M.R.O. 1—30,000—16-10-59.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No. 1405 Press Mis.

461-462

Dated 20th May 1869

Not to be folded or roughly handled

MRO
25/2/20

Proceedings of the Madras Government, Revenue Department,
20th May 1869.

No. 461. Read the following Proceedings of the Madras Government in the Public Works Department:—

Communicating to the Officer concerned, Proceedings of the Board of Revenue passing orders on the letter from the Collector of Ganjam, submitting Captain Beckley's preliminary report uponthe proposed Irrigation works in North Ganjam. | (Here enter 7th May 1869, No. 1,476.)

No. 462. ORDER THEREON, 20th May 1869, No. 1,405.

Irrigation, No. 11.

COMMUNICATED to the Revenue Board.

(True Extract.)

(Signed) H. WELLESLEY,
Acting Under-Secretary to Government.

To the Board of Revenue, with Proceedings Public Works Department, No. 1,476.

Ed. R. C. Shunker.

Govt. of 1869 Collect

REVENUE.

To

THE BOARD OF REVENUE.

Dated May, 20th

Read.

No. 1,305.

MAY.

Nos. 431-462.

Irrigation works in North Ganjam.—Order on Board's Proceedings on Collector's letter submitting Captain Beckley's preliminary report upon the proposed works, communicated to the Board.

Proceedings of the Madras Government, Public Works Department, 7th May 1869.

No. 103. Read the following Proceedings of the Board of Revenue, dated 3rd April 1869, No. 2,219 :—

Read the following letter from the Collector of Ganjam, to the Acting Secretary to the Board of Revenue, dated Camp at Digoopoody, 28th December 1868, No. 1,396.

1. Referring to the Board's Proceedings, No. 7,514, of 18th November 1867, calling upon all Collectors to report, at their early convenience, upon the wants of their respective districts in regard to irrigation works, I have the honour to state, that as Captain Beckley, R. E., has been specially deputed to Ganjam for this purpose, I thought it best to await the result of that Officer's inquiries. All the information available in my records was placed at his disposal, and a copy of Colonel Frederick Cotton's Report (1857), together with copy of Captain Rundall's Report (1854), was at the same time supplied; those papers being previously unknown to him. Printed copies of the latter Report were furnished to the Board with my last Annual Press statements, (*vide* Board's Proceedings, No. 7,617, dated 26th October 1868,) and I intend to reprint portions of the former at an early date.

2. Captain Beckley has now written a preliminary memorandum upon proposed irrigation works in the northern half of the district. For facility of reference I have struck off a few copies of this paper at the Office Press, and beg now to hand you one of them for the information of the Board. Captain Beckley, it is presumed, will in due course report upon the wants of the southern portion of Ganjam; but in that direction, it is believed, very little requires to be done.

3. The statement called for in your paragraph 4, regarding the area under each existing work, with the annual grants for repair as compared with the annual requirements for the same, is herewith furnished.

4. As required in paragraph 5 a further statement is enclosed, showing the sums expended (with results) on *new* irrigation works since our connection with the district. It is a shabby total enough; but it may be said, in extenuation, that the monsoons of Ganjam have been almost invariably unfailing: whence, indeed, the district appears to have got its present name from the Mahomedans who preceded us—*Ganj-i-âm* (the depôt of the world.)

ENCLOSURE No. 1.

PRELIMINARY REPORT UPON PROPOSED IRRIGATION WORKS IN NORTH GANJAM.

1. The principal physical feature of Northern Ganjam is the Rooshkoolia. This river rises in the Khond Hills above Goomsoor; near Aska it is joined by the Mahanuddy, with a stream larger than its own, also flowing from the Eastern Ghauts; five miles lower down, the Donaye falls in on the left bank, and ten miles below Aska the stream is augmented by the Godahallow flowing in on right bank from the range of hills situated to the west of the Military Station of Berhampore. The Rooshkoolia enters the sea at Ganjam, formerly a most flourishing port and chief Civil and Military Station in the Northern Circars, still a place of considerable trade, but shunned both by Europeans and Natives on account of its unhealthiness; the causes of sickness are happily removable, and as no other place in the vicinity possesses equal natural suitableness for trade, not much will be done towards improving the district before it will become evident that works must be undertaken to restore to Ganjam its former supremacy over the numerous small ports dotted along an extensive line of coast.

2. The basin of the Rooshkoolia comprises an area of 2,400 square-miles, of which, perhaps, 1,000 square-miles is mountainous, the remaining 1,400 square-miles consisting of undulating ridges and valleys broken by numerous isolated hills composed for the most part of gigantic gneiss and granite boulders. In this large area is contained the Government talooks of Berhampore and Goomsur and Zemindaries of Darakota, Hautghur, Callicote, Beridi, Shargada, Coorla, and Pedda and Chinna Kimedy.

3. The people subsist principally upon rice; and on the success of the rice cultivation the general welfare of the district depends. The cultivation of raggy has been of late wisely increased, some of the ryots being warned by the last famine not to depend entirely on their rice fields for support: gram and oil-seeds are grown on the highlands. No cholum is grown; this is to be regretted as it requires but little rain; it is more nourishing than rice, and for cattle both grain and stalks constitute excellent food. Sugar-cane gardens are very numerous, and great trouble and expense are lavished on its culture.

4. The entire rice-crop is dependent upon the local rains, a considerable portion receiving little more than what actually falls upon it. The *best* rice ground is imperfectly irrigated by natural drainages and hill streams, the supply of water being sometimes supplemented by means of small tanks, mostly without sluices or calingulahs, but very useful in enabling large areas of cultivation to tide over a short cessation of rain. Of important tanks or river channels the district is all but destitute; there are, I think, but two irrigation works that would in the Bellary District yield Rupees 500 revenue; under these circumstances the yield of grain on the uplands is at the best but scanty; in favorable years fair crops are obtained in the valleys; during average seasons the ryots after much anxiety have to mourn over the crops lost, and make the most of those saved; in bad years nearly the whole crop is lost, and a scarcity or famine of greater or less intensity results.

5. The Sugar-cane, though often injured by drought, is seldom altogether lost; the gardens being usually close to the river and receiving from the villagers every care and attention. The total cost of cultivating an acre of sugar appears to be about Rupees 150, and its value on the ground about Rupees 200.

6. The district is tolerably well off for roads, but difficulty is experienced in keeping them in repair, no good gravel being obtainable, the rocks being almost exclusively felspathic. The draught cattle are nearly all agricultural animals, very small and weak. In fact, I have not seen a single bullock here fit to be yoked to a cart; buffaloes are much used for drawing bandies; they are not adapted for the work, being very slow and soon knocking up in the sun when unable to bathe or wallow in the mire; the introduction into the district of a better breed of cattle and of cholum to feed them with, is most desirable and should receive attention.

7. The general condition of the district must, I think, be pronounced unhappy, and such as to demand amelioration: the prevailing custom of growing rice upon lands, depending solely on the rains for irrigation, must always be a source of anxiety to the people and to Government, and must produce famines periodically, perhaps, the oftener now that high prices and other causes have given a great impetus to export grain trade. The soil is rich and fertile; there is little barren or stony land, the hills rising abruptly from the plains; the rain-fall is very large though not excessive, and though variable never appears to fail; all parts have short easy access to the sea; but, notwithstanding all these advantages, Kurnool and parts of the Bellary District evince signs of far greater prosperity than Ganjam; doubtless much of the squalor and wretchedness observable around is due to the apathetic character of the Oorias, and one great argument in favour of large Public Works is, that through them the people would be trained to labour, and their indolence gradually overcome.

8. But though appearances might lead one to form a contrary opinion, unloubtedly the general welfare of the district has advanced considerably during the last twelve years; the revenue has risen from Rupees 13,74,143 to 27,29,015, the increase being chiefly obtained from larger salt sales. The trade in this article still admits of further expansion: much of the increase of Rupees nine lacs revenue from this source during the

Vide Famine Report.

last twelve years is attributable to the formation of roads, and it can hardly be questioned that the few lacs expended on communications between the coast and the interior have yielded cent. per cent. through the salt trade alone. The recent famine has, of course, seriously checked this progress, and the recurrence of such calamities can hardly be prevented except by very extensive irrigation works. The people are naturally disinclined to change their ideas on agriculture, and grow other crops on land specially prepared for rice, in such a manner as to represent a capital of at least a million sterling. The importance of irrigation works in this district must be measured not only by the prosperity they will induce, but also by the misery and loss they will prevent. The immediate cost to Government of the late famine was estimated by Mr. Grigg, c. s., at six lacs of Rupees; but this did not include loss by decrease in consumption of salt and many other indirect and remote losses, such as a permanent rise of nearly twenty per cent. on labour upon Public Works—a rise due not to any wholesome cause, but to the worst of all possible causes, death by starvation of the labourers. We should probably very considerably under-estimate loss to Government of late famine in setting it down at ten lacs.

Vide Famine Report.

9. Whilst considering Ganjam famine years, it is quite necessary to bear in mind that, a rain-fall there constituting a year of drought would, in most parts of India, be regarded as ample. I have no reliable data of rain-fall previous to 1863; and probably the accompanying register (not sent) does not include a very wet year, when the average fall over the district might reach 60 inches, a fall of 46 is sufficient to ensure a satisfactory season if distributed over both monsoons. In the so-called years of drought, 1864 and 1865, that preceded the last famine, the register shows falls of 33·5 and 31·2, respectively. In both years, especially in the latter, the deficiency is mostly accounted for by the failure of the October rains, i. e., the north-east monsoon. A perusal of this rain register affords us two important facts: namely, that in the worst years sufficient rain falls to fill tanks or reservoirs ordinarily well situated; and, secondly, that rice-crops would be safe under reservoirs holding in reserve as little as one month's supply of water.

10. That nearly all the irrigation works fail to alleviate the general distress during famine years is due to their insignificant dimensions; and being intended for ordinary years, in very bad seasons a small tank capable of saving fifty acres of paddy is rendered entirely useless by water being drawn off for 100 acres until the tank is empty. The only two important works in the neighbourhood that I know of, and to which I have alluded, have answered perfectly. (1) The Koratholy tank, an old work, is fed by a channel from the Godahallow, which has recently been improved, and a weir thrown across the river; the crops under this tank have never suffered; no remission on a revenue of Rupees 15,000 has ever been made; and the ryots during bad years make very large profits. (2) The Boary reservoir was constructed by the British Government in the year 1861 at a cost of Rupees 10,749. The total area deriving water from this tank is 1,632 acres, paying a revenue of Rupees 10,172; an increase of Rupees 1,845 on the old revenue due to a water-rate of little more than one Rupee per acre. The average yearly repairs amount to Rupees 70; so that seventeen per cent. is derived upon the original cost of construction. The lands under it had an ample supply of water during the famine year, and there was no remission of rent or water-rate.

11. The most remunerative manner of laying out a few lacs of Rupees would probably be to construct several reservoirs in well chosen sites, and trust mainly to existing channels for distribution of the water. But to irrigate extensive areas by means of reservoirs, long and expensive distributing channels must be excavated; and this being the case, it is obviously wise and economical to lead them from or through the principal rivers from which, throughout a great portion of the irrigation season, they will convey water that has not undergone the expense of storage, and which would otherwise flow unheeded to the sea, the reservoirs being drawn upon when the river's supply begins to fail. I consider also that, any channel that will for many months in the year consecutively convey a large body of water should, if possible, be made navigable. Irrigation works alone, though they will afford sufficient food for the people, will not, unaided by Railways or Canals, civilize the country, nor awaken the minds of the Oorias from the wretched apathy that now

debases them. Neither will the waste lands be taken up, nor any land be properly cultivated, so long as there is a constant demand against the agricultural cattle for draught work. Much of the rice crop that is this year lost, would have been saved had it been planted a month earlier, which it would have been, had not the ryots been tempted to hire out their cattle to the very last moment that appeared to give them time for ploughing.

12. In a country like Ganjam where the natural supply of water is almost, though indubitably not, sufficient for irrigation, water artificially stored is unquestionably of the highest value. In the Godavery, where the soil is not more fertile than here, an acre of land pays Rupees two kist and four for water, and it is universally admitted that this total rent of Rupees six is very light, and might well be increased to Rupees ten.

In Ganjam the kist levied is as follows :—

	Rs.	A.	P.
On artificially imperfectly irrigated land...	2	15	4
On wet lands depending on local rain	1	14	7
Dry land	1	5	9

But we may assume that, land thoroughly irrigated and fertilized by river water would bear a total charge of Rupees six per acre, and that land irrigated to a less degree could afford to pay Rupees three, communication through the country being improved. The channels in the Godavery are now usually made so as to discharge a maximum of two cubic yards per hour per acre for the land they irrigate; but for many years Sir A. Cotton's rule of one cubic yard per acre was followed, and generally found sufficient, two cubic yards only being required at the commencement of the season just to enable all the fields to be ploughed and planted at the same moment. I believe in the Godavery Delta 1½ yards per hour per acre to be sufficient for a channel to convey; and that here, where the rain-fall is much greater and the configuration of the country so favorable to irrigation by drainage, a channel need only be required to be of a capacity to discharge ¾ cubic yard per acre per hour, and that with this quantity supplied when wanted, crops will reach perfection.

13. The irrigation scheme I propose consists of channels contoured on as high a level as is convenient down either slope of the valley of the Rooshkoolia leading from weirs built across the Mahanuddy and Rooshkoolia. During moderate weather these channels will convey the river water direct to the fields; during wet weather they will fill the small tanks lying below; and when the water in the river falls low will be supplied by reservoirs from above. My observations and levels have hitherto been chiefly directed to the right bank and Doab. The guiding difficulty in contouring this channel is the obstacle offered by a considerable mass of hills situated between Aska and Injelly approaching so close to the Rooshkoolia that the upper part of the broad valley of the Godahallow could not be reached by working round on that side except by a very long and difficult route, and not then probably without serious loss of level. We are consequently forced to enter on the Godahallow through a ridge joining the Aska to a still higher range of hills (the summit level of this ridge is M. S. L. +200 feet) by constructing a weir on the Rooshkoolia immediately below the confluence of the Janemilly nullah upon a granite barrier there met with, its crest being level with highest flood line or M. S. L.+175 feet; and allowing a fall of 6" per mile, the cutting under the summit level will not exceed 30 + 5 feet depth of channel, say 35 feet. From the Rooshkoolia weir I would lead a channel to the Mahanuddy below the confluence of the Barata nullah, and there place a weir with crest up to level of highest flood or M. S. L. + 183 feet, so that this channel primarily intended to supplement the supply in the Rooshkoolia would have a fall of 8 feet in 17 miles. Between the two weirs a somewhat formidable cutting appears necessary which further exploration may possibly show may be avoided.

14. Every facility exists for constructing the two weirs, and very little masonry will be required on the channel that connects them; the cutting above alluded to being the only expensive portion of this section. Below the Rooshkoolia weir, the levels are favorable until the Sharagadah ridge is reached near Soonamoe. Cutting through this ridge will cost a large sum, and occupy much time and labour, as much rock will probably have to be removed; still the cost need not be extravagant if the work be done systematically, and suitable and powerful machinery employed; the blasting might perhaps be facilitated by the use of Dynamite. The stone blasted would certainly be valuable, as building stone is seldom to be picked up in this district, but has to be quarried. Immediately below the cutting, the Sharagadah nullah must be crossed; and a little further on, the main stream of the Godahallow. This river is spanned near Injelly by nine 30-feet arches. The rest of the line on to Chetterpore is quite free from formidable obstacles, from the Mahanuddy to where the channel crosses the Berhampore road, the channel bed might have a continuous slope not exceeding six inches per mile so as to be well adapted for navigation; near the point where the road is crossed, to drop the channel bed may be found advisable, and then continue it with a uniform slope on to Chetterpore, where it would command the low land to the south of Ganjam, and might terminate for the present.

Proceedings of the Madras Government, Public Works Department, 7th May 1869.

15. The drainages crossing the line of canal will be received into the channel or passed under according to circumstances. Streams irrigating considerable areas of land would mostly be passed under, especially through the Zemindary estates, as the most economical arrangement, and also to avoid water disputes. We should throughout the scheme interfere as little as possible with existing irrigation. Godahallow might be crossed by a weir; probably an aqueduct, with weir and supply channel above, would be preferable, constructed so as to prevent sand from entering the channel, the removal of which would be an endless source of trouble and expense.

16. I should propose that the canal should be from five feet to six feet deep, and that it should be entirely within soil where the excavation is easy for the reasons usually assigned in favour of such a mode of construction. To avoid rock, however, it would for portions of its length be taken partly or entirely within embankment.

17. From the returns received from the Collector it appears that belonging to the Government talooks, there are commanded by the proposed channel—

17,369 acres of irrigated land.
102,852 do. rain irrigated or dry.
20,000 do. waste that can be cultivated.

This is only a rough calculation, and the Revenue Survey now in progress will probably show a considerable excess over this estimate. In addition to this Government land, there are under the proposed channel 14½ square-miles of Zemindary estates, so that probably we might have to irrigate immediately about 2,000,000 acres more or less thoroughly.

18. I propose that the canal joining the two anicuts shall be constructed to carry 60,000 cubic yards per hour, and that the main canal from the Rooshkoolia be of capacity to convey 120,000 cubic yards per hour through the Sharagadah cutting: this quantity to be gradually reduced after passing Degoopoody as we approach the termination at Chetterpore.

19. To attempt to make an estimate of the cost of the project would be mere waste of time until the general approval of Government has been accorded to the proposed works; nor has the proper moment arrived for determining the quantity of water that it is desirable to store upon each of the principal rivers; there appears no reason to doubt, but there would be an increase of revenue of Rupees five lacs per annum from the south bank channel alone; and the works might be credited with five lacs on account of half the cost of a single famine, also with at least one-fourth lac per annum on account of increased Salt sales. The reservoirs, although quite a necessary adjunct to the scheme, need not be taken into account in the first estimate. The cost of constructing them would be amply repaid by the revenue they would yield on the second crop, as in ordinary years they would be full in the beginning of November. After a failure of the north-east monsoon this would not of course be the case, as they would have been emptied in saving the first crop.

20. Navigation canals and other important works in the district should be pushed on with now, as the irrigation works when once commenced will require all the labour available. (1) The canal from the Chilka Lake to Ganjam though not perfected is completed and navigated, and the survey and estimate for continuing this canal on to Gopalpore are nearly ready. (2) As till more important canal would be one from Ganjam to Aska where it would join the main irrigation canal and finally terminate at Russelkonda. I would recommend that orders be issued for surveys and estimates, for the first section of this work, namely, from Ganjam up to Injelly. This canal would pass through a highly cultivated tract of country, at present quite impassable for carts or even laden bullocks for more than six months in the year; and it would also be the means of draining a considerable area of marsh land. From the imperfect returns before me, I should estimate that the traffic upon it would be about 40,000 tons annually, now carried on roads at two Annas and six Pies per ton per mile. The cost of carriage by canal would be six Pies; so that, if another six Pies were charged as a toll, the return on a length of twenty miles would be 25,000 Rupees per annum. Such cheap inland water communication would give an impetus to the Salt trade, and there would be a considerable saving in cost of road maintenance; taking advantage of existing channels, the cost of excavation would not exceed one lac of Rupees, the rise of 80 feet would be attained by ten 8-feet lift locks 60' × 10' costing Rupees 80,000. Total cost of work certainly not more than two lacs.

21. A copy of this report will be forwarded to the Governor's Agent and Collector of Ganjam, from whom I have received every assistance applied for, and who will doubtless strenuously advocate the execution of works calculated to promote the prosperity of the district, and to raise the depressed condition of the people.

CHETTERPORE,
28th October 1868.

(Signed) T. BECKLEY, Captain, R. E.,
Executive Engineer, on Special Duty, Ganjam.

Statement showing the several irrigation works, the area of the ayacut and of the cultivation under each work for the last three years, and the amounts proposed by the Collector to be expended on irrigation repairs in each year contrasted with the Budget grant, and the amounts actually expended.

Works.	Total ayacut.	Cultivation. Fusly 1275. Extent.	Fusly 1275. Assessment.	Fusly 1276. Extent.	Fusly 1276. Assessment.	Fusly 1277. Extent.	Fusly 1277. Assessment.	Amount proposed by the Collector to be expended on repairs of irrigation works. 1865-66.	1866-67.	1867-68.	Budget grant. 1865-66.	1866-67.	1867-68.	Amount actually expended. 1865-66.	1866-67.	1867-68.
Chicacole Talook.																
1. Krustnasagaram Tank...	202	178	515	178	515	178	515									
2. Kottacota Charavu Tank.	416	357	1,330	357	1,330	357	1,330									
3. Sylanda Pedda Charavu Tank	212	129	589	129	589	129	589									
4. Wadadah Dasagedda...	5,813	4,265	17,941	4,265	17,941	4,265	17,941									
5. Byreethasagedda ...	5,250	4,468	15,393	4,468	15,393	4,468	15,393									
6. Mabagamgedda ...	281	239	639	239	639	239	639									
7. Lukulamgedda ...	487	456	1,735	456	1,735	456	1,735									
8. Nyrugedda	374	293	1,091	293	1,091	293	1,091									
9. Poorushottapuram Thasagedda	2,418	2,072	8,145	2,072	8,145	2,072	8,145									
10. Thoosee Thasagedda ..	1,483	1,150	5,363	1,150	5,363	1,150	5,363									
11. Nellaparty Thasagedda.	683	568	2,080	568	2,080	568	2,080									
12. Singeenadam Butta ...	3,933	3,213	13,310	3,213	13,310	3,213	13,310									
13. Nagarikatakum Thasagedda	1,847	1,546	6,708	1,546	6,708	1,546	6,708									
14. Polaky Gedda... ...	3,057	2,409	1,193	2,409	1,193	2,409	1,193									
15. Garcebula Gedda ...	901	839	2,547	839	2,547	839	2,547									
16. Minor Works	25,243	20,647	62,519	20,647	62,519	20,647	62,519									
Total...	52,600	42,829	1,51,838	42,829	1,51,838	42,529	1,51,838									
Berhampore Talook....																
1. Ghodaka Nalo ...	1,414	807	2,333	807	2,333	807	2,333									
2. Holshooleya Nalo ...	413	321	853	321	853	321	853									
3. Lorna Nalo	524	340	934	340	934	340	934									
4. Konkeya Nalo ...	486	435	1,711	435	1,711	435	1,711									
5. Khareya Nalo ...	928	824	2,163	824	2,163	824	2,163									
6. Bahuda River... ...	3,883	3,067	11,594	3,067	11,594	3,067	11,594									
7. Ghodaka Gedda Channel.	3,174	2,879	7,429	2,879	7,429	2,879	7,429									
8. Konkeya Gedda do....	270	226	748	226	748	226	48									
9. Dongala Gedda do. ...	181	177	372	177	372	177	372									
10. Rajaghayee Gedda do...	413	382	824	382	824	382	824									
11. Padmapuram Gedda Channel	597	367	1,135	367	1,135	367	1,135									
12. Jayamangala Nalo Channel	6,072	5,432	16,611	5,432	16,611	5,432	16,611									
13. Koratoli Tumpara Lake.	4,258	3,816	11,042	3,816	11,042	3,816	11,042									
14. Sorobheempuram do. ...	374	331	842	331	842	331	842									
15. Newgam do. do. ...	605	547	1,645	547	1,645	547	1,645									
16. Heeradaro Butta Channel	1,255	1,093	2,734	1,093	2,734	1,093	2,734									
17. DolibilloThumpara Lake	902	669	1,443	669	1,443	669	1,443									
18. Nundoonee Nalo Channel	972	814	2,486	814	2,486	814	2,486									
19. Baromanneya Nalo do.	379	303	795	303	795	303	795									
20. Chathooraghayee Tank.	860	577	1,207	577	1,207	577	1,207									
21. Chatookoom Baghayee Tank	311	293	615	293	615	293	615									
22. Loochadaro Tank ...	248	230	834	230	834	230	834									
23. Minor Works	36,183	31,692	94,633	31,692	94,633	31,692	94,633									
Total ...	64,702	55,622	1,64,983	55,622	1,64,983	55,622	1,64,983									
Gumsoor Talook.																
1. Bore Sagaram Tank ...	1,641	1,222	1,730	1,222	1,730	1,222	1,730									
2. Jelemedighayee Tank.	339	252	791	252	791	252	791									
3. Bodanadi Butta ...	5,005	3,996	12,920	3,996	12,920	3,996	12,920									
4. Soharakandi Butta ...	1,515	1,119	3,619	1,119	3,619	1,119	3,619									
5. Bodanadi Butta ...	392	278	980	278	980	278	980									
6. Jorunga Nalo Butta ...	645	479	1,355	479	1,355	479	1,355									
7. Noyeekora Nalo ...	624	442	1,152	442	1,152	442	1,152									
8. Minor Works	25,555	20,288	59,555	20,288	59,555	20,288	59,555									
Total ...	35,716	28,076	82,102	28,076	82,102	28,076	82,102									
Grand Total ...	1,53,018	1,26,527	3,98,923	1,26,527	3,98,923	1,26,527	3,98,923	30,795	22,936	19,464	14,600	14,600	16,000	12,683	15,245	16,964

Camp Diccopoody,
28th December 1868.

(Signed) D. F. CARMICHAEL,
Collector.

ENCLOSURE No. 3.

Statement showing the sums expended on the construction of Important New Irrigation Works in Ganjam District by the British Government.

Talook.	Name of the work.	Amount expended in its construction.	Ayacut and extent of cultivated land dependant thereon and assessment.			When completed.	Remarks.
			Ayacut.	Extent under cultivation.	Assessment.		
			ACRES.	ACRES.	Rs.		
Goomsur...	A. Boary reservoir channels.	9,450 1,299	1,641	1,222	1,730	In 1861-62.	A.—The increase of annual revenue derived from the construction of this reservoir is Rupees 1,845.
Berhampore	B. Anicut across Godahad nullah.	7,405	6,072	5,432	16,611	In 1866-67.	B.—The object of the construction of this work was to secure water to lands yielding an annual revenue of Rupees 27,653 depending both upon the nullah and the Korataili "Tumpara" (for natural lake) for their supply.

CAMP DIGGOPOODY,
28th December 1868.

(Signed) D. F. CARMICHAEL,
Collector.

In this letter the Collector responds to Board's Proceedings, No. 7,514, dated 18th November 1867, and forwards a statement of irrigation works in his District, of which the following is an abstract:—

	Ayacut.	Average cultivation for three years last past.	
	ACRES.	ACRES.	Rs
Larger Works.			
Chicacole, 15 large works	27,357	22,182	89,319
Berhampore, 22 large works	28,519	23,930	70,350
Gumsur, 7 do	10,161	7,788	22,547
	66,037	53,900	1,82,216
Minor Works.			
Chicacole	25,243	20,647	62,519
Berhampore	36,183	31,692	94,633
Gumsur	25,555	20,288	59,555
Grand Total ...	86,981	72,627	2,16,707

FROM this it appears that under the larger works, 18·4 per cent., and under minor works, 16·4 per cent. of the registered ayacut is uncultivated. The Collector should ascertain from the Superintending Engineer whether this result is owing to the inefficiency of the works, or to the ayacut being over-estimated; and if to the former, whether he contemplates repairing or improving the works at an early date.

The Collector will give the assessment on the whole ayacut according to the accounts.

2. The statement in the margin shows the total estimates, allotments, and expenditure on these works generally, for three years. These matters should, if possible, have been shown in detail in respect to the larger works. It cannot now be judged whether any expenditure has been incurred on minor works of irrigation in the district, nor whether the assignments (which have fully expended) were concentrated on a few works only, or devoted to the repair or improvement of all or the majority.

	By Collector.	Allotment.	Expenditure.
1865-66	30,795	14,600	12,683
1866-67	22,936	14,600	15,245
1867-68	19,464	16,000	16,964

3. The Collector likewise submits a statement of the only two irrigation works said to have been constructed in the district by the British Government. Under the first, there has been a direct increase of revenue of Rupees 1,845, or 17·6 per cent. on the outlay; but one-fourth of the ayacut is still untilled. The cause of this should be explained. The second work was constructed to secure irrigation for lands yielding Rupees 27,653 annually, of which apparently Rupees 16,611 only are brought to account. It should be explained whether, and how far this work has proved remunerative; and if not yet remunerative, what may be done to make it so.

Name of works.	Amount expended.	Ayacut	Cultivation.	
			Acres.	Assessment.
	Rs.	Acres.		Rs.
Boary Channels ...	10,749	1,641	1,222	*10,172
Godahalo Anicut ...	70,405	6,072	5,432	16,611

* N B.—taken from Captain Beckley's letter.

4. The Collector does not state what condition the irrigation works of his district are in; and has not submitted any estimate of what is required to put those which are out of order in efficient repair, or what amount will be required annually to keep them in an efficient condition. These omissions should be supplied after communication with the Department Public Works.

5. With regard to new works required to be executed, the Collector submits Captain Beckley's report without remark by himself.

Captain Beckley, whose report is confined to the Gumsur Talook and the northern part of the district, states that rice is the staple food of Ganjam, raggy being the principal dry grain cultivated in the upland; and that sugar-cane is

Dated 28th October 1868.

profitably grown. He states that the entire crop is dependent on local rains, the best land *only* being imperfectly irrigated by natural drainage and hill streams, sometimes supplemented by small tanks without sluices and calingulahs; that the district is all but destitute of important tanks and river channels, and that consequently cultivation is exposed to peculiar vicissitudes. He pronounces the condition of North Ganjam unhappy, (though the rain never appears to fail entirely,) and one which requires amelioration and security against the recurrence of famines, by the execution of extensive irrigation works. And he estimates that sufficient rain-falls in the worst years to fill river-fed tanks and reservoirs which are ordinarily well situated; for he considers that the rice-crops would be safe under reservoirs holding in reserve as little as one month's supply of water.

N. B.—He estimates the loss by the late famine as little short of ten lacs of Rupees, exclusive of the loss of population.

Captain Beckley proposes and sketches a system of works—embracing both irrigation and navigation—which comprises two weirs across the Mahanuddy and Rooshkoolia rivers, the water of which will be conducted from the anicuts by high level channels five or six feet deep, along the south bank of the latter river, as far as Berhampore and Chetterpore. And he contemplates filling tank reservoirs from the same channels.

	Acres.
Irrigated land	17,369
Rain irrigated or dry land	102,852
Waste available for cultivation	20,000
Zemindary land (say)	59,889
Total...	200,000

He estimates, from information received from the Collector, that water would thereby be distributed over 200,000 acres more or less thoroughly. Captain Beckley estimates that there would be an increase of five lacs of revenue from the works he proposes; but he does not enter on an estimate of the cost of them, until the general approval of Government is accorded to the proposed scheme.

He further urges, (1) the immediate completion of the Chilka and Ganjam Canal which is already used; (2) the commencement of the Ganjam and Gopaulpore Canal, the survey and estimate for which are nearly ready; and (3), the construction of a canal from Ganjam to Aska.

The Board have carefully examined Colonel Frederick Cotton's report on Ganjam with reference to these works. He alludes to the necessity of constructing anicuts on the great rivers, and supplying reservoirs as proposed in Captain Beckley's schemes; but he does not specify the works individually. He reports very favorably of the capabilities of this exceptionally fine district; remarking that the soil is generally very good. He remarks that the physical configuration of the country not only assures abundance of rain in ordinary seasons, but secures a fair supply in seasons, when less hilly countries are entirely without it; he considers that its rivers offer facilities for irrigation on a large scale, and will feed canals leading directly from the interior to the principal ports. And he dwells specially on the capability of the district to become a great sugar-growing country, if a certain supply of water be secured for lands suitable for its culture which are almost unlimited.

Dated 12th July 1856.

The Board observe that Ganjam has always been a cane-growing country, but the cultivation is almost stationary, probably from the want of water. The Board have placed in juxta-position a statement of the cultivation of this product in the Ganjam and Godavery Districts during the last eighteen years, and observe that the comparison is suggestive. In the Godavery the cultivation has multiplied upwards of three-fold; in Ganjam it has declined.

Three years' average from.	Ganjam.	Godavery.
	Acres.	Acres.
1850-51 to 1852-53... ...	4,191	1,807
1853-54 to 1855-56... ...	3,752	3,111
1856-57 to 1858-59... ...	3,958	3,347
1859-60 to 1861-62	3,265	4,398
1862 63 to 1864-65.. ...	3,712	5,266
1865-66 to 1867-68... ...	3,423	6,082

In 1854 Colonel Rundall urged the construction of the works now proposed by Captain Beckley. His system, with some modification, included an "anicut on the Rooshkoolia river near Aska, a mile "below the junction of the two rivers." A channel as now proposed was to be carried along the southern bank to convey water into a wholly unirrigated tract of the Mobery Talook; "rendering certain what has until now been very precarious "and converting a large extent of land into wet cultivation which has hitherto yielded "only dry crops or lain altogether fallow." And he considered that the channel might be made navigable for six months at least of the year. A channel was likewise to be conducted from the northern end of the anicut into the Poorbaconda Talook, lying to the north of the Ganjam river. The cost of these works was roughly estimated at one lac of Rupees, and the prospective return at Rupees 50,000 from the south channel alone.

Memoir dated 6th November 1854.

In his Minute on the famine in Ganjam in 1866, the Right Honorable the Governor observed that the distress was most severely felt in the region "from the lake (Chilka) westward over a dry hilly diversified country to the basin of the Ganjam river; throughout that valley with varying intensity wherever permanent channel irrigation is not applied to the land." The proposed work will affect this basin, and secure, in a great measure, this region from the disastrous consequence of failing monsoons.

The Board resolve to recommend that Captain Beckley's projects be earnestly taken up without delay. The scheme has evidently been well considered though, not worked out in all its details, and it is very important that the resources of this fine district should be fully developed, and all the safeguards against calamities like that of 1866 which works of irrigation can afford, should be secured as soon as possible.

No. 104. ORDER THEREON, 7th May 1869, No 1,476.

IRRIGATION, No. 11.

1. Communicated to the Superintending Engineer of the 1st Division.

2. The Government observe that Captain Beckley is actively engaged in the examination of the irrigation projects referred to in these papers, and of the capabilities of the Ganjam District for extended

irrigation, and they hope to receive at an early date a complete report on the results of his investigations.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 1st Division.
,, Revenue Department.

Rec'd 4 May

Comm'r of the Revenue Board.

20 May/69.

14 To the Bd of Revenue Pro. No. 1476 Dept.

13/3

Ex'd. F. C. Shunker.

Revenue Dept.
No. 1526.

Court of {1869} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

1st Division.

&c., &c., &c.

Dated May. 7th.

Recd. 12 c/o — *Encl*

G. O., 7th May 1869, *No.* 1,476.

MAY.

Nos. 103-104

Irrigation Works.—Proceedings of the Board of Revenue passing orders on the letter from the Collector of Ganjam, submitting Captain Beckley's preliminary report upon the proposed irrigation works in North Ganjam, communicated to the Officer concerned with remarks.

Mutlas. 10 May

Wette Orders