

(1) Number of Pages.....14
(2) Date of repair.....16-4-68.
(3) Initials of the Referencer.....~~15-11-68~~

MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No.
B.P. No.

178

☒ Press
☐ Mis.

Dated 26-1-1875 196.

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Proceedings of the Madras Government, Public Works Department,
21st January 1875.

No. 361. Read the following endorsement of the Chief Engineer for Irrigation, dated Suramungalam, 7th December 1874, No. 42 :—

From J. H. LATHAM, Esq., Chief Engineer and Manager of the Madras Irrigation and Canal Company, to Lieutenant-Colonel, J. MULLINS, R.E., Chief Engineer for Irrigation, dated Kurnool, 27th November 1874, No. 136.

Report for October 1874.

I HAVE the honor to forward per book post the copies of Divisional Reports, together with my own, for the month of October 1874.

MONTHLY REPORT FOR OCTOBER 1874.

Upper Sections.

1. In my last report I mentioned that a fine dry October might be expected after the excessive rains of September ; we have had instead an unusually wet October. The heavy rains generally cease about the middle of October, but this season it continued till near the end.

				Inches.	
At Kurnool	...	...	...	7.60	Making an average of nearly 9.00 inches.
„ Soonkesula..	...	...	...	8.35	
„ Jupaud	...	...	...	12.91	
„ Velapanoor..	...	...	...	7.10	
The totals for the year are as follow :—					
At Kurnool	...	...	...	40.20	Averaging 47.45.
„ Soonkesula..	...	...	...	44.97	
„ Jupaud	...	...	...	50.57	
„ Velapanoor	...	...	...	54.07	
					Inches

	Inches.
Total average rainfall of the above four Stations in 1872	20.50
Do. do. do. 1873	22.84
Do. do. do. 1874	47.45

2. The above figures show the comparative difference between the three last years' rainfall ; since the canal was finished it has never been so tried, and the result may be taken as very satisfactory. The year's repairs will scarcely be increased beyond what has already been spent in September. During the month no accident occurred except a small slip at Terrigopully, which caused no danger to the safety of the canal and is now being rectified.

3. About the 12th of the month I started on a tour of inspection hoping the rain was over, but from the 17th I was scarcely able to move my camp on account of the state of the roads ; with great difficulty I got to Velapanoor, and had to remain six days at that bungalow, quite unable to stir out except along the banks of the canal. It may easily be imagined that irrigation applications are on this account not so numerous as they would have been in ordinary season. The road between Kurnool and Nundicotkur was in places so much cut up that traffic all but ceased for several days, and if the canal had been open for navigation it would have been a very great boon to the district.

4. Foundations were ready for masonry both at Ulloor (for the new wall) and at Cumbal-pully outlet bridge, but the water was too much for any work to be attempted, so I left them for finer weather.

5. Many minor works have been prevented or delayed this month, especially irrigation channels and bridges ; but as the country, and especially nearly all the village entrances, are an wholesome swamps of mire, our small irrigation channels will not be very great impediments to the ryots. About fourteen substantial bridges have been built during the last few months in the villages of Pessaroy and Bilcalagoodoor.

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21st January 1875.

6. The dry crops have miserably failed nearly everywhere that I have been, and reports from every side have been received to the same effect. In Singarum, Nidjood and other villages the dry crops have been removed (being entirely useless), and paddy will be sown immediately in place of them. It is too early yet to say how far this will increase our year's return.

7. The wet crops seem to be everywhere in good condition.

It is natural that a few ryots in Kullur (Kurnool) should have given up paddy as the rates for other crops have been reduced, and perhaps because they could not claim the benefit of the Note to Rule VI.; moreover, some of them have complained that they do not like the Curnam's measurements. It must be confessed that they are not singular, and the cancelling of Rule XV. was in many cases an unnecessary precaution; perhaps one in ten can measure a field, but even then their method of measurement is erroneous, and there will be many disputes to settle hereafter. They have hitherto been in the habit of taking our measurements. The Revenue Inspectors were often little better. They were in the habit of giving over land in a very satisfactory way; as regards the canal officers they never disputed the measurements or understood the plans sent them. I only remember meeting one intelligent man of this class during the last eleven years; but as irrigation increases it is to be hoped they will learn, and perhaps in time men may be appointed who can measure a field.

8. The total number of acres applied for during October was... 410.57
Total up to date was... 3,247.07

9. The staff were paid from the 9th to the 17th of October.

10. There were several cases of fever during the month; the Jupaud Dresser was himself laid up for some days and has resigned in consequence.

(Signed) C. H. WILKS,
Conservancy Engineer.

Proceedings of the Madras Government, Public Works Department,
21st January 1875.

MADRAS IRRIGATION AND CANAL COMPANY.

UPPER SECTION.

Abstract of Applications received up to 4th November 1874.

	APPLICATIONS RECEIVED FROM 8TH OCTOBER TO 4TH NOVEMBER 1874.						Grand Total up to 4th November 1874.
	At Rupees 6.	At Rupees 5.	At Rupees 4.	At Rupees 3.	At Rupees 2.	Special.	
Ramalakshmi Taluk.						Total.	
Soonkenla ..	..	..	..	..	..	..	12
Konthalapand ..	..	..	..	..	..	..	81
Yeddarr ..	..	..	..	..	..	..	59
Gopalasingavaram ..	..	..	..	..	..	..	83
Nidjoor ..	..	..	..	..	..	..	51
Moongalapand ..	..	..	..	..	..	..	54
Manidialpand ..	..	..	..	..	..	..	62
Reza ..	..	..	..	..	..	..	73
Kurnool ..	..	..	..	..	..	..	63
Zi repuram ..	..	..	..	..	..	..	41
	5	..	1	3	..	10	791
	..	..	26	73	..	..	21
	..	..	..	..	..	..	801
Nandikotkur Taluk.							
Rudravaram ..	..	..	..	..	..	..	..
Fudur ..	..	..	..	..	..	..	..
Ullur ..	..	..	..	..	..	..	..
Samanicotts ..	..	..	..	..	..	..	..
Mallyala ..	..	..	..	..	..	..	..
Mudiyarala ..	..	..	..	..	..	..	..
Negatcor ..	..	..	..	..	..	..	..
Moratoonda ..	..	..	..	..	..	..	..
Veerapooram ..	..	..	..	..	..	..	..
Moochamary ..	..	..	..	..	..	..	..
Beeraval ..	..	..	..	..	..	..	..
Pratakota ..	..	..	..	..	..	..	..
Puggadial ..	..	..	..	..	..	..	..
Ganapavaram ..	..	..	..	..	..	..	..
Thattipad ..	..	..	..	..	..	..	..
Bollavaram ..	..	..	..	..	..	..	..
Terrigopully ..	..	..	..	..	..	..	..
Bunoor ..	..	..	..	..	..	..	..
Jutoor ..	..	..	..	..	..	..	..
	1	..	..	1	..	2	44
	..	..	..	..	..	..	15
	..	..	..	..	..	..	75
	..	..	..	..	..	..	51
	..	..	..	..	..	..	37
	..	..	..	..	..	..	20
	..	..	..	..	..	..	39
	..	..	..	..	..	..	29
	..	..	..	..	..	..	03
	..	..	..	..	..	..	64
	..	..	..	..	..	..	51
	..	..	..	..	..	..	60
	..	..	..	..	..	..	31
	..	..	..	..	..	..	235
	..	..	..	..	..	..	64
	..	..	..	..	..	..	61
	..	..	..	..	..	..	82
	..	..	..	..	..	..	136
	..	..	..	..	..	..	36
	..	..	..	..	..	..	99
	..	..	..	..	..	..	78
	..	..	..	..	..	..	833
	..	..	..	..	..	..	29
	..	..	..	..	..	..	61
	..	..	..	..	..	..	26
	..	..	..	..	..	..	37
	..	..	..	..	..	..	10
	..	..	..	..	..	..	59
	..	..	..	..	..	..	30

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21st January 1875.

	APPLICATIONS RECEIVED FROM 5th OCTOBER TO 4th NOVEMBER 1874.						Total up to 8th October 1874.	Grand Total up to 4th November 1874.
	At Rupees 6.	At Rupees 5.	At Rupees 4.	At Rupees 3.	At Rupees 2.	Special.	Total.	
<i>Mandicote Talug.—(Concluded.)</i>								
Chelimele, Rudravaram	3	99	...	...	...	...	...	53
Pamalpaud	56	09	...	...	...	...	...	237
Tadicherla	...	...	...	...	...	...	...	254
Cumbalipully	...	...	...	...	...	...	...	27
Muddoor	...	...	...	...	...	...	...	74
Banakecherla	...	...	...	...	...	...	...	87
Wansa	...	...	...	...	...	...	...	4
Ragedigoodur	7	30	...	...	...	...	...	23
Velapanoor	...	...	...	...	...	...	...	13
Korropalur	...	...	...	...	...	...	...	44
	353	26	64	33	43	...	399	2,341
<i>Nandial Talug.</i>								
Bilalgoodoor	...	...	...	...	...	...	...	43
Pesary	...	...	...	...	...	...	...	15
Kartimadula	...	...	...	...	...	...	...	46
Fernatur	...	...	...	...	...	...	...	39
Korapududi	...	...	...	...	...	...	...	82
Budiyatmakur	...	...	...	...	...	...	...	19
Kokanur	...	...	...	...	...	...	...	61
Yerragoolu	...	...	...	...	...	...	...	84
Bojanum	...	...	...	...	...	...	...	1
Tiripaud	...	...	...	...	...	...	...	00
Bojanur	...	...	...	...	...	...	...	11
	...	...	...	...	...	...	...	09
	...	...	...	...	...	...	...	23
	...	...	...	...	...	...	...	12
	...	...	...	...	...	...	...	44
	...	...	...	...	...	...	...	3
	...	...	...	...	...	...	...	19
	...	...	...	...	...	...	...	20
	...	...	...	...	...	...	...	2
	...	...	...	...	...	...	...	00
	...	...	...	...	...	...	...	204
	...	...	...	...	...	...	...	3,347
Total	...	...	...	...	...	...	...	...
Grand Total	...	...	...	...	...	...	...	...

(Signed) C. H. WILKS,
Conservancy Engineer.

KURNOOL,
5th November 1874.

Proceedings of the Madras Government, Public Works Department,
21st January 1875.

REPORT FOR THE MONTH OF OCTOBER 1874.

Lower Sections.

THE rainfall during the month at Dhoor and the stations north of it was less than one-quarter of that which fell in September, and the injury done to the Main Canal and Distribution Channels has been comparatively slight, and has been already rectified, but in the valley of the Pennair the rainfall during the last six days of the month was greater than any known for twenty years.

1. It commenced to rain on the 22nd and continued with increasing violence until the morning of the 27th. Unfortunately the rain gauge at Bakrapoorum was washed away, so no register of the fall has been recorded; but my Overseer, Mr. Griffiths, says he never saw such rain anywhere but in Burmah.

2. The Pennair was previous to the 22nd only running a few inches over the anicut, but it rose rapidly every day, until midnight of the 26th when it appears to have been at its greatest flood, and read 22 feet above head sluice sill, or 16 feet above crest of anicut. The flood had long before that date spread widely over the land on either bank of the river, and many villages were surrounded with water and the inhabitants in much danger. On the north side of the Pennair the flood, interrupted by the north stop bank of our canal, which extends inland $1\frac{1}{2}$ miles, rose against it to a height of 12 feet, and as a strong wind was blowing from west, the waves lashing against the unprotected slopes caused many slips, so that in some parts more than half of the bank had fallen or slipped forward, greatly endangering its stability, but fortunately it stood the trial and saved the lower two miles of the 9th section from being completely washed away.

3. Below the anicut the flood, after passing our retaining wall, formed a powerful eddy against the sandy bank on which the Bakrapoorum bungalow was built, and eventually carried away full 50 feet of a bank about 15 feet high; it then rose over the bank and submerged the whole compound until the water was 3 feet deep over the basement floor of the bungalow and store-shed; soon after which the walls fell in and both buildings were completely in ruins. About 3 miles below the anicut the north bank of the river is divided by a valley, through which a considerable stream falls into the Pennair; the flood rose up this valley and flowing behind the sand hills, on which Cotaloor is built, flowed all over the paddy fields of Comaloor till stopped by the eastern bank of our canal through which it breached about 20 feet wide, filling the canal, and ultimately rose above the tow-path level.

4. At the commencement of the flood the pressure of the water rising in the tail lock shut the flood gates, keeping the canal free of water until the breach just mentioned.

5. On the south side of the river the south stop bank prevented the flood flowing over Wulloor, and has itself sustained very slight injury, but the river topping the bank on which Adimappully is built (below the anicut) rose until it was 2 feet deep on the floors of Adimappully bungalow and the adjoining store-shed, and, rushing violently through the gap formed in the spoil bank of the canal just behind the bungalow, filled the canal, and flowing rapidly down towards the south was headed up by the Punkal Wunka Aqueduct till it breached the tow-path bank and fell into the Punkal Wunka; lower down the 10th section many small breaches occurred, but as the canal receded from the Pennair valley the injuries done decreased.

6. The damage done by this flood of the Pennair are, I am happy to say, almost entirely confined to the earthworks. The main canal masonry works have stood the trial in a most satisfactory manner. Not a stone has been displaced from the head or under sluices works, nor in the tail and head locks. As to the anicut I cannot yet speak with any certainty as $1\frac{1}{2}$ feet of water is still flowing over its crests, but I fear one breach has been made, but not of any great extent. Much of the pitching has also been displaced and heaped up, as is evident by the way in which the water dashes over it, but as soon as possible I will report fully on the damage done to it. The injuries to the earthworks of the 9th and 10th sections consists of one breach in the 180th mile, one in the 182nd, four in the 183rd, five in the 184th, and one in the 187th mile, but none of them are large, and their repair is already commenced.

Irrigation Channels.

7. This flood was not confined to the Pennair valley, but heavy rain fell for six days as far north as Maidoor and southwards to far below Cuddapah, but at Dhoor, 18 miles north of the Pennair, we had only 5.18 inches during those six days.

8. As might be expected the injuries done to the distribution works over the area of heavy flood has been very considerable. The Maidoor channel has been breached in three places; the Yaitoor channel has its last half mile with its subsidiaries completely filled up, and a quarter mile of the Cotaloor channel must be re-made.

9. In the 10th Section half a mile of the Cokroyapully channel is greatly damaged, and over 2 miles of the Chennoor channel is cut up and filled with silt.

10. The bungalow at Bakrapoorum is completely destroyed, as is also the plant store-shed, and I fear many of the tools, etc., are washed away. The floor of the Adimapully bungalow has sunk in many places, and the walls are cracked so considerably that I consider it unsafe to live in; it must be re-built as another wet season would no doubt destroy it; the same may be said of the store-shed.

Irrigation first Crops.

11. The first crops in the taluqs of Nundial, Sirwell, and Koilcoontla may be considered as now all sown, and by the table below it will be seen that the increase over last season first wet crops has not been great. In Jummudugoo Taluq the applications are coming in slowly, owing to its being the first year in which many of the villages have had water supplied, but I yet expect a fair return from those villages.

12. In Prodatoor Taluq the increase has been very great in the first crop of paddy and betel gardens, and sowing is still going on in new fields. Over 60 per cent. has been added on the whole of this taluq above the amount of last season. The returns for Cuddapah Taluq are not complete for reasons subsequently given, but, I believe, they will ultimately amount to an increase of nearly 50 per cent. sown:—

Table of first Irrigation up to end of October 1874.

Taluq.	Amount to end of Sept.		Amount to end of Oct.		Increase.	Remarks.
	Ac.	C.	Ac.	C.		
Nundial ...	190	51	224	10	33 59	In addition about 180 acres of flooding.
Sirwell ...	658	24	690	53	32 29	Do. do. 300 do.
Koilcoontla ...	205	82	207	83	2 01	
Jummudugoo.	30	20	30	20		Very few tickets sent in by Cur- num.
Prodatoor ...	1,536	58	1,660	29	123 71	About 60 per cent. increase over 1873.
Cuddapah ...	2,180	00	2,180	00		Returns of this month not known.
Total ...	4,801	35	4,992	95	191 60	

13. The prospects of second crops are, I think, very good, but are still necessarily uncertain, as much depends on the result of the first crops. On the whole the paddy in the upper five taluqs is in a very good condition, promising a heavy crop; but in Cuddapah Taluq the effects of the floods will, I fear, cause a considerable loss. Many acres are washed away, others have been submerged until the crop rotted, and a large area in Chennoor village will greatly suffer from the injury done to the supply-channels, but every effort is being made to avert that danger, and I hope with success.

New Irrigation Rules.

14. Throughout the first three taluqs in the above list (all in Kurnool District) the new rules have been in full force this season. No tickets have been given by any of the Company's servants; all have been sent through the Curnums, and although every assistance has been given to the village authorities by the Deputy Collector and his Tahsildars, and by the Engineers and their Overseers, yet the result is far from satisfactory; instead of any increase having taken place in consequence of the lowered rates, the total *as yet* is 300.41 acres under the full return of last season. Also the amount of new fields at Rupees 3 rate sown with paddy is only about one-fifth of the total acres sown up to date.

15. In the two taluqs of Prodatoor and Cuddapah, both in the Cuddapah District, the new rules have been in force only as regards the alteration of rates. No application forms have been issued to the Curnums; all the tickets have been given to the ryots by the Company's Overseers and Amins. No assistance has been received from the Deputy Collector or his Tahsildars; in fact, the whole working of the irrigation has been left to the Company's servants.

16. In Prodatoor Taluq the result has been highly satisfactory; the increase on first crops alone has been up to date 60 per cent. on the whole area irrigated, both first and second crops, in 1873-74, and out of the total of 1,660 acres sown up to date over 900 acres are new fields, showing that the lowered rates producing the increase of area as expected.

17. From Cuddapah Taluq I have no returns from which I can form any accurate estimate of the area under wet cultivation; my Overseer and his Amins have received no assistance from the Curnums or any of the higher Revenue Authorities; they have no village or taluq maps, and no village registers. We know that a large amount is sown, and that great part of the fields planted with paddy last season are so planted again. We also know that in the villages of Comanoor, Cotaloor, Cokroyapully and Gunnapoorum, a large area of new irrigation is sown, but as yet, owing to the almost constant absence of the Village Curnums and their great disinclination to work with the Company's servants, no applications have been received from them. My Amins have measured up most of the new irrigation, but, for want of the registers, cannot fill in the tickets, not knowing the numbers and owners' names, and in consequence the ryots are sowing to a large extent at their own peril; for of the 2,180 acres estimated as sown with paddy only 280 acres have been supplied by my Overseers with irrigation tickets.

18. The general result of the trial made of the new rules and rates, as far as I can judge from the amount of first crops, shows a very remarkable difference in their action in the two districts of Kurnool and Cuddapah.

19. In the former district the four taluqs have been fully supplied with copies of the rules and placards. All the Curnums have had their instruction from the Collector, Deputy Collector, and Tahsildars, together with an early and plentiful supply of application forms; but the result seems to show, 1st, that the ryots do not find the reduction in rates for new fields sown a sufficient inducement to prepare fresh lands for wet cultivation; 2nd, that the system of leaving all the arrangements for supplying tickets in the hands of Curnums has so far been a failure, in spite of the personal influence of the Deputy Collector, who has visited most of the villages of the four taluqs, and explained fully the advantages to be derived from these new rules.

20. In the Cuddapah District the working of the new rules shows quite a different result. In Prodatoor the Company's staff, totally unassisted by the higher Revenue Authorities, have yet been able to work well with the village Curnums, and the ryots have eagerly taken advantage of the new rates, and the result is the large increase of new fields irrigated as detailed above.

21. In Cuddapah Taluq—the Curnums having been nearly always absent from their villages attending, I am told, on the Tahsildar employed in collecting the water-rates of the last two seasons—the result is that the canal as an irrigating property has been totally neglected by the Revenue Authorities and left entirely to the unassisted labors of the Company's Officers, who,

without maps or registers, find themselves quite unable to relieve the ryots from the danger of growing wet crops without receiving irrigation tickets.

General.

22. From the 13th to the 18th of the month I was absent at Madras, by order, to arrange the removal of the Company's stores, part of them going to Kurnool, part to Adimappully, and the heavy castings, etc., by the consent of Government, to be left at the Department Public Works Stores in Madras. All this was done and everything removed before the end of the month, without any mishaps, though the difficulty and expense of removing the heavy castings was much increased by the nearly constant rain in Madras that week.

DHOOR,
4th November 1874.

(Signed) A. J. DODSON,
Conservancy Engineer.

Chief Engineer's Report to accompany the Divisional Reports for October 1874.

OCTOBER, like September, has been the wettest month of its name recorded. 6.48 inches of rain fell at Kurnool, the average of the preceding twelve years, during which our records extend, being 3.053. This raised the total fall in the year to 43.85, while 21.045 is the average total fall in each of the previous twelve years.

Lord Napier in his Minute of the 21st June 1871, accompanying the Despatch No. 14, of 31st July 1871, from the Madras Government to the Secretary of State for India, acknowledged, and at the same time pacified, with reasonable remarks, a panic which had arisen, from some just but insufficient grounds, amongst his Council in Madras and some of their professional advisers, regarding the design and construction of the Company's canal. After so trying a season as that just past it seems appropriate to review his temperate and reasonable remarks, and to see how far the Company may now expect reasonable men to trust the design and construction of their works.

In design Lord Napier pointed out the defect—then generally admitted—of the underestimate of the volume of drainage-water to be provided for. This did not apply to the 9th and 10th Sections, the drainage works of which had been totally revised by Colonel Mullins and myself in consultation; nor to the 8th and 6th Sections, in which little drainage crosses the canal, and the works had been similarly revised. It applied to the open canal in the 1st, 2nd, 3rd, 4th, 5th, and 7th Sections. His Lordship added:—"There will be no serious difficulty in effecting additional passages for the water-courses." "There will be no difficulty whatever in providing waste weirs;" and, in fact, these have been provided. There remain two or three culverts in those sections which, from special causes hereafter to be alluded to, are not free from danger. After setting aside the alleged defect of design in the use of masonry walls for facing the canal, etc., His Lordship passed to the "defects of construction or execution." These, he said, "are *probably* (the italics are mine) more serious than those of design," which he had above discussed. After some detail, conjectures, and inductions now become unimportant, he added:—"The Government appear to me to have failed to interfere at an earlier period, with sufficient energy." Lord Napier would, of course, have been satisfied, as regards the construction, had the canal been successfully tested; and a test was proposed by the Madras Government in their Order No. 1,975, of 27th July 1871, which, from a misapprehension, is stated to be "nothing more than the canal was designed for," viz., to fill the canal full and keep it so for 24 hours. The canal had been designed to be navigable from the commencement, and to supply continually increasing irrigation, at a moderate charge on the receipts; and, I may add, no defect in its design or construction has appeared since its opening sufficient to prevent this. In his Minute Lord Napier with strict

fairness made no allusion to this test; the proposal for which, no doubt, originated from the panic it also tended to promote. But inasmuch as the season just past has tested the canal, and that, in the most important respects, far more thoroughly than could be done by artificial means alone, I am justified in supposing that an account of the result of this natural testing will be, once for all, conclusive; and this renders it unimportant to enter at length into former fears where we now have certainty.

I.—*Trial of the Canal by excessive rains.*—On the 8th September the Toombudra river rose 3 feet higher than ever yet recorded on the gauge at Kurnool, and continued at full height at Soonkesula for ten hours. The head works at Soonkesula consist of two anicuts, between which is a sandy island below flood level. Thus there are three wing-walls; one on the extreme north bank of the river, protecting the junction of the anicut with the flood bank on that side; and two more connecting the bank on the island north and south with each anicut. At the extreme south bank of the river the anicut abuts on the sluices, and from them the other flood bank protects the village land of Soonkesula, etc. These head works were originally constructed for an extreme flood rising 17 feet above the head sluice sill (level with the canal bed); the present flood rose to 16.7 feet. No damage occurred.

On the night of the 26th October the Pennair rose to 16 feet* above the anicut crest on the south side of the river, and I believe to 17 or 17½ feet* on the north side. The head works consist of a single anicut, 9 feet high, terminating on the north side of the river in a wing-wall 33 feet high founded on sand, and with sluices at its south end. On both sides the surface of the country falls from the river, and this necessitates very long and high flood banks, which in a flood are exposed to the wash from quite a little lake of water. The northern flood bank is 1½ miles long, and the southern is 3 miles long; more care being required from the necessity for passing several artificial irrigating channels through it. The tail lock from the upper canal, and the head lock from the lower canal, pass through the north and south flood banks also. The works were constructed for a flood 14 feet above the crest of anicut on its lower side, which it was estimated† (it seems correctly) would rise to 15.3 feet on the upper side. The present flood, therefore, rose from 1 to 2½ feet higher than the highest flood allowed for in the design. All the works stood the test, including the lock gates, which efficiently kept out the flood. The anicut alone, which is a composite work, partly of masonry and partly of loose rubble, has evidently suffered; but Mr. Dodson, from what he could see when there was only 1½ feet of water passing over, "could not speak with any certainty," which is very extraordinary, if there be any radical or even critical damage. Some, or all, of the coping is removed; such anicuts are expected to require constant additions for many years.

* I believe these to be a foot or 18 inches too high, owing to the swell, etc.
ADIMAPPULLY,
18th November 1874.

(Sd.) J. H. LATHAM.

† See G. O., No. 2,394, of 28th July 1868.

‡ See previous note.
(Initialled) J. H. L.

The canal on each side of the river behind the flood banks is not banked off from the river floods. That on the north side might be so at little expense; but also the water quietly rising into it can do it but little damage. The short canal on the south side is more exposed, but, like the other, it is nearly all in cutting. To bank the southern canal on both sides would both be expensive, and might give rise to much complication with existing interests.

It almost necessarily breached and was somewhat cut up. I have no particulars, except that no interruption of importance to irrigation is at all likely. The practical knowledge now gained may allow of a useful reconsideration of the subject of protective banks.

II.—*Trial owing to unanticipated floods.*—Damage has been caused at Allur, where a stream overflowed from its channel at Wuddaman, and about half of it came across to another stream and overflowed through the crops, doing much damage, till it finally entered the canal. Also three

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tanks above Bandyatkur burst twice, and the water came across country to the bank of the canal. Ayalur tank breached four times and flowed across country through the canal station to the canal. The water from the Vaikalair came in unexpected quantity down a bye-wash on the canal. In all these cases the upper bank of the canal gave way, or was purposely cut, but the lower bank did not suffer. The same happened when the two tanks near Dooganapully, near Cuddapah, breached against the canal in September and this month.

The Palar river, really an artificial channel supplying the Nundial tank, can be breached into any one of three different culverts, besides the one which was intended for it. That breached, as is not uncommon. Four tanks on the Vaikalair breached. Dhoor tank gave way, as did one above Peechapad. All these did no damage, needing anything but trimming by the staff of bankers.

III.—*Trials of ordinary kind.*—These have been ample and frequent during so wet a season, and it is singular that the only damage which on a railway or other work would be considered serious, *i.e.*, the only one in the course of this year which without unusual exertion might have interrupted the efficient working of the canal at all was due to this cause. It happened in the 21st mile, where a breach occurred on the 19th July in a portion of bank that had never shown signs of weakness. I had myself dismounted at a canal gauge three-quarters of a mile above the breach just after it occurred, but without knowing that it had occurred, and with a 2-foot rule ascertained that the highest water-mark to which the canal had risen was only 4.95 feet in the canal there. Also five leaks occurred, some of which, if neglected for 24 hours, would certainly have made a breach. All these leaks occurred in certain banks known to be bad and carefully watched, and they are always repaired so as to make a repetition at the same spot impossible.

IV.—Generally, the different parts of the canal have worked well during the rains, though some have had the water raised considerably above full water-mark, and in others the waste weirs have been in full action. Irrigation has been efficiently maintained, and I have not heard of any claims for remission of water-rate on the ground of failure of water. There have been no leaks in face walls nor in puddle banks, and no indication that vermin attack the puddle at all. The passage of drainage under the canal, even when the floods caused by the heavy rainfall were supplemented by the bursting of tanks, has taken place with only two occurrences deserving the name of accidents, *viz.*, at Allur and at the Vaikalair bye-wash above-mentioned. In some other cases existing works, or openings, for admitting drainage into the canal were (as above-mentioned) supplemented by additional openings, either forced by the water or artificially made. This occurred under an unprecedented monsoon. After most exceptional rains, lasting throughout the south-west monsoon, the north-east monsoon commenced with an unprecedented burst, (1) extending over the whole basin of the Pennair and its tributaries, and raising that river higher than the highest traditional flood; (2) falling in full weight on the whole length of the Nullamullies, so as to raise the large Cumbum tank, rarely filled, to 2 feet 6 inches above its waste weir; and (3), touching Jupaud station, where 13 inches fell.

The accompanying sketch is necessary in order to show the Board clearly and positively that their canal is under-rated if spoken of disparagingly, as it has been, as if it were not a first class work. I dare say there are many who will hardly believe that the breaches shown in the sketch in roads, canal works, tanks, and railways are from the newspaper and other accounts, representing them as sufficient in each case to interrupt seriously the work for which the works were designed, or to allow the damage they were intended to prevent; while the breaches shown in the Company's canal have caused, and are likely to cause, no interruption of the efficient irrigation maintained throughout by the canal, yet that the rivers, the drainages, and the rainfall encountered by the canal, itself the largest work of all, have been as large and difficult as in the case of any other. In justice to the original designers of the canal, to the Government and Governmental officers who watched and sanctioned its construction, to the Company's staff who carried out the works so well and economically, and, lastly, to those who have been responsible for the thoroughly

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21st January 1875.*

efficient maintenance of the canal, it should be known that so far the canal has proved itself a first class work, inferior to none in point of stoutness and efficiency, cheap to maintain and simple to work. The carefully adjusted masses, plain sound work, and simply but judiciously thrown earthwork, have not, under the management of such Engineers, led to the failure and expense anticipated by too many; but the canal has shown the economical expenditure of money, amongst all the working class of the local population, with the maximum result of sound and useful work. All works are liable to accidents, and every Engineer is liable to be taken in, or to relax his supervision under illness. I do not wish to create undue confidence in the canal works. I have merely written what I cannot leave unwritten without moral certainty that the Company's property will be undervalued by its owners.

Lastly, I will add that the Company have been fortunate in the prompt and well-considered action of the Madras Government, under the advice of their Engineers, in sanctioning the adoption by the Company of a large co-efficient of drainage. Since the re-commencement of works under my charge the allowance for drainage has been continually increased, in consultation with the Governmental Consulting Engineers, until after 1870 the present rule was finally adopted. Until the same rule be extended to roads and tanks, these works, their designers and promoters, "must" remain liable to "be held faulty." In the interest of all large companies, now that the capacity required for drainage works is known, and their construction can be made absolutely permanent, and the benefit they confer secure, it is much to be wished that some £25,000 should be spent in this country in good simple roads in each district, giving from 120 to 150 miles of well bridged and well metalled roads in each, and nothing is calculated to bring home to the mass of Indian villagers a feeling of the beneficence and power of their English rulers so much as good free roads, not running along barren water-sheds, but selected so as practically to effect the comforts and entertainment of the greatest number of individual villagers. I venture to turn to the last Annual Report on roads by the Assistant Engineer-in-Chief of New Zealand, of 30th June last. Take the first road mentioned:—"I refer first to the lately completed road through the seventy-mile bush, whereby *easy communication is now established* between the east and west coasts, and by which *coaches now run REGULARLY, etc.*," and so on. That is the sort of thing the tax-payers of New Zealand—and I may add of Madras Municipality, Ootacamund and Coonoor—the demand as a very first necessity, but such a blessing is, so far as I see, never likely to be secured for the Indian; and its mere suggestion by some enthusiast is received as a harmless dream, whose fulfilment is too remote to cause any anxiety. Yet how can large undertakings thrive alone? Or how can they alone cause development, except just in their own direction, when existing trade and comfort has not yet accommodation? On this subject, I have,* in reply to a Government

*My letter No. 128 of 23rd October 1874, to Chief Engineer for Irrigation.
G. O., No. 2,615, of 15th September 1874.

Order, made a suggestion for £5,000 worth of useful roads for the villages under the first five sections of canal, and I trust that this small expenditure will prove to be within the means available to Government.

KURNOOL,
11th November 1874.

(Signed) J. H. LATHAM,
Chief Engineer and Manager.

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21st January 1875.

MADEAS IRRIGATION AND CANAL COMPANY.

Register of Rainfall in inches and decimals of the following stations during the month
of October 1874 at 6 A.M. daily.

Month and Date.	Soonesula.	Kurnool.	Jupand.	Velapand.	Jutoor.	Ayaloor.	Chinta Coonta.	Rajoly.	Dhoor.
1st October 1874	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
2nd do. do.	0.30	0.40	0.63	...	0.07	0.11	...	...	...
3rd do. do.	Nil.	0.11	Nil.	1.25	0.17	Nil.	...	...	...
4th do. do.	...	Nil.	...	Nil.	Nil.	...	0.60	0.10	...
5th do. do.	...	...	...	...	...	...	Nil.	Nil.	0.04
6th do. do.	...	...	...	...	...	...	...	...	Nil.
7th do. do.	...	0.11	...	...	...	...	...	...	0.09
8th do. do.	...	Nil.	...	...	...	0.32	0.10	...	Nil.
9th do. do.	...	...	...	...	...	0.20	0.21	...	...
10th do. do.	0.15	...	0.80	0.75	0.61	Nil.	Nil.	...	...
11th do. do.	Nil.	...	0.36	0.15	Nil.	...	...	...	...
12th do. do.	...	...	Nil.	Nil.	...	...	...	...	...
13th do. do.	0.20	0.98	1.80	...	...	...	0.10	...	...
14th do. do.	Nil.	Nil.	0.76	...	0.56	...	Nil.	...	...
15th do. do.	...	...	Nil.	...	Nil.	0.31	0.25	...	...
16th do. do.	...	...	1.12	...	0.15	0.10	0.15	...	0.55
17th do. do.	0.60	0.37	Nil.	...	Nil.	Nil.	Nil.	0.40	0.20
18th do. do.	1.40	{ 0.55 0.04 }	1.65	...	...	...	...	Nil.	Nil.
19th do. do.	Nil.	Nil.	Nil.	...	...	...	...	...	...
20th do. do.	1.30	...	...	...	...	0.66	0.40	...	...
21st do. do.	Nil.	1.03	0.55	1.00	1.06	2.52	1.42	0.45	0.34
22nd do. do.	0.90	0.48	1.87	1.30	1.75	0.16	0.28	0.20	0.39
23rd do. do.	Nil.	0.02	Nil.	Nil.	0.10	0.70	1.48	0.05	0.05
24th do. do.	0.50	0.81	2.30	0.70	0.93	0.12	0.92	1.35	1.97
25th do. do.	1.00	0.15	0.17	0.20	0.75	1.16	1.16	0.95	0.76
26th do. do.	1.20	0.69	1.30	1.75	0.59	3.30	0.40	1.55	2.11
27th do. do.	0.70	{ 0.64 0.22 }	0.20	Nil.	1.94	Nil.	Nil.	0.35	0.29
28th do. do.	0.10	Nil.	0.40	...	Nil.	...	...	Nil.	Nil.
29th do. do.	Nil.	...	Nil.	...	...	...	...	...	...
30th do. do.	...	...	...	...	...	...	...	...	...
31st do. do.	...	...	...	...	...	...	...	...	...
Total	8.35	6.60	12.91	7.10	8.68	9.66	7.47	5.40	6.79

KURNOOL,
11th November 1874.

(Signed) J. H. LATHAM,
Chief Engineer and Manager.

SUBMITTED for the information of Government.

The report of the Chief Engineer and Manager, Madras Irrigation and Canal Company, for October, will be read with much interest, detailing as it does in a very clear and comprehensive manner the history of the canal in a very eventful and trying year, in which disasters to public works of all kinds in all directions have been most serious. While not endorsing all that Mr. Latham has stated, it is a pleasure to admit that, whatever the shortcomings of the canal in its earlier years, these have been met and overcome with a steady determination and much

Proceedings of the Madras Government, Public Works Department,
21st January 1875.

judgment, and the result is one of which Mr. Latham and his Assistants may reasonably be proud.

2. The latter part of the report of the Engineer in charge of the Lower Sections will no doubt be considered by Government to be worthy of attention.

Paragraph 14 to end.

Nothing apparently makes a complicated system work like a simple one, and most of us would probably starve were we required to get our food from those who have none to sell, instead of from those who have the food in their hands.

(Signed) JOHN MULLINS, Lieut.-Colonel, R.E.,
Chief Engineer for Irrigation.

No. 362.

ORDER THEREON, 21st January 1875, No. 175.

IRRIGATION, No. 41.

His Excellency the Governor in Council has read the foregoing reports with much pleasure, and with a conviction

that the Chief Engineer and Manager, as also his Assistants, are bestowing very great care and attention on everything relating to the efficiency of the canal and to its usefulness.

2. The latter part of Mr. Dodson's report, paragraphs 14 to 21, will not be without its due weight when the subject of the arrangements for future irrigation seasons are under consideration. In the meantime the Collector will be required to explain, through the Board of Revenue, what measures he has taken to advance the interests of the canal and bring the new rules into operation.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Chief Engineer for Irrigation.

and Manager, of the Madras Irrigation and Canal Company,
Revenue Department.

Ed. S. T. Austin.

20 Spare Copies

N^o 268
Revenue Department
Govt of 1875 Madras
PUBLIC WORKS.

To
THE CHIEF ENGINEER FOR IRRIGATION,

Ac. Ac. Ac.

Dated January 21st.

Recd. *u-259* Encl.

G. O., 21st January 1875, No. 175.

JANUARY.

Nos 361 362

Madras Irrigation and Canal Company.—
Passing orders on the reports of the works
of the Company for the month of October
1874.

N^o 178
Referred to the Board
of Revenue for report on the
Subject of para 2 of the
Order above recorded.

26 January 1875 *GM*

Indefinite 724/76

14 To the Board of Revenue 28 Jan