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MADRAS RECORD OFFICE.

Government of Madras.

Lubrication DEPARTMENT.

G.O. No. 238	Press
482-83	Mis
Dated 26-1-	1869.

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
26th January 1859.*

No 482 Read the following Proceedings of the Government of India, in the Public Works Department, (Account—Irrigation) dated Fort William, 30th November 1868, No 167 A—I.

Revenue Report of Canals in the Punjab, 1866-67

Read —
Letter No 002 A—I, dated 16th September 1868, from the Officiating Under Secretary to the Government of Punjab, Public Works Department, Irrigation Branch.

RESOLUTION—This Report was received on the 21st September 1868, being just the same time as that at which the Report for the previous year was received, and still 10 months after it is due. The promise of improvement in punctuality continues to be made, but only to be broken. Enquiries have been made as to the precise share which the several Officers concerned have in the preparation of the Report, and in furnishing the materials for it, and on receipt of this information, the Government of India will, it is hoped, be in a position to put an end to the habitual want of promptitude which has till now characterized the submission of these Reports.

General Financial Results for 1866-67.

2. The figures given in the Report are as follows:—

Works	Capital invested to end of 1865 66	Gross Increase		Working expenses	Profit or Loss		PER CENTAGE OF PROFIT OR LOSS ON CAPITAL		Acres irrigated
		Direct only	With indirect also		On direct income only	On total income	On direct income only	On total income	
Baree Doab Canal	RS 1,13,13,811	RS 5,84,749	RS 6,03,283	RS 3,17,103	RS 2,67,616	RS 3,46,180	2 31	3 00	2,28,421
Western Jumna Canal	22,84,518	7,72,599	11,45,162	2,62,148	5,10,451	8,83,011	22 34	38 65	4,47,171
Upper Sutlej "	4,01,232	12,112	70,024	30,958	11,154	39,066	2 78	9 74	51,675
Lower " "	65,305	3,506	2,16,805	10,167	— 6 661	2,00,638	— 10 53	336 94	1,19,897
Indus Canal	1 27,994	854	81,792	43 172	— 42,818	33,620	— 33 06	30 17	1,14,652
Delhi and Goorgaon Canal	1,70,791	4,087	28,615	7,124	— 3,037	21,131	— 1 78	12 59	8,721
Total, 1866 67	1,45,63,561	14,07,907	22,03,681	6,70,672	7,37,235	15,35,009	5 04	10 52	1,000,537
Total, 1865 66	1,43,84,578	10,12,090	8,01,013	7,28,371	3,83,725	10,72,642	1 95	7 36	8,41,573

These figures do not exactly agree with those given in the letter of the Punjab Government, certain charges and receipts per contra having been introduced for the Western Jumna Canal, as shewn in the separate Revenue Account, to assimilate the results to those of former years

The general results are satisfactory. Although the Western Jumna Canal still shews its marked superiority over the other works, yet, excluding that canal, there is reduction of charge of Rupees 75,000, (in some measure due to this account-year having only 11 months), and an increase of total profit of nearly 2 lacs of Rupees. The large increase of income and profit shewn by the Western Jumna Canal is caused by raising the rates for the rubbee of 1866-67; in the past year 1867-68, when the khurreef rates were also raised, there should probably be a further increase of about 2 lacs from this canal since 1863-64. The total direct revenue from Irrigation Works in the Punjab has risen from about 8 lacs to 14 lacs, and the

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charges from about $5\frac{1}{2}$ lacs to $6\frac{1}{2}$ lacs, so that the net income has increased about $4\frac{1}{2}$ lacs. The area under irrigation has also apparently increased in a like proportion, but the exact figures cannot be given, as the Returns are imperfect for past years.

3 But though there has been this amount of progress, it is quite manifest that there is still room for the extension of irrigation with the means at command. Neither on the Western Jumna Canal, nor on the Baree Doab Canal, is the actual supply of water which the channels will safely carry fully utilized, nor is the whole supply that can be taken from the rivers in the khurreef nearly all thrown into the canals. The waters of the Sutlej and Beas have hitherto been hardly touched. The works necessary for the full utilizing of the available water of the Jumna, Sutlej, Beas and Ravee, are in some stage of progress, however, though much still remains in the form of merely preliminary outline. The area now irrigated from the waters of these rivers is nearly 850,000 Acres, and there seems to be no reason for doubting that this may be increased four-fold, including the area that will be irrigated in the Native States from the Sirhind Canal.

Baree Doab Canal.

4. The results for the last three years are—

	1864-65	1865-66	1866-67
Direct Income	Rs.	Rs.	Rs.
Charges	4,90,660	4,67,594	5,81,719
Profit	3,98,128	3,55,053	3,17,103
	92,132	1,12,535	2,67,616
Area irrigated	Acres	Acres	Acres
	1,92,633	175,979	228,421

These figures are more favorable than any that have hitherto been shewn. The charges have declined, and the revenue has sensibly increased. The reduction of charges is explained to be partly accidental, the year of account having been only 11 months, and the outlay on repairs being reduced, because the canal water was not turned off owing to the constant demand.

5 The establishments employed on all the canals have quite recently been completely revised, and it is not necessary to make comments on this part of the outlay.

6. The charge for repairs is still very high as compared to the older canals; but the canal-bed is known to be in a very unsatisfactory state, owing to its excessive slope, and, until this defect is remedied, the cost of maintenance must continue to be heavy. In their present form, the accounts do not admit of any exact comparison of the elements of outlay on the various canals; a remedy for this has, however, been proposed, and, in future years a better check will be possible on this part of the administration.

7 The charge for fees on collections has risen from Rupees 20,307 to Rupees 30,404, without an equivalent rise in the revenue. The cause of this might have been noticed.

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8 It is stated that a sum of Rupees 82,000 has been laid out on original works and added to the Capital Account. No detail, however, is given of the nature of the outlay. In future, an exact Statement should be submitted yearly of the Capital outlay, classified in an uniform manner for all canals.

9 The area irrigated per cubic foot of water discharged per second, continues to be very low, viz, for the khurreef 54.5 acres, and for the rubbee 92.5 acres. This is somewhat worse than last year, when the figures were 57.9 acres and 111.8 acres, respectively. The presumption seems to be that the water is given at too low a price, or that the distribution is not made by a satisfactory method.

10 The latter conclusion is again strongly supported by a reference to the Table shewing the monthly discharge of the canal, from which it appears that the total volume of water which escaped from the canal and did no useful work, was never less than 126 cubic feet per second; in one month, rose to 477 cubic feet, and averaged about 268 cubic feet per second. The average quantity utilized was 1,442 cubic feet, so that the quantity that ran to waste was nearly one-sixth of the whole available supply entering the canal. The same result was shewn to have occurred in 1865-66. It is the more remarkable that the greatest waste took place in January, February, and March, when the rubbee waterings are most needed. If the Rain-gauge Returns given are to be trusted, there was no general heavy rain to account for a refusal to take water, and it is, indeed, remarked in the Report that the rain-fall was generally small in the rubbee.

11. The escape of water in large quantities in the khurreef is also not readily understood, having regard to the general small amount of rain-fall in the lower parts of the Baree Doab. Possibly, however, there was sufficient rain over the Districts to which the canal is at present extended.

12 As was said last year, this subject evidently calls for attention.

13. A great discrepancy may be pointed out in the cost of measurement of the irrigated lands, which is said to have been 2 annas 3 pie per acre for the khurreef, and 3 annas 3 pie per acre for the rubbee, in the 1st Division of the canal, whereas, in the 2nd Division, the charges are said to be only 4 pie and 3 pie per acre. In the 4th Division, the amount was 2 pie and 3 pie, per acre. On the Western Jumna Canal, where chain measurements continue, the charge is 3 pie, per acre. The cause of the high charge in the 1st Division, Baree Doab Canal requires explanation.

14. It was remarked last year that time might be saved if the Superintending Engineers were required to prepare general Reports of their Circles, sending up Divisional Reports from the Executive Engineers, the Chief Engineer confining his remarks to such a review of these documents as may be deemed necessary, and it is requested that this system may be adopted hereafter in the Punjab.

15. As to the Statistical Tables, it seems needless to give the details of crops of which very small areas are irrigated. Nothing less than 1,000 acres need be shewn as a separate item. It would suffice to exhibit the smaller crops as "Miscellaneous, Class I," giving an entry to each class. And it is desirable, that where there is not an acknowledged English name for any crop, the botanical name should be given. Some classification such as the following might also be attempted —

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- 1.—Cereal grains.
- 2 —Pulses.
- 3.—Oil-seeds.
- 4 —Grains for fodder.
- 5 —Miscellaneous food-crops.
- 6 —Fibres
- 7 —Dyes and drugs.

This would make the Returns more intelligible. The above heads are merely suggested for consideration, and the forms might be discussed between the North-West and Punjab Officers, and then settled

16. It is desirable to know in what manner the weights of produce are estimated, and also the value. A foot-note should state this, or a general brief introduction to the Statistical Tables might be more convenient.

17. A Statement might usefully be given with the Revenue Reports, showing the main facts of the agriculture of the Districts through which the canals pass, the total area, the cultivated area, and the irrigated area, something in the form adopted in the Sindh Returns lately circulated. The exact form of such a Return may also be considered by the Local Officers. It will always be important to keep in view the progress of irrigation by the relation which the irrigated lands bear to the whole area.

18. The introduction of the charges for interest on Capital into the Revenue Account is not correct, and should be discontinued in future.

19. The working of the Dalhousie State Quarry seems hardly to fall within the proper scope of these Reports. The proper course would seem to be to charge off the whole outlay, with a fair proportion of establishment charge, to the general branch of Public Works outlay.

WESTERN JUMNA CANAL.

20. The general results are as follows —

	1864-65	1865-66	1866-67.
Direct Income ..	rs	rs.	rs
Charges ...	5,26,168	4,90,468	7,72,509
Profit ..	2,11,789	2,53,119	2,62,148
	3,11,688	2,77,319	5,10,451
Acres irrigated	Acres 431,904	Acres 397,963	Acres 417,171

21. The great increase of income is essentially due to the increase of the water-rates as before noticed, but there has also been an increase of area irrigated which is said to be the largest yet recorded. Also, there would appear to have been a larger volume of water utilized

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22. The discharge and area irrigated per cubic foot per second, entering the canal has been as follows. —

	1864-65.	1865-66	1866-67.
	Cubic foot.	Cubic feet	Cubic feet.
Average discharge in cubic feet	1,784	1,442	1,790
Khureef area per cubic foot	110 1	120 8	108 6
Rubbee area per cubic foot	133 5	160 6	147 1
Total area per cubic foot	243	262	250

23. There are no data now available, on which to determine precisely, whether the extension of irrigation in the last few years has been due to the increased area watered by the same amount of supply, but it is most likely that this is the case. The above figures, it must be remarked, are not thoroughly trustworthy, as the volume of water is not accurately known

24. In this canal also, there has been a considerable quantity of water running to waste throughout the greater part of the year. The average has been 210 cubic feet per second, of a total of 2,000 cubic feet, or about one-tenth of the whole. From September to January, the waste was between 173 feet and 423 feet per second, a quantity of water which could, without any doubt, have been very usefully employed in the extremely dry western Districts if there had been the means of carrying it thither

25. The charges on this canal are about one-sixth less than those of the Baree Doab, with a direct income one-third more. They are, therefore, relatively only five-eighths of the Baree Doab charges.

26. The increase of the Cotton crop is important, as giving the means of utilizing the khureef water. It is worthy of notice, that neither on the Baree Doab Canal, nor on this, is there much disposition to increase the area of sugar.

27. The statistics of the irrigated areas in the rubbee and khureef crops on this canal seem to indicate a tendency for the khureef crop to become equal to the rubbee. It will be useful if the dates of the ordinary time of sowing and reaping, and also of the first and last waterings to the several crops, form a regular addition to the Statistical Tables

28. It is noticed that a small plot of land reclaimed by drainage had been let out at a high rent on the Delhi Bianch Canal. If this implies that the lease was given by the Canal Officers, the arrangement seems an improper one. The charge of all lands recovered by drainage should certainly be made over to the District Officers, the rents or increased revenue being, however, shewn to the credit of the canal.

29. The enquiry made as to the mode of charging interest on the Capital of this canal, now that all the accumulations of charge have long been cleared off,

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will be disposed of hereafter The present form of the account is not a satisfactory one.

30. The Rain-fall Report has some blunders in it, two places, Gohanna and Kunnal, being twice entered with altogether different figures

INUNDATION CANALS

Upper Sulej series

31. The last three years give the following results —

	1864-65.	1865-66	1866-67
Direct Revenue	RS	RS	RS
Charges	40,320	47,085	42,112
Profit	32,842	40,853	30,958
	7,478	6,232	11,151
Area irrigated	Acres	Acres	Acres
	30,612	57,389	51,675
Increased Land Revenue		RS	RS
		27,912	27,912

32. The way in which the direct revenue and increased Land Revenue are estimated, is not very clear. The direct revenue is understood to be mainly that portion of the Land Revenue which was fixed at the last settlement as dependent on irrigation, and remittable in case of failure of supply But there seems also to be some fluctuating charge, possibly on land not assessed as irrigated at the last settlement The manner in which the sums set down are arrived at, should be distinctly shewn on the face of the accounts

33. There is also something peculiar in the way of exhibiting the charges; one Account shews the establishments as Rupees 9,706, another as Rupees 11,691. There is no means of ascertaining what is the meaning of the two sets of figures.

34. There seems to be a satisfactory tendency to prevent increase of charge, and some growth of the irrigated area

Lower Sulej and Chenab

35. On these canals there is no regular direct revenue, the Returns being in the Land Revenue.

36. The charges have been as follows —

	1864-65	1865-66	1866-67
Direct outlay	RS	RS	RS
Statute labor	6,603	12,380	10,167
	89,535	89,535	89,535
Total	96,138	1,01,915	99,702
Acres irrigated	Acres	Acres	Acres
	1,03,214	1,02,014	1,19,897

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37. Here, again, there are two sets of figures for Establishment Charges, very greatly at variance with one another. Moreover, the manner in which the Statute labor is dealt with, is not explained Large sums shewn as recovered as fines for non-attendance, but credited under this head, are exhibited in the Accounts, and nothing appears as the charge for the work paid for, in lieu of that which should have been done by the absent Statute laborers It seems clear that the whole of the Accounts rendered are manipulated in some way and net results shewn, the original transactions not appearing. There seems to be a separate Fine Fund also All this appears irregular and objectionable, though possibly sanctioned heretofore, and it is to be desired that the actual money transactions may in future be shewn as they take place.

38. The value of the Statute labor as entered in the Revenue Account, is, it may be remarked, purely ideal, and, as far as can be judged, the Revenue Accounts of these inundation canals are not worth much, the figures having no very useful relation to the facts. Nothing can be suggested in the way of improvement, because the actual system is not understood, and the question must be specially considered and separately disposed of

39. The figures seem to shew that these canals are extremely costly to the community. The Government outlay, taking the lowest sum shewn, is Rupees 10,167. Another Account shews Rupees 38,272. The value of the Statute labor at what it may be presumed is the actual rate of labor paid in the District, is said to be Rupees 2,33,674, so that the total outlay is close upon 2½ lacs for 120,000 acres, or more than Rupees 2 an acre, for what is probably a very uncertain supply of water The same outlay on the Western Jumna Canal provides a regular supply of water for nearly 450,000 acres The burden on the Agricultural Community is the value of the Statute labor as above stated, and the additional Land Revenue, Rupees 2,13,299, or in all 4½ lacs, or about Rupees 4 an acre. The total charge to the community on the Western Jumna Canal is less than Rupees 2-12 an acre, making a difference in favor of the latter of nearly Rupees 1½ per acre.

40. There is another important consideration worth noticing in relation to the working of the inundation canals on the old system. These canals employ yearly, for about 120 days, or 4 months, upwards of 5,000 men for clearances. So long as these clearances are necessary, this labor must be given or the cultivation could not go on, and hence this large number of men is year by year rendered unavailable for agricultural labor proper. Of course, on an improved system under which the clearances would be reduced very greatly, a large outlay on Capital would be required, the interest on which must be paid by the Cultivating Community. But the labor saved from the clearances, which is now quite unproductive, would become, when applied to agriculture, directly productive, and would almost unquestionably yield a return, much more than would be necessary to cover the increased charge for interest.

Indus Canals

41. The same doubts apply to the Revenue Accounts of these canals as to those last spoken of The comparison of the figures of the balanced Accounts give the following results:—

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	1864-65	1865-66	1866-67
Direct outlay	RS	RS	RS
Value of labor contributed by cultivators	50,012	50,013	43,172
	38,599	26,426	22,100
Total	88,611	76,439	65,272
Area irrigated		...	* Acres 144,652

No comments can be usefully made on these figures.

42. It is worthy of notice, that nearly one-half of the irrigated area is cultivated with Maize, a crop which does not form an important item in the produce of the Western Jumna or Baree Doab Canal, though it could, without doubt, be readily raised. It may be interesting to state, that the Statistical Returns of the United States shew, that the acreage under Indian Corn there in 1864 was decidedly more than that under Wheat, being 17½ millions Acres against 13 millions; and that the value of the produce was considerably in favor of the Indian Corn, being 30 dollars an acre, against 23 dollars for the Wheat. In Wallachia and Moldavia, also, the area of Maize cultivation largely exceeds that of wheat. There can be little doubt that there is great scope for the extension of the cultivation of this grain in Northern India in the Khureeffussul. Possibly there would be a difficulty in first introducing the use of it as a general article of food, but its wholesomeness is undisputed, and if it could be got to supersede the poorer khureef cereals, when irrigation is made available, the advantage would be very great.

43. The discussions which have lately taken place as to the prospects of utilizing the monsoon waters of our larger rivers with financial advantage, turn a good deal on the question, whether the khureef crops can pay a fair water-rate, and whether there is a prospect of an extension of the khureef area if water is provided. The improvement of the staples thus becomes of much importance in relation to the profitable extension of irrigation, whether regard is had to the interest of the State, or of the community generally. The time is certainly come when increased attention is required to these subjects.

DELHI AND GOORGAON WORKS.

44. The following are the main features of the operations under this head.

	1864-65	1865-66	1866-67.
Direct revenue	RS	RS	RS
Charges	1,598	3,460	4,087
	13,238	16,917	7,124
Increase of Land Revenue	15,671	15,671	21,523
Area irrigated	Acres	Acres	Acres.
	2,795	7,447	8,721

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These figures do not seem very reliable. The increase of Rs 8,857 in the Land Revenue enhancement seems merely an item brought forward for the first time this year, and represents a charge on 22,144 acres in the Chundance Jheel, which are not included in the account of irrigated area. In like manner, it appears that the Rs. 15,671 of former years is reckoned on an area of 39,178 acres in the Nujcefgurh Jheel, also not entered in the Statement of cultivated area. Therefore, in fact, these works seem to protect or improve rather more than 70,000 acres. It is to be desired that the various Reports and Returns should be rendered in a more precise and consistent manner. There are several partial Statements of area which are inconsistent with one another at first sight, and there is no general account that is comprehensible. Discrepancies in the sums set down as paid for establishments also appear in this case. The attention of the Engineers might be directed to these points, and a clearer style of Report devised for the future.

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

Ordered also, that a copy be forwarded to the Governments of Madras, Bombay, Bengal and the North Western Provinces, and to the Home, Foreign and Financial Departments, for information.

Ordered further, that a copy of the Resolution, with the Returns, be forwarded to Her Majesty's Secretary of State.

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

To the Secretary to the Government of Madras, Public Works Department

No. 483. ORDER THEREON, 26th January 1869, No. 238.

IRRIGATION, No. 38.

Ordered to be recorded.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Chief Engineer for Irrigation.
" Revenue Department

Exd. G. A. Turton.

Cort. of {1869} Madras.

PUBLIC WORKS.

To

THE CHIEF ENGINEER FOR IRRIGATION

&c, &c, &c

Dated January, 20th.

Recd

Encl.

G. O., 20th January 1869, No 233

JANUARY.

Nos. 482-483

Revenue Report—Proceedings of the
Government of India, forwarding copy of
their orders on the Revenue Report of
Canals in the Punjab for 1866-67, record-
ed.

171
1858 Dec 21

GOVERNMENT OF INDIA
PUBLIC WORKS DEPARTMENT

ACCOUNT
Irrigation

To

100052

No 157A-I

Dated November 20, 1895

Received 12 Dec 2/58

100052
1858 Dec 21

Order the receipt —

238
1858

No 238-21 January 1858

Orders on Revenue Report of Canals in the
Punjab, 1866-67.

With an order

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Govt. of 1869 Madras.

PUBLIC WORKS.

To The Chief Engineer for
Irrigation

Dated

Recd

G O 26-*June* 1869 No 238

Nos 482-483

Revenue Report Pro. of completion
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venue Report of Pensions in
the Punjab for 1866-67.
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