the river itself, while one channel is over abundantly supplied while another cannot get any water into it until the river has risen some 5 or 6 feet. The velocity acquired by the great fall given to these channels, has the effect of deepening their beds continually, which renders the necessity of cross banks being raised every here and there to bring the surface of the water to the level of the fields. These cross banks while they are injurious to the channel by occasioning breaches are also the cause of many disputes between the different villagers. Another defect is that in their present state they cannot take advantage of the small freshes in the river, which in the event of a late or a scanty monsoon is the cause of the whole cultivation being thrown back, which of course is prejudicial to the proper growth of the crop if not sometimes endangering its failure altogether. The result of this uncertainty must necessarily be not only a considerable fluctuation in the revenue, but a source of hardship to the ryot, who after having engaged for the land is obliged to run the risk of the season being unable to calculate on the production of his crop.

Seeing then that such are the defects of the present system, the remedies by which these are to be overcome must be stated, and in the improvements I am about to suggest, I have been guided by the consideration of what is required to secure the present extent of cultivation under the existing channels as well as what will tend to bring a larger quantity of land under the influence of river irrigation.

I would therefore recommend first bringing all the present channels as far as possible under control by supplying them from one main head. For this purpose, I propose throwing an annicut across the Calingapatam river just above the village of Heeramaundalum, where there is a favorable site for such a work, and lead a channel from thence, which shall follow the highest level attainable with a fall of one foot per mile, which will I think allow it to terminate in the backwater at Nowpadah. From this main head I would supply all the 4 other channels on the northern bank, and by thus regulating the quantity of water allow the land to have just as much water as was needed; and at the same time not interfere with the proper drainage of the country.

The 4 channels on the south bank of the river may likewise be supplied from the same source, but as lands belonging to the Vizianagruin estate intervene, there may be some objections to carrying out this project which do not at present appear, and therefore I have not laid the line of this channel down on the map.

The Wadadah channel taken from the Nangoolea river being the only one on that side, all that will be necessary at present is to construct a head sluice to regulate the water during the high freshes of the river, to repair the banks where necessary, and to straighten the course of the channel by cutting away some of the most intricate windings. By taking off a high level branch on a small fall, more land might be brought under its influence, but as I have not yet the exact levels for this taken yet, I could not mark out the course it would follow.

Between these two rivers there is a high ridge of country extending from 2 to 4 miles in width, at present lying almost wholly waste from want of means of irrigation. A great deal of this however would be commanded by a high level channel from the proposed annicut at Heeramaundalum, and by making new and restoring the old tanks, I doubt not a great portion of this tract containing about 20 square miles will be redeemed.

Besides supplying the existing channels in the northern side, the proposed new main channel would convey water to a number of tanks hitherto dependant on the local rains, convert a good quantity of dry land into wet, and allow of a large extent of waste and jungle being redeemed, as it would command the whole country between it and the sea.

The heads of the present channels, I would not close up, but protect with head sluices, as in the event of more water being required than the main channel could convey, or of some unforeseen accident happening at the head, these channels would not then be deprived altogether of water, but draw their supply as now direct from the river.

But with this project, I have also held in view the feasibility of establishing a water communication for at least 6 months in the year between the village of Buttely in the confines of the Kennedy Zemindary, a great emporium for trade, and the Salt pans at Nowpadah.

Combining navigation with irrigation from the proposed canal.

The whole rich valley of the Parlah Kimeddy Zemindary would thus be opened up, and an incalculable saving effected in the transport of produce, which would tell with especial force on the item of seeds, as the principal crop ripens in the month of September, when there is the greatest quantity of water in the river, and when carriage by land is most expensive. The great demand for seeds has caused such a rise in the prices, that any saving that can be effected in the cost of carriage will tend to increase the export, and give additional stimulus to the cultivation, as the present prices are very remunerative. I have limited the time of navigation to 6 months, but from what I have seen of the Calingapatam river, I should say that there was enough water in it to supply a navigable canal for 8 months in the year. The supply for the remaining 4 months could without doubt be obtained by having reservoirs in the Kimeddy Hills, but this is a point I have not yet attempted to investigate. With this the subject of the desirability of establishing a salt depot at the foot of the Hills, bordering the Jeypore country naturally suggests itself, and there can be but little doubt that the establishment of such a depot would cause a very extensive increase in the export of that article, as the diminished cost of carriage would enable it to be supplied so much more cheaply to the inhabitants in the interior, and become one of the most effectual means of putting an end to the illicit manufacture, which it is now almost impossible to prevent.

I do not here enter into the details of this project, and the enumeration of the several works required to carry it into effect, but as far as I am able to calculate roughly, I think the cost will be about 50,000 Rupees. As soon as the country is more passable, I purpose having a careful survey and levels taken, the particulars of which will be submitted together with the estimate.

Besides the above, the tanks must all be provided with Calingulaks and sluices, but as these are mere ordinary works, they require no special notice.

In the Itchapore talook there is so small a breadth of land between the hills and the sea, that only a very limited extent can be effected by channels from the river, and therefore the improvements to be made must consist in rendering the existing channels more secure, and preventing their being breached, as they now are, during the high freshes of the river.

The Moherry talook although having 60,000 Rupees of wet land is, as stated above, entirely dependant on the local rains, and this talook has therefore required careful consideration. The chief means by which it can be benefited with river irrigation, would appear to be by the construction of an annicut across the Rooshkoolea near Aska, a mile below the junction of the two rivers, from whence a channel must be led on the right bank skirting the highest ground up to the Godhola Nullah which it must cross either by an aqueduct or by the annicut hereafter proposed, and passing the village of Injelly be carried, as the levels allow, across the highest country towards Munsoorcottah, terminating in the backwater at that place, and filling all the reservoirs that lie below it.

The benefit accruing from this work will necessarily be very great, as it will convey water to a hitherto wholly unirrigated tract of country, rendering certain what has till now been very precarious, and converting large extents of land into wet cultivation which have hitherto yielded only dry crops or lain altogether fallow. This channel would, like the one in Wadadah, be also available for navigation for 6 months of the year, but of the possibility of extending it over a further period, I cannot speak positively, as I know that the supply in the river after December is generally very small, and I do not know enough of the country to say where extensive reservoirs might be constructed, though the general aspect of the country would seem to indicate that many such localities exist among the basins formed in the different ranges of hills that are scattered throughout it.

The increase of revenue derivable from the increased irrigation would, so the Tahsildar once stated to me, amount to Rupees 50,000, and which I myself think might safely be taken. The cost of the work on a rough calculation would amount to a lac of Rupees.

From this same point also, a channel can be taken which shall provide for the irrigation of all the Poobacondah talook lying to the north of the Ganjam river.

37. For supplying the portion which lies to the south of that river, it will be only necessary to improve the existing channel from the Godhola Nullah, by constructing an annicut across the latter, cutting a new head to the channel, and protecting it with head and under-sluices, correcting the fall in the bed with masonry dams at the requisite spots, and thus enabling it to be of more extensive use than it even now is.

38. The Gumsur talook will require a different system altogether, the peculiar features of the country will not admit of the irrigation works being brought under the control of one main feeder, consisting as it does of a succession of narrow valleys separated from each other by ranges of hills, the drainage from which is discharged down the centre of each valley, as will be perceived by a reference to the map, a more minute and detached system of works will be required, and which it will require some little time and care to carry out, so as to allow of the country being properly supplied, while at the same time the drainage is not intercepted. As yet I have not had sufficient time to devote to the consideration of this question, and am therefore unprepared to lay before the Board any suggestion except that of improving the existing channels, and of embanking the rivers. This last appears to be a most necessary measure for the preservation of this talook, and will require careful execution as the levels along the banks of these several rivers vary considerably at intervals. This project, as entered in my Budget for 1854-55 lately submitted, I estimate would cost Rs. 75,000, and I think that a competent officer should be appointed to carry out the works. The loss from floods in this talook are stated to be considerable, being, as a Thasildar informed me, from as much as 10 to 20,000 Rupees.

39. For the Hautgur talook, I am not able to suggest any thing at present from the reasons stated above, and the talook of Sooradah comprising comparatively so small an extent, I have deferred visiting until I had more leisure.

40. Before concluding my remarks on the irrigation works of the District, I would beg to state that, the minor works such as tanks &c. have been considerably improved within the last 3 years. The amount of repairs annually executed is five and six fold what it used to be in former years, and the most important of these have generally received the inspection of some member of the Department. The Wadadah talook has received the most attention and necessarily so, as it is the most important, having the largest and most valuable works of irrigation in it and containing the greatest extent of irrigated land, viz. $\frac{2}{3}$ of the whole District. The more extensive works I have recommended in this report, I have long thought necessary, but have felt that it was useless to propose them until I should be certain of having means at my command to carry them out. There are few artificers in the Ganjam District, and, till lately, the ryots and villagers were unaccustomed to seek for employment on the Public Works. The prejudice is gradually, I hope, being overcome, as the presence of the various European Officers and Overseers employed on the construction of the different lines of Road, and the regular payment made by them, seem to have given confidence to the people. These works are thus preparing the way for more extensive ones, and not only will the artificers whom I have sent from the Vizagapatam District find continued employment as the new projects are successively sanctioned, but, doubtless, the class will increase amongst the people of the District also, the higher pay serving as a stimulus to increased exertion.

41. While submitting this memoir on the irrigation of the Ganjam District, I have thought it may not be out of place and unacceptable to the Board to state, at the same time, a few words regarding the communications of the District. I have therefore entered on the map the Roads, already sanctioned, in the different stages of progress, and such as are still proposed to be made.

42. The Districts of Ganjam and Vizagapatam are necessarily, by their formation, rendered independent of connected projects with other Districts, the only point to be considered being the opening of lines from the interior to the coast; completing the communication with Nagpore, and a few lines of intercommunication between the principal towns. A reference to the map will shew that nearly all has been provided for, the proposed Roads marked yellow being for opening such tracts as have hitherto been shut up, such as that from Aska to Cheekaty and thence to the port of Sonapore; and from Aska to Rumbah on the north; and on the south from Sarvaccottah to

Calingapatam; from Palkondah to Nowpaulah—a track greatly frequented by Brinjarics; from Varanausy to Kimed; and from Buttely to Nagaricuttacum to join the road, already sanctioned to Byree. The two last run almost, if not entirely, through the Kimed Zemindary, and could be executed with the funds available for that purpose.

43. The Road from Palcondah towards Nowpaulah would branch from that already sanctioned, and in the event of the channel from Heeramundalum being available for navigation, need be carried only to the most convenient point in the channel to which Salt from the Pans would be brought.

44. I cannot close my remarks on the communications, without pointing out, in reference to the Report by the Committee lately assembled for systematizing the Public Works in the Presidency, the extremely favorable nature of the country in the Ganjam District for carrying out the coast Canal. Perhaps in no District does the line present so few difficulties, or could be opened sooner than between Calingapatam and the Chilka Lake, and even in this detached portion would prove of much value to the commerce to the country, by enabling produce to be carried to the most favorable shipping port. The Roadstead of Munsoorcottah is very often for days inaccessible on account of the high surf, while a few miles lower down, produce can be shipped without risk at Sonapore, and the difference of transit by water to the two places would be insignificant, compared with the delay and anxiety caused by the detention of a vessel in rough weather. There are a number of hollows, called Tumparabs or tanks, extending for miles parallel to the beach, and just at the back of the sand hills, containing several feet of water in the centre. These only require short cuts to be connected one with the other, and these again with the Backwaters and long swamps, which last, would require but a very small amount of excavation to render them navigable.

45. In conclusion I would beg to sum up in one view the principal works mentioned in the report, which are as follows.

An Anicut across the Wamshadara river at Heeramundalum, with channels on the northern side to be rendered navigable, also as far as circumstances will permit...	Rs. 55,000
An Anicut across the Rooshkoolea river below Aska, with channels to water the Moherry and Poobacondah talooks, also to be rendered navigable as far as circumstances will admit.....	1,00,000
An Anicut across the Godhalo Nullah head and undersluices, and a new head to the channel.....	11,000
The embanking of the Rooshkoolea, Lohara Kundee and Mahanaddee rivers.....	75,000
Calingulabs and sluices to the different tanks... ..	1,00,000
Improvements in Gumsur and Hantgur talooks not yet ascertained, but from the Revenue of each being a lac of Rupees, the probability is, the required expenditure will amount to one year's revenue, as there have been no extensive works ever yet undertaken in them.....	2,00,000
Superintendence for the whole	50,000

Total Rupees 5,91,000

46. The time required for the execution of these projects will depend of course on the amount of labour that can be obtained, and probably they would extend over a period of 5 years, as at the same time the various Roads from the interior are being opened, and the necessary masonry works connected with them will demand a proportionate number of artificers.

47. The particulars for the talooks of Gumsur and Hantgur must be stated in another report whenever I have had sufficient time to devote to a proper description of them.

48. The projects I have already brought forward, I trust, will tend to the improvement of a large proportion of the District, and afford means for the development of its resources, and as such, I hope will meet with the favorable consideration of the Board and Government.

Civil Engineer's Office, 9th Division, A
Camp at Waltair, 6th November 1854.

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F. H. DALL, Captain,
Civil Engineer, 9th Division.

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