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MADRAS RECORD OFFICE.

Government of Madras.

Public works **DEPARTMENT.**

G.O. No. 828 Press Mis.

407-08

Dated 18 3 1867.

Not to be folded or roughly handled

No. 407. Read the following Endorsement of the Secretary to the Government of India:—

Read the following Proceedings of the Government of India, in the Public Works Department, (Irrigation), dated Fort William, 26th February 1867, No. 18 I.

Revenue Reports of the Irrigation Department in the Punjab for the year 1864-65.

Read:—

Letter from the Under Secretary to the Government of the Punjab, in the Public Works Department, Irrigation Branch, No. 518, dated 1st September 1866.

1. Observations.—The Revenue Report of the Punjab Irrigation Department for the year 1863-64 was received in this Office on 15th March 1865, and that for the year 1864-65 on the 10th September 1866, so that notwithstanding the notice taken by the Government of India, when reviewing the last Reports, of the delay in their submission, a further falling off of nearly six months has taken place.

2. The Chief Engineer of Irrigation Works remarks that the latter Report was delayed in order that all available information regarding the works in the Punjab might be collected and submitted in an intelligible shape. A further cause of delay, he observes, was his own absence, from the end of March to the middle of May, on business connected with the Ganges Canal. It is also mentioned that the data for the Report for 1865-66 are already partly collected, so that no undue delay is likely to occur in its submission.

3. Whilst admitting that there is, in the present instance, some reason for the preparation of the Report having been deferred to a later period than usual, the Governor General in Council would observe that it should nevertheless have been ready for submission before the date on which the services of the Chief Engineer were required in connection with the Ganges Canal.

4. Great improvement is, however, observable in the manner in which the Report has, on this occasion, been prepared, and the Governor General in Council will now merely impress on the attention of the Punjab Government the necessity for rendering these Reports punctually for the future. The Report for 1865-66 is now overdue, and should be immediately submitted.

5. The works reported on are—

1. The Baree Doab Canal.
2. The Western Jumna Canals.
3. The Sutlej and Chenab Inundation Canals.
4. The Indus Inundation Canals.
5. The Delhi and Goorgaon Works.

Baree Doab Canal.

6. The Statements which accompany the Report on this canal, show a few differences in the details of their preparation from the previous Reports.

7. These differences are chiefly apparent in the mode of charging off Contingencies and Establishments. The distribution of such charges must be arbitrary, but it is desirable that the system adopted on various canals should be the same, unless reasons exist for any modifications in particular cases. In this view the

Governor General in Council desires that in future Reports the system of proportioning such charges between the various canals and between the Capital and Revenue Accounts of each canal may be assimilated to that adopted in the North-Western Provinces Reports for 1864-65, with the modification noticed in the Resolution of Government on these Reports No. dated

Charges against Revenue Account.

8. The charges on this Canal have increased 14 per cent. on those of the previous year, an increase having occurred under every head of Maintenance excepting Direction. In the item of Repairs this is doubtless, in great measure, owing to the yearly increasing length of rajbuhas brought into operation, and this, as observed in the Report, must always be heavy for the first two or three years after the admission of water until the banks become thoroughly consolidated. But in the year 1863-64, the number of miles of canal and rajbuha open was 746, whilst in 1864-65 it was 774, giving in the former year an expenditure of Rupees 306, and in the latter year of Rupees 323 per mile open. No unusual causes for such expenditure appear to have existed in the year under review, excepting with regard to the embankments and spurs on the Chukkee torrent. The proportion of the repair expenditure which has taken place on rajbuhas, has never been separated in these annual statements from the proportion on the main canal. This it is observed is to be done in future, and a better check on this expenditure will thus be furnished.

9. As compared with the Western Jumna Canals, the working expenses of this canal show very unfavorably, the establishments being three times, and the repairs seven times, as much per acre irrigated in the latter as in the former. This proportion will, of course, diminish with the spread of irrigation. But until the slope of the canal is re-modelled, and a permanent dam made, this expenditure may be expected to remain high.

10. The per-centage of the cost of establishments for the collection of revenue on the sum collected is 12·69, which is every high, although not so much as in some previous years. This is a point which is deserving of careful attention.

Revenue.

11. The income of the year shows a very satisfactory increase of nearly 40 per cent. on that of the previous year, which was in excess of that of any preceding year, since the opening of the canal. As in the previous years, the water-rent to the end of the year excluding that derived from the Husli canal up to the date of the transfer of the accounts of that canal to the Baree Doab Canal, is 95 per cent. of the whole income. This item shows an increase of 44 per cent. in the year, the chief part of the increase being in the rubbee crop. A considerable part of this increase is due to the increase in the "duty" performed by the water, the number of acres irrigated per cubic foot utilized having increased from 112 in 1863-64 to 204 in 1864-65.

12. The area irrigated per cubic foot per second entering the canal is very much less than this, 24 per cent. of the water entering the canal at the head having passed off again unutilized into the Ravee by escapes. This amount of water, at the rate obtained last year, represents about 1¼ lakhs of Rupees, the whole

income for the year being under 5¼ lakhs. The attention of the Lieutenant Governor and of the Chief Engineer has, however, already been directed to this point, and measures are in contemplation for lessening this evil, which is the more important now that there are grave doubts as to the Ravee being able to supply the full amount which will be required when the system of rajbuhas is completed, and the bed of the canal re-modelled to enable it to carry the full amount originally intended.

13. The total volume in the Ravee on the 19th January 1865, was only 1,436 cubic feet per second. In October, also, the whole visible supply was turned into the canal, the amount being 2,180 cubic feet per second. This supply, though not so much as what it was originally, would be derived from the river, and to carry which the canal was constructed, is still sufficient to give three times the present income before the works for supplementing the supply, a project for which is now under preparation, can be completed.

14. The general result of the year's operation is, that the return has been ·8 on the capital expended to the end of the year, so that, calculating interest at the rate of 5 per cent., there has been a loss of 4·2 per cent. This result, though unfavorable, is considerably better than that of the two preceding years. Great improvement may be hoped for when the work of re-modelling and the additional supply-channel shall have been carried out.

15. The projects for these works have been delayed pending the result of the late discussions on similar points in connection with the Ganges Canal; but a decision having now been come to with regard to that work, His Excellency in Council desires that these projects may now be vigorously taken in hand and submitted for sanction with the least possible delay.

WESTERN JUMNA CANAL.

16. The statements made in the body of the Report on this canal are considerably modified by a revised account given in the Appendix, in which, the Capital Account has been debited from the year 1820 with a share of the charges for establishments and contingencies. This re-calculation has been carried out by the Chief Engineer of Irrigation Works in the North-Western Provinces. As given in the body of the Report, the Capital expended to 1st May 1864 is Rupees 19,04,614, which, in the revised account, is increased to Rupees 21,28,996.

17. For past years, 10 per cent. on the expenditure on Original Works has been allotted to that head for Establishments, the balance being debited to Repairs. Major Crofton considers that 13 per cent. would be a fairer charge, and proposes to re-calculate the statements of Capital on this assumption for the next Revenue Report. The Governor General in Council agrees in considering that the per-centage has been fixed at too low a rate, but would not wish the Report, for 1865-66, to be delayed on this account.

18. The total charges of the year exhibit an increase of nearly 24 per cent. on those of the previous year, but in the last five years a considerable reduction has taken place. The chief increase has been in repairs which are 73 per cent. in excess of the similar charges for 1863-64. The Public Works Establishments show a per-centage of 21·23 on the expenditure on Repairs and Plantations taken together.

This is higher than it should be, and higher than it is on the Baree Doab Canal. If, as in previous years, only 10 per cent. were charged to Original Works for *all* Establishments, the per-centage on Repairs would be much higher than this. The charges for Revenue Establishment are Rupees 39,450, the amount of water-rent collected being Rupees 4,51,774, giving a per-centage of 8·73. The working expenses are Rupees 77·46 per cubic foot entering the canal per second. The number of acres irrigated was 4,34,965, the working expenses being little more than 5 Annas per acre.

Income.

19. The income for 1864-65 exceeds that of any previous year, not excluding the famine year 1860-61, and is 23 per cent. in excess of that for 1863-64. The amount of each item of revenue, excepting sales of canal produce, exceeds that of the same item of the previous year; and each item, excepting fines, exceeds the amount which it attained in the famine year. The cause of the large increase in water-rent, which is 23 per cent. above that of the previous year, is traced to the fact of the rain-fall, although not scanty, not being always seasonable, rain not falling at the time required. The item of mill-rents exhibits an increase. The khurreef crop contributed the greater portion of the increase in water-rent owing to the want of rain in September 1864.

20. The amount of water entering the canal at the head is so largely supplemented in the case of this canal by drainage water, that any comparisons made of the area irrigated per cubic foot per second entering this canal at the head, with the results of other canals, must be more or less inaccurate. The average discharge at the head of the canal for the year was 1,784 cubic feet per second, giving an area of 243 acres irrigated per cubic foot per second.

21. The area irrigated has increased from 3,51,537 acres in 1863-64 to 4,34,965. Cotton and rice both show a large increase, whilst sugar has decreased in the past two years. The acreage of each is in excess of that in any of three previous years, but below that of 1860-61. The water-rates on this canal during the year under review were for overflow irrigation—

	Rs.	A.	P.	
1st Class	1	3	2	per acre.
2nd ,, ...	0	10	8	,,

the rates for lift irrigation being two-thirds of the above.

22. The rates lately adopted for the Ganges Canal are to be in force from the 1st November 1866, and a considerable increase in the water-rent may, consequently, be looked for after that date. The value of the crops in 1864-65 is estimated at 50 times the water-rent paid, so that an increase can be easily borne.

23. The general result of the year's operations is a direct return of 14·64 on the capital expended to the end of the year, leaving a profit, after paying the interest of 5 per cent., of 9·64. This is higher than the return of any of the previous five years.

INUNDATION CANALS.

24. In the Government Resolution on the Report for 1863-64, the want of information regarding these canals, and the system on which they are worked, was prominently noticed. Some information regarding them is now given.

Proceedings of the Madras Government, Public Works Department,
18*th March* 1867.

25. It appears that there are four distinct series of such canals, viz. :—

1.	The Upper Sutlej Canals ...	3	in number and aggregating	147	miles in length.
2.	The Lower Sutlej Canal ...	20	,, ,,	420	,,
2.	The Chenab Canal	14	,, ,,	212	,,
4.	The Indus Canal	13	,, ,,	554	,,
	Total	50		1,333	

And in addition to these, there are Inundation canals from the left bank of the Indus, and right bank of the Chenab, which are not under the control of the Irrigation Department.

26. On the Upper Sutlej series, all expenditure is defrayed by Government. A small portion of the water-rent is derived from a water-tax of As. 9-7·2 per acre, but in the larger part of the Montgomery (Googaira) District, the amount entered as water-rent in the accounts is a share of land revenue, which, in the settlement of 1859, was divided into two parts : one fixed, and one subject to remission in case of failure of the water-supply. A portion of the fixed revenue is also credited in the accounts as indirect income (see page 24 of Report). All water-courses, except three constructed by Government since the annexation, have been constructed, and are maintained, by the cultivators. The whole of the 2nd and 3rd series, excepting the Dourana Langana (11 miles in length), were constructed prior to the occupation of the country by the British, and were in working order on annexation. The income of these series, with the exception of certain petty miscellaneous items, insignificant in amount, is indirect, in the shape of enhancement of land revenue.

27. Annual silt clearances and improvements are effected by Statute labor. The proportion of Statute laborers, or "*Chers*," to be supplied by each village, was fixed at the last settlement. The value of this labor as then recorded was Rupees 89,585. The fine for non-attendance of "*Chers*" was 4 Annas a day, but owing to the absence during the season of nearly one-third of the whole number called out, the fine was raised to 8 Annas, which, it is hoped, will have the required effect. The cost of the men actually present, at 4 Annas a day, amounted to Rupees 1,24,411, and Rupees 184 more were expended during the year in hired labor from the fines. The experiment of paid labor was made one year, but the cultivators objected to a repetition of it.

28. No measurements of areas irrigated are taken, the figures in the returns being given by village Accountants. They are consequently unreliable. According to these, the irrigated area has decreased since the settlement of 1858, whilst it seems pretty certain that it is annually increasing. The Governor General in Council observes that arrangements, are now in progress for rectifying this by annual measurements, and also for the construction of permanent outlets.

29. The Indus series is somewhat similar to the above; masonry heads being given to only three of the canals. Clearances are effected by hired labor; a certain proportion of (at present half) the cost being levied from cultivators. The system of Statute labor has been tried here, but was objected to.

30. Almost the whole of these canals were in existence at the time of the annexation. The few since excavated have been constructed, half by Government and half by the proprietors of the lands benefited. The expenditure on extraordinary new works, such as new mouths and masonry regulating heads, is defrayed

by Government. In one year only was a grant of Rupees 25,000 (noticed in paragraph 80 of the Government Resolution on the last reports) made from the 1 per cent. Income Tax. This was exceptional, as was the construction of three canals by Natives at their own expense. Of these, one has been abandoned, and another is likely to be so. These cost Government nothing for maintenance.

31. The income of the Indus Canals, as in the case of the Lower Sutlej and Chenab Canals, is chiefly indirect, no water-rent being levied.

32. As the whole question of the working of these canals is said to be under the consideration of the Punjab Government, and will form the subject of a separate report, the Governor General in Council will reserve such remarks as he might wish to make on them until this report is received.

33. The expenditure on the Upper Sutlej Canals chargeable to the Revenue Account during the year under review, was—

	Rs.
Maintenance and Repairs	24,303
Plantations	250
Public Works Establishments	4,942
Share of Direction	685
Total ...	30,180
The direct income being...	39,803

of which Rupees 39,101 was water-rent.

The enhancement of land revenue (exclusive of the portion included in water-rent) was Rupees 27,912.

34. On the Lower Sutlej and Chenab Canals the expenditure was—

	Rs.
Maintenance and repairs paid by Government	3,208
Value of Statute labor	89,535
Plantations	490
Establishments...	2,995
Share of Direction	400
Total ...	96,133

The income was—

Water-rent...	655
Sale of Canal produce	1,069
Miscellaneous	5,880
	7,6..
Value of Statute labor	89,535
Total ...	97,139

showing a profit for the year of Rupees 1,000, exclusive of the enhancement of the land revenue, which is estimated at Rupees 2,13,299.

35. The value of Statute labor as here given, is that at which it was estimated at the last settlement, but at 4 Annas a man, the value now would, it is said, be Rupees 1,24,411, to which should be added Rupees 184 spent from fines.

36. The Upper and Lower Sutlej Canals with the Chenab Canal thus show for the year a profit of Rupees 2,23,923, excluding the indirect income on the Upper Sutlej Canals. The indirect income of the Lower Sutlej and Chenab Canals forming, as it does virtually, the whole of the return, must be considered in forming any estimate of returns on Capital.

37. The Capital expended to the beginning of the year was Rupees 6,24,062, so that the profits amount to about 35 per cent. If the indirect income from the Upper Sutlej series be included, the profits become Rupees 2,51,835, or 40 per cent. Deducting interest on Captial expended at 5 per cent., the profits become Rupees 1,92,720, and Rupees 2,20,632, respectively.

38. Until the separation of the Capital Accounts of these canals, it is not possible to estimate properly the actual working of each series. By far the larger amount of the Capital expended is on the Upper Sutlej series, which gives a very small proportion of the returns.

INDUS CANALS.

39. The charges against Revenue are as follows :—

	Rs.
Maintenance paid by Government	12,631
Ditto recovered from cultivators	11,935
	24,566
Plantations	782
Public Works Establishments	8,473
Fees on collection	6,475
Share of Direction	1,463
	41,759
Clearance of other canals, one-half remitted from land revenue...	53,326
Total ...	95,085

and the receipts are—

Miscellaneous	128
Collection fees recovered...	6,475
Half share of clearance	11,935
Ditto ditto	26,663
	45,201
Enhancement of land revenue	80,938
Total ...	1,26,139

leaving a total profit of Rupees 31,054, or, exclusive of the indirect expenditure, of Rupees 57,717. Deducting the sums paid and recovered, the actual expenditure by Government is Rupees 23,349, besides Rupees 26,663 indirect expenditure; and the receipts Rupees 81,066, of which all but Rupees 128 is enhancement of land revenue.

40. No Capital Account has been given, as certain expenditure on embankments has always been included in the accounts of the Division in which the Indus

Canals are, and it was found impossible to separate this expenditure from that on the canals in time for this Report, so that no Capital Account is given. The total outlay, however, is under 1¾ lakhs, so that this return is good.

DELHI AND GOORGAON WORKS.

41. These works are of two kinds:—one set, like the Nujuffghur Lake Works, consists merely of escapes from natural lakes to drain off the water when the ground has been sufficiently submerged; and the other consists of artificial reservoirs which irrigate the lands above the bunds by submersion, and those below by flooding.

42. The water-rent from the lands affected by the Nujuffghur Jheel is only leviable if the water has run off by the end of November, and irrigation is taken for the spring crop above the regulating bridge. The rent from the reservoir system is 6 Annas 5 Pie per acre.

43. The year under review shows unsatisfactory results, as it is manifest that the water available falls short in dry seasons.

44. The enhanced land revenue gives the greater part of the returns, and with this, the return during the year was only Rupees 4,031, or 2·4 per cent. on the outlay.

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1. ORDER.—Ordered that a copy of the foregoing Resolution be forwarded to the Government of the Punjab, in the Public Works Department, Irrigation Branch, for information and guidance.

2. Ordered also that copies of the Resolution be forwarded to the Governments of Madras, Bombay, and the North-Western Provinces, and to the Home Department, for information.

3. And further, that a copy of the Resolution, with the returns, be fowarded to Her Majesty's Secretary of State.

(Signed) C. H. DICKENS, Colonel, R. A.,
Secretary to the Government of India.

No. 408. ORDER THEREON, 18th March 1867, No. 828.

IRRIGATION, No. 11. Ordered to be recorded.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

Exd. S. T. Augustin.

No. 828.

Recorded

Grant St George
18th March 1867

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

IRRIGATION.

To

The Secy. to Govt

No. 191.

Dated February 26, 1867.

Received

Revenue Reports of the Irrigation Department in the Punjab for the year 1864-65.