

Contents.

- 1902-1-1904-5
1. Triennial (1902 to 1905) Irrigation Revenue Report of the Bombay Presidency (excluding Sind) for the triennium ending 1904-05. pp. 1- 96.
 2. Public Works Department. Budget Estimate of Irrigation, Navigation, Embankment and Drainage Works for which Capital Accounts are kept (Revenue and Working Expenses) in Bombay Presidency (Sind) for 1923-24. pp. 97-105.
 3. dto. (Deccan and Gujarat) for 1923-24. pp.106-115.
 4. dto. and other Revenue Expenditure Financed from Ordinary Revenues for 1923-24. pp.116-124.
 5. dto. in Bombay Presy., Sind, 1923-24. pp.125-133.
 6. dto. (Sind and Deccan and Gujarat), 1923-24. pp.134-144.
 7. dto. 1924-25. pp.145-153.
 8. dto. (Deccan and Gujarat), 1924-25. pp.154-163.
 9. dto. in Bombay Presy., Sind, 1924-25. pp.164-169.
 10. dto. (Deccan and Gujarat), 1924-25. pp.170-177.
 11. dto. (Sind and Deccan and Gujarat), 1924-25. pp.178-189.

TRIENNIAL IRRIGATION REVENUE REPORT

OF THE

BOMBAY PRESIDENCY

(EXCLUDING SIND)

FOR THE

TRIENNium ENDING 1904-1905.

CONTENTS.

	PAGES
General Remarks	i to iv
Consolidated Statement for Major Works, Protective	1 to 3
Do. do. Productive	5 to 7
Do. for Minor Works and Navigation—Works for which Capital and Revenue Accounts are kept	9 to 11
Do. for Works for which only Revenue Accounts are kept... ..	13 to 15
Do. for all classes of Irrigation Works	17
Detailed Statements of:—	
(1) Nira Canal	20 & 21
(2) Mhaswad Tank	22 & 23
(3) Shetphal do.	24 & 25
(4) Chankápur do.	26 & 27
(5) Maladevi do.	28 & 29
(5A) Surveys and Investigations of Protective Irrigation Works	30 & 31
(6) Hathmati Canal	34 & 35
(7) Lower Panjhra River Works... ..	36 & 37
(8) Kadva River Works	38 & 39
(9) Pravara River Works—Lákh Canal	40 & 41
(10) Mutha Canals	42 & 43
(11) Ekruk Tank	44 & 45
(12) Krishna Canal	46 & 47
(13) Khari Cut	50 & 51
(14) Wangroli Tank	52 & 53
(15) Tranza-Nagrama Tank	54 & 55
(16) Hartala Tank	56 & 57
(17) Mhaswa do.	58 & 59
(18) Jamda Canals	60 & 61
(19) Parsul Tank	62 & 63
(20) Pravara River Works—Ojhar Canal	64 & 65
(21) Bhatodi Tank	66 & 67
(22) Matoba do.	68 & 69
(23) Kasurdi do.	70 & 71
(24) Shirsuphal do.	72 & 73
(25) Bhadalvadi do.	74 & 75
(26) Koregaon do.	76 & 77
(27) Ashti do.	78 & 79
(28) Revari Canal	80 & 81
(29) Upper Man River Works	82 & 83
(30) Yerla River Irrigation Works	84 & 85
(31) Chikhli Canal	86 & 87
(32) Maini Tank	88 & 89
(33) Muchkundi do.	90 & 91
(34) Gadikeri do.	92 & 93
(35) Dambal do.	94 & 95
(36) Medleri do.	96 & 97
(37) Madag do.	98 & 99
(38) Asundi do.	100 & 101
(39) Mavinkop do.	102 & 103
(40) Savli do.	104 & 105
(41) Pathri do.	106 & 107
(42) Gokák Canal, 2nd Section	108 & 109
(43) Gokák Canal, 1st Section, and Storage Works	110 & 111
Detailed Statements of Works for which only Revenue Accounts are kept in the—	
(1) Ahmedabad District	114 & 115
(2) Kaira do.	116 & 117
(3) Surat do.	118 & 119
(4) Khándesh do.	120 & 121
(5) Násik do.	122 & 123
(6) Belgaum do.	124 & 125
(7) Dhárwár do.	126 & 127
(8) Panch Maháls, Broach, Ahmednagar, Poona, Sátára, Bijápur, Ratnágiri and Kánara Districts	128 & 129
Statements of Minor Works and Navigation—Works for which neither Capital nor Revenue Accounts are kept	132 & 133
Maps of the Northern, Central and Southern Divisions ... ..	...
Government Resolution	1 & 2
Supplement to the Triennial Revenue Report, Deccan and Gujarát	1 to 38

TRIENNIAL IRRIGATION REVENUE REPORT, BOMBAY
PRESIDENCY (EXCLUDING SIND), 1902-03 to 1904-05.

General Remarks.

This is the second Triennial Revenue Report of Irrigation Works prepared in accordance with the orders of the Government of India conveyed in their Resolution No. 670-C.W.I., dated the 6th June 1901, contained in Government Resolution No. W.I.—1396, dated 5th July 1901.

2. The report is intended to contain the statistical information of which it is important to maintain a permanent and continuous record. Accordingly, statements showing various working details and the results attained in four successive triennial periods have been prepared and brief general remarks appended to each, as was done in the case of the first triennial report.

For details regarding the administrative work and progress of the department, reference should be had to the Annual Administration Reports which are published separately.

3. The works in the Deccan and Gujarát, for which both Capital and Revenue Accounts are kept, are divided into two classes—Major Irrigation Works and Minor Works and Navigation—and are used for irrigation purposes only.

The "Major Irrigation Works" are—

Protective Works.

1. Nira Canal.
2. Mhaswad Tank.
3. Shetphal Tank.
4. Chankapur Tank.
5. Maladevi Tank.

Productive Works.

6. Hathmati Canal.
7. Lower Panjhra River Works.
8. Kadva River Works.
9. Pravara River Works—Lakh Canal.
10. Mutha Canals.
11. Ekruk Tank.
12. Krishna Canal.

and those classed under the head "Minor Works and Navigation" are—

13. Khari Cut.
14. Wangroli Tank.
15. Tracza-Nagramma Tank.
16. Hartala Tank.
17. Mhaswa Tank.
18. Jamda Canals.
19. Parsul Tank.
20. Pravara River Works—Ojhar Canal.
21. Bhatodi Tank.
22. Matoba Tank.
23. Kasurdi Tank.
24. Shirsuphal Tank.
25. Bhadalvadi Tank.
26. Koregaon Tank.
27. Ashti Tank.
28. Revari Canal.
29. Upper Man River Works.
30. Yerla River Irrigation Works.
31. Chikhli Canal.
32. Maini Tank.
33. Muchkundi Tank.
34. Gadikeri Tank.
35. Dambal Tank.
36. Medleri Tank.
37. Madag Tank.

38. Asundi Tank.
 39. Mavinkop Tank.
 40. Savli Tank.
 41. Pathri Tank.
 42. Gokak Canal, 2nd Section.
 43. Gokak Canal, 1st Section and Storage Works.

4. At the end of the last triennium there were 39 works; during the triennium under report 4 new works have been added, and these are Wangroli, Tranza-Nagramma, Savli and Pathri Tanks.

5. Of these 43 works, 38 are in operation, 3, *viz.*, Chankapur, Savli and Pathri Tanks, are under construction, and the remaining two—the Maladevi Tank and Gokak Canal, 2nd Section—are in abeyance.

6. The following table gives the average of the rainfall at all stations connected with works in operation at which rainfall is gauged:—

Average of 12 years 1893-94 to 1904-05.	During			Average for			
	1902-03.	1903-04.	1904-05.	1902-03 to 1904-05.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.
Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
20.06	20.90	21.80	14.86	19.19	16.25	21.34	23.47

The rainfall during the triennium under report, though slightly below the average of the 12 years ending with 1904-05 was considerably above that of the preceding triennium.

7. The capital outlay and financial results of the works classed as Major Works—Protective—are shown in the following table:—

	Average for			
	1902-03 to 1904-05.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.
	Acres.	Acres.	Acres.	Acres.
Area irrigated	45,332	52,698	48,030	29,772
Capital outlay to end of triennial period	Rs 91,75,054	Rs. 86,81,773	Rs. 80,79,379	Rs. 78,28,357
Revenue	2,26,479	1,93,628	1,35,585	99,927
Working Expenses	82,467	69,161	83,407	77,652
Net Revenue	1,44,002	1,24,477	52,178	22,275

8. Although there is decrease in the area irrigated, the deficit is more than made up by the increase in the revenue earned, which shows a continuous and steady rise. The working expenses also show an increase, but this is due partly to high establishment charges on account of less capital outlay and partly to the payment of rent of the telegraph line opened along the Nira Canal during 1904-05. The net revenue of the triennium under review shows a return of 1.57 per cent. on the capital spent—nearly 92 lakhs excluding interest charges, which is slightly better than that of the last triennium which was 1.43 per cent. The general remarks at foot of the detailed statements describe the progress of each individual work.

9. Under the above head—Major Works—Protective—a new sub-head—“Works for which neither Capital nor Revenue Accounts are kept”—has been opened as per Government of India No. 56-A.I., dated 24th July 1901, embodied in the preamble to Government Resolution No. A.I.—1654, dated 7th August 1901, and the expenditure of Rs. 6,05,012 incurred during the triennium under report on Surveys and Investigations of Protective Irrigation Works has been debited to it. A separate statement showing details of the above outlay has been for the first time included in the present report.

10. The following statement gives capital outlay and financial results in respect of the works classed as Major Works—Productive :—

	Average for			
	1902-1903 to 1904-1905.	1899-1900 to 1901-1902.	1897-97 to 1898-99.	1893-94 to 1895-96.
Area irrigated	Acres. 25,139	Acres. 26,904	Acres. 30,096	Acres. 25,709
	Rs.	Rs.	Rs.	Rs.
Capital outlay to end of triennial period	1,15,40,351	1,10,53,704	1,09,50,247	1,08,71,463
Revenue	4,05,441	3,65,465	3,58,057	3,61,360
Working Expenses	1,69,876	1,62,162	1,83,170	1,38,814
Net Revenue	2,35,565	2,03,303	1,74,887	2,22,546

11. There is a very slight decrease in the area irrigated. The revenue, however, shows a very large increase and this is chiefly due to high-rated crops having been cultivated under the canals. The increase in working expenses is due to certain extraordinary charges having been debited to the Revenue Account of the Mutha Canals on account of cost of service pipes transferred in 1902-03 to the Military Department. The capital outlay under this head excluding interest charges amounts to Rs. 1,15,40,351 upon which a return of 2.04 per cent. is obtained. This is slightly better than the percentage shown in the last triennium, which was 1.84.

12. The capital expenditure on the five works—Lower Panjhara River Works, Kadwa River Works, Pravara River Works—Lakh Canal, Mutha Canals and Krishna Canal originally classed as Productive Works and still maintained on the list of works of that class has from 1885-86 been met from funds provided under "Minor Works and Navigation" as they were found not to fulfil the conditions prescribed in the case of Productive Works, the amount so charged being Rs. 9,08,391. This expenditure is included in the figures entered in the table in paragraph 10.

13. The capital outlay and financial results in respect of "Minor Works and Navigation—Works for which Capital and Revenue Accounts are kept" are as follows:—

	Average for			
	1902-1903 to 1904-1905.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.
Area irrigated	Acres. 37,093	Acres. 40,863	Acres. 39,146	Acres. 25,359
	Rs.	Rs.	Rs.	Rs.
Capital outlay to end of triennial period	92,39,850	81,08,867	76,65,147	75,52,399
Revenue	1,26,289	1,06,373	1,36,683	1,17,402
Working expenses	82,352	1,59,793	1,00,804	94,392
Net Revenue	43,937	—53,420	36,379	23,010

14. The small decrease in the area irrigated is chiefly due in some cases to favourable rainfall and in some to scanty supply. The revenue realized, however, shows an increase and the working expenses show a considerable decrease. There is thus a marked increase in the net revenue which is satisfactory. Details of these works are given in the individual statements.

15. Besides the works detailed in paragraph 3 under Minor Works and Navigation, there are two classes, namely, (1) works for which only Revenue Accounts are kept and (2) works for which neither Capital nor Revenue Accounts are kept.

16. The particulars of "Works for which only Revenue Accounts are kept" are as follows :—

	Average for			
	1902-1903 to 1904-1905.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.
	Acres.	Acres.	Acres.	Acres.
Area irrigated	143,850	131,372	145,985	145,036
	Rs.	Rs.	Rs.	Rs.
Revenue	5,08,238	5,53,072	5,64,244	5,47,497
Working expenses	4,56,804	2,32,089	2,19,698	2,65,652
Net Revenue	51,434	3,20,983	3,44,546	2,81,845

17. The works included in the above class are small tanks and bandharas which earn considerable revenue. The working expenses show an expenditure which is nearly double that of the preceding three triennia, and this is due to greater progress having been made with the repair and improvement of irrigation tanks. The system of levying 10 per cent. contribution having been discontinued under orders of Government, it is now possible to repair tanks without waiting for a contribution.

18. Particulars in respect of works for which neither Capital nor Revenue Accounts are kept are as follows :—

	Average for			
	1902-1903 to 1904-1905.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.
	Rs.	Rs.	Rs.	Rs.
Revenue	1,499	1,785	537	535
Expenditure	1,62,888	1,19,049	62,686	28,032

19. The expenditure under this head is on account of compensation for land taken up for famine works, drainage channels, surveys, rain and river gauges, etc., and calls for no remarks.

CONSOLIDATED STATEMENT.

MAJOR WORKS—PROTECTIVE WORKS.

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL

Consolidated Statement for Major

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Acres.	Acres.	Acres.
1. Area irrigated—Kharif	23,167	18,776	25,980
2. Do. —Rabi	16,226	17,264	34,584
3. Do. —Total	39,393	36,040	60,564
	Rupees.	Rupees.	Rupees.
4. Capital Outlay, direct and indirect during the year.	2,04,790	1,30,291	*1 } 1,58,200
5. Do. do. to end of year	88,86,562	90,16,853	91,75,054
6. Revenue—Total (Assessment)	2,42,247	2,53,030	2,38,619
7. Total (Collection)	247,659	2,83,405	1,48,424
8. Deduct—Refunds	20	63	.....
9. Working Expenses	73,260	78,996	95,144
10. Net Revenue based on Assessment	1,68,987	1,74,034	1,43,475
11. Net Revenue based on Collection	1,74,379	2,04,346	53,280
12. Percentage do. on Capital	1.96	2.27	0.58
13. Gross Assessed Revenue per acre irrigated... ..	6.15	7.02	3.94
14. Collection per acre irrigated	6.29	7.86	2.45
15. Working Expenses do.	1.86	2.19	1.57

REPORT, 1902-1903 TO 1904-1905.

Works—Protective Works.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Acres.	Acres.	Acres.	Acres.	
22,641	24,781	16,319	14,069	
22,691	27,917	31,771	15,703	
45,332	52,698	48,090	29,772	
Rupees.	Rupees.	Rupees.	Rupees.	
1,64,427	2,00,798	83,674	1,51,819	*Adjustment on account of fractions of a rupee.
91,75,054	86,81,773	80,79,379	78,28,357	The figures in columns 5, 6, 7, and 8 relate to end of triennial period.
2,44,632	2,21,154	1,40,966	1,06,651	
2,26,496	1,93,702	1,35,805	99,943	
27	74	220	15	
82,467	69,161	83,407	77,652	
1,62,165	1,51,993	57,559	28,999	
1,44,002	1,24,467	52,178	22,275	
1.57	1.43	0.65	0.28	
5.39	4.20	2.93	3.53	
5.00	3.68	2.82	3.36	
1.82	1.32	1.73	2.61	

CONSOLIDATED STATEMENT.

MAJOR WORKS—PRODUCTIVE WORKS.

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL

Consolidated Statement for Major

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Acres.	Acres.	Acres.
1. Area irrigated—Kharif	16,568	12,765	23,618
2. Do. Rabi	6,297	7,906	8,267
3. Do. Total	22,865	20,671	31,885
	Rupees.	Rupees.	Rupees.
4. Capital outlay, direct and indirect during the year.	1,34,164	3,17,090	35,393
5. Do. do. to end of year	1,11,87,868	1,15,04,958	1,15,40,351
6. Revenue—Total (Assessment)... ..	3,97,600	3,97,586	4,66,808
7. Total (Collection)	3,90,427	4,37,089	3,90,613
8. Deduct—Refunds	989	560	252
9. Working Expenses	1,85,077	1,50,508	1,74,045
10. Net Revenue based on Assessment	2,12,523	2,47,078	2,92,763
11. Do. on Collection	2,04,361	2,86,021	2,16,316
12. Percentage based on Capital	1.83	2.49	1.87
13. Gross Assessed Revenue per acre irrigated...	17.39	19.23	14.64
14. Collection per acre irrigated	17.08	21.15	12.25
15. Working Expenses per acre irrigated	8.09	7.28	5.46

REPORT, 1902-1903. TO 1904-1905.

Works—Productive Works.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Acres.	Acres.	Acres.	Acres.	
17,650	19,264	16,279	15,654	
7,489	7,640	13,817	10,055	
25,139	26,904	30,096	25,709	
Rupees.	Rupees.	Rupees.	Rupees.	
1,62,215	34,486	26,262	83,929	
1,15,40,351	1,10,53,704	1,09,50,247	1,08,71,463	The figures in columns 5 to 8 represent capital expenditure to end of triennial period.
4,20,665	3,94,004	3,83,013	3,76,824	
4,06,042	3,66,614	3,59,581	3,64,165	
601	1,149	1,224	2,805	
1,69,876	1,62,162	1,83,170	1,38,814	
2,50,789	2,31,842	1,99,843	2,38,010	
2,35,565	2,03,303	1,74,887	2,22,546	
2·04	1·84	1·60	2·05	
16·73	14·64	12·73	14·66	
16·15	13·70	11·94	14·16	
6·76	6·03	6·09	5·39	

CONSOLIDATED STATEMENT.

—

**MINOR WORKS AND NAVIGATION—WORKS FOR WHICH
CAPITAL AND REVENUE ACCOUNTS ARE KEPT.**

—

(DECCAN AND GUJARAT.)

DECCAN AND GUJARÁT TRIENNIAL

Consolidated Statement for Minor Works and Navigation—

Particulars.	1902-03.	1903-1904.	1904 1905.
1	2	3	4
	Acres.	Acres.	Acres.
1. Area irrigated—Kharif	27,005	18,139	20,351
2. Do. —Rabi	11,233	14,214	20,344
3. Do. —Total	38,238	32,353	40,695
	Rupees.	Rupees.	Rupees.
4. Capital Outlay, direct and indirect, during the year.	1,08,042	*6,74,925	+3,48,016
5. Do. do. to end of year.	82,16,909	88,91,834	92,39,850
6. Revenue—Total (Assessment)	1,33,597	1,28,022	1,40,478
7. Total (Collection)	1,09,309	1,48,627	1,26,699
8. Deduct—Refunds	71	450	247
9. Working Expenses	81,510	78,620	86,935
10. Net Revenue based on Assessment	52,087	49,402	53,543
11. Do. on Collection	27,728	64,557	39,517
12. Percentage based on Capital	0·34	0·73	0·43
13. Gross Assessed Revenue per acre irrigated	3·49	3·96	3·45
14. Collection per acre irrigated	2·86	4·44	3·11
15. Working Expenses per acre irrigated	2·13	2·43	2·14

REPORT, 1902-1903 TO 1904-1905.

Works for which Capital and Revenue Accounts are kept.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Acres.	Acres.	Acres.	Acres.	
21,830	21,666	18,062	13,243	
15,263	19,197	21,084	12,116	
37,093	40,863	39,146	25,359	
Rupees.	Rupees.	Rupees.	Rupees.	
3,76,994	1,47,907	37,583	79,096	
92,39,350	81,08,867	76,65,147	75,52,399	
1,34,028	1,29,408	1,49,835	1,22,337	
1,26,544	1,06,432	1,36,731	1,17,498	
255	59	43	96	
82,352	1,59,793	1,00,304	94,392	
51,676	-30,335	49,531	27,945	
43,937	-53,420	-36,379	23,010	
0.48	0.66	0.47	0.30	
3.61	3.17	3.83	4.82	
3.41	2.60	3.49	4.63	
2.22	3.91	2.56	3.72	
				* Including adjustment of Rs. 4,06,452 on account of famine outlay at normal rates. † Including adjustment of Rs. 2,33,306 on account of famine outlay at normal rates. The figures in columns 5 to 8 relate to end of triennial period.

CONSOLIDATED STATEMENT.

**MINOR WORKS AND NAVIGATION—WORKS FOR WHICH
ONLY REVENUE ACCOUNTS ARE KEPT.**

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL

Consolidated statement for Minor Works and Navigation—

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
1. Number of Works	1,326	1,332	1,328
	Acres.	Acres.	Acres.
2. Area irrigated	142,861	148,536	144,152
	Rs.	Rs.	Rs.
<i>Revenue.</i>			
3. Total Revenue	5,15,959	5,20,921	4,87,834
4. Net Revenue	1,08,557	60,946	—15,203
<i>Working Expenses.</i>			
5. Total Working Expenses	4,07,402	4,59,975	5,03,037

REPORT, 1902-1903 TO 1904-1905.

Works for which only Revenue Accounts are kept.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
1,328	1,296	1,305	1,308	
Acres.	Acres.	Acres.	Acres.	
143,350	131,372	145,985	145,036	
Rs.	Rs.	Rs.	Rs.	
5,08,238	5,53,072	5,64,244	5,47,497	
51,434	3,20,983	3,44,546	2,81,845	
4,56,804	2,32,089	2,19,698	2,65,652	

DECCAN AND GUJARAT-TRIENNIAL REPORT, 1902-03 TO 1904-05.

Consolidated Statement for all classes of Irrigation Works.

	DURING THE YEAR			AVERAGE FOR TRIENNIAL.			
	1902-03.	1903-04.	1904-05.	1902-03 to 1904-05.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Works for which Capital and Revenue Accounts are kept.</i>							
Capital outlay during year	4,46,996	(a) 11,22,306	(b) 5,41,610	7,03,636	3,83,191	1,47,519	3,14,844
Do. do. to end of year	2,82,91,339	2,94,13,645	2,99,55,255	2,99,55,255	2,78,44,344	2,66,94,773	2,62,52,219
Gross Revenue	7,46,315	8,63,048	6,65,237	7,58,199	6,65,466	6,30,325	5,78,689
Working Expenses	3,39,847	3,08,124	3,56,124	3,34,695	3,91,116	3,66,881	3,10,858
Net Revenue	4,06,468	5,54,924	3,09,113	4,23,504	2,74,350	2,63,444	2,67,831
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Area irrigated	100,496	89,064	133,144	107,564	120,465	117,332	80,840.
<i>Works for which only Revenue Accounts are kept.</i>							
Gross Revenue	5,15,959	5,20,921	4,87,834	5,08,238	5,53,072	5,64,244	5,47,497
Working Expenses	4,07,402	4,59,975	5,03,037	4,56,804	2,32,089	2,19,698	2,65,652
Net Revenue	1,08,557	60,946	-15,203	51,434	3,20,983	3,44,546	2,81,845
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Area irrigated	142,361	143,536	144,152	143,350	131,372	145,985	145,036
<i>Works for which neither Capital nor Revenue Accounts are kept.</i>							
Gross Revenue	721	1,581	2,195	1,499	1,785	537	535
Working Expenses	4,55,634	2,85,049	3,52,993	3,64,559	1,19,049	62,686	28,032
Net Revenue	-4,54,913	-2,83,468	-3,50,798	-3,63,060	-1,17,264	-62,149	-27,497
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Area irrigated (d)	35	118	144	99	...	...	...
Total.							
Gross Revenue	12,62,995	13,85,550	11,55,266	12,67,936	12,20,323	11,95,106	11,26,721
Working Expenses	12,02,883	10,53,148	12,12,154	11,56,058	7,42,254	6,49,265	6,04,542
Net Revenue	60,112	3,32,402	-56,888	1,11,878	4,78,069	5,45,841	5,22,179
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Area irrigated	242,892	232,718	277,440	251,013	251,837	263,317	225,876

(a) Including adjustment of Rs. 4,05,452 on account of famine outlay at normal rates.

(b) Do. Rs. 2,33,306 and do. Re. 1 due to difference of annas and pias.

(c) These figures relate to end of triennial period.

(d) Area irrigated under Khámgaon Tank.

MAJOR WORKS—PROTECTIVE WORKS.

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—Nira Canal. Source of Supply—River Nira and

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year.	2,941	7,282	3,969
2. Do. do. to end of year ...	56,88,737	56,96,019	56,99,988
3. Interest charges to end of year ...	38,68,205	40,82,748	42,97,478
4. Net Revenue do. ...	7,46,175	9,87,369	9,82,719
5. Total sum at charge do. ...	87,70,297	88,18,049	88,45,862
6. Revenue—Water-rate assessment ...	2,24,783	2,31,781	1,98,718
7. Miscellaneous receipts do. ...	2,308	2,463	2,485
8. Total (assessment) ...	2,27,091	2,34,244	2,01,203
9. Total (collection) ...	2,31,616	2,54,754	1,23,191
10. Refunds ...	20	29	.....
11. Working expenses ..	57,704	63,531	77,841
12. Net Revenue based on assessment ...	1,69,387	1,70,713	1,23,362
13. Percentage do. on Capital ...	2.98	3.00	2.16
14. Net Revenue do. on collection ...	1,73,892	1,91,194	45,350
15. Percentage do. on Capital ...	3.06	3.36	0.80
16. Gross assessed Revenue per acre irrigated...	6.47	7.65	4.12
17. Working expenses do. ...	1.64	2.07	1.59
18. Net assessed Revenue do. ...	4.83	5.57	2.53
19. Cost of measurement do. ...	pies 9	pies 6	pies 5
20. Estimated value of crops irrigated ...	38,70,582	40,04,043	36,51,270
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	43.73	43.23	29.16
2. Do. (do. Irrigation) ...	18.93	19.49	12.88
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	227,670	2,27,670	227,670
4. Area irrigated, Kharif ...	19,754	16,005	20,427
5. Do. Rabi ...	15,348	14,633	28,395
6. Do. Total ...	35,102	30,638	48,822
7. Area applied for (Total) ...	45,982	30,759	44,631
8. Percentage irrigated of total culturable area under command ...	15.42	13.46	21.44
9. Lowest supply reached during the year M. C. Ft.	384	676	410
10. Date on which supply was lowest per Item 9, May 1902		June 1903	12th July 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second, Kharif...	239	244	209
	Rabi ...	267	275
12. Supply utilised do. ...	183	212*
	Rabi ...	267	275
	Kharif ...	66	98
13. Duty per cubic foot per second... Rabi ...	99	81	118

General Remarks.—The Canal continued to show a satisfactory increase in the cultivation of

REPORT, 1902-1903 TO 1904-1905.

PROTECTIVE WORKS.

Reservoir at Bhatghar supplied from Yelwandi River and Ghat Catchment.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
4,731	935	10,504	1,38,843	
56,99,388	56,85,796	56,82,931	56,51,480	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
42,97,478	36,53,843	30,11,067	23,69,962	
9,82,719	5,72,283	2,35,423	66,887	
88,45,362	87,22,792	83,23,180	77,77,879	
2,18,427	1,88,888	1,20,630	87,118	
2,419	1,872	1,616	1,593	
2,20,846	1,90,760	1,22,246	88,711	
2,03,187	1,70,041	1,19,068	82,097	
16	74	220	16	
66,359	57,680	62,670	55,538	
1,54,487	1,33,080	59,576	33,173	
2-71	2-34	1-05	0-60	
1,36,812	1,12,287	56,178	26,543	
2-40	1-98	0-99	0-48	
5-78	4-40	2-95	3-49	
1-73	1-33	1-51	2-19	
4-05	3-07	1-44	1-30	
pies 7	pies 10	pies 11	Anna 1 pies 2	
38,41,965	33,17,701	19,07,388	12,29,812	
Inches.	Inches.	Inches.	Inches.	
38-71	Total rainfall at Lake Whiting.
17-10	12-76	17-73	19-14	
Acres.	Acres.	Acres.	Acres.	
227,670	277,670	227,670	227,670	
18,729	19,875	14,379	11,953	
19,459	23,452	27,117	13,489	
38,188	43,327	41,496	25,442	
40,457	42,636	28,709	19,051	
16-77	19-08	18-23	11-18	
.....	
.....	
231	183	203	238	
262	274	267	281	* Could not be correctly ascertained.
198	171	187	217	
250	274	262	271	
82	108-93	72	50-35	
99	112-17	112	48-30	

valuable crops. The block system is being introduced and its working should be watched.

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—Mhaswad Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year.	5,362	1,433	1,570
2. Do. do. to end of year.	20,88,427	20,89,860	20,91,430
3. Interest charges to end of year ...	16,04,963	16,84,891	17,64,870
4. Net Revenue do. ...	7,461	22,673	25,439
5. Total sum at charge do. ...	36,06,480	36,87,362	37,53,648
6. Revenue—Water-rate assessment ...	9,542	15,623	24,947
7. Miscellaneous receipts do. ...	5,038	157	1,046
8. Total (assessment) ...	14,580	15,780	25,993
9. Total (collection) ...	15,200	27,943	16,096
10. Refunds ...	.....	.....	.....
11. Working expenses ...	14,842	12,731	13,330
12. Net Revenue based on assessment ...	—262	3,049	12,663
13. Percentage do. on Capital ...	0·01	0·15	0·61
14. Net Revenue do. on collection ...	358	15,212	2,766
15. Percentage do. on Capital ...	0·02	0·73	0·13
16. Gross assessed Revenue per acre irrigated ...	3·58	3·59	3·02
17. Working expenses do. ...	3·46	2·89	1·55
18. Net assessed Revenue do. ...	0·06	0·70	1·47
19. Cost of measurement do. ...	pies 4	pies 3	pies 6
20. Estimated value of crops irrigated ...	68,822	89,920	1,63,330
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (in catchment area) ...	15·73	17·28	12·00
2. Do. (as affecting Irrigation) ...	22·64	25·12	9·34
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	106,214	106,214	106,214
4. Area irrigated, Kharif ...	3,274	2,354	4,369
5. Do. Rabi ...	801	2,044	4,246
6. Do. Total ...	4,075	4,398	8,615
7. Area applied for (Total) ...	4,028	4,118	6,931
8. Percentage irrigated of total culturable area under command ...	3·84	4·14	8·11
9. Lowest supply reached during the year ...	439·36	1,770·13	527·33
	M. C. Ft.		
10. Date on which supply was lowest per Item 9.	8th June 1902.	20th May 1903.	12th Sept. 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second			
	Kharif ...	37·76	48·47
	Rabi ...	72·61	87·89
12. Supply utilised do.			
	Kharif ...	37·76	48·47
	Rabi ...	72·61	87·89
13. Duty per cubic foot per second ...			
	Kharif ...	62·34	90·13
	Rabi ...	49·27	72·71

General Remarks.—The area irrigated varies with the rainfall being

REPORT, 1902-1903 TO 1904-1905.

PROTECTIVE WORKS.

Source of Supply—Mán River and Rainfall.

Average for the triennium under report.	1899-00 to 1901-02.	1896-97 to 1899-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
2,788	2,805	715	12,482	The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
20,91,430	20,83,065	20,74,651	20,72,506	
17,64,870	15,25,156	12,86,474	10,48,265	
25,439	7,103	-29,437	-17,437	
37,53,648	35,34,112	33,18,839	30,58,784	
16,704	24,391	17,498	15,977	
2,030	5,724	1,222	1,963	
18,784	30,115	18,720	17,940	
19,746	23,661	16,737	17,846	
.....	
18,634	11,481	20,737	22,114	
5,150	18,634	-2,017	-4,174	
0.25	0.89	0.10	0.20	
6,112	12,180	-4,000	-4,268	
0.29	0.59	0.19	0.21	
3.30	3.25	2.84	4.14	
2.39	1.24	3.14	5.10	
0.91	2.01	0.30	0.96	
pies 4	pies 9	annas 2	annas 3 pies 4	
1,07,357	2,37,781	2,44,645	1,91,145	
Inches.	Inches.	Inches.	Inches.	
15.00	11.12	16.32	19.54	
19.03	8.79	13.78	20.26	
Acres.	Acres.	Acres.	Acres.	
106,214	106,214	1,06,214	106,214	
3,332	4,906	1,940	2,116	
2,364	4,353	4,654	2,214	
5,636	9,259	6,594	4,330	
5,026	7,708	6,413	3,749	
5.36	8.72	6.21	4.08	
.....	
.....	
36.68	45.21	36.73	55.95	
71.64	89.17	68.09	62.80	
36.68	44.44	36.73	55.95	
71.64	89.17	68.09	62.80	
96.64	115.07	44.50	37.88	
45.57	55.24	69.76	36.69	

greatest in bad years. The kharif duty of 1902-1903 is good.

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—*Shetphal Tank.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	1,35,640	21,333	13,377
2. Do. do. to end of year.	6,71,518	6,92,851	7,06,228
3. Interest charges to end of year ...	68,642	93,812	1,19,430
4. Net Revenue do. ...	129	-1,931	3,233
5. Total sum at charge do. ...	7,17,606	7,61,364	8,01,971
6. Revenue—Water-rate assessment ...	468	2,946	11,391
7. Miscellaneous receipts do. ...	108	60	32
8. Total (assessment) ...	576	3,006	11,423
9. Total (collection) ...	843	708	9,137
10. Refunds ...	.....	34	.....
11. Working expenses ...	714	2,734	3,973
12. Net Revenue based on assessment ...	- 138	272	7,450
13. Percentage do. on Capital ...	0.02	0.04	1.05
14. Net Revenue do. on collection ...	129	-2,060	5,164
15. Percentage do. on Capital ...	0.02	0.30	0.73
16. Gross assessed Revenue per acre irrigated ...	2.67	2.99	3.65
17. Working expenses do. ...	3.31	2.72	1.27
18. Net assessed Revenue do. ...	0.64	0.27	2.38
19. Cost of measurement do. ...	.....	.....	pies 6
20. Estimated value of crops irrigated ...	8,653	50,706	95,439
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	22.03	9.12
2. Do. (do. Irrigation) ...	18.63	20.29	9.00
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	25,000	25,000	25,000
4. Area irrigated, Kharif ...	139	417	1,184
5. Do. Rabi ...	77	587	1,943
6. Do. Total ...	216	1,004	3,127
7. Area applied for (Total) ...	570	899	2,505
8. Percentage irrigated of total culturable area under command ...	0.86	4.02	12.51
9. Lowest supply reached during the } M. C. Ft. year ...	.....	70.68	227
10. Date on which supply was lowest per Item 9.	.....	8th June 1903.	11th June 1904.
11. Supply entering the canal at head, } average discharge in cubic feet } per second. { Kharif ... Rabi ...	.....	Area irrigated by leakage water.	8 9
12. Supply utilised do. { Kharif ... Rabi ...	.....	.....	8 9
13. Duty per cubic foot per second ... { Kharif ... Rabi ...	.....	.....	148 216

General Remarks.—The canal is developing. The rabi duty obtained in 1904-05.

REPORT, 1902-1903 to 1904-1905.

PROTECTIVE WORKS.

Source of Supply—Nála, Rainfall and surplus water from Nira Canal.

Average for the triennium under report.	1890-00 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
56,783	1,22,630	55,996	Capital account opened in 1896-97.	
7,06,228	5,35,879	1,67,988	.....	} The figures in columns 5, 6 and 7 relate to end of triennial period.
1,19,430	46,088	9,360	.....
3,233	.....	.....	.....
8,01,971	5,64,568	1,71,173	.....
4,935	279	.....	.....
67	.....	.....	.....
5,002	279	.....	.....
3,563	.....	.....	.....
11	.....	.....	.....
2,474	.....	.....	.....
2,528	279	.....	.....
0.36	.....	.....	.....
1,078	.....	.....	.....
0.15	.....	.....	.....
3.45	.....	.....	.....
1.71	.....	.....	.....
1.74	.....	.....	.....
.....	
51,599	.....	.....	.....
Inches.	Inches.	Inches.	Inches.	
15.57	.....	.....	.....
15.97	.....	.....	.....
Acres.	Acres.	Acres.	Acres.	
25,000	.....	.....	.....
580	.....	.....	.....
869	112	.....	.....
1,449	112	.....	.....
1,325	.....	.....	.....
5.80	.....	.....	.....
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

was good. The block system is being introduced and the results should be watched.
B 1523-7

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—Chankapur Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	2,663	96,287	1,53,819
2. Do. do. to end of year.	1,12,352	2,08,639	3,62,458
3. Interest charges to end of year ...	61,853	67,813	78,358
4. Net Revenue do.
5. Total sum at charge do. ...	1,70,023	2,70,492	4,30,271
6. Revenue—Water-rate assessment
7. Miscellaneous receipts do.
8. Total (assessment)
9. Total (collection)
10. Refunds
11. Working expenses
12. Net Revenue based on assessment
13. Percentage do. on Capital
14. Net Revenue do. on collection
15. Percentage do. on Capital
16. Gross assessed Revenue per acre irrigated
17. Working expenses do.
18. Net assessed Revenue do.
19. Cost of measurement do.
20. Estimated value of crops irrigated
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)
2. Do. (do. Irrigation)
	Acres.	Acres.	Acres.
3. Total culturable area under command
4. Area irrigated, Kharif
5. Do. Rabi
6. Do. Total
7. Area applied for (Total)
8. Percentage irrigated of total culturable area under command
9. Lowest supply reached during the year
10. Date on which supply was lowest per Item 9...
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif
{ Rabi
12. Supply utilised do. ... { Kharif
{ Rabi
13. Duty per cubic foot per second... { Kharif
{ Rabi

General Remarks.—Satisfactory progress made

REPORT, 1902-1903 TO 1904-1905,

PROTECTIVE WORKS.

Source of Supply—Girna River.

Average for the triennium under report.	1899-00 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
84,256	4,834	8,977	494	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
3,62,458	1,09,689	95,186	68,255	
78,358	57,671	45,950	36,486	
.....	
4,30,271	1,68,200	1,37,518	1,02,159	
.....	
.....	
.....	
.....	
.....	
.....	
Inches.	Inches.	Inches.	Inches.	
.....	
.....	
Acres.	Acres.	Acres.	Acres.	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

with the construction of this tank.

DECCAN AND GUJARA'T TRIENNIAL

MAJOR WORKS—

Name of Work—Maladevi Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	58,184	3,956	*1
2. Do. do. to end of year ...	3,25,528	3,29,484	+—14,535
3. Interest charges to end of year ...	51,027	63,280	8,14,950
4. Net Revenue do. ...	.....	.....	75,330
5. Total sum at charge do. ...	3,65,425	3,80,511	3,78,230
6. Revenue—Water-rate assessment ...	.....	.....	.....
7. Miscellaneous receipts do. ...	.....	.....	.....
8. Total (assessment) ...	.....	.....	.....
9. Total (collection) ...	.....	.....	.....
10. Refunds ...	.....	.....	.....
11. Working expenses ...	.....	.....	.....
12. Net Revenue based on assessment ...	.....	.....	.....
13. Percentage do. on Capital ...	.....	.....	.....
14. Net Revenue do. on collection ...	.....	.....	.....
15. Percentage do. on Capital ...	.....	.....	.....
16. Gross assessed Revenue per acre irrigated ...	.....	.....	.....
17. Working expenses do. ...	.....	.....	.....
18. Net assessed Revenue do. ...	.....	.....	.....
19. Cost of measurement do. ...	.....	.....	.....
20. Estimated value of crops irrigated ...	.....	.....	.....
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	.....	.....	.....
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	.....	.....	.....
4. Area irrigated, Kharif ...	.....	.....	.....
5. Do. Rabi ...	.....	.....	.....
6. Do. Total ...	.....	.....	.....
7. Area applied for (Total) ...	.....	.....	.....
8. Percentage irrigated of total culturable area under command ...	.....	.....	.....
9. Lowest supply reached during the year M. C. Ft. ...	.....	.....	.....
10. Date on which supply was lowest per Item 9. ...	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second. ...	.....	.....	.....
	Kharif ...	.....	.....
	Rabi ...	.....	.....
12. Supply utilised do. ...	Kharif ...	.....	.....
	Rabi ...	.....	.....
13. Duty per cubic foot per second. ...	Kharif ...	.....	.....
	Rabi ...	.....	.....

General Remarks.—An alternative site is proposed at

REPORT, 1902-03 to 1904-05.

PROTECTIVE WORKS.

Source of Supply—Pravara River.

Average for the triennium under Report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
15,869	69,594	7,482	.....	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period. * Adjusted on account of difference due to annas and pies † Credit on account of the value of a light railway transferred to the Chankápur Tank.
3,14,950	2,67,344	58,563	36,116	
75,330	39,897	20,437	15,297	
.....	
3,78,230	2,98,255	76,771	50,050	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
Inches.	Inches.	Inches.	Inches.	
.....	
.....	
Acres.	Acres.	Acres.	Acres.	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

Bhandardara for a masonry dam.

DECCAN AND GUJARAT TRIENNIAL
CONSTRUCTION OF PROTECTIVE IRRIGATION WORKS—WORKS FOR
Surveys and Investigations of

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
		Rs.	Rs.	Rs.
1	Revenue ... ..	.....	.....	.....
	<i>Expenditure.</i>			
2	Works	33,901	49,837	46,951
3	Establishment	1,04,692	1,58,484	1,47,987
4	Tools and Plant	34,641	20,232	8,288
5	Suspense Account ... ..	.....	250	—251
6	Total ...	1,73,234	2,28,803	2,02,975

General Remarks.—The results of the surveys

REPORT, 1902-03 TO 1904-05.

WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

Protective Irrigation Works.

Average for the triennium under Report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
Rs.	Rs.	Rs.	Rs.	
.....	
43,563	
1,37,054	
21,054	
.....	
2,01,671	

are now beginning to be available.

MAJOR WORKS—PRODUCTIVE WORKS.

—

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—*Hathmati Canal.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year ...	5,17,838	5,17,838	5,17,838
3. Interest charges to end of year ...	5,90,846	6,10,483	6,30,120
4. Net Revenue do. ...	—56,089	—60,882	—65,395
5. Total sum at charge do. ...	11,39,028	11,64,773	11,89,203
6. Revenue—Water-rates assessment ...	573	2,842	13
7. Miscellaneous receipts do. ...	465	644	613
8. Total (assessment) ...	1,038	3,486	626
9. Total (collection) ...	516	2,166	2,638
10. Refunds ...	.....	.....	.....
11. Working expenses ...	6,626	6,959	7,151
12. Net Revenue based on assessment ...	—5,588	—3,473	—6,525
13. Percentage do. on Capital ...	1·08	0·67	1·26
14. Net Revenue do. on collection ...	—6,110	—4,793	—4,513
15. Percentage do. on Capital ...	1·18	0·93	0·87
16. Gross assessed Revenue per acre irrigated ...	3·62	2·69	12·27
17. Working expenses do. ...	23·09	5·38	140·21
18. Net assessed Revenue do. ...	19·47	2·69	127·94
19. Cost of measurement do. ...	Not available.	Pies 3	Pies 6
20. Estimated value of crops irrigated ...	7,215	34,048	327
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	Not available.	30·99	13·50
2. Do. (do. Irrigation) ...	31·49	27·76	6·82
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	28,840	28,840	28,840
4. Area irrigated, Kharif ...	.....	300	51
5. Do. Rabi ...	287	994	.....
6. Do. Total ...	287	1,294	51
7. Area applied for (Total) ...	520	1,609	185
8. Percentage irrigated of total culturable area under command ...	0·99	4·49	0·18
9. Lowest supply reached during the year M. C. Ft. ...	.....	.....	.....
10. Date on which supply was lowest per Item 9. ...	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second. ...	45·50	10·80	13·75
12. Supply utilised do. ...	{ Kharif ... 22·75 Rabi ... 4·00	{ 14·00 21·50 7·00	{ .. 5·50
13. Duty per cubic foot per second ...	{ Kharif Rabi ... 71·75	{ 14·00 142·00	{ .. 9·27

General Remarks.—The drought of 1899-1902 was continued during 1902-05 and the results are therefore poor.

REPORT, 1902-1903 TO 1904-1905.

PRODUCTIVE WORKS.

Source of Supply—Hathmati River.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	—186	
5,17,838	5,17,838	5,17,838	5,17,838	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
6,30,120	5,71,209	5,12,298	4,53,387	
—65,395	—49,979	—37,774	—52,690	
11,89,203	11,13,556	10,54,559	10,10,036	
1,143	345	11,018	9,582	
574	511	1,221	1,221	
1,717	856	12,239	10,803	
1,773	2,067	12,272	10,756	
.....	
6,912	6,135	7,300	5,958	
—5,195	—5,279	4,939	4,845	
1.00	1.02	0.95	0.94	
—5,139	—4,068	4,972	4,808	
0.99	0.79	0.96	0.93	
3.16	1.26	2.71	2.86	
12.71	9.06	1.62	1.58	
9.55	7.80	1.09	1.28	
.....	.....	8 pies	7 pies
13,863	5,113	2,06,640	1,20,660	
Inches.	Inches.	Inches.	Inches.	
.....	Not available.	Not available.		
22.02	15.50	26.55	41.57	
Acres.	Acres.	Acres.	Acres.	
28,840	28,840	28,840	28,840	
117	518	1,589	1,517	
427	159	2,934	2,263	
544	677	4,523	3,780	
771	803	3,710	2,862	
1.89	2.34	15.68	13.11	
.....	} Weir project.
.....	
23.35	53.92	68.17	72.50	
11.00	6.83	67.33	69.92	
16.58	23.96	31.16	32.71	
5.50	3.41	34.00	33.66	
11.63	7.03	23.09	21.48	
106.87	8.77	46.26	32.67	

supply of water was much shorter than in the triennium 1896-1899 and 1893-1896. The

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—Lower Panjhra River Works.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	4,68,621	4,68,621	4,68,621
3. Interest charges to end of year ...	5,60,964	5,78,779	5,96,594
4. Net Revenue do. ...	2,06,446	2,18,140	2,22,184
5. Total sum at charge do. ...	8,12,543	8,23,139	8,29,260
6. Revenue—Water-rate assessment* ...	17,093	16,682	13,828
7. Miscellaneous receipts do. ...	339	624	484
8. Total (assessment) ...	17,432	17,306	14,312
9. Total (collection)* ...	15,936	16,834	16,713
10. Refunds ...	.....	.....	.....
11. Working expenses ...	8,717	5,140	12,669
12. Net Revenue based on assessment ...	8,715	12,166	1,643
13. Percentage do. on Capital ...	1.86	2.59	0.35
14. Net Revenue do. on collection ...	7,219	11,694	4,044
15. Percentage do. on Capital ...	1.54	2.50	0.86
16. Gross assessed Revenue per acre irrigated ...	6.96	7.15	5.26
17. Working expenses do. ...	3.48	2.12	4.65
18. Net assessed Revenue do. ...	3.48	5.03	0.61
19. Cost of measurement do. ...	Pies 7	Pies 4	Pies 5
20. Estimated value of crops irrigated ...	40,070	40,268	54,450
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	22.41	23.94	15.86
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	12,627	12,627	12,627
4. Area irrigated, Kharif ...	1,293	1,326	1,301
5. Do. Rabi ...	1,210	1,035	1,421
6. Do. Total ...	2,503	2,421	2,722
7. Area applied for (Total) ...	737	656	960
8. Percentage irrigated of total culturable area under command ...	19.82	19.17	21.56
9. Lowest supply reached during the year M. C. Ft.	2	44.35	0.48
10. Date on which supply was lowest per Item 9.	May 1902	21st June 1903	25th June 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif.	6.49	13.76	7.99
{ Rabi...	13.30	9.14	8.92
12. Supply utilised do. { Kharif.	6.49	13.76	7.99
{ Rabi...	13.30	9.14	8.92
13. Duty per cubic foot per second { Kharif.	199.23	96.36	102.83
{ Rabi...	165.49	191.90	201.34

General Remarks.—The rabi duty for water obtained is high,

REPORT, 1902-1903 TO 1904-1905.

PRODUCTIVE WORKS.

Source of Supply—Local Streams.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	2	1,382	1,507	
4,68,621	4,68,621	4,68,616	4,64,469	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
5,96,594	5,43,149	4,89,704	4,36,451	
2,22,184	1,99,227	1,71,827	1,44,189	
8,29,260	8,04,003	7,78,992	7,49,530	
15,838	15,576	18,367	17,375	* Including Irrigation share of Land Revenue assessment on the "Mámúl Bágáyat" with fixed rate under the settlement.
482	386	583	625	
16,350	15,962	18,950	18,000	
16,494	16,098	17,978	18,032	
.....	.....	.....	628	
8,842	6,965	8,765	6,545	
7,508	8,997	10,185	11,455	
1.60	1.92	2.17	2.47	
7,652	9,133	9,213	10,859	
1.63	1.94	1.97	2.34	
6.41	6.42	5.40	6.24	
3.47	2.80	2.59	2.27	
2.94	3.62	2.90	3.97	
Pies 5	† Pies 6	Pies 5	Pies 8	† For 1899-1900 only.
44,929	25,226	81,374	80,231	
Inches.	Inches.	Inches.	Inches.	
.....	
20.74	12.42	22.41	21.51	In the catchment area of the Mukti Tank.
Acres.	Acres.	Acres.	Acres.	
12,627	12,627	12,627	12,627	
1,307	1,524	1,331	1,614	
1,242	961	2,179	1,270	
2,549	2,485	3,510	2,884	
784	691	1,673	977	These figures represent only new irrigation.
20.19	19.68	27.80	22.84	
.....	
.....	
9.41	7.05	9.17	14.17	
10.45	12.75	.....	8.32	
9.41	7.05	9.17	14.17	
10.45	12.75	.....	8.32	
152.81	113.58	206.87	122.12	
186.24	141.83	.....	75.26	

but the supply is much smaller than required.

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—Kadva River Works, comprising Waghad Tank and Palkhed, Rivers and Waghad Tank Canals

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	24,153	2,088	—753
2. Do. do. to end of year	7,97,905	7,99,993	7,99,240
3. Interest charges to end of year ...	6,59,958	6,90,520	7,21,107
4. Net Revenue do. ...	—58,175	—51,892	—41,739
5. Total sum at charge do. ...	14,87,848	15,18,126	15,41,652
6. Revenue—Water-rate assessment* ...	13,612	16,133	20,910
7. Miscellaneous receipts do. ...	604	188	515
8. Total (assessment) ...	14,216	16,321	21,425
9. Total (collection)* ...	8,267	14,072	23,049
10. Refunds ...	.....	.....	.....
11. Working expenses ...	6,375	7,789	12,897
12. Net Revenue based on assessment ...	7,841	8,532	8,528
13. Percentage do. on Capital ...	0.98	1.07	1.07
14. Net Revenue do. on collection ...	1,892	6,283	10,152
15. Percentage do. on Capital ...	0.24	0.79	1.27
16. Gross assessed Revenue per acre irrigated...	5.12	5.40	4.67
17. Working expenses do. ...	2.30	2.58	2.81
18. Net assessed Revenue do. ...	2.82	2.82	1.86
19. Cost of measurement do. ...	Anna 1 pies 3	Anna 1 pies 6	Anna 1 pie 1
20. Estimated value of crops irrigated ...	32,592	48,690	73,330
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	†38.09	†37.74
2. Do. (do. Irrigation) ...	17.40	18.55	11.03
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	36,430	36,430	36,430
4. Area irrigated, Kharif ...	1,314	523	2,610
5. Do. Rabi ...	1,461	2,500	1,974
6. Do. Total ...	2,775	3,023	4,584
7. Area applied for (Total) ...	3,059	2,958	3,577
8. Percentage irrigated of total culturable area under command ...	7.62	8.30	12.58
9. Lowest supply reached during the year M. C. Ft.	Nil	0.78	19.47
10. Date on which supply was lowest per Item 9.	April 1902	31st May 1903	3rd July 1904
<i>Wadali Canal.</i>			
11. Supply entering the Canal at head, average discharge in cubic feet per second.	Kharif. 2.87 Rabi... 7.51	4.09 6.73	7.02 7.36
12. Supply utilised do. ...	Kharif. 2.87 Rabi... 7.51	4.09 5.34	5.48 5.13
13. Duty per cubic foot per second ...	Kharif. 102.08 Rabi... 116.91	30.81 110.35	70.37 92.93
<i>Ojhar Tamlat Canal.</i>			
11-A. Supply entering the Canal at head, average discharge in cubic feet per second.	Kharif. §..... Rabi... §.....	§..... §.....	4.79 6.10
12-A. Supply utilised do. ...	Kharif. §..... Rabi... §.....	§..... §.....	4.79 6.10
13-A. Duty per cubic foot per second.	Kharif. §..... Rabi... §.....	§..... §.....	106.47 118.03
<i>Palkhed Canal.</i>			
11-B. Supply entering the Canal at head, average discharge in cubic feet per second.	Kharif. §15.09 Rabi... §23.96	§15.52 §32.72	26.42 32.13
12-B. Supply utilised do. ...	Kharif. §15.09 Rabi... §23.96	§15.52 §32.72	26.42 32.13
13-B. Duty per cubic foot per second.	Kharif. §82.90 Rabi... §92.24	§33.70 §115.04	68.24 52.13

General Remarks.—In spite of the three years being one of low rainfall the area irrigated lower but this is due to method of accounting and it is the increase

REPORT, 1902-1903 to 1904-1905.

PRODUCTIVE WORKS.

Ojhar Tambat and Wadali Canals. Source of Supply—Kadva and Banganga supplied from Kalvan River.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
8,496	7,819	8,812	1,141	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period. * Including Irrigation share of Land Revenue.
7,99,210	7,73,752	7,50,295	7,23,860	
7,21,107	6,29,876	5,42,679	4,57,844	
-41,739	-60,067	-11,904	12,101	
15,41,652	14,13,711	12,74,197	11,42,260	
16,885	14,168	13,300	10,802	
436	450	346	469	
17,321	14,618	13,646	11,271	
15,129	6,559	11,248	11,202	
.....	.....	1	3
9,020	22,613	19,249	11,288	
8,301	-7,995	-5,603	-17	
1.04	1.03	0.75	0.00	
6,109	-16,054	-8,002	-89	
0.77	2.07	1.07	0.01	
5.01	4.64	4.47	4.08	
2.61	7.18	6.30	4.09	
2.40	2.54	1.83	0.01	
Anna 1 pies 3	Anna 1 pies 5	Anna 1 pies 4	Anna 1 pies 5	
51,537	40,243	64,609	1,18,101	
Inches.	Inches.	Inches.	Inches.	† Gauged at the damsite. ‡ Rainfall in the tank catchment.
37.91	.....	‡51.29	‡57.43
15.66	18.16	27.30	27.87	
Acres.	Acres	Acres.	Acres.	
36,430	36,430	36,430	36,430	
1,482	1,600	940	867	
1,978	1,549	2,115	1,894	
3,460	3,143	3,055	2,761	
3,198	2,804	2,670	2,512	
9.50	8.64	8.39	7.58	
.....	
.....	
4.66	5.83	7.35	6.44	
7.21	6.35	8.61	7.55	
4.15	4.14	5.13	4.55	
5.99	4.61	5.65	4.89	
67.75	79.50	35.75	37.40	
106.73	73.56	63.89	60.20	
.....	2.95	2.97	3.25	§ The figures entered against the Palkhed Canal include those of the Ojhar Tambat Canal. Separate figures for each canal are not available.
.....	4.81	4.66	5.36	
.....	2.24	2.32	2.49	
.....	3.65	3.52	3.99	
.....	113.83	58.89	52.27	
.....	42.65	74.29	70.81	
§20.61	19.66	15.89	15.44	
§31.64	27.17	24.91	26.16	
§20.61	13.27	11.13	10.61	
§31.64	17.74	17.14	15.11	
§97.10	48.22	38.76	39.07	
§125.81	34.85	62.47	48.68	

and the revenue assessed and collected have increased satisfactorily. The working expenses are in line I-8 and 9 and II-6 which show that progress is being made.

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—Pravara River Works—Lakh Canal.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	3,71,891	3,71,891	3,71,891
3. Interest charges to end of year ...	4,82,286	4,96,384	5,10,482
4. Net Revenue do. ...	-2,28,419	-2,29,334	-2,32,834
5. Total sum at charge do. ...	10,67,561	10,82,596	10,97,609
6. Revenue—Water-rate assessment* ...	2,144	535	560
7. Miscellaneous receipts do. ...	134	188	251
8. Total (assessment) ...	2,278	723	1,111
9. Total (collection)* ...	784	2,872	1,706
10. Refunds ...	6	19	16
11. Working expenses ...	1,715	3,768	5,190
12. Net Revenue based on assessment ...	563	-3,045	-4,079
13. Percentage do. on Capital ...	0.15	0.82	1.10
14. Net Revenue do. on collection ...	-937	-915	-3,500
15. Percentage do. on Capital ...	0.25	0.25	0.94
16. Gross assessed Revenue per acre irrigated...	1.89	3.89	2.03
17. Working expenses do. ...	1.42	20.26	9.33
18. Net assessed Revenue do. ...	0.47	16.37	7.33
19. Cost of measurement do. ...	Anna 1 pies 7	Anna 1 pies 6	Pies 10
20. Estimated value of crops irrigated ..	12,372	2,367	5,481
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	19.65	21.95	21.99
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	25,536	25,536	25,536
4. Area irrigated, Kharif ...	399	28	480
5. Do. Rabi ...	807	158	76
6. Do. Total ...	1,206	186	556
7. Area applied for (Total) ...	1,847	615	959
8. Percentage irrigated of total culturable area under command ...	4.72	0.73	2.18
9. Lowest supply reached during the year	M. C. Ft.	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second.	36.34	27.60	29.59
	36.82	18.51	14.80
12. Supply utilised do. ...	29.62	21.10	23.76
	36.82	16.16	8.89
13. Duty per cubic foot per second ...	10.98	1.01	16.22
	21.92	9.40	5.95

General Remarks.—The canal is unsatisfactorily constructed

REPORT, 1902-1903 TO 1904-1905.

PRODUCTIVE WORKS.

Source of Supply—Pravara River.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	67	
3,71,891	3,71,891	3,71,891	3,71,891	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
5,10,482	4,68,188	4,25,894	3,83,600	
-2,32,834	-2,27,482	-1,73,968	-1,05,666	
10,97,609	10,27,642	9,46,255	8,39,341	
1,180	1,058	2,564	1,235	
191	158	362	734	
1,871	1,216	2,926	1,969	
1,787	905	2,550	1,879	
14	.....	.....	.....
3,558	18,743	25,318	9,094	
-2,187	-17,527	-22,392	-7,125	
0.59	4.71	6.02	1.92	
-1,785	-17,838	-22,768	-7,215	
0.48	4.80	6.12	1.94	
2.11	1.40	2.44	5.98	
5.48	21.67	21.08	27.64	
3.37	20.27	18.64	21.66	
Anna 1 pies 4 6,740	Pies 11 6,345	Anna 1 pies 8 †1,12,603	Anna 1 pies 8 16,528	† The estimated value of crops for the triennium ending 1893-99 seems to be wrong.
Inches.	Inches.	Inches.	Inches.	
.....	
21.20	13.68	21.26	20.60	
Acres.	Acres.	Acres.	Acres.	
25,536	25,536	25,536	25,536	
302	359	405	115	
347	506	798	214	
649	865	1,201	329	
1,140	1,480	2,162	532	
2.54	3.39	4.70	1.29	
.....	} Weir project.
.....	
31.18	32.82	43.26	26.64	
23.38	15.49	37.36	22.71	
24.83	22.42	29.78	23.64	
20.46	14.97	28.21	20.37	
9.40	10.72	8.98	4.42	
12.42	38.90	26.30	10.00	

being in single bank and is liable to be blocked up by silt.

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—Mutha Canals.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	1,10,011	3,13,575	35,638
2. Do. do. to end of year.	68,26,835	71,32,910	71,75,748
3. Interest charges to end of year ...	71,93,361	74,62,216	77,37,502
4. Net Revenue do. ...	32,87,139	85,14,633	36,76,418
5. Total sum at charge do. ...	1,06,34,605	1,10,46,152	1,11,23,331
6. Revenue—Water-rate assessment* ...	1,65,898	1,68,257	1,85,020
7. Miscellaneous receipts do. ...	1,34,278	1,24,009	1,50,137
8. Total (assessment) ...	3,00,176	2,92,266	3,35,157
9. Total (collection)* ...	2,98,687	3,27,977	2,70,370
10. Refunds ...	852	505	184
11. Working expenses ...	1,34,750	99,978	1,08,402
12. Net Revenue based on assessment ...	1,65,426	1,92,288	2,26,755
13. Percentage do. on Capital ...	2.42	2.69	3.16
14. Net Revenue do. on collection ...	1,63,085	2,27,494	1,61,784
15. Percentage do. on Capital ...	2.39	3.19	2.25
16. Gross Assessed Revenue per acre irrigated†	22.30	26.89	18.16
17. Working expenses do. ...	16.63	14.78	9.88
18. Net Assessed Revenue do.†	5.67	12.13	8.28
19. Cost of measurement do. ...	Annas 3	Ans. 2 pies 11	Ans. 2 pies 4
20. Estimated value of crops irrigated ...	17,74,227	17,73,845	25,44,579
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)†	31.07	29.38	16.73
2. Do. (do. Irrigation)	29.83	24.21	15.30
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	49,800	49,800	49,800
4. Area irrigated, Kharif ...	7,398	6,437	10,423
5. Do. Rabi ...	703	337	543
6. Do. Total ...	8,101	6,774	10,971
7. Area applied for (Total) ...	8,538	7,377	9,773
8. Percentage irrigated of total culturable area under command ...	16.27	13.60	22.03
9. Lowest supply reached during the year, M. C. Ft.	607	1,025	744
10. Date on which supply was lowest per Item 9 ...	May 1902	25th May 1903	12th June 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	144.68	159.86	158.67
{ Rabi ...	130.46	134.83	131.58
12. Supply utilised do. ... { Kharif ...	Not available.	Not available.	Not available.
{ Rabi ...	Do.	Do.	131.58
13. Duty per cubic foot per second. { Kharif ...	51.00	40.00	65.72
{ Rabi ...	45.00	41.00	48.54

General Remarks.—The canal continued to maintain a large area

REPORT, 1902-1903 TO 1904-1905.

PRODUCTIVE WORKS.

Source of Supply—Mutha River and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.	
5	6	7	8	9	
Rs.	Rs.	Rs.	Rs.		
1,53,141	26,665	16,068	79,100	The figures in columns 5, 6, 7 and 8 relate to end of triennial period.	
71,75,748	67,16,324	66,36,329	65,88,127		
77,37,502	69,32,324	61,60,478	53,96,207		
36,76,418	31,24,054	25,43,214	20,77,480		
1,11,23,331	1,04,75,104	1,01,69,723	98,52,200		
1,73,058	1,53,662	1,34,983	1,51,993		
1,86,141	1,32,519	1,23,665	1,12,120		
3,09,199	2,86,181	2,58,648	2,64,113		
2,99,011	2,76,621	2,42,276	2,54,758		
514	824	1,218	2,174		
1,14,376	82,184	85,813	74,836	* Including Rs. 42 on account of "Irrigation Share of Land Revenue."	
1,94,823	2,03,997	1,72,835	1,89,277	† Excluding receipts from "Water-power" and "Poona water-supply."	
2-72	3-04	2-61	2-87	Excluding receipts as above and working expenses on Poona water-supply, the rates per acre are as under :—	
1,84,121	1,93,613	1,55,245	1,77,748		
2-57	2-90	2-35	2-70		
21-75	17-98	15-77	18-09		
13-28	9-00	9-47	8-48		
8-47	8-98	6-30	9-61		
Annas 2 pies 9	Anna 1 pies 5	Annas 2 pies 3	Annas 2 pies 5		
20,30,884	13,38,864	11,82,064	19,96,584		
Inches.	Inches.	Inches.	Inches.		
25-73	21-50	27-29	27-89		
23-11	21-66	31-35	30-26		
Acres.	Acres.	Acres.	Acres.		
49,800	49,800	49,800	49,800		
8,088	8,544	7,256	7,219		
527	589	1,809	1,607		
8,615	9,133	9,065	8,826		
8,563	9,170	9,956	9,857		
17-30	18-34	18-20	17-72		
.....		
.....		
154-40	148-18	150-97	155-82		
132-31	133-71	134-64	147-90		
Not available.	Not available.	Not available.	Not available.		
.....	Do.	Do.	Do.		
52-24	58-63	48-54	46-39		
44-85	39-05	42-70	10-57		

	Gross Assessed Revenue per acre irrigated.	Working expenses per acre irrigated.	Net Assessed Revenue per acre irrigated.
	Rs.	Rs.	Rs.
1902-03 ...	23-30	6-01	16-29
1903-04 ...	26-99	9-24	17-65
1904-05 ...	18-16	4-63	13-33
Average...	21-75	6-30	15-39

‡ Rainfall at Lake Fife. Rainfall in the catchment of the lake :—		
Inches.		
1903-04 ...	99-13	
1904-05 ...	59-54	

of valuable crops and the figures on line 20 are noteworthy.

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS—

Name of Work—*Ekrak Tank.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	13,40,386	13,40,386	13,40,386
3. Interest charges to end of year ...	16,17,889	16,66,514	17,15,639
4. Net Revenue do. ...	—41,977	—25,692	—12,745
5. Total sum at charge do. ...	20,57,884	29,99,752	30,32,592
6. Revenue—Water-rate assessment ...	11,660	16,490	20,175
7. Miscellaneous receipts do. ...	12,232	9,835	15,106
8. Total (assessment) ...	23,892	26,325	35,281
9. Total (collection) ...	19,461	28,721	25,929
10. Refunds ...	106	.....	50
11. Working expenses ...	12,098	12,436	12,932
12. Net Revenue based on assessment ...	11,794	13,889	22,349
13. Percentage do. on Capital ...	0.88	1.04	1.67
14. Net Revenue do. on Collection ...	7,257	16,285	12,947
15. Percentage do. on Capital ...	0.54	1.21	0.97
16. Gross assessed Revenue per acre irrigated ...	11.76	9.04	7.33
17. Working expenses do. ...	5.95	4.27	2.69
18. Net assessed Revenue do. ...	5.81	4.77	4.64
19. Cost of measurement do. ...	Ans. 5 pies 6	Pies 10	Pies 5
20. Estimated value of crops irrigated ...	1,94,043	1,87,777	1,60,828
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	33.15	46.79	19.79
2. Do. (do. Irrigation) ...	29.54	49.89	20.73
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	16,941	16,941	16,941
4. Area irrigated, Kharif ...	1,322	1,594	2,644
5. Do. Rabi ...	708	1,317	2,172
6. Do. Total ...	2,030	2,911	4,816
7. Area applied for (Total) ...	2,992	2,737	3,529
8. Percentage irrigated of total culturable area under command ...	11.98	17.18	28.43
9. Lowest supply reached during the year, M. C. Ft. ...	652	2,114.18	1,724.41
10. Date on which supply was lowest per Item 9 ...	August 1902	21st May 1903.	10th September 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	18.72	18.31	32.10
{ Rabi ...	15.91	34.52	39.67
12. Supply utilised do. ... { Kharif ...	16.72	16.31	29.41
{ Rabi ...	13.91	32.51	35.50
13. Duty per cubic foot per second. { Kharif ...	70.62	87.05	82.36
{ Rabi ...	44.50	82.70	92.81

General Remarks.—The rainfall in 1904 was favourable for crops and the

REPORT, 1902-1903 TO 1904-05.

PRODUCTIVE WORKS.

Source of Supply—Adhela River and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	.....	.....	.....	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
13,40,386	13,40,386	13,40,386	13,40,386	
17,15,639	15,68,264	14,20,889	12,73,514	
-12,745	-49,234	-1,03,749	-1,06,089	
30,32,592	29,25,954	28,32,796	26,81,824	
16,108	13,728	13,813	13,373	
12,391	14,290	11,600	13,122	
28,499	28,018	25,413	26,495	
24,704	27,273	22,739	26,365	
52	323	.....	.....
12,489	8,779	21,959	17,974	
16,010	19,239	3,454	8,521	
1-19	1-44	0-26	0-64	
12,163	18,171	780	8,391	
0-94	1-35	0-06	0-63	
8-76	7-20	6-70	9-06	
3-84	2-25	5-79	6-15	
4-92	4-95	0-91	2-91	
Annas 2 pies 3	Annas 2 pies 9	Annas 2 pies 4	Annas 2 pies 11	
1,80,883	1,43,884	2,32,933	2,39,285	
Inches.	Inches.	Inches.	Inches.	
33-24	18-71	24-59	27-71	
33-39	16-78	23-61	25-16	
Acres.	Acres.	Acres.	Acres.	
16,941	16,941	16,941	16,941	
1,853	2,118	2,049	1,916	
1,399	1,771	1,741	1,007	
3,252	3,889	3,790	2,923	
3,086	2,731	2,562	2,497	
19-20	22-95	22-37	17-25	
.....	
.....	
23-04	20-02	30-59	37-90	
30-03	28-59	37-44	42-51	
20-81	14-57	27-92	34-14	
27-31	23-83	36-23	40-71	
80-01	133-85	68-97	50-88	
73-34	46-86	46-47	25-34	

return from Irrigation shows a slight reduction in the previous triennium.

DECCAN AND GUJARAT TRIENNIAL

MAJOR WORKS--

Name of Work—*Krishna Canal.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	1,427	308
2. Do. do. to end of year.	8,64,892	8,66,319	8,66,627
3. Interest charges to end of year	11,42,664	11,75,432	12,08,232
4. Net Revenue do.	3,89,663	4,19,636	4,55,038
5. Total sum at charge do.	16,17,106	16,19,320	16,22,423
6. Revenue—Water-rate assessment	36,523	39,991	57,298
7. Miscellaneous receipts do.	2,045	1,168	1,598
8. Total (assessment)	38,568	41,159	58,896
9. Total (collection)	46,776	44,447	50,208
10. Refunds	25	36	2
11. Working expenses	14,796	14,438	14,804
12. Net Revenue based on assessment	23,772	26,721	44,092
13. Percentage do. on Capital	2.75	3.08	5.09
14. Net Revenue do. on collection	31,955	29,973	35,402
15. Percentage do. on Capital	3.69	3.46	4.09
16. Gross assessed Revenue per acre irrigated	6.47	10.13	7.20
17. Working expenses do.	2.49	3.56	1.81
18. Net assessed Revenue do.	3.98	6.57	5.39
19. Cost of measurement do.	Ans. 2 pies 2	Ans. 2 pies 11	Anna 1 pies 9
20. Estimated value of crops irrigated	4,51,264	5,29,549	8,29,222
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (Total)*	29.55	29.02	14.72
2. Do. (as affecting Irrigation)	26.21	23.41	14.52
	Acres.	Acres.	Acres.
3. Total culturable area under command	26,453	26,453	26,453
4. Area irrigated, Kharif	4,842	2,557	6,104
5. Do. Rabi	1,121	1,505	2,081
6. Do. Total	5,963	4,062	8,185
7. Area applied for (Total)	5,967	3,747	6,308
8. Percentage irrigated of total culturable area under command	22.54	15.36	30.94
9. Lowest supply reached during the year,			
10. Date on which supply was lowest per Item 9	M. C. Ft. ....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif	48.56	38.77	48.26
	45.90	66.81	58.49
12. Supply utilised do. { Kharif	46.05	35.12	47.10
	44.85	60.83	57.52
13. Duty per cubic foot per second. { Kharif	99.71	65.95	126.49
	24.64	22.70	35.58

General Remarks.—This small canal without storage

REPORT, 1902-03 TO 1904-1905.

PRODUCTIVE WORKS.

Source of Supply—River Krishna and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1893-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
578	2,300	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
8,66,627	8,64,892	8,64,892	8,64,892	
12,08,232	11,09,922	10,11,696	9,13,470	
4,55,038	3,57,708	2,96,670	1,90,328	
16,22,423	16,08,564	15,82,946	15,73,808	
44,604	45,774	49,051	41,642	
1,604	1,379	2,140	2,531	
46,208	47,153	51,191	44,173	
47,144	37,091	50,218	41,163	
21	2	5	.....
14,679	16,743	14,766	13,119	
31,529	30,410	36,425	31,054	
3.64	3.52	4.21	3.59	
32,444	20,346	35,447	28,044	
3.74	2.35	4.10	3.24	
7.61	7.03	10.34	10.50	
2.42	2.50	2.98	3.12	
5.19	4.53	7.36	7.38	
Annas 2 pies 3	Anna 1 pies 11	Anna 1 pies 8	Annas 3 pies 3	
6,03,345	4,54,743	7,17,190	4,81,391	
Inches.	Inches.	Inches.	Inches.	* Rainfall gauged at Retre Budruk, 16.4 mile of the canal, about the centre of the system.
24.43	22.27	29.89	27.10	
21.38	20.46	28.69	24.65	
Acres.	Acres.	Acres.	Acres.	} Weir project.
26,453	26,453	26,453	26,453	
4,501	4,601	2,709	2,406	
1,569	2,105	2,243	1,800	
6,070	6,706	4,952	4,206	
5,341	6,048	4,676	4,043	
22.95	25.35	18.72	15.90	
.....	
.....	
45.20	43.27	61.91	53.92	
56.90	56.75	97.63	85.03	
42.76	37.03	49.54	50.24	
54.40	52.23	78.98	73.01	
97.38	107.73	45.80	44.33	
27.64	35.45	22.89	21.33	

continued to irrigate a large proportion of valuable crops.

MINOR WORKS AND NAVIGATION.

**WORKS FOR WHICH CAPITAL AND REVENUE
ACCOUNTS ARE KEPT.**

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—*Khari Cut.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year...	98,526	41,879	8,448
2. Do. do. to end of year.	5,66,827	6,08,706	6,17,154
3. Interest charges to end of year ...	1,71,829	1,92,578	2,14,768
4. Net Revenue do. ...	30,385	23,936	16,658
5. Total sum at charge do. ...	6,82,248	7,49,650	7,85,796
6. Revenue—Water-rate assessment ...	3,033	5,710	44
7. Miscellaneous receipts do. ...	804	1,040	1,688
8. Total (assessment) ...	3,837	6,750	1,682
9. Total (collection) ...	922	3,513	3,148
10. Refunds ...	.....	.....	.....
11. Working expenses ...	7,454	9,962	10,426
12. Net Revenue based on assessment ...	—3,617	—3,212	—8,744
13. Percentage do. on Capital ...	0.64	0.53	1.42
14. Net Revenue do. on collection ...	—6,532	—6,449	—7,278
15. Percentage do. on Capital ...	1.15	1.06	1.18
16. Gross assessed Revenue per acre irrigated ...	3.50	2.26	35.79*
17. Working expenses do ...	6.79	3.34	221.83
18. Net assessed Revenue do. ...	3.29	1.08	—186.04
19. Cost of measurement do. ...	Not available.	Pies 10	Not available.
20. Estimated value of crops irrigated ...	29,025	55,476	239
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	†22.85	†10.21
2. Do. (do. Irrigation) ...	19.43	26.05	8.90
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	11,500	11,500	11,500
4. Area irrigated, Kharif ...	764	2,982	†47
5. Do. Rabi ...	334	3	.....
6. Do. Total ...	1,098	2,985	47
7. Area applied for (Total) ...	1,367	3,183	40
8. Percentage irrigated of total culturable area under command ...	9.55	25.96	0.41
9. Lowest supply reached during the year ... M. C. Ft.	.....	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	20.81	13.59	.....
12. Supply utilised do. ...	17.71	21.20	.....
13. Duty per cubic foot per second ...	36.71	219.42	.....
	.....	0.00	.....

General Remarks.—The three years

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Khari River.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
49,618	94,045	1,439	972	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
6,17,154	4,68,301	1,86,165	1,81,848	
2,14,768	1,52,338	1,13,422	92,725	
16,658	36,917	54,201	26,243	
7,85,796	5,57,542	2,51,275	2,47,622	
2,929	327	14,048	12,344	
1,161	824	473	508	
4,090	1,151	14,521	12,852	
2,528	2,205	15,599	9,651	
.....	15	.....	.....
9,281	7,951	6,280	5,369	
-5,191	-6,800	8,241	7,483	
0.84	1.45	4.43	4.11	
-6,753	-5,761	9,319	4,232	
1.09	1.23	5.01	2.35	
2.97	1.67	5.29	5.50	
.....	
6.74	11.55	2.29	2.30	
3.77	9.88	3.00	3.20	
.....	.....	1 anna.	1 anna 3 pies.
28,247	3,395	75,186	79,846	
Inches.	Inches.	Inches.	Inches.	† Rainfall gauged at Raipur, the head-work of the Canal.
.....	
18.13	13.18	33.12	42.21	
Acres.	Acres.	Acres.	Acres.	† Irrigation from the Bokh Reservoir.
11,500	11,500	11,500	11,500	
1,264	687	2,723	2,307	
112	1	21	26	
1,376	688	2,744	2,333	
1,530	1,006	2,899	2,160	
11.97	5.93	23.86	20.28	
.....	} Weir project.
.....	
.....	7.01	23.33	12.87	
.....	.....	8.10	3.83
.....	4.36	20.34	11.98	
.....	0.34	2.97	3.82	
.....	33.04	120.54	191.49	
.....	.....	8.30	14.70

were all deficient in rainfall.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Wangroli Tank.

Particulars:	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Es.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year... }		25,808	{ *57,214 } 38,547
2. Do. do. to end of year.		25,808	1,21,569
3. Interest charges to end of year... ..		479	4,288
4. Net Revenue do. ... ..		.....	—339
5. Total sum at charge do.		25,808	1,24,193
6. Revenue—Water-rate assessment .....		.....	.....
7. Miscellaneous receipts do. ....		.....	746
8. Total (assessment) ... ..		.....	746
9. Total (collection) ... ..		.....	746
10. Refunds ... ..		.....	.....
11. Working expenses ... ..		.....	1,085
12. Net Revenue based on assessment ... ..		.....	—339
13. Percentage do. on Capital ... ..		.....	0.28
14. Net Revenue do. on collection ... ..		.....	—339
15. Percentage do. on Capital ... ..		.....	0.28
16. Gross assessed Revenue per acre irrigated ... ..		.....	.....
17. Working expenses do. ....		.....	.....
18. Net assessed Revenue do. ....		.....	.....
19. Cost of measurement do. ....		.....	.....
20. Estimated value of crops irrigated ... ..		.....	.....
<i>II.—Working Details.</i>			
1. Rainfall (as affecting storage)	Inches.	Inches.	Inches.
2. Do. (do. Irrigation) ... ..	.....	.....	.....
	Acres.	Acres.	Acres.
3. Total culturable area under command ... ..	.....	.....	.....
4. Area irrigated, Kharif ... ..	.....	.....	.....
5. Do. Rabi ... ..	.....	.....	.....
6. Do. Total ... ..	.....	.....	.....
7. Area applied for (Total) ... ..	.....	.....	.....
8. Percentage irrigated of total culturable area under command ... ..	.....	.....	.....
9. Lowest supply reached during the year M. C. Ft.	.....	.....	.....
10. Date on which supply was lowest per Item 9. ....	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second ... ..	.....	.....	.....
	{ Kharif... ..	.....	.....
	{ Rabi ... ..	.....	.....
12. Supply utilised do.	{ Kharif... ..	.....	.....
	{ Rabi ... ..	.....	.....
13. Duty per cubic foot per second... ..	{ Kharif... ..	.....	.....
	{ Rabi ... ..	.....	.....

General Remarks.—

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Wangroli Nala.

Average for the trennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
40,523	} The figures in column 5 relate to end of triennial period. * Famine outlay at normal rates adjusted.
1,21,569	
4,288	
-339	
1,24,193	
.....	
249	
249	
249	
.....	
362	
-113	
0.09	
-113	
0.09	
.....	
.....	
.....	
.....	
.....	
Inches.	Inches.	Inches.	Inches.	
.....	
.....	
Acres.	Acres.	Acres.	Acres.	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

This tank is in progress.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Tranza-Nagrama Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year ...	.....	45,099	{ *1,26,641 18,939 }
2. Do. do. to end of year.	.....	45,099	1,90,879
3. Interest charges to end of year	.....	837	7,607
4. Net Revenue do. ...	.....	.....	-973
5. Total sum at charge do. ...	.....	45,099	1,96,265
6. Revenue—Water-rate assessment	.....	.....	.....
7. Miscellaneous receipts do. ...	.....	.....	107
8. Total (assessment) ...	.....	.....	107
9. Total (collection) ...	.....	.....	107
10. Refunds	.....	.....	.....
11. Working expenses	.....	.....	1,080
12. Net Revenue based on assessment	.....	.....	-973
13. Percentage do. on Capital ...	.....	.....	0.51
14. Net Revenue do. on collection	.....	.....	-973
15. Percentage do. on Capital ...	.....	.....	0.51
16. Gross assessed Revenue per acre irrigated	.....	.....	.....
17. Working expenses do. ...	.....	.....	.....
18. Net assessed Revenue do. ...	.....	.....	.....
19. Cost of measurement do. ...	.....	.....	.....
20. Estimated value of crops irrigated	.....	.....	.....
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	.....	.....	.....
	Acres.	Acres.	Acres.
3. Total culturable area under command	.....	.....	.....
4. Area irrigated, Kharif	.....	.....	.....
5. Do. Rabi	.....	.....	.....
6. Do. Total	.....	.....	.....
7. Area applied for (Total)	.....	.....	.....
8. Percentage irrigated of total culturable area under command	.....	.....	.....
9. Lowest supply reached during the year ... M. C. Ft.	.....	.....	.....
0. Date on which supply was lowest per Item 9.	.....	.....	.....
1. Supply entering the Canal at head, average discharge in cubic feet per second ...	.....	.....	.....
	{ Kharif ...	.....	.....
	{ Rabi ...	.....	.....
2. Supply utilised do. ...	{ Kharif ...	.....	.....
	{ Rabi ...	.....	.....
3. Duty per cubic foot per second ...	{ Kharif ...	.....	.....
	{ Rabi ...	.....	.....

General Remarks.—

REPORT, 1902-03 TO 1904-05.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Cuts in Matar Drainage Channel.

Average for the triennium under report.	1899-1900 to 1901-1902.	1898-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
63,560	The figures in column 5 relate to end of triennial period. * Famine outlay at normal rates adjusted.
1,90,679	
7,607	
—973	
1,96,265	
.....	
36	
36	
36	
.....	
360	
—324	
0-17	
—324	
0-17	
.....	
.....	
.....	
.....	
.....	
Inches.	Inches.	Inches.	Inches	
.....	
.....	
Acres.	Acres.	Acres.	Acres.	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

This tank is in progress.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Work—Hartala Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
I	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	73,382	73,382	73,382
3. Interest charges to end of year	58,858	60,776	62,694
4. Net Revenue do.	16,030	16,292	16,560
5. Total sum at charge do.	1,14,323	1,16,210	1,17,866
6. Revenue—Water-rate assessment	18	.....	.....
7. Miscellaneous receipts do.	279	491	560
8. Total (assessment)	297	491	560
9. Total (collection)	333	520	560
10. Refunds	.....	.....	.....
11. Working expenses	297	258	292
12. Net Revenue based on assessment	.....	233	258
13. Percentage do. on Capital	.....	0.32	0.36
14. Net Revenue do. on collection	36	262	268
15. Percentage do. on Capital	0.05	0.36	0.37
16. Gross Assessed Revenue per acre irrigated	*19.80	.....	.....
17. Working expenses do.	19.80	.....	.....
18. Net Assessed Revenue do.	.....	.....	.....
19. Cost of measurement do.	Pies 4	.....	.....
20. Estimated value of crops irrigated	425	.....	.....
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	.....	.....
2. Do. (do. Irrigation)	19.89	21.08	18.31
	Acres.	Acres.	Acres.
3. Total culturable area under command	527	527	527
4. Area irrigated, Kharif	12	.....	.....
5. Do. Rabi	3	.....	.....
6. Do. Total	15	.....	.....
7. Area applied for (Total)	17	.....	.....
8. Percentage irrigated of total culturable area under command	2.85	.....	.....
9. Lowest supply reached during the year, M. C. Ft.	.....	.....	.....
10. Date on which supply was lowest per Item 9	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif	0.005	.....	.....
{ Rabi	0.02	.....	.....
12. Supply utilised do. { Kharif	0.005	.....	.....
{ Rabi	0.02	.....	.....
13. Duty per cubic foot per second. { Kharif	2.406	.....	.....
{ Rabi	150	.....	.....

General Remarks.—A small tank which

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Local Streams.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
73,382	73,382	73,382	73,382	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
62,694	56,940	51,186	45,432	
16,560	15,994	15,157	13,580	
1,17,866	1,12,987	1,08,159	1,04,081	
6	52	155	209	
443	566	653	783	
449	618	808	997	
471	562	826	1,025	
.....	
282	283	300	595	
167	335	508	402	
0.23	0.46	0.69	0.55	
189	279	526	430	
0.26	0.38	0.72	0.59	
.....	22.07	7.92	11.08	* The high rate is owing to large miscellaneous receipts.
.....	10.11	2.94	6.61	
.....	11.96	4.98	4.47	
.....	.....	.....	4 pies.	
142	354	1,637	1,908	
Inches.	Inches.	Inches.	Inches.	
.....	
19.76	17.52	21.65	27.72	
Acres.	Acres.	Acres.	Acres.	
527	527	527	527	
4	5	57	12	
1	23	45	78	
5	28	102	90	
6	29	107	103	
0.95	5.31	19.35	17.08	
.....	
.....	
.....	0.24	0.85	0.52	
.....	0.31	0.83	1.02	
.....	0.24	0.85	0.52	
.....	0.31	0.83	1.02	
.....	2.74	31.08	24.71	
.....	50.45	52.91	74.80	

fails in year of low rainfall.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Work—Mhasva Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	1,38,956	1,38,956	1,38,956
3. Interest charges to end of year ...	1,34,222	1,39,373	1,44,524
4. Net Revenue do. ...	-11,758	-12,010	-12,820
5. Total sum at charge do. ...	2,78,738	2,84,936	2,90,339
6. Revenue—Water-rate assessment ...	728	594	1,292
7. Miscellaneous receipts do. ...	244	435	218
8. Total (assessment) ...	972	1,029	1,510
9. Total (collection) ...	1,000	1,406	962
10. Refunds ...	.....	.....	77
11. Working expenses ...	2,047	1,658	1,695
12. Net Revenue based on assessment ...	-1,075	-629	-185
13. Percentage do. on Capital ...	0.77	0.45	0.13
14. Net Revenue do. on collection ...	-1,047	-252	-810
15. Percentage do. on Capital ...	0.75	0.18	0.58
16. Gross Assessed Revenue per acre irrigated .	3.66	5.68	2.15
17. Working expenses do. ...	7.72	9.16	2.41
18. Net Assessed Revenue do. ...	4.06	3.48	0.26
19. Cost of measurement do. ...	Pies 5	Pies 4	Pies 6
20. Estimated value of crops irrigated. ...	7,246	5,863	10,812
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	23.77	27.59	21.74
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	4,075	4,075	4,075
4. Area irrigated, Kharif ...	64	56	213
5. Do. Rabi ...	201	125	489
6. Do. Total ...	265	181	702
7. Area applied for (Total) ...	210	160	647
8. Percentage irrigated of total culturable area under command ...	6.50	4.44	17.23
9. Lowest supply reached during the year, M. C. Ft.	22	69.10	50.47
10. Date on which supply was lowest per Item 9 ...	June 1902.	30th June 1903.	10th June 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	0.81	0.77	0.77
{ Rabi ...	1.60	1.62	2.07
12. Supply utilised do. { Kharif ...	0.81	0.77	0.77
{ Rabi ...	1.60	1.62	2.07
13. Duty per cubic foot per second. { Kharif ...	79.01	72.70	276.62
{ Rabi ...	146.25	111.00	244.93

General Remarks.—A small work

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Local Streams.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
1,38,956	1,38,956	1,38,956	1,38,956	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
1,44,524	1,29,071	1,13,618	98,165	
-12,820	-10,711	-10,738	-10,312	
2,90,339	2,72,889	2,57,972	2,41,868	
871	1,140	747	391	
239	488	478	681	
1,170	1,628	1,225	1,072	
1,123	1,433	1,114	1,124	
26	.....	.....	.....
1,800	1,424	1,256	1,456	
-630	204	-31	-384	
0.45	0.15	0.02	0.28	
-703	9	-142	-332	
0.51	0.00	0.10	0.24	
3.06	2.90	3.37	7.82	
4.70	2.54	3.46	10.62	
1.64	0.36	0.09	2.80	
Pies 5	.....	8 pies.	1 anna 1 pie.	
7,974	9,688	8,111	2,626	
Inches.	Inches.	Inches.	Inches.	
.....	
24.37	21.84	25.53	26.31	
Acres.	Acres.	Acres.	Acres.	
4,075	4,075	4,075	4,075	
111	151	82	19	
272	410	281	118	
383	561	363	137	
338	449	334	128	
9.40	13.77	8.91	3.36	
47.19	.....	.....	.....
.....	
0.78	0.80	0.86	1.00	
1.76	1.44	1.23	1.48	
0.78	0.80	0.86	1.00	
1.76	1.44	1.23	1.48	
142.78	232.29	84.22	21.68	
167.39	317.49	218.41	78.93	

dependent on local rainfall.

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Name of Work—Jamda Canals.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	10,41,089	10,41,089	10,41,089
3. Interest charges to end of year ...	13,98,521	14,38,168	14,77,815
4. Net Revenue do. ...	-2,28,932	-2,32,725	-2,36,113
5. Total sum at charge do. ...	26,24,563	26,68,542	27,11,982
6. Revenue—Water-rate assessment ..	2,504	3,075	8,410
7. Miscellaneous receipts do. ...	1,093	2,233	500
8. Total (assessment) ...	3,597	5,308	8,910
9. Total (collection) ...	4,378	4,761	5,410
10. Refunds ...	.....	.....	.....
11. Working expenses ...	8,710	8,554	8,798
12. Net Revenue based on assessment ...	-5,113	-3,246	112
13. Percentage do. on Capital ...	0.49	0.31	0.01
14. Net Revenue do. on collection ...	-4,332	-3,793	-3,388
15. Percentage do. on Capital... ..	0.42	0.36	0.33
16. Gross Assessed Revenue per acre irrigated .	3.14	4.26	2.10
17. Working expenses do. ...	7.59	6.87	2.07
18. Net Assessed Revenue do. ...	4.45	2.61	0.03
19. Cost of measurement do. ...	11 pies.	7 pies.	Pies 11
20. Estimated value of crops irrigated ...	14,712	15,026	32,045
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	25.70	29.33	19.64
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	40,185	40,185	40,185
4. Area irrigated, Kharif ...	328	83	1,535
5. Do. Rabi ...	819	1,162	2,707
6. Do. Total ...	1,147	1,245	4,242
7. Area applied for (Total) ...	1,089	1,109	3,528
8. Percentage irrigated of total culturable area under command ...	2.85	3.10	10.56
9. Lowest supply reached during the year, M. C. Ft. ....	.....	.....	.....
10. Date on which supply was lowest per Item 9 ...	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	20.58	15.79	22.89
{ Rabi ...	36.78	78.23	22.60
12. Supply utilised do. { Kharif ...	20.58	15.79	22.89
{ Rabi ...	36.78	78.28	22.60
13. Duty per cubic foot per second . { Kharif ...	15.94	5.26	67.06
{ Rabi ...	24.44	15.58	124.91

General Remarks.—The canals irrigated

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Girna River.

Average for the triennium under report.	1899-1900 to 1901-02.	1895-96 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	7	83	174	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
10,41,089	10,41,089	10,41,069	10,40,969	
14,77,815	13,58,874	12,39,936	11,21,000	
-2,36,113	-2,24,600	-1,73,917	-1,51,941	
27,11,982	25,80,543	24,16,102	22,75,821	
4,663	6,707	10,195	7,529	
1,275	459	805	3,675	
5,938	7,166	11,000	11,204	
4,850	7,680	10,327	11,081	
.....	.....	11	.....
8,687	24,574	17,641	9,568	} Weir project.
-2,749	-17,408	-6,641	1,636	
0.26	1.67	0.64	0.15	
-3,837	-16,894	-7,325	1,513	
0.37	1.62	0.70	0.15	
2.68	2.15	3.11	7.99	
3.92	7.36	4.99	6.82	
1.24	5.21	1.88	1.17	
Pies 10	9 pies.	1 anna.	1 anna 7 pies.	
20,594	41,387	60,599	40,854	
Inches.	Inches.	Inches.	Inches.	
.....	
24.89	15.89	26.13	22.67	
Acres.	Acres.	Acres.	Acres.	
40,185	40,185	40,185	40,185	
648	1,439	983	597	
1,563	1,901	2,549	806	
2,211	3,340	3,537	1,403	
1,909	3,050	3,230	1,362	
5.50	8.31	8.80	3.49	
.....	
.....	
19.75	28.39	21.95	39.12	
45.89	23.15	36.89	42.73	
19.75	28.39	21.95	39.12	
45.89	23.15	36.89	42.73	
29.42	53.06	43.28	17.31	
54.98	96.79	74.06	19.89	

most in the year of worst rain,

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION WORKS FOR WHICH

Name of Work—Parsul Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. do. to end of year	2,14,995	2,14,995	2,14,995
3. Interest charges to end of year	1,38,694	1,47,015	1,55,336
4. Net Revenue do.	5,109	7,012	8,741
5. Total sum at charge do.	3,41,169	3,48,580	3,54,998
6. Revenue—Water-rate assessment	2,914	2,840	2,709
7. Miscellaneous receipts do.	6	.....	106
8. Total (assessment)	2,920	2,840	2,815
9. Total (collection)	2,087	3,138	3,207
10. Refunds	.....	45	.....
11. Working expenses	1,177	1,190	1,478
12. Net Revenue based on assessment	1,743	1,650	1,337
13. Percentage do. on Capital	0.81	0.77	0.62
14. Net Revenue do. on collection	910	1,903	1,729
15. Percentage do. on Capital	0.42	0.89	0.80
16. Gross assessed Revenue per acre irrigated...	4.23	4.25	4.48
17. Working expenses do.	1.70	1.78	2.35
18. Net assessed Revenue do.	2.53	2.47	2.13
19. Cost of measurement do.	Anna 1 pie 1	Pies 6	Pies 6
20. Estimated value of crops irrigated	8,999	7,885	7,555
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	14.68	15.39
2. Do. (do. Irrigation)	15.67	14.25	15.39
	Acres.	Acres.	Acres.
3. Total culturable area under command	3,197	3,197	3,197
4. Area irrigated, Kharif	18	37	49
5. Do. Rabi	672	631	579
6. Do. Total	690	668	628
7. Area applied for (Total)	636	626	556
8. Percentage irrigated of total culturable area under command	21.58	20.89	19.64
9. Lowest supply reached during the year.	M. C. Ft. Nil.	Nil.	Nil.
10. Date on which supply was lowest per Item 9	February 1902.	20th April 1903.	20th June 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second	{ Kharif... 0.08 { Rabi ... 3.82	2.70 3.37	2.73 4.33
12. Supply utilised do.	{ Kharif... 0.08 { Rabi ... 3.82	2.70 3.37	2.73 4.33
13. Duty per cubic foot per second	{ Kharif... 225 { Rabi ... 179.58	18.70 194.00	17.95 139.03

General Remarks.—A small tank

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Parsul River.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	.....	—586	1,055	
2,14,995	2,14,995	2,14,995	2,16,754	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
1,55,336	1,30,373	1,05,410	80,286	
8,741	4,194	4,765	2,983	
3,54,998	3,32,173	3,08,713	2,85,680	
2,821	1,138	2,575	1,338	
37	15	22	14	
2,858	1,153	2,597	1,352	
2,810	1,034	1,954	1,464	
15	.....	.....	.....
1,281	1,223	1,360	1,136	
1,577	—70	1,237	216	
0.73	0.03	0.58	0.10	
1,514	—189	594	328	
0.70	0.09	0.28	0.15	
4.32	3.06	4.22	4.16	
1.94	3.24	2.21	3.50	
2.38	0.18	2.01	0.66	
Pies 8	.....	Pies 5	.....
8,146	6,304	9,024	4,058	
Inches.	Inches.	Inches.	Inches.	
.....	
15.10	9.89	21.87	19.88	
Acres.	Acres.	Acres.	Acres.	
3,197	3,197	3,197	3,197	
35	233	153	98	
627	144	463	227	
662	377	616	325	
606	411	545	214	
20.71	11.79	19.27	10.17	
.....	
.....	
1.84	2.71	0.91	1.20	
3.84	3.09	2.34	1.71	
1.84	2.71	0.91	1.20	
3.84	3.09	2.34	1.71	
85.55	107.76	190.81	96.85	
170.87	55.98	249.09	131.87	

dependent on local rain.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Pravara River Works—

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	7,144
2. Do. do. do. to end of year	3,31,386	3,31,386	3,38,530
3. Interest charges to end of year	3,49,576	3,61,961	3,74,467
4. Net Revenue do.	-1,18,671	-1,12,740	-1,10,820
5. Total sum at charge do.	7,88,576	7,99,633	8,13,231
6. Revenue—Water-rate assessment*	12,120	7,118	9,995
7. Miscellaneous receipts do.	1,415	900	674
8. Total (assessment)	13,535	8,018	10,669
9. Total (collection)*	5,469	12,045	10,118
10. Refunds	27	223	18
11. Working expenses	4,114	5,891	8,180
12. Net Revenue based on assessment	9,421	2,127	2,489
13. Percentage do. on Capital	2.84	0.64	0.74
14. Net Revenue do. on collection	1,328	5,931	1,920
15. Percentage do. on Capital	0.40	1.79	0.57
16. Gross assessed Revenue per acre irrigated...	1.34	1.70	1.48
17. Working expenses do.	0.41	1.25	1.14
18. Net assessed Revenue do.	0.93	0.45	0.34
19. Cost of measurement do.	8 pies	1 anna 1 pie	anna 1 pie 1
20. Estimated value of crops irrigated	82,348	44,513	78,697
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	.....	.....
2. Do. (do. Irrigation)	17.53	13.17	17.48
	Acres.	Acres.	Acres.
3. Total culturable area under command	21,155	21,155	21,155
4. Area irrigated, Kharif	7,864	2,941	5,516
5. Do. Rabi	2,225	1,767	1,671
6. Do. Total	10,089	4,708	7,187
7. Area applied for (Total)	13,111	9,475	11,861
8. Percentage irrigated of total culturable area under command	47.69	22.25	33.97
9. Lowest supply reached during the year	.....	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second.	61.68	51.89	75.18
	29.53	20.31	26.92
12. Supply utilised do.	51.30	35.81	61.80
	29.53	16.58	22.54
13. Duty per cubic foot per second.	127.50	56.68	73.34
	75.35	98.32	73.74

General Remarks.—The large proportion of the area under command which is irrigated in

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Ojhar Canal. Source of Supply—Pravara River.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
2,381	370	11	
3,38,530	3,31,386	3,30,275	3,30,275	} The figures in columns 5 to 8 relate to end of triennial period.
3,74,467	3,37,191	2,99,714	2,62,559	
-1,10,820	-1,19,999	-63,393	-45,928	
8,13,231	3,47,001	6,76,279	6,17,612	
9,714	9,186	13,362	5,708	
997	354	520	519	
10,741	9,540	13,882	6,227	
9,211	4,291	11,358	5,459	
89	12	19	4	
6,032	23,148	17,161	16,597	
4,679	-13,608	-3,279	-10,370	
1,33	4,11	0,99	3,14	
3,060	-18,869	-5,822	-11,142	
0,30	5,69	1,76	3,37	
1,47	1,50	2,53	3,29	
0,83	3,65	3,13	8,76	
0,64	2,15	0,60	5,47	
Pies 11	Pies 10	Anna 1 pies 2	Anna 1 pies 8	
68,519	60,094	+4,25,805	81,123	† The estimated value of crops for the triennium ending 1898-99 seems to be wrong.
Inches.	Inches.	Inches.	Inches.	
.....	
16.04	13.94	22.18	21.88	
Acres.	Acres.	Acres.	Acres.	
21,155	21,155	21,155	21,155	
5,440	3,933	2,106	507	
1,888	2,396	3,371	1,387	
7,328	6,329	5,477	1,894	
11,482	9,133	7,852	2,545	
34.64	29.92	25.89	8.95	
.....	} Weir project.
.....	
62.92	58.26	37.73	33.56	
25.75	25.48	38.72	35.85	
49.64	43.08	29.94	26.10	
22.88	24.05	35.17	23.24	
35.84	74.60	46.96	15.06	
82.47	99.49	86.44	38.05	

year of deficient rain by this small canal depending entirely on the river is remarkable.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—*Bhátodi Tank.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year	3,79,707	3,79,707	3,79,707
3. Interest charges to end of year ...	4,55,465	4,69,572	4,83,679
4. Net Revenue do. ...	-36,161	-32,493	-32,707
5. Total sum at charge do. ...	8,57,879	8,71,833	8,81,777
6. Revenue—Water-rate assessment* ...	2,457	3,962	3,663
7. Miscellaneous receipts do. ...	475	701	376
8. Total (assessment) ...	2,932	4,663	4,039
9. Total (collection)* ...	2,113	6,781	3,324
10. Refunds ... ..	.....	.....	.....
11. Working expenses	1,460	3,118	3,533
12. Net Revenue based on assessment ...	1,472	1,545	506
13. Percentage do. on Capital ...	0.33	0.41	0.13
14. Net Revenue do. on collection ...	653	3,663	-209
15. Percentage do. on Capital ...	0.17	0.96	0.06
16. Gross assessed Revenue per acre irrigated...	9.22	6.49	4.76
17. Working expenses do. ...	4.59	4.34	4.16
18. Net assessed Revenue do. ...	4.63	2.15	0.60
19. Cost of measurement† do. ...	.....	.....	.....
20. Estimated value of crops irrigated ...	3,309	7,628	6,203
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	21.82	26.55	14.59
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	13,657	13,657	13,657
4. Area irrigated, Kharif	185	248	494
5. Do. Rabi	133	471	355
6. Do. Total	318	719	849
7. Area applied for (Total)	754	734	892
8. Percentage irrigated of total culturable area under command	2.33	5.26	6.22
9. Lowest supply reached during the year M. C. Ft.	Nil.	7.08	25.24
10. Date on which supply was lowest per Item 9.	April 1902.	24th June 1903.	27th May 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second { Kharif ...	1.15	0.97	2.96
... { Rabi ...	1.07	1.23	4.20
12. Supply utilised do. ... { Kharif ...	1.15	0.97	2.96
... { Rabi ...	1.07	1.23	4.20
13. Duty per cubic foot per second . { Kharif ...	160.87	255.67	165.54
... { Rabi ...	124.30	618.70	193.10

General Remarks.—A small tank

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Mehekri River.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
3,79,707	3,79,707	3,79,707	3,79,707	} The figures in columns 5 to 8 relate to end of triennial period.
4,83,679	4,41,358	3,99,037	3,56,716	
-32,707	-36,814	794	8,395	
8,81,777	8,18,604	7,59,156	7,10,980	
3,361	4,362	5,336	5,988	
517	545	402	432	
3,878	4,907	5,738	6,420	
4,073	3,426	5,460	5,841	
.....	.....	8	53	
2,704	15,962	7,986	8,461	
1,174	-11,055	-2,243	-2,041	
0-31	2-91	0-59	0-54	
1,369	-12,536	-2,534	-2,673	
0-36	3-30	0-67	0-70	
6-17	5-00	4-88	4-60	
4-30	16-28	6-79	6-06	
1-87	11-26	1-91	1-46	
.....	.....	.....	Annas 2 pies 6.	† The land under command is subdivided into small irrigation numbers and therefore no expenditure was incurred in measurement of irrigated area.
5,713	19,479	†1,13,177	60,830	† The estimated value of crops for the triennium ending 1898-99 seems to be wrong.
Inches.	Inches.	Inches.	Inches.	
.....	
20-99	13-47	19-30	24-66	
Acres.	Acres.	Acres.	Acres.	
13,657	13,657	13,657	13,657	
309	540	414	417	
320	442	763	979	
629	982	1,177	1,306	
793	1,250	1,254	1,528	
4-61	7-19	8-62	10-22	
.....	
.....	
1-69	5-73	4-39	4-36	
2-17	7-95	6-71	8-34	
1-69	5-73	4-39	4-36	
2-17	7-95	6-71	8-34	
194-03	102-39	76-22	97-92	
312-03	55-33	123-81	118-68	

dependent on local rainfall.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—*Mátoba Tank.* Source of Supply—*Nála,*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rupees.	Rupees.	Rupees.
1. Capital outlay, direct and indirect, during the year ...	.....	.....	.....
2. Do. do. to end of year. ...	2,01,422	2,01,422	2,01,422
3. Interest charges to end of year ...	1,87,665	1,95,191	2,02,717
4. Net Revenue do. ...	1,21,301	1,30,223	1,36,383
5. Total sum at charge do. ...	2,73,261	2,67,786	2,66,390
6. Revenue—Water-rate assessment ...	11,957	11,278	10,536
7. Miscellaneous receipts do. ...	23	53	9
8. Total (assessment) ...	11,980	11,331	10,545
9. Total (collection) ...	15,982	12,081	9,731
10. Refunds ...	4	12	.....
11. Working expenses ...	2,977	3,147	3,571
12. Net Revenue based on assessment ...	9,003	8,184	6,974
13. Percentage do. on Capital... ..	4.47	4.06	3.46
14. Net Revenue do. on collection ...	13,001	8,922	6,160
15. Percentage do. on Capital... ..	6.45	4.43	3.06
16. Gross assessed Revenue per acre irrigated ...	6.16	6.15	4.99
17. Working expenses do. ...	1.53	1.71	1.69
18. Net assessed Revenue do. ...	4.63	4.44	3.30
19. Cost of measurement do. ...	.....	Anna 1 pies 6	Anna 1 pies 2
20. Estimated value of crops irrigated ...	1,23,046	78,190	1,90,413
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	23.64	13.23	16.97
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	7,133	7,133	7,133
4. Area irrigated, Kharif ...	1,413	1,212	926
5. Do. Rabi ...	533	630	1,185
6. Do. Total ...	1,946	1,842	2,111
7. Area applied for (Total) ...	1,767	1,993	1,787
8. Percentage irrigated of total culturable area under command ...	27.28	25.82	29.59
9. Lowest supply reached during the year M. C. Ft.	3	22.85	9
10. Date on which supply was lowest per Item 9.	June 1902.	8th June 1903.	20th June 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	7.57	5.69	4.27
{ Rabi ...	5.11	10.97	6.71
12. Supply utilised do. { Kharif ...	7.57	5.69	4.27
{ Rabi ...	5.11	10.97	6.71
13. Duty per cubic foot per second { Kharif ...	187.00	213.00	217.00
{ Rabi ...	191.00	94.00	177.00

General Remarks.—The tank is filled by the Mutha Canals

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Rainfall and surplus water from Mutha Right Bank Canal.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	.....	.....	232	} The figures in columns 5 to 8 relate to end of triennial period.
2,01,422	2,01,422	2,01,422	2,01,422	
2,02,717	1,80,139	1,57,561	1,34,983	
1,36,383	1,08,300	91,652	70,838	
2,66,390	2,72,512	2,65,498	2,64,243	
11,257	10,931	11,998	9,899	
28	270	187	87	
11,285	11,201	12,185	9,986	
12,598	8,440	10,567	9,791	
5	.....	.....	.....
3,232	2,891	3,629	3,281	
8,053	8,310	8,556	6,705	
4-00	4-13	4-25	3-33	
9,361	5,549	6,938	6,510	
4-65	2-75	3-44	3-23	
5-74	5-15	5-65	8-03	
1-64	1-33	1-68	2-64	
4-10	3-82	3-97	5-39	
.....	.....	Anna 1 pies 2	Pies 10	
1,28,883	48,396	1,51,877	1,99,939	
Inches.	Inches.	Inches.	Inches.	
.....	
17-95	9-39	14-93	15-17	
Acres.	Acres.	Acres.	Acres.	
7,133	7,133	7,133	7,138	
184	1,515	1,083	800	
1,782	662	1,075	443	
1,966	2,177	2,158	1,243	
1,842	2,343	2,682	1,723	
27-56	30-52	30-25	17-43	
.....	
.....	
5-84	6-57	10-57	9-16	
7-60	7-91	10-42	9-56	
5-84	6-57	10-57	9-16	
7-60	7-91	10-42	9-56	
206-00	274-92	100-84	87-43	
154-00	124-53	126-71	46-76	

and has a reliable supply. The duty of water is good.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Kásurdi Tank. Source of

Particulars.	1902-03.	1903-04.	1904-05.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	45,590	45,590	45,590
3. Interest charges to end of year ...	59,144	60,777	62,410
4. Net Revenue do. ...	-13,433	-13,442	-13,768
5. Total sum at charge do. ...	1,16,487	1,18,167	1,19,809
6. Revenue—Water-rate assessment ...	88	245	233
7. Miscellaneous receipts do. ...	243	481	304
8. Total (assessment) ...	331	726	537
9. Total (collection) ...	635	549	518
10. Refunds ...	.....	.....	.....
11. Working expenses ...	682	558	844
12. Net Revenue based on assessment ...	-351	168	-307
13. Percentage do. on Capital... ..	0·77	0·37	0·67
14. Net Revenue do. on collection ...	-47	-9	-326
15. Percentage do. on Capital... ..	0·10	0·02	0·72
16. Gross assessed Revenue per acre irrigated...	4·36	5·26	4·59
17. Working expenses do. ...	8·97	4·04	7·21
18. Net assessed Revenue do. ...	4·61	1·22	2·62
19. Cost of measurement do. ...	.....	Anna 1 pies 6	Anna 1
20. Estimated value of crops irrigated ...	1,905	3,010	6,355
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	14·84	18·69	13·74
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	478	478	478
4. Area irrigated, Kharif ...	57	27	.....
5. Do. Rabi ...	19	111	117
6. Do. Total ...	76	138	117
7. Area applied for (Total) ...	120	160	150
8. Percentage irrigated of total culturable area under command ...	15·90	28·87	24·48
9. Lowest supply reached during the year, M. C. Ft.	Nil.	Nil.	Nil.
10. Date on which supply was lowest per Item 9.	November 1902.	27th Nov. 1903.	25th Dec. 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	.....	.....	.....
{ Rabi ...	.....	.....	.....
12. Supply utilised do. ... { Kharif ...	.....	.....	.....
{ Rabi ...	.....	.....	.....
13. Duty per cubic foot per second { Kharif ...	.....	.....	.....
{ Rabi ...	.....	.....	.....

General Remarks.—This is a tank with insufficient

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Supply—Kásurdi Nála and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	} The figures in columns 5 to 8 relate to end of triennial period.
45,590	45,590	45,590	45,590	
62,410	57,511	52,612	47,713	
-13,768	-13,386	-14,185	-10,569	
1,19,809	1,14,663	1,09,994	98,519	
189	126	219	118	
342	650	139	179	
531	776	358	297	
567	771	245	362	
.....	
694	505	1,451	1,534	
-163	271	-1,093	-1,237	
0.36	0.59	2.40	2.71	
-127	266	-1,206	-1,172	
0.28	0.58	2.65	2.57	
4.83	10.48	3.26	6.90	
6.31	6.82	13.19	35.67	
1.48	3.66	9.93	28.77	
.....	.....	Pies 7	Pies 3
3,757	1,329	1,458	1,004	
Inches.	Inches.	Inches.	Inches.	
.....	
15.76	10.87	16.09	16.67	
Acres.	Acres.	Acres.	Acres.	
478	478	478	478	
28	28	20	14	
82	46	90	29	
110	74	110	43	
143	61	100	56	
23.01	15.48	23.01	9.00	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

catchment, dependent on local rain.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—*Shirsuphal Tank.* Source of Supply—

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	2,24,568	2,24,568	2,24,568
3. Interest charges to end of year ...	1,98,375	2,06,863	2,15,351
4. Net Revenue do. ...	-8,504	-8,796	-9,791
5. Total sum at charge do. ...	4,23,505	4,31,447	4,40,227
6. Revenue—Water-rate assessment ...	830	1,962	2,987
7. Miscellaneous receipts do. ...	55	59	92
8. Total (assessment) ...	885	2,021	3,079
9. Total (collection) ...	1,662	1,313	1,991
10. Refunds ...	.....	.....	.....
11. Working expenses ...	1,116	1,605	2,986
12. Net Revenue based on assessment ...	-231	416	93
13. Percentage do. on Capital... ..	0.10	0.18	0.04
14. Net Revenue do. on collection ...	546	-292	-995
15. Percentage do. on Capital... ..	0.24	0.13	0.44
16. Gross assessed Revenue per acre irrigated... ..	2.52	2.68	2.24
17. Working expenses do. ...	3.18	2.13	2.17
18. Net assessed Revenue do. ...	0.60	0.55	0.07
19. Cost of measurement do. ...	.....	Pies 9	Pies 10
20. Estimated value of crops irrigated ...	58,459	45,790	90,728
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)... ..	.....	.....	.....
2. Do. (do. Irrigation) ...	14.35	15.01	11.63
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	2,500	2,500	2,500
4. Area irrigated, Kharif ...	107	263	575
5. Do. Rabi ...	244	492	796
6. Do. Total ...	351	755	1,371
7. Area applied for (Total) ...	366	978	1,722
8. Percentage irrigated of total culturable area under command ...	14.04	30.20	54.84
9. Lowest supply reached during the year, M. C. Ft.	Nil.	Nil.	Nil.
10. Date on which supply was lowest per Item 9.	April 1902	1st April 1903	14th May 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	0.67	1.76	2.67
{ Rabi ...	.....	4.37	4.38
12. Supply utilised do. { Kharif ...	0.67	1.76	2.67
{ Rabi ...	.....	4.37	4.38
13. Duty per cubic foot per second. { Kharif ...	1.59	149.00	215.00
{ Rabi ...	.....	126.60	182.00

General Remarks.—This tank used all the water stored and the duty obtained is good, was obtained when the rainfall was the lowest of the three years.

REPORT, 1902-03 to 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Minor Tributary of the Bhima River and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.	
5	6	7	8	9	
Rs.	Rs.	Rs.	Rs.		
.....	4,258	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.	
2,24,568	2,24,568	2,24,568	2,24,568		
2,15,351	1,89,887	1,64,423	1,38,959		
-9,791	-9,050	-8,128	-8,069		
4,40,227	4,15,389	3,88,559	3,60,940		
1,926	1,725	3,154	2,193		
69	75	176	163		
1,995	1,800	3,330	2,356		
1,655	2,087	3,147	2,198		
.....	.....	1	2	
1,902	2,394	3,165	3,247		
93	-594	165	-891		
0.04	0.26	0.07	0.40		
-247	-307	-19	-1,051		
0.11	0.14	0.00	0.47		
2.41	1.87	2.60	3.91		
2.30	2.48	2.47	5.38		
0.11	0.61	0.13	1.47		
.....	.....	Pies 7	Pies 10	
64,992	54,266	66,687	57,650		
Inches.	Inches.	Inches.	Inches.		
.....		
13.66	8.56	12.41	14.60		
Acres.	Acres.	Acres.	Acres.		
2,500	2,500	2,500	2,500		
315	603	390	261		
511	361	291	342		
826	964	1,281	603		
1,021	696	791	675		
33.04	38.56	51.24	24.12		
.....		
.....		
1.70	3.44	6.05	5.35		
4.37	2.47	6.50	6.08		
1.70	3.44	6.05	5.35		
4.37	2.47	6.50	6.08		
174.00	228.60	64.00	47.96		
154.00	120.00	155.00	47.16		

The supply is uncertain. It is noticeable that in the years under reference the greatest storage e

DECCAN AND GUJARA'T TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Work—Bhādalvādi Tank.

Particulars.	1902-03.	1903-04.	1904-05.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year	2,27,422	2,27,422	2,27,422
3. Interest charges to end of year	1,95,047	2,03,572	2,12,097
4. Net Revenue do.	4,544	4,521	5,444
5. Total sum at charge do.	4,09,055	4,17,925	4,26,473
6. Revenue—Water-rate assessment	2,049	3,159	3,713
7. Miscellaneous receipts to end of year...	74	16	5
8. Total (assessment) ...	2,123	3,175	3,718
9. Total (collection) ...	1,002	1,973	3,730
10. Refunds ...	.....	.....	4
11. Working expenses	1,347	2,001	2,803
12. Net Revenue based on assessment	776	1,174	915
13. Percentage do. on Capital	0.84	0.52	0.40
14. Net Revenue do. on collection	—345	—23	923
15. Percentage do. on Capital	0.15	0.01	0.41
16. Gross assessed Revenue per acre irrigated...	1.78	2.15	2.43
17. Working expenses do.	1.13	1.35	1.83
18. Net assessed Revenue do.	0.65	0.80	0.60
19. Cost of measurement do.	.....	Pies 7	Pies 8
20. Estimated value of crops irrigated	20,254	48,310	1,43,117
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	18.47	22.65	12.15
	Acres.	Acres.	Acres.
3. Total culturable area under command	2,400	2,400	2,400
4. Area irrigated, Kharif	514	478	220
5. Do. Rabi	678	999	1,311
6. Do. Total	1,192	1,477	1,531
7. Area applied for (Total)	1,491	1,912	1,571
8. Percentage irrigated of total culturable area under command	49.66	61.54	63.79
9. Lowest supply reached during the year	37 M. C. Ft.	35.80	35
10. Date on which supply was lowest per Item 9.	August 1902.	8th June 1903.	11 Sept. 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second	3.30	3.30	2.28
12. Supply utilised do.	2.74	7.72	5.74
13. Duty per cubic foot per second.	154	145.00	97.00
	247	135.00	228.00

General Remarks.—The tank is a Deccan Tank dependent on local rain. The area the year of least rainfall of the three under report.

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Minor Tributary of the Bhima River and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	.....	.....	65	
2,27,422	2,27,422	2,27,422	2,27,422	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
2,12,047	1,86,522	1,60,947	1,35,372	
5,444	4,889	2,558	869	
4,26,473	4,02,092	3,78,698	3,53,129	
2,974	1,998	3,936	2,438	
31	245	41	44	
3,005	2,243	5,977	2,482	
2,228	2,859	3,426	2,239	
1	.....	2	4	
2,050	2,082	2,861	1,925	
955	161	1,116	557	
0.42	0.07	0.49	0.24	
185	777	5.63	3.10	
0.08	0.34	0.25	0.14	
2.14	2.24	2.36	3.92	
1.46	2.08	1.70	3.04	
0.68	0.16	0.66	0.88	
.....	.....	Pies 6	Pies 10	
70,560	40,203	81,096	60,261	
Inches.	Inches.	Inches.	Inches.	
.....	
17.76	12.52	16.00	14.28	
Acres.	Acres.	Acres.	Acres.	
2,400	2,400	2,400	2,400	
404	469	469	269	
936	532	1,214	364	
1,400	1,001	1,683	633	
1,658	730	1,005	798	
58.33	41.71	70.13	26.38	
.....	
.....	
2.95	2.70	6.68	4.02	
5.40	4.33	5.91	6.85	
2.95	2.70	6.68	4.02	
5.40	4.33	5.91	6.85	
132.00	205.94	72.00	56.99	
203.00	112.90	229.00	57.35	

irrigated is a very large proportion of the area under command. The tank irrigated most in

DECCAN AND GUJARA'T TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Work—Koregaon Tank.

Particulars.	1902-03.	1903-04.	1904-05.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year	39,189	39,189	39,189
3. Interest charges to end of year	43,114	44,631	46,148
4. Net Revenue do.	2,799	1,803	1,257
5. Total sum at charge do.	77,592	79,504	82,517
6. Revenue—Water-rate assessment	63	600	981
7. Miscellaneous receipts to end of year	18	13	169
8. Total (assessment) ...	81	613	1,150
9. Total (collection) ...	390	156	965
10. Refunds ...	.....	.....	.....
11. Working expenses ...	785	1,652	1,012
12. Net Revenue based on assessment	-704	-1,039	138
13. Percentage do. on Capital	1.80	2.65	0.35
14. Net Revenue based on collection	-395	-1,496	-46
15. Percentage do. on Capital	1.01	3.82	0.12
16. Gross assessed Revenue per acre irrigated...	3.68	2.17	2.63
17. Working expenses do.	35.68	5.85	2.31
18. Net assessed Revenue do.	32.00	3.68	0.32
19. Cost of measurement do.	Rs. 1-8-9	Annas 2	Anna 1 pies 2
20. Estimated value of crops irrigated	639	1,064	2,949
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation)	22.10	34.63	24.08
	Acres.	Acres.	Acres.
3. Total culturable area under command	Not known.	Not known.	Not known.
4. Area irrigated, Kharif	.....	21	144
5. Do. Rabi	22	261	294
6. Do. Total	22	282	438
7. Area applied for (Total)	102	265	375
8. Percentage irrigated of total culturable area under command	.....	.....	.....
9. Lowest supply reachad during the year	..... M. C. Ft.	.....	.....
10. Date on which supply was lowest per Item 9.	April 1902.	9th May 1903.	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second	Kharif ... 0.04	0.51	4.15
	Rabi ... 0.50	1.54	2.87
12. Supply utilised do.	Kharif ... 0.04	0.43	4.15
	Rabi ... 0.43	1.19	2.87
13. Duty per cubic foot per second...	Kharif	41.13	34.69
	Rabi ... 44	187.66	153.31

General Remarks.—A small Deccan

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Nala and Rainfall.

Average of the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
39,189	39,189	39,189	39,189	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
46,148	41,597	37,046	32,495	
1,257	3,194	4,036	4,494	
82,517	75,650	70,561	65,842	
548	360	512	1,002	
67	20	36	25	
615	380	548	1,027	
504	417	577	1,012	
.....	
1,150	698	730	789	
-535	-318	-182	238	
1.37	0.81	0.46	0.61	
-646	-281	-153	223	
1.65	0.72	0.39	0.57	
2.49	2.18	2.23	2.84	
4.66	3.99	2.97	2.18	
2.17	1.81	0.74	0.66	
Annas 9 pies 4	.....	Annas 2 pies 7	Annas 2 pies 11	
1,551	918	10,115	22,050	
Inches.	Inches.	Inches.	Inches.	
.....	
26.94	15.48	21.68	28.62	
Acres.	Acres.	Acres.	Acres.	
.....	Not known.	Not known.	Not known.	
55	19	16	77	
192	156	230	285	
247	175	246	362	
247	159	285	364	
.....	
.....	
.....	
1.57	0.59	0.69	1.75	
1.64	1.24	2.39	2.54	
1.54	0.50	0.66	1.75	
1.50	1.06	2.26	2.54	
37.93	11.00	12.52	56.83	
128.32	118.00	96.46	113.90	

tank dependent on local rain.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Ashti Tank. Source of

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital-outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year...	8,36,091	8,36,091	8,36,091
3. Interest charges to end of year ...	6,91,277	7,21,559	7,51,841
4. Net Revenue do. ...	-84,031	-82,108	-82,295
5. Total sum at charge do. ...	15,80,361	16,11,399	16,39,758
6. Revenue—Water-rate assessment ...	2,166	3,659	6,621
7. Miscellaneous receipts do. ...	1,285	477	533
8. Total (assessment) ...	3,451	4,136	7,154
9. Total (collection) ...	5,118	6,036	4,976
10. Refunds ...	.....	.....	.....
11. Working expenses ...	5,874	4,113	5,163
12. Net Revenue based on assessment ...	-2,423	23	1,991
13. Percentage do. on Capital ...	0.29	0.00	0.24
14. Net Revenue do. on collection ...	-756	1,923	-187
15. Percentage do. on Capital ...	0.09	0.23	0.02
16. Gross assessed Revenue per acre irrigated...	4.99	3.75	2.59
17. Working expenses do. ...	8.49	3.73	1.87
18. Net assessed Revenue do. ...	3.50	0.02	0.72
19. Cost of measurement do.* ...	.....	.....	.....
20. Estimated value of crops irrigated ...	18,021	82,233	54,724
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) † ...	16.95	23.34	16.12
2. Do. (do. Irrigation) ...	21.60	31.65	16.29
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	16,825	16,825	16,825
4. Area irrigated, Kharif ...	347	421	885
5. Do. Rabi ...	345	681	1,879
6. Do. Total ...	692	1,102	2,764
7. Area applied for (Total) ...	670	1,116	2,690
8. Percentage irrigated of total culturable area under command ...	4.11	6.55	16.43
9. Lowest supply reached during the year, M. C. Ft.	42	72.50	313.94
10. Date on which supply was lowest per Item 9 ...	May 1902.	21st May 1903	20th Oct. 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif	5.28	3.33	8.78
{ Rabi...	2.86	6.92	13.81
12. Supply utilised do. { Kharif	4.58	2.75	8.78
{ Rabi...	2.43	6.04	13.81
13. Duty per cubic foot per second ... { Kharif	65.72	126.42	100.79
{ Rabi...	120.63	162.86	169.44

General Remarks.—The tank stored most water and irrigated

REPORT, 1902-1903 TO 1940-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Supply—Ashti Nāla and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	1,663	83	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
8,36,091	8,36,091	8,36,091	8,31,103	
7,51,841	6,60,995	5,70,149	4,79,594	
—82,295	—83,275	—38,333	—41,748	
16,39,758	15,45,921	14,15,007	13,22,756	
4,149	6,592	4,603	4,185	
765	802	1,058	445	
4,914	7,394	5,661	4,630	
5,377	6,259	5,286	4,335	
.....	
5,050	21,240	4,148	4,437	
—136	—13,846	1,513	193	
0·02	1·66	0·18	0·02	
327	—14,981	1,138	—102	
0·04	1·79	0·14	0·01	
3·24	2·53	3·00	3·49	
3·32	7·27	2·19	3·34	
0·08	4·74	0·81	0·15	
.....	
31,993	81,311	71,014	61,203	* The lands under command have been sub-divided into suitable pot numbers for irrigation purposes.
Inches.	Inches.	Inches.	Inches.	† Rainfall over the catchment area.
20·47	14·20	23·95	24·58	
23·18	15·77	24·78	24·97	
Acres.	Acres.	Acres.	Acres.	
16,825	16,825	16,825	16,825	
551	504	612	614	
968	2,419	1,274	713	
1,519	2,923	1,886	1,327	
1,492	2,825	1,876	1,334	
9·03	17·37	11·21	7·89	
.....	
.....	
5·80	5·81	8·81	10·01	
7·86	14·32	10·54	10·94	
5·37	4·84	8·38	10·01	
7·43	12·26	10·09	10·94	
97·64	166·21	69·69	61·05	
150·98	135·22	121·10	67·89	

the largest area in the year of least rainfall.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Ashti Tank. Source of

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital-outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year...	8,36,091	8,36,091	8,36,091
3. Interest charges to end of year ...	6,91,277	7,21,559	7,51,841
4. Net Revenue do. ...	-84,031	-82,108	-82,295
5. Total sum at charge do. ...	15,80,361	16,11,399	16,39,758
6. Revenue—Water-rate assessment ...	2,166	3,659	6,621
7. Miscellaneous receipts do. ...	1,285	477	533
8. Total (assessment) ...	3,451	4,136	7,154
9. Total (collection) ...	5,118	6,036	4,976
10. Refunds ...	.....	.....	.....
11. Working expenses ...	5,874	4,113	5,163
12. Net Revenue based on assessment ...	-2,423	23	1,991
13. Percentage do. on Capital ...	0.29	0.00	0.24
14. Net Revenue do. on collection ...	-756	1,923	-187
15. Percentage do. on Capital ...	0.09	0.23	0.02
16. Gross assessed Revenue per acre irrigated...	4.99	3.75	2.59
17. Working expenses do. ...	8.49	3.73	1.87
18. Net assessed Revenue do. ...	3.50	0.02	0.72
19. Cost of measurement do. * ...	.....	.....	.....
20. Estimated value of crops irrigated ...	18,021	32,233	54,724
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) † ...	16.95	23.34	16.12
2. Do. (do. Irrigation) ...	21.60	31.85	16.29
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	16,825	16,825	16,825
4. Area irrigated, Kharif ...	347	421	885
5. Do. Rabi ...	345	681	1,879
6. Do. Total ...	692	1,102	2,764
7. Area applied for (Total) ...	670	1,116	2,690
8. Percentage irrigated of total culturable area under command ...	4.11	6.55	16.43
9. Lowest supply reached during the year, M. C. Ft. ...	42	72.50	313.94
10. Date on which supply was lowest per Item 9 ...	May 1902.	21st May 1903	20th Oct. 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second. { Kharif ...	5.28	3.33	8.78
{ Rabi... ..	2.86	6.92	13.81
12. Supply utilised do. { Kharif. ...	4.58	2.75	8.78
{ Rabi... ..	2.43	6.04	13.81
13. Duty per cubic foot per second ... { Kharif. ...	65.72	126.42	100.79
{ Rabi... ..	120.63	162.86	169.44

General Remarks.—The tank stored most water and irrigated

REPORT, 1902-1903 TO 1940-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Supply—Ashti Nāla and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	1,663	83	} The figures in columns 5 6, 7 and 8 relate to end of triennial period.
8,36,091	8,36,091	8,36,091	8,31,103	
7,51,841	6,80,995	5,70,149	4,79,594	
-82,295	-83,275	-38,333	-41,748	
16,39,758	15,45,921	14,15,007	13,22,756	
4,149	6,592	4,603	4,185	
765	802	1,058	445	
4,914	7,394	5,661	4,630	
5,377	6,259	5,286	4,335	
.....	
5,050	21,240	4,148	4,437	
-136	-13,846	1,513	193	
0.02	1.66	0.18	0.02	
327	-14,981	1,138	-102	
0.04	1.79	0.14	0.01	
3.24	2.53	3.00	3.49	
3.32	7.27	2.19	3.34	
0.08	4.74	0.81	0.15	
.....	
34,993	81,311	71,014	61,203	* The lands under command have been sub-divided into suitable pot numbers for irrigation purposes.
Inches.	Inches.	Inches.	Inches.	† Rainfall over the catchment area.
20.47	14.20	23.95	24.58	
23.18	15.77	24.78	24.97	
Acres.	Acres.	Acres.	Acres.	
16,825	16,825	16,825	16,825	
551	504	612	614	
968	2,419	1,274	713	
1,519	2,923	1,886	1,327	
1,492	2,825	1,876	1,334	
9.03	17.37	11.21	7.89	
.....	
.....	
5.80	5.81	8.81	10.01	
7.86	14.32	10.54	10.94	
5.37	4.84	8.38	10.01	
7.43	12.26	10.09	10.94	
97.64	166.21	69.69	61.05	
150.98	135.22	121.10	67.39	

the largest area in the year of least rainfall.

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Name of Work—Bevári Canal.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year.	59,811	59,811	59,811
3. Interest charges to end of year.	79,578	81,849	84,120
4. Net Revenue do.	40,637	44,158	47,040
5. Total sum at charge do.	97,381	98,752	97,502
6. Revenue—Water-rate assessment	3,633	4,572	2,225
7. Miscellaneous receipts do.	57	216	108
8. Total (assessment)	3,690	4,788	2,333
9. Total (collection)	3,195	5,791	4,886
10. Refunds	.....	.....	13
11. Working expenses	2,295	2,270	1,991
12. Net Revenue based on assessment	1,395	2,518	342
13. Percentage do. on Capital	2.33	4.21	0.57
14. Net Revenue do. on collection	900	3,521	2,882
15. Percentage do. on Capital	1.50	5.39	4.82
16. Gross assessed Revenue per acre irrigated	5.84	5.33	8.64
17. Working expenses do.	3.63	2.55	7.37
18. Net assessed Revenue do.	2.21	2.33	1.27
19. Cost of measurement do.	Annas 4 pies 3	Annas 4 ps. 4	Annas 3 ps. 11
20. Estimated value of crops irrigated	30,985	46,119	10,340
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	24.05	13.85
2. Do. (do. Irrigation)	25.20	22.65	10.65
	Acres.	Acres.	Acres.
3. Total culturable area under command	3,624	3,624	3,624
4. Area irrigated, Kharif	111	86	128
5. Do. Rabi	521	804	142
6. Do. Total	632	890	270
7. Area applied for (Total)	698	812	294
8. Percentage irrigated of total culturable area under command	17.44	24.56	7.45
9. Lowest supply reached during the year	..... M. C. Ft.	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second.	Kharif ... 2.01 Rabi ... 4.12	1.88 5.01	1.68 1.45
12. Supply utilised do.	Kharif ... 2.01 Rabi ... 4.12	1.88 5.01	1.68 1.45
13. Duty per cubic foot per second...	Kharif ... 55.22 Rabi ... 126.46	45.74 160.48	76.19 97.93

General Remarks.—The river supply is precarious;

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—River Warna and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	.....	.....	148	
59,811	59,811	59,811	59,811	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
84,120	77,307	70,494	63,681	
47,040	39,737	35,929	19,054	
97,502	96,043	97,605	1,03,723	
3,476	3,165	8,415	6,137	
127	78	98	130	
3,603	3,243	8,513	6,267	
4,624	3,276	7,912	5,762	
4	.....	.....	2	
2,185	2,007	2,287	2,382	
1,418	1,236	6,226	3,885	
2-37	2-07	10-41	6-50	
2,435	1,269	5,625	3,378	
4-07	2-12	9-40	5-65	
6-04	6-31	5-02	4-57	
3-66	3-90	1-35	1-74	
2-38	2-41	3-67	2-83	
Annas 4 pies 2	Annas 8 pies 3	Anna 1 pies 9	Annas 2 pies 6	
29,148	30,872	91,095	33,339	
Inches.	Inches.	Inches.	Inches.	
.....	
19-50	19-12	31-82	30-13	
Acres.	Acres.	Acres.	Acres.	
3,624	3,624	3,624	3,624	
108	79	170	232	
439	435	1,527	1,139	
597	514	1,697	1,371	
601	645	1,584	1,373	
16-47	14-18	46-83	37-83	
.....	.....	.....	.....	} Weir project.
.....	
1-86	2-03	4-17	5-67	
3-53	3-17	12-24	8-93	
1-86	2-03	4-17	5-44	
3-53	3-17	12-24	8-22	
59-05	36-03	41-92	44-00	
128-29	105-35	125-31	131-00	

the three years were dry and the supply bad.

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Name of Work—Upper Man River Works.

Particulars	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
I.—Financial Results.			
1. Capital outlay, direct and indirect, during the year.	.....	79	.....
2. Do. do. to end of year.	4,39,207	4,39,286	4,39,286
3. Interest charges to end of year ...	4,13,878	4,30,491	4,47,104
4. Net Revenue do. ...	—43,607	—40,461	—39,694
5. Total sum at charge do. ...	8,76,636	8,96,771	9,10,238
6. Revenue—Water-rate assessment ...	2,290	3,304	3,655
7. Miscellaneous receipts do. ...	342	52	333
8. Total (assessment) ...	2,632	3,356	3,988
9. Total (collection) ...	373	6,962	4,388
10. Refunds ...	3	.....	.....
11. Working expenses ...	3,813	3,816	3,621
12. Net Revenue based on assessment ...	—1,181	—450	367
13. Percentage do. on Capital ...	0.27	0.10	0.08
14. Net Revenue do. on collection ...	—3,443	3,146	767
15. Percentage do. on Capital ...	0.78	0.72	0.17
16. Gross assessed Revenue per acre irrigated ...	3.97	4.72	4.58
17. Working expenses do. ...	5.75	5.37	4.16
18. Net assessed Revenue do. ...	1.78	0.65	0.42
19. Cost of measurement do. ...	Annas 6 pies 3	Annas 5 pies 7	Anna 1 pies 7
20. Estimated value of crops irrigated ...	16,252	16,695	19,885
II.—Working details.			
	Inches.	Inches.	Inches.
1. Rianfall (as affecting storage) ...	.....	17.74	15.96
2. Do. (do. Irrigation) ...	20.89	18.04	10.39
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	7,623	7,623	7,623
4. Area irrigated, Kharif ..	293	271	90
5. Do. Rabi ..	371	440	780
6. Do. Total ..	634	711	870
7. Area applied for (Total) ...	750	775	616
8. Percentage irrigated of total culturable area under command ...	8.71	9.33	11.41
9. Lowest supply reached during the year ... M. C. Ft.	81	28	Nil.
10. Date on which supply was lowest per Item 9.	March 1903	31st Mar. 1904	5th Sep. 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second. } Kharif ...	1.14	1.77	1.03
} Rabi ...	2.10	4.22	4.37
12. Supply utilised do. ... { Kharif ...	0.97	1.56	0.96
} Rabi ...	1.66	4.06	4.14
13. Duty per cubic foot per second ... { Kharif ...	257.02	153.11	87.58
} Rabi ...	176.66	101.27	178.00

General Remarks.—The three years were

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Man River and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
26	2,837	82	296	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
4,39,286	4,39,207	4,30,696	4,30,451	
4,47,104	3,97,265	3,47,893	2,98,987	
-39,694	-40,164	-7,460	-8,337	
9,10,238	8,51,756	7,69,370	7,22,693	
3,083	3,474	5,825	6,803	
242	274	153	101	
3,325	3,748	5,978	6,904	
3,903	1,664	4,653	6,394	
1	10	.....	.....
3,750	12,555	4,361	4,850	
-425	-8,807	1,617	2,054	
0.10	2.01	0.38	0.48	
157	-10,901	292	1,544	
0.04	2.48	0.07	0.33	
4.45	3.17	3.25	4.69	
5.01	10.60	2.37	3.29	
0.56	7.43	0.88	1.40	
Annas 4 pies 6	Annas 3	Anna 1 pies 4	Annas 3 pies 5	
17,611	25,727	60,041	30,567	
Inches.	Inches.	Inches.	Inches.	
.....	
16.44	13.17	17.36	20.47	
Acres.	Acres.	Acres.	Acres.	
7,623	7,623	7,623	7,623	
218	611	715	760	
530	573	1,124	713	
748	1,184	1,839	1,473	
714	1,223	1,743	1,403	
9.81	15.53	24.12	19.32	
.....	
.....	
1.31	2.21	2.45	3.71	
3.56	2.91	4.26	6.40	
1.16	2.20	2.03	1.92	
3.29	2.82	3.56	4.16	
165.84	359.33	302	205	
152.98	198.39	262	119	

ones of deficient rainfall.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Work—Yerla River Irrigation Works.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year.	887	153	4
2. Do. do. to end of year.	7,62,466	7,62,619	7,62,623
3. Interest charges to end of year ...	6,51,715	6,80,268	7,08,824
4. Net Revenue do. ...	—59,492	—57,278	—50,026
5. Total sum at charge do. ...	14,40,870	14,73,826	15,00,169
6. Revenue—Water-rate assessment ...	6,465	13,366	15,823
7. Miscellaneous receipts do. ...	522	518	696
8. Total (assessment) ...	6,987	13,884	16,519
9. Total (collection) ...	8,704	8,128	13,742
10. Refunds ...	.....	.....	.....
11. Working expenses ...	12,971	5,914	6,490
12. Net Revenue based on assessment ...	—5,934	7,970	10,029
13. Percentage do. on Capital ...	0.78	1.04	1.32
14. Net Revenue do. on collection ...	—4,267	2,214	7,252
15. Percentage do. on Capital ...	0.56	0.29	0.95
16. Gross assessed Revenue per acre irrigated ...	8.34	4.76	4.18
17. Working expenses do. ...	15.48	2.03	1.64
18. Net assessed Revenue do. ...	7.14	2.73	2.54
19. Cost of measurement do. ...	.....	Annas 2 pies 8	Anna 1 pie 11
20. Estimated value of crops irrigated ...	30,549	83,905	1,16,860
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	21.80	18.52
2. Do. (do. Irrigation) ...	24.19	22.97	20.98
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	10,680	10,680	10,680
4. Area irrigated, Kharif ...	499	175	863
5. Do. Rabi ...	339	2,737	3,085
6. Do. Total ...	838	2,912	3,948
7. Area applied for (Total) ...	553	2,538	3,352
8. Percentage irrigated of total culturable area under command ...	7.85	27.27	36.97
9. Lowest supply reached during the year ... M. C. Ft.	50	15	71
10. Date on which supply was lowest per Item 9.	May-1902	7th June 1903	10th Sep. 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second, { Kharif ...	6.74	7.39	9.66
{ Rabi ...	5.94	29.90	23.29
12. Supply utilised do. { Kharif ...	3.87	4.54	5.61
{ Rabi ...	3.68	17.46	11.69
13. Duty per cubic foot per second ... { Kharif ...	74.04	23.68	89.33
{ Rabi ...	57.07	91.51	132.00

General Remarks.—This work is helped by the supply in Nehr tank. The years were the area irrigated is the largest in the 3.

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Yerla River and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
348	18,896	3,494	10,458	
7,62,623	7,61,579	7,04,892	6,94,411	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
7,08,824	6,23,179	5,41,386	4,62,720	
-50,026	-55,225	-26,061	-35,468	
15,00,169	14,10,512	12,48,592	11,72,842	
11,885	10,542	11,165	8,258	
578	287	587	1,044	
12,463	10,829	11,752	9,302	
10,191	9,341	10,013	8,910	
.....	.....	2	2	
8,458	19,062	6,875	12,039	
4,005	-8,233	4,877	-2,737	
0.53	1.08	0.69	0.39	
1,733	-9,721	3,136	-3,131	
0.23	1.28	0.44	0.45	
4.86	2.99	3.37	4.01	
3.30	5.26	1.97	5.19	
1.56	2.27	1.40	1.18	
.....	.....	Anna 1 pies 5	Annas 2 pie 1	
77,105	1,12,454	91,230	49,151	
Inches.	Inches.	Inches.	Inches.	
.....	
22.71	18.29	22.75	27.83	
Acres.	Acres.	Acres.	Acres.	
10,680	10,680	10,680	10,680	
512	503	825	448	
2,054	3,115	2,665	1,869	
2,566	3,621	3,490	2,317	
2,148	3,363	3,191	2,094	
24.03	33.90	32.68	21.69	
.....	
.....	
7.93	5.54	6.12	7.04	
19.71	18.71	13.21	11.62	
4.67	4.23	3.98	2.66	
10.94	13.54	6.99	6.28	
62.35	97.02	135.33	62.33	
93.54	198.09	206.33	137.00	

all of deficient rainfall, but in 1904-05 the year of worst rainfall the tank stored most and

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Name of Work—Chikhli Canal.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year	57,442	57,442	57,442
3. Interest charges to end of year	72,902	75,054	77,206
4. Net Revenue do.	-5,864	-6,313	-5,421
5. Total sum at charge do.	1,81,707	1,86,208	1,88,809
6. Revenue—Water-rate assessment	1,900	1,270	874
7. Miscellaneous receipts do.	304	9	161
8. Total (assessment)	2,204	1,279	1,055
9. Total (collection)	605	2,052	1,800
10. Refunds	.....	.....	84
11. Working expenses	2,954	2,591	824
12. Net Revenue based on assessment	-750	-1,222	231
13. Percentage do. on Capital	1.31	2.13	0.40
14. Net revenue do. on collection	-2,349	-449	892
15. Percentage do. on Capital	4.09	0.78	1.55
16. Gross assessed Revenue per acre irrigated...	5.39	5.12	13.88
17. Working expenses do.	7.22	10.00	10.84
18. Net assessed Revenue do.	1.83	4.88	3.04
19. Cost of measurement do.	Anna 1 pie 1	Anna 1 pies 2	Annas 2 pies 11.
20. Estimated value of crops irrigated	17,291	11,636	10,709
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	.....	.....
2. Do. (do. Irrigation)	18.93	25.69	12.26
	Acres.	Acres.	Acres.
3. Total culturable area under command	1,478	1,478	1,478
4. Area irrigated, Kharif	399	200	58
5. Do. Rabi	10	50	18
6. Do. Total	409	250	76
7. Area applied for (Total)	411	357	124
8. Percentage irrigated of total culturable area under command	27.67	16.91	5.14
9. Lowest supply reached during the year	.....	.....	.....
10. Date on which supply was lowest per item 9	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	2.40	2.24	1.06
	Kharif ...	2.04	9.32
	Rabi ...	1.58	0.77
12. Supply utilised do.	1.84	5.32	0.79
	Kharif...	186.87	0.68
	Rabi ...	89.29	54.72
13. Duty per cubic foot per second.	4.90	5.36	23.88

General Remarks.—The river supply is small and

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—River Nandni and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
57,442	57,442	57,442	57,442	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
77,206	70,750	64,294	57,838	
-5,421	-3,515	-1,295	-2,718	
1,88,809	1,27,732	1,21,738	1,17,232	
1,348	1,182	2,342	1,889	
165	51	60	70	
1,518	1,283	2,402	1,959	
1,486	1,087	1,917	1,976	
28	3	.....	.....
2,093	1,774	1,443	922	
-580	-541	959	1,037	
1-01	0-94	1-67	1-81	
-635	-740	474	1,054	
1-11	1-29	0-83	1-83	
6-18	3-71	4-46	5-10	
8-55	5-34	2-68	2-40	
2-37	1-63	1-78	2-70	
Anna 1 pies 9	Pies 8	Anna 1 pies 2	Annas 2 pies 4	
13,212	16,659	33,997	22,981	
Inches.	Inches.	Inches.	Inches.	
.....	
18-96	14-59	18-35	21-21	
Acres.	Acres.	Acres.	Acres.	
1,478	1,478	1,478	1,478	
219	285	408	253	
26	47	131	131	
245	332	539	384	
297	364	566	382	
16-58	22-46	36-46	25-98	
.....	} Weir project.
.....	
1-90	1-69	3-15	3-36	
4-04	1-49	5-95	7-72	
1-14	1-34	2-79	2-63	
2-61	1-22	4-54	6-07	
103-63	144-79	131-00	68-33	
11-21	32-71	22-30	19-33	

precarious and the years were of deficient rain.

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Work—Chikhli Canal.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. do. to end of year	57,442	57,442	57,442
3. Interest charges to end of year	72,902	75,054	77,206
4. Net Revenue do.	-5,864	-6,313	-5,421
5. Total sum at charge do.	1,31,707	1,36,208	1,38,809
6. Revenue—Water-rate assessment	1,900	1,270	874
7. Miscellaneous receipts do.	304	9	151
8. Total (assessment)	2,204	1,279	1,055
9. Total (collection)	605	2,052	1,800
10. Refunds	.....	.....	54
11. Working expenses	2,954	2,591	824
12. Net Revenue based on assessment	-750	-1,222	231
13. Percentage do. on Capital	1.31	2.13	0.40
14. Net revenue do. on collection	-2,349	-449	892
15. Percentage do. on Capital	4.09	0.78	1.55
16. Gross assessed Revenue per acre irrigated...	5.39	5.12	13.88
17. Working expenses do.	7.22	10.00	10.84
18. Net assessed Revenue do.	1.83	4.88	3.04
19. Cost of measurement do.	Anna 1 pie 1	Anna 1 pie 2	Annas 2 pies 11.
20. Estimated value of crops irrigated	17,291	11,636	10,709
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	.....	.....
2. Do. (do. Irrigation)	18.93	25.69	12.26
	Acres.	Acres.	Acres.
3. Total culturable area under command	1,478	1,478	1,478
4. Area irrigated, Kharif	399	200	58
5. Do. Rabi	10	50	18
6. Do. Total	409	250	76
7. Area applied for (Total)	411	357	124
8. Percentage irrigated of total culturable area under command	27.67	16.91	5.14
9. Lowest supply reached during the year	.....	.....	.....
10. Date on which supply was lowest per item 9	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second	2.40	2.24	1.06
	Rabi	Rabi	Rabi
	2.04	9.32	0.77
	1.58	1.04	0.79
12. Supply utilised do.	1.84	5.32	0.68
	Kharif	Kharif	Kharif
	166.87	89.29	54.72
13. Duty per cubic foot per second	4.90	5.36	23.88
	Rabi	Rabi	Rabi

General Remarks.—The river supply is small and

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—River Nandni and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
57,442	57,442	57,442	57,442	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
77,206	70,750	64,294	57,838	
- 5,421	-3,515	-1,295	- 2,718	
1,88,809	1,27,732	1,21,738	1,17,232	
1,348	1,182	2,342	1,889	
165	51	60	70	
1,518	1,283	2,402	1,959	
1,486	1,087	1,917	1,976	
28	3	.....	.....
2,093	1,774	1,443	922	
-580	-541	959	1,037	
1.01	0.94	1.67	1.81	
-635	-740	474	1,054	
1.11	1.29	0.83	1.83	
6.18	3.71	4.46	5.10	
8.55	5.34	2.68	2.40	
2.37	1.63	1.78	2.70	
Anna 1 pies 9	Pies 8	Anna 1 pies 2	Annas 2 pies 4	
13,212	16,659	33,997	22,981	
Inches.	Inches.	Inches.	Inches.	
.....	
18.96	14.59	18.35	21.21	
Acres.	Acres.	Acres.	Acres.	
1,478	1,478	1,478	1,478	
219	285	408	253	
26	47	131	131	
245	332	589	384	
297	364	566	382	
16.58	22.46	36.46	25.98	
.....	} Weir project.
.....	
1.90	1.69	3.15	3.36	
4.04	1.49	5.95	7.72	
1.14	1.34	2.79	2.63	
2.61	1.22	4.54	6.07	
103.63	144.79	131.00	68.33	
11.21	32.71	22.30	19.33	

precarious and the years were of deficient rain.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Work—Maini Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year	.....	.....	.....
2. Do. do. to end of year	4,44,477	4,44,477	4,44,477
3. Interest charges to end of year	4,39,618	4,56,287	4,72,956
4. Net Revenue do. ...	5,810	8,958	13,271
5. Total sum at charge do. ...	8,61,295	8,78,285	8,91,806
6. Revenue—Water-rate assessment	5,168	6,260	6,438
7. Miscellaneous receipts do. ...	61	126	60
8. Total (assessment) ...	5,229	6,386	6,498
9. Total (collection) ...	3,248	5,990	7,831
10. Refunds	5	.....	.....
11. Working expenses	3,564	2,842	3,518
12. Net Revenue based on assessment	1,665	3,544	2,980
13. Percentage do. on Capital	0.37	0.80	0.67
14. Net Revenue do. on collection	—321	3,148	4,313
15. Percentage do. on Capital	0.07	0.71	0.97
16. Gross assessed Revenue per acre irrigated ..	3.48	5.20	4.03
17. Working expenses do. ...	2.38	2.32	2.18
18. Net Assessed Revenue do. ...	1.10	2.88	1.85
19. Cost of measurement do. ...	Annas 2 pies 6	Annas 2 pies 9	Annas 2 pies 11.
20. Estimated value of crops irrigated	43,205	47,810	56,570
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation)	18.29	22.30	18.59
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	4,625	4,625	4,625
4. Area irrigated, Kharif ...	1,341	485	319
5. Do. Rabi ...	161	742	1,292
6. Do. Total ...	1,502	1,227	1,611
7. Area applied for (Total) ...	1,490	1,415	1,374
8. Percentage irrigated of total culturable area under command ...	32.48	26.53	34.83
9. Lowest supply reached during the year ... M. C. Ft.	18	16	46
10. Date on which supply was lowest per Item 9 ...	May 1902.	19th May 1903.	17th June 1904
11. Supply entering the Canal at head, average discharge in cubic feet per second	2.21	1.93	0.85
	Kharif ...	Rabi ...	Kharif ...
	Rabi ...	Kharif ...	Rabi ...
12. Supply utilised do. ...	3.00	7.37	5.21
	Kharif ...	Rabi ...	Kharif ...
	Rabi ...	Kharif ...	Rabi ...
13. Duty per cubic foot per second .	606.79	251.29	375.29
	Kharif ...	Rabi ...	Kharif ...
	Rabi ...	Kharif ...	Rabi ...

General Remarks.—It is very remarkable that this tank has never failed, but always fills irrigated is good. The extraordinary duties are due to the water being used to mature crops

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Wanga Nala and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	18,276	—262	175	
4,44,477	4,44,477	3,89,649	3,90,434	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
4,72,956	4,22,949	3,75,948	3,31,932	
13,271	6,131	6,155	4,025	
8,91,806	8,43,315	7,43,962	7,06,710	
5,955	5,037	4,583	5,450	
82	188	102	234	
6 037	5,225	4,685	5,684	
5,690	3,410	4,245	5,818	
2	.....	5	.....
3,308	3,418	3,530	4,991	
2,729	1,807	1,115	693	
0.61	0.41	0.30	0.18	
2,380	—8	710	827	
0.53	0.00	0.18	0.21	
4.17	3.08	3.22	4.44	
2.28	2.02	2.43	3.90	
1.89	1.06	0.79	0.54	
Annas 2 pies 9	Annas 2 pie 1	Anna 1 pie 6.	Annas 3 pies 6	
49,128	44,312	50,613	53,082	
Inches.	Inches.	Inches.	Inches.	
.....	
18.06	13.00	14.18	19.85	
Acres.	Acres.	Acres.	Acres.	
4,625	4,625	4,625	4,625	
715	1,024	835	614	
732	671	620	665	
1,447	1,695	1,455	1,279	
1,426	1,726	1,481	1,168	
31.28	36.65	31.46	27.65	
.....	
.....	
1.66	2.61	3.03	3.96	
5.19	5.19	9.14	7.54	
1.65	2.61	2.97	3.96	
5.03	5.19	9.14	6.75	
411.12	397.41	273.67	149.33	
134.11	124.62	66.67	83.67	

even in famine years though the catchment is not in the gháts. The percentage of area sown under rainfall.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR

Name of work—*Muchkundi Tank.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year	1,58,707	1,58,707	1,58,707
3. Interest charges to end of year	1,15,704	1,21,313	1,26,922
4. Net Revenue do.	-3,853	-3,835	-3,838
5. Total sum at charge do.	2,72,293	2,78,264	2,83,855
6. Revenue—Water-rate assessment	164	119	16
7. Miscellaneous receipts do.	150	285	304
8. Total (assessment)	314	404	320
9. Total (collection)	159	459	436
10. Refunds ... ..	.....	.....	.....
11. Working expenses	521	451	439
12. Net Revenue based on assessment	-207	-47	-119
13. Percentage do. on Capital	0.13	0.03	0.07
14. Net Revenue do. on collection	-362	18	-3
15. Percentage do. on Capital	0.23	0.01	0.00
16. Gross assessed Revenue per acre irrigated... ..	3.49	8.24	80.00*
17. Working expenses do.	5.79	9.20	110.00
18. Net assessed revenue do.	2.30	0.96	30.00
19. Cost of measurement do. ... ..	.....	Anna 1 pies 8	Anna 1 pies 4
20. Estimated value of crops irrigated	1,217	705	16
<i>II.—Working Details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ... ..	.....	19.39	10.63
2. Do. (do. Irrigation)	20.49	19.28	10.22
	Acres.	Acres.	Acres.
3. Total culturable area under command	5,417	5,417	5,417
4. Area irrigated, Kharif	48	49	4
5. Do. Rabi	42††
6. Do. Total	90	49	4
7. Area applied for (Total) ... ..	.....†	49	4
8. Percentage irrigated of total culturable area under command	1.65	0.90	0.07
9. Lowest supply reached during the year M. C. Ft.	29	16.29	Not available.
10. Date on which supply was lowest per Item 9	April 1902...	6th June 1903...	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second ... ..	.....†	0.65	0.36
	Rabi	0.77	0.22
12. Supply utilised do.	Kharif	0.65	.....
	Rabi	0.77	.....
13. Duty per cubic foot per second... ..	Kharif ... ..	.....	.....
	Rabi ... ..	.....	.....

General Remarks.—A tank with an

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Muchkundi Nala and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	1,053	
1 58,707	1,58,707	1,58,707	1,58,707	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
1,26,922	1,10,095	93,268	76,441	
-3,838	-3,491	-3,561	-3,311	
2,83,855	2,67,005	2,50,035	2,33,085	
100	292	25	77	
246	337	146	339	
346	629	171	416	
354	494	175	411	
.....	
470	471	259	415	
-124	158	-88	1	
0·03	0·10	0·06	0·00	
-116	23	-84	-4	
0·07	0·01	0·05	0·00	
7·21	6·69	28·50	24·47	
9·79	5·01	43·17	24·41	
2·58	1·68	14·67	0·06	
.....	
646	1,154	130	577	
Inches.	Inches.	Inches.	Inches.	
.....	
16·66	14·90	14·27	17·34	
Acres.	Acres.	Acres.	Acres.	
5,417	5,417	5,417	5,417	†Water in the tank given free for non-perennial crops.
34	30	5	14	
14	64	1	3	
48	94	6	17	
18	110	19	29	
0·88	1·74	0·11	0·31	
.....	
.....	
.....	
.....	
.....	
.....	
.....	} No observations made.
.....	

arid and insufficient catchment.

DECCAN AND GUJARÁT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Gadikeri Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year...	3,707	3,710	.....
2. Do. do. to end of year...	12,986	16,696	16,696
3. Interest charges to end of year ...	8,274	8,834	9,462
4. Net Revenue do. ...	37,226	38,870	40,218
5. Total sum at charge do. ...	-14,760	-12,256	*16,696
6. Revenue—Water-rate assessment† ...	1,987	1,987	1,987
7. Miscellaneous receipts do. ...	.....	.....	.....
8. Total (assessment) ...	1,987	1,987	1,987
9. Total (collection)† ...	1,987	1,987	1,987
10. Refunds ...	.....	.....	.....
11. Working expenses ...	356	343	639
12. Net Revenue based on assessment ...	1,631	1,644	1,348
13. Percentage do. on Capital ...	12.56	9.85	8.07
14. Net Revenue do. on collection ...	1,631	1,644	1,348
15. Percentage do. on Capital ...	12.56	9.85	8.07
16. Gross assessed Revenue per acre irrigated...	5.90	5.90	5.90
17. Working expenses do. ...	1.06	1.02	1.90
18. Net assessed Revenue do. ...	4.84	4.88	4.00
19. Cost of measurement do. ...	.....	.....	.....
20. Estimated value of crops irrigated ...	.....	.....	.....
<i>II.—Working details.</i>			
1. Rainfall (as affecting storage) ...	Inches.	Inches.	Inches.
2. Do. (do. Irrigation) ...	.....	.....	.....
3. Total culturable area under command ...	Acres.	Acres.	Acres.
4. Area irrigated, Kharif ...	.....	.....	.....
5. Do. Rabi ...	337	337	337
6. Do Total ...	337	337	337
7. Area applied for (Total) ...	.....	.....	.....
8. Percentage irrigated of total culturable area under command ...	.....	.....	.....
9. Lowest supply reached during the year, M. C. Ft. ...	.....	.....	.....
10. Date on which supply was lowest per Item 9 ...	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	.....	.....	.....
12. Supply utilised do. ...	.....	.....	.....
13. Duty per cubic foot per second ...	.....	.....	.....

General Remarks.—This tank is within the

REPORT, 1902-1903 to 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
2,472	.....	.....	.....
16,696	9,279	9,279	9,279	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
9,462	7,849	6,778	5,707	
40,218	35,595	34,752	29,972	
16,696	-18,790	-17,412	-13,555	
1,987	1,987	1,987	1,987	* Excluding excess of net revenue over interest.
.....	1	1	.....
1,987	1,988	1,988	1,987	
1,987	1,988	1,988	1,987	
.....	.....	.....	20	† Irrigation share of Land Revenue.
446	1,707	394	246	
1,541	281	1,594	1,741	
9-23	3-03	17-18	18-76	
1,541	281	1,594	1,721	
9-23	3-03	17-18	18-55	
5-90	5-90	5-90	5-90	
1-32	5-07	1-17	0-73	
4-57	0-83	4-73	5-17	
.....	
.....	
Inches.	Inches.	Inches.	Inches.	
.....	.....	.....	.....	} No rain gauge kept.
.....	.....	.....	26-94	
Acres.	Acres.	Acres.	Acres.	
.....	.....	Not known.	Not known.	
337	337	337	337	
.....	
337	337	337	337	
.....	
.....	.....	.....	.....	The management of this tank is in the hands of the Revenue Department.
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

zone of regular rain and is a good useful tank.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Dambal Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year...	.....	.....	.....
2. Do. do. to end of year...	63,980	63,980	63,980
3. Interest charges to end of year ...	61,711	64,145	66,579
4. Net Revenue do. ...	17,349	18,165	19,965
5. Total sum at charge do. ...	1,06,416	1,08,342	1,09,960
6. Revenue—Water-rate assessment* ...	2,022	1,524	1,419
7. Miscellaneous receipts do. ...	210	221	234
8. Total (assessment) ...	2,232	1,745	1,653
9. Total (collection)* ...	1,421	2,030	2,995
10. Refunds ...	32	10	.....
11. Working expenses ...	881	1,204	1,195
12. Net Revenue based on assessment ...	1,351	541	458
13. Percentage do. on Capital ...	2.11	0.85	0.72
14. Net Revenue do. on collection ...	508	816	1,800
15. Percentage do. on Capital ...	0.79	1.28	2.81
16. Gross assessed Revenue per acre irrigated...	4.24	5.16	5.04
17. Working expenses do. ...	1.67	3.56	3.64
18. Net assessed Revenue do. ...	2.57	1.60	1.40
19. Cost of measurement do. ...	.....	Pies 7	Pies 2
20. Estimated value of crops irrigated ...	15,636	10,392	4,559
<i>II.—Working details.</i>			
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	25.28	22.71	15.36
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	2,500	2,500	2,500
4. Area irrigated, Kharif ...	459	301	272
5. Do. Rabi ...	67	37	56
6. Do Total ...	526	338	328
7. Area applied for (Total) ...	547	354	323
8. Percentage irrigated of total culturable area under command ...	21.04	13.52	13.12
9. Lowest supply reached during the year, M. C. Ft. ...	1.00	1.619	N/A.
10. Date on which supply was lowest per Item 9 ...	April 1902.	28th Aug. 1903.	20th Aug. 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	3.37	2.54	2.03
	3.37	2.54	2.03
	2.54	1.88	2.32
12. Supply utilised do. ...	.....	.....	.....

13. Duty per cubic foot per second ...	133.00	114.00	117.00
	111.00	149.00	84.00

General Remarks.—A small tank

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
63,980	63,980	63,980	63,980	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
66,579	59,277	51,975	44,673	
10,065	16,841	13,304	11,024	
1,09,960	1,04,469	1,00,981	95,856	
1,655	1,806	1,709	1,448	
221	826	177	415	
1,876	2,132	1,886	1,863	
2,148	2,008	1,602	1,864	
14	.....	.....	.....
1,093	829	842	859	
783	1,303	1,044	1,004	
1.22	2.04	1.63	1.57	
1,041	1,179	760	1,005	
1.63	1.84	1.19	1.57	
4.72	5.75	5.28	7.63	
2.75	2.23	2.36	3.52	
1.97	3.52	2.92	4.11	
.....	
10,196	12,656	8,730	3,869	
Inches.	Inches.	Inches.	Inches.	
.....	
21.12	14.05	17.33	15.98	
Acres.	Acres.	Acres.	Acres.	
2,500	2,500	2,500	2,500	
344	278	324	201	
53	93	33	43	
397	371	357	244	
408	333	191	95	
15.88	14.84	14.28	9.76	
.....	
.....	
2.65	1.93	1.68	1.47	
2.25	3.40	2.83	2.01	
.....	
.....	
121.00	183.00	207.00	142.00	} All utilised except leakage in the Canal.
115.00	72.00	41.00	64.00	

dependent on local rain.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Medleri Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year...	.....	.....	.....
2. Do. do. to end of year...	81,392	81,392	81,392
3. Interest charges to end of year ...	70,170	73,304	76,438
4. Net Revenue do. ...	-7,718	-7,794	-8,207
5. Total sum at charge do. ...	1,55,630	1,59,280	1,62,490
6. Revenue—Water-rate assessment ...	856	491	498
7. Miscellaneous receipts do. ...	9	...	.....
8. Total (assessment) ...	865	491	498
9. Total (collection) ...	679	570	623
10. Refunds ...	.....	.....	.....
11. Working expenses ...	1,195	646	1,036
12. Net Revenue based on assessment ...	-330	-155	-538
13. Percentage do. on Capital ...	0.41	0.19	0.66
14. Net Revenue do. on collection ...	-516	-76	-413
15. Percentage do. on Capital ...	0.63	0.09	0.51
16. Gross assessed Revenue per acre irrigated...	7.33	9.44	6.73
17. Working expenses do. ...	10.13	12.42	14.00
18. Net assessed Revenue do. ...	2.80	2.98	7.27
19. Cost of measurement do. ...	.....	Pies 5	Pies 4
20. Estimated value of crops irrigated ...	9,342	6,217	6,945
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	23.61	19.15	22.15
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	830	830	830
4. Area irrigated, Kharif ...	110	37	69
5. Do. Rabi ...	8	15	5
6. Do. Total ...	118	52	74
7. Area applied for (Total) ...	124	59	77
8. Percentage irrigated of total culturable area under command ...	14.22	6.27	8.92
9. Lowest supply reached during the year, M. C. Ft.	11	13.098	6.064
10. Date on which supply was lowest per Item 9 ...	April 1902.	8th May 1903.	21st Sept. 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	0.95	1.08	0.93
{ Kharif ...	0.50	1.99	0.68
{ Rabi ...	.....	.....	.....
12. Supply utilised do. ...	.....	.....	.....
{ Kharif ...	.....	.....	.....
{ Rabi ...	.....	.....	.....
13. Duty per cubic foot per second. { Kharif ...	116	34.00	74.00
{ Rabi ...	194	21.00	103.00

General Remarks.—A small tank

REPORT, 1902-1903 to 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Medleri Nala and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5.	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
81,392	81,392	81,392	81,392	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
76,438	67,036	57,634	48,232	
-8,207	-7,202	-7,171	-6,631	
1,62,490	1,52,446	1,42,821	1,32,771	
615	595	660	470	
3	7	1	6	
618	602	661	476	
624	655	588	476	
.....	7	.....	.....
959	658	768	761	
-341	-56	-107	-285	
0.42	0.07	0.13	0.35	
-335	-10	-180	-285	
0.41	0.01	0.22	0.35	
7.63	6.08	7.43	3.78	
11.84	6.64	8.63	6.04	
4.21	0.56	1.20	2.26	
.....	
7,501	9,880	8,025	5,866	
Inches.	Inches.	Inches.	Inches.	
.....	
21.64	15.33	2.418	14.32	
Acres.	Acres.	Acres.	Acres.	
830	830	830	830	
72	56	75	100	
9	43	14	26	
81	99	89	126	
86	106	95	117	
9.76	11.93	10.72	15.18	
.....	
.....	
0.99	0.45	0.57	0.49	
1.06	1.61	0.87	1.15	
.....	.....	.....	.....	} All utilised except leakage in the Canal.
.....	
75.00	99	142	228	
106.00	58	153	126	

dependent on local rain.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Madag Tank.

Particulars.	1902-03.	1903-04.	1904-05.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. do. to end of year	1,67,598	1,67,598	1,67,598
3. Interest charges to end of year	2,32,974	2,39,424	2,45,874
4. Net Revenue do.	-5,302	-2,551	-2,218
5. Total sum at charge do.	3,99,530	4,05,874	4,09,573
6. Revenue—Water-rate assessment	2,042	2,328	2,144
7. Miscellaneous receipts do.	130	125	124
8. Total (assessment) ...	2,172	2,453	2,268
9. Total (collection) ...	1,435	4,188	1,733
10. Refunds	.....	.....	.....
11. Working expenses	1,389	1,437	1,400
12. Net Revenue based on assessment	783	1,016	868
13. Percentage do. on Capital	0.47	0.61	0.52
14. Net Revenue do. on collection	106	2,751	333
15. Percentage do. on Capital	0.06	1.64	0.20
16. Gross assessed Revenue per acre irrigated...	2.31	2.66	2.98
17. Working expenses do.	1.48	1.56	1.84
18. Net assessed Revenue do.	0.83	1.10	1.14
19. Cost of measurement* do.	.....	Pics 2	Pic 1
20. Estimated value of crops irrigated	33,250	24,191	23,709
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation)	31.79	26.38	24.87
	Acres.	Acres.	Acres.
3. Total culturable area under command	1,345	1,345	1,345
4. Area irrigated, Kharif	523	628	413
5. Do. Rabi	416	294	348
6. Do. Total	939	922	761
7. Area applied for (Total)	955	1,067	749
8. Percentage irrigated of total culturable area under command	69.81	68.48	56.58
9. Lowest supply reached during the year	... M. C. Ft.	Not available.	...
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second.	{ Kharif ... 4.78 Rabi ... 5.39	{ 6.19 6.37	{ 5.04 8.39
12. Supply utilised do.	{ Kharif ... Rabi ...	{	{
13. Duty per cubic foot per second.	{ Kharif ... 109 Rabi ... 141	{ 101.00 106.00	{ 82.00 82.00

General Remarks.—A large proportion of rice is grown

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Kumadwati River and Rainfall.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	
1,67,598	1,67,598	1,67,598	1,67,598	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
2,45,874	2,26,524	2,07,174	1,87,824	
-2,218	-5,408	-7,607	-8,649	
4,09,573	3,93,645	3,76,272	3,58,108	
2,171	2,394	1,906	2,135	
126	127	169	225	
2,297	2,521	2,075	2,360	
2,472	2,181	2,069	2,428	
.....	
1,408	1,448	1,722	1,422	
889	1,073	353	938	
0.53	0.64	0.21	0.56	
1,064	733	347	1,006	
0.63	0.44	0.21	0.60	
2.63	2.49	2.58	2.78	
1.61	1.43	2.14	1.68	
1.02	1.06	0.44	1.10	
.....	.....	.....	.....	} The lands under command have been sub-divided into pot numbers suitable for irrigation purposes.
23,717	46,101	37,399	28,058	
Inches.	Inches.	Inches.	Inches.	
.....	
27.68	21.31	32.21	22.18	
Acres.	Acres.	Acres.	Acres.	
1,345	1,345	1,345	1,345	
521	558	412	494	
353	453	391	355	
874	1,011	803	849	
924	1,017	792	809	
64.95	75.17	59.70	63.12	
.....	
.....	
5.34	4.71	2.84	4.03	
6.72	9.22	7.16	7.27	
.....	.....	.....	.....	} All utilized except leakage in in the Canal.
.....	
97.00	121	145	124	
110.00	79	105	80	

under the small tank and hence the low duty.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—*Asundi Tank.*

Particulars	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	.....	.....	.....
2. Do. do. to end of year	74,995	74,995	74,995
3. Interest charges to end of year ...	49,037	51,467	53,897
4. Net Revenue do. ...	-10,769	-9,925	-9,820
5. Total sum at charge do. ...	1,31,284	1,34,801	1,36,387
6. Revenue—Water-rate assessment* ...	1,484	1,197	1,050
7. Miscellaneous receipts do. ...	89	76	88
8. Total (assessment) ...	1,573	1,273	1,148
9. Total (collection)* ...	1,706	1,836	1,088
10. Refunds ...	.....	.....	.....
11. Working expenses ...	2,798	992	983
12. Net Revenue based on assessment ...	-1,220	281	165
13. Percentage do. on Capital ...	1.63	0.37	0.22
14. Net Revenue do. on collection ...	-1,087	844	105
15. Percentage do. on Capital ...	1.45	1.13	0.14
16. Gross assessed Revenue per acre irrigated...	4.45	4.40	4.03
17. Working expenses do. ...	7.90	3.43	3.45
18. Net assessed Revenue do. ...	3.45	0.97	0.58
19. Cost of measurement do. ...	.....	Anna 1 pies 7	Anna 1 pies 5
20. Estimated value of crops irrigated† ...	6,892	4,709	6,480
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	27.46	19.55	18.02
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	1,011	1,011	1,011
4. Area irrigated, Kharif ...	142	84	63
5. Do. Rabi ...	211	205	222
6. Do. Total ...	353	289	285
7. Area applied for (Total)† ...	210	87	123
8. Percentage irrigated of total culturable area under command ...	34.92	28.59	28.19
9. Lowest supply reached during the year ... M. C. Ft.	29	12.8145	Nil.
10. Date on which supply was lowest per Item 9.	March 1903.	31st March 1904.	12th March 1905.
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	0.94	0.80	1.01
12. Supply utilised do. ...	1.55	1.34	1.45
13. Duty per cubic foot per second ...	252	217	148
	175	124	128

General Remarks.—A small tank

REPORT, 1902-1903 to 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Rainfall.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	.....	.....	4,179	
74,995	74,995	74,995	74,995	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
53,897	46,607	39,317	32,027	
-9,820	-9,682	-3,569	914	
1,36,387	1,27,186	1,11,984	1,03,949	
1,247	1,545	1,253	1,081	
84	84	18	22	
1,331	1,629	1,271	1,103	
1,543	1,455	1,131	1,160	
.....	
1,589	3,493	2,626	888	
-258	-1,864	-1,355	215	
0-34	2-49	1-81	0-29	
-46	-2,038	-1,495	272	
0-06	2-72	1-99	0-36	
4-31	4-56	3-95	3-55	
5-14	9-78	8-16	2-86	
0-83	5-22	4-21	0-69	
.....	
6,027	7,691	7,643	6,423	† Value of new irrigation only.
Inches.	Inches.	Inches.	Inches.	
.....	
21-68	13-07	24-44	17-96	
Acres.	Acres.	Acres.	Acres.	
1,011	1,011	1,011	1,011	
96	109	88	89	
213	248	234	221	
309	357	322	310	
140	143	109	108	† The areas represent only new irrigation.
30-56	35-31	31-85	30-66	
.....	
.....	
0-92	0-75	0-65	1-22	
1-45	2-31	1-52	1-26	
.....	
.....	
206	270	204	126	} All utilized except leakage in Canal.
142	107	153	163	

dependent on local rain.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—*Mavinkop Tank.*

Particulars.	1903-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	18	.....	.....
2. Do. do. to end of year	33,504	33,504	33,504
3. Interest charges to end of year ...	27,028	28,228	29,428
4. Net Revenue do. ...	24,402	25,003	25,313
5. Total sum at charge do. ...	36,590	36,180	36,729
6. Revenue—Water-rate assessment* ...	2,057	1,413	2,163
7. Miscellaneous receipts do. ...	5	1	1
8. Total (assessment) ...	2,062	1,414	2,164
9. Total (collection)† ...	2,062	1,414	2,164
10. Refunds ...	.....	.....	.....
11. Working expenses ...	402	813	1,854
12. Net Revenue based on assessment ...	1,660	601	310
13. Percentage do. on Capital ...	4.95	1.79	0.93
14. Net Revenue do. on collection ...	1,660	601	310
15. Percentage do. on Capital ...	4.95	1.79	0.93
16. Gross assessed Revenue per acre irrigated... ..	3.82	2.44	3.78
17. Working expenses do. ...	0.74	1.40	3.24
18. Net assessed Revenue do. ...	3.08	1.04	0.54
19. Cost of measurement do. ...	.....	.....	.....
20. Estimated value of crops irrigated ...	.....	.....	.....
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	.....	.....
2. Do. (do. Irrigation) ...	.....	.....	.....
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	755	755	755
4. Area irrigated, Kharif ...	540	579	573
5. Do. Rabi ...	.....	.....	.....
6. Do. Total ...	540	579	573
7. Area applied for (Total) ...	.....	.....	.....
8. Percentage irrigated of total culturable area under command ...	71.52	76.69	75.89
9. Lowest supply reached during the year ... M. C. Ft.	.....	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	.....	.....	.....
12. Supply utilised do. ...	.....	.....	.....
13. Duty per cubic foot per second ...	.....	.....	.....

General Remarks.—An old small tank within the zone

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Rainfall.

Average for the triennium under report,	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.	
5	6	7	8	9	
Rs.	Rs.	Rs.	Rs.		
6	880	.....	.....
33,504	33,486	30,847	30,847	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.	
29,428	25,828	22,378	19,066		
25,313	22,742	17,180	11,634		
36,729	37,226	36,797	38,852		
1,878	2,057	2,057	1,242		
2	3	3	5		* Irrigation share of consolidated assessment.
1,880	2,060	2,060	1,247		
1,880	2,060	2,060	1,247		† Including share of consolidated assessment.
.....		
1,023	206	211	124		
857	1,854	1,849	1,123		
2-55	5-54	6-00	3-64		
857	1,854	1,849	1,123		
2-55	5-54	6-00	3-64		
3-33	3-81	3-81	2-45		
1-81	0-38	0-39	0-24		
1-52	3-43	3-42	2-21		
.....	.....	.....	.....	} All revenue is consolidated.
.....		
Inches.	Inches.	Inches.	Inches.		
.....		
.....		
Acres.	Acres.	Acres.	Acres.		
755	755	755	755		
564	540	540	508		
.....		
564	540	540	508		
.....		
74-70	71-52	71-52	67-28	The work is under the management of the Civil Department.	
.....		
.....		
.....		
.....		
.....		
.....		
.....		

of regular rain with established irrigation below it.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—*Sávi Tank.*

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year... }	.....	.....	{ *49,451 } 19,773
2. Do. do. to end of year.	.....	.....	69,224
3. Interest charges to end of year	.....	.....	2,216
4. Net Revenue do.	.....	.....	.....
5. Total sum at charge do.	.....	.....	71,078
6. Revenue—Water-rate assessment	.....	.....	.....
7. Miscellaneous receipts do.	.....	.....	.....
8. Total (assessment)	.....	.....	.....
9. Total (collection) ...	.....	.....	.....
10. Refunds	.....	.....	.....
11. Working expenses	.....	.....	.....
12. Net Revenue based on assessment	.....	.....	.....
13. Percentage do. on Capital	.....	.....	.....
14. Net Revenue do. on collection	.....	.....	.....
15. Percentage do. on Capital	.....	.....	.....
16. Gross assessed Revenue per acre irrigated...	.....	.....	.....
17. Working expenses do.	.....	.....	.....
18. Net assessed Revenue do.	.....	.....	.....
19. Cost of measurement do.	.....	.....	.....
20. Estimated value of crops irrigated	.....	.....	.....
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	.....	.....
2. Do. (do. Irrigation)	.....	.....	.....
	Acres.	Acres.	Acres.
3. Total culturable area under command	.....	.....	.....
4. Area irrigated, Kharif	.....	.....	.....
5. Do. Rabi	.....	.....	.....
6. Do. Total	.....	.....	.....
7. Area applied for (Total)	.....	.....	.....
8. Percentage irrigated of total culturable area under command	.....	.....	.....
9. Lowest supply reached during the year	.....	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second.	.....	.....	.....
	Kharif ...	.....	.....
	Rabi ...	.....	.....
12. Supply utilised do.	Kharif... ..	.....	.....
	Rabi ... ..	.....	.....
13. Duty per cubic foot per second.	Kharif... ..	.....	.....
	Rabi .. ..	.....	.....

General Remarks.—The work

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Ghadia Nala.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
23,075	*Adjustment of famine outlay at normal rates. } The figures in column 5 relate to end of triennial period. Capital Account opened in 1904-05.
69,224	
2,216	
.....	
71,078	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
Inches.	Inches.	Inches.	Inches.	
.....	
.....	
Acres.	Acres.	Acres.	Acres.	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

is under construction.

DECCAN AND GUJARÁT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Pathri Tank.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year... }	.....	{*4,05,452 }	18,991
2. Do. do. to end of year. }	.....	1,42,470 }	5,73,913
3. Interest charges to end of year	.....	5,54,922	38,298
4. Net Revenue do.	.....	17,591	.....
5. Total sum at charge do.	.....	5,69,743	6,06,325
6. Revenue—Water-rate assessment	.....	.....	.....
7. Miscellaneous receipts do.	.....	.....	.....
8. Total (assessment)	.....	.....	.....
9. Total (collection)	.....	.....	.....
10. Refunds	.....	.....	.....
11. Working expenses	.....	.....	.....
12. Net Revenue based on assessment	.....	.....	.....
13. Percentage do. on Capital	.....	.....	.....
14. Net Revenue do. on collection	.....	.....	.....
15. Percentage do. on Capital	.....	.....	.....
16. Gross assessed Revenue per acre irrigated...	.....	.....	.....
17. Working expenses do.	.....	.....	.....
18. Net assessed Revenue do.	.....	.....	.....
19. Cost of measurement do.	.....	.....	.....
20. Estimated value of crops irrigated	.....	.....	.....
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage)	.....	.....	.....
2. Do. (do. Irrigation)	.....	.....	.....
	Acres.	Acres.	Acres.
3. Total culturable area under command	.....	.....	.....
4. Area irrigated, Kharif	.....	.....	.....
5. Do. Rabi	.....	.....	.....
6. Do. Total	.....	.....	.....
7. Area applied for (Total)	.....	.....	.....
8. Percentage irrigated of total culturable area under command	.....	.....	.....
9. Lowest supply reached during the year	..... M.C.Ft.	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second. }	.....	.....	.....
	Kharif...	.....	.....
	Rabi	.....	.....
12. Supply utilised do. }	Kharif...	.....	.....
	Rabi	.....	.....
13. Duty per cubic foot per second. }	Kharif...	.....	.....
	Rabi	.....	.....

General Remarks.—The work

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Yerai River.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
1,91,304	*Adjustment of famine outlay at normal rates. } The figures in column 5 relate to end of triennial period. Capital Account opened in 1903-04.
5,73,913	
38,298	
.....	
6,06,325	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

is under construction.

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Name of Work—Gokák Canal 2nd Section.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
	Rs.	Rs.	Rs.
<i>I.—Financial Results.</i>			
1. Capital outlay, direct and indirect, during the year...	.....	.....	.....
2. Do. do. to end of year.	1,90,284	1,90,284	1,90,284
3. Interest charges to end of year	1,79,076	1,86,128	1,93,180
4. Net Revenue do.	.....	.....	.....
5. Total sum at charge do.	3,62,308	3,69,360	3,76,412
6. Revenue—Water-rate assessment	.....	.....	.....
7. Miscellaneous receipts do.	.....	.....	.....
8. Total (assessment)	.....	.....	.....
9. Total (collection)	.....	.....	.....
10. Refunds	.....	.....	.....
11. Working expenses	.....	.....	.....
12. Net Revenue based on assessment	.....	.....	.....
13. Percentage do. on Capital	.....	.....	.....
14. Net Revenue do. on collection	.....	.....	.....
15. Percentage do. on Capital	.....	.....	.....
16. Gross assessed Revenue per acre irrigated...	.....	.....	.....
17. Working expenses do.	.....	.....	.....
18. Net assessed Revenue do.	.....	.....	.....
19. Cost of measurement do.	.....	.....	.....
20. Estimated value of crops irrigated	.....	.....	.....
	Inches.	Inches.	Inches.
<i>II.—Working details.</i>			
1. Rainfall (as affecting storage)	.....	.....	.....
2. Do. (do. Irrigation)	.....	.....	.....
	Acres.	Acres.	Acres.
3. Total culturable area under command	.....	.....	.....
4. Area irrigated, Kharif	.....	.....	.....
5. Do. Rabi	.....	.....	.....
6. Do. Total	.....	.....	.....
7. Area applied for (Total)	.....	.....	.....
8. Percentage irrigated of total culturable area under command	.....	.....	.....
9. Lowest supply reached during the year	..... M.C.Ft.	.....	.....
10. Date on which supply was lowest per Item 9.	.....	.....	.....
11. Supply entering the Canal at head, average discharge in cubic feet per second.	.....	.....	.....
12. Supply utilised do.	.....	.....	.....
13. Duty per cubic foot per second.	.....	.....	.....

General Remarks.—The

REPORT, 1902-1903 TO 1904-1905.

CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Ghatprabha River.

Average for the triennium under report.	1899-1900 to 1901-1902.	1898-97 to 1898-99	1898-94 to 1895-96.	Remarks.
5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	
.....	} The figures in columns 5, 6, 7 and 8 relate to end of triennial period.
1,90,284	1,90,284	1,90,284	1,90,284	
1,93,180	1,72,024	1,50,868	1,29,712	
.....	
3,76,412	3,55,256	3,34,100	3,12,944	
.....	
.....	
.....	
.....	
.....	
Inches.	Inches.	Inches.	Inches.	
.....	
.....	
Acres.	Acres.	Acres.	Acres.	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	
.....	

work is in abeyance.

DECCAN AND GUJARAT TRIENNIAL

PROVINCIAL—MINOR WORKS AND NAVIGATION—WORKS FOR

Name of Works—Gokák Canal—First Section and Storage Works.

Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4
<i>I.—Financial Results.</i>			
	Rs.	Rs.	Rs.
1. Capital outlay, direct and indirect, during the year.	4,904	3,275	2,864
2. Do. do. to end of year*	13,49,436	13,52,711	13,55,575
3. Interest charges to end of year ...	7,39,044	7,90,792	8,42,653
4. Net Revenue do. ...	2,70,804	3,06,893	3,30,375
5. Total sum at charge do. ...	10,68,119	10,74,707	10,77,192
6. Revenue—Water-rate assessment ...	32,661	21,735	27,112
7. Miscellaneous receipts do. ...	22,048	15,726	15,714
8. Total (assessment) ...	54,709	37,461	42,826
9. Total (collection) ...	42,584	47,933	33,532
10. Refunds ...	.....	160	51
11. Working expenses ...	10,336	11,684	9,999
12. Net Revenue based on assessment ...	44,373	25,777	32,827
13. Percentage do. on Capital ...	3.29	1.91	2.42
14. Net Revenue do. on collection ...	32,248	36,089	23,482
15. Percentage do. on Capital ...	2.39	2.67	1.73
16. Gross assessed Revenue per acre irrigated†	3.02	3.01	2.97
17. Working expenses do. ...	0.77	1.52	1.04
18. Net assessed Revenue do.†	2.25	1.49	1.93
19. Cost of measurement do. ...	Pies 10	Anna 1 pies 8	Anna 1 pies 5
20. Estimated value of crops irrigated ...	2,36,703	1,43,832	1,71,539
<i>II.—Working details.</i>			
	Inches.	Inches.	Inches.
1. Rainfall (as affecting storage) ...	.....	79.57	84.51
2. Do. (do. Irrigation) ...	25.91	21.42	16.54
	Acres.	Acres.	Acres.
3. Total culturable area under command ...	17,627	17,627	17,627
4. Area irrigated, Kharif ...	10,530	6,138	6,558
5. Do. Rabi ...	2,859	1,557	3,013
6. Do. Total ...	13,389	7,695	9,571
7. Area applied for (Total) ...	10,174	7,661	7,030
8. Percentage irrigated of total culturable area under command ...	75.96	43.65	54.30
9. Lowest supply reached during the year ... M. C. Ft.	290	427.74	16.93
10. Date on which supply was lowest per Item 9.	May 1902.	13th May 1903.	10th May 1904.
11. Supply entering the Canal at head, average discharge in cubic feet per second ...	36.34	40.32	35.66
12. Supply utilised do. ...	56.58	43.54	40.78
13. Duty per cubic foot per second ...	281.06	147.18	178.67
	73.95	58.57	104.06

General Remarks.—The areas irrigated by this canal which has no perennial water but has supply is certain. The canal is fed by a large weir on a big ghát-fed river.

REPORT, 1902-1903 TO 1904-1905.

WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

Source of Supply—Ghatprabha River.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.	
5	6	7	8	9	
Rs.	Rs.	Rs.	Rs.		
3,681	12,596	31,720	56,595	The figures in columns 5, 6, 7 and 8 relate to end of triennial period. * Including expenditure charged to 35—construction of Protective Irrigation Works.	
13,55,575	13,44,532	13,06,744	12,11,583		
8,42,653	6,87,445	5,34,406	3,88,267		
3,30,375	2,38,556	1,55,766	91,346		
10,77,192	17,72,920	16,60,319	14,78,393		
27,169	29,342	16,692	11,483		
17,829	14,270	13,871	10,384		
44,998	43,612	30,563	21,867		
41,349	35,399	28,492	23,483		
70	12	.....	9	
10,673	7,790	7,018	6,098		
34,325	35,822	23,545	15,769		
2-53	2-66	1-80	1-30		
30,606	27,597	21,474	17,376		
2-26	2-05	1-64	1-43		
3-00	2-70	2-75	2-69		
1-04	0-70	1-12	1-40		
1-96	2-00	1-63	1-29		
Anna 1 pies 4	11 pies.	1 Anna 5 pies.	2 Annas 7 pies.		† Excluding receipts (Rs. 14,313) from mills.
1,84,025	2,41,928	63,164	1,07,398		
Inches.	Inches.	Inches.	Inches.		
.....	†14-09	†17-69	†22-86	† Rainfall at Dhripdal.	
21-29	12-34	16-36	20-98		
Acres.	Acres.	Acres.	Acres.		
17,627	17,627	17,627	17,627		
7,742	7,127	4,215	3,201		
2,476	3,932	2,077	1,154		
10,218	11,089	6,292	4,355		
8,288	9,127	5,766	4,039		
57-97	62-90	35-63	24-70		
.....		
.....		
37-44	38-49	22-43	14-95		
46-97	39-13	25-57	20-28		
.....	38-49	22-43	14-95		
.....	39-13	25-57	20-28		
202-30	177-73	213-18	215-33		
78-86	134-02	139-16	112-33		

an assured kharif supply are very remarkable and show how kharif water is appreciated when the

MINOR WORKS AND NAVIGATION.

WORKS FOR WHICH ONLY REVENUE
ACCOUNTS ARE KEPT.

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Ahmedabad

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	No. of Works	66	66	66
		Acres.	Acres.	Acres.
2	Area irrigated	10,284	10,209	10,348
	<i>Revenue.</i>	Rs.	Rs.	Rs.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	22,383	22,306	15,607
4	Direct Receipts—Water-rates from Irrigation and Miscellaneous Receipts ...	18	52	792
	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
5	Total, Revenue	22,401	22,358	16,399
6	Net Revenue	—48,230	1,999	—32,538
	<i>Working Expenses.</i>			
7	Extensions and Improvements ...	23,634	3,659	5,432
8	Maintenance and Repairs	24,131	9,663	31,352
9	Establishment	20,223	3,234	9,426
10	Tools and Plant	405	1,572	1,166
11	Share of Collection Charges in the Civil Department	2,238	2,231	1,561
12	Total, Working Expenses	70,631	20,359	48,937

REPORT, 1902-1903 to 1904-1905.

WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

District.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
66	66	66	66	
Acres.	Acres.	Acres.	Acres.	
10,280	7,189	10,774	10,810	
Rs.	Rs.	Rs.	Rs.	
20,099	14,554	21,879	21,921	
287	9	38	4	
.....	
20,386	14,563	21,917	21,925	
-26,256	1,515	15,972	13,727	
10,908	2,081	562	1,350	
21,715	6,767	2,289	2,923	
10,961	2,604	873	1,684	
1,048	141	29	48	
2,010	1,455	2,192	2,193	
46,642	13,018	5,945	8,198	

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Kaira

Item.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	No. of Works	11	11	* 12
		Acres.	Acres.	Acres.
2	Area irrigated	12,717	12,729	12,596
	<i>Revenue.</i>	Rs.	Rs.	Rs.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	5,352	12,221	6,613
4	Direct Receipts—Water-rates from Irrigation and Miscellaneous Receipts ...	2	736	664
	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
5	Total, Revenue	5,354	12,957	7,277
6	Net Revenue	—70,648	—1,30,654	—70,146
	<i>Working Expenses.</i>			
7	Extensions and Improvements ...	49,093	1,27,017	50,833
8	Maintenance and Repairs ...	14,667	7,958	8,972
9	Establishment	11,237	6,537	15,156
10	Tools and Plant	469	877	1,799
11	Share of Collection Charges in the Civil Department	536	1,222	663
12	Total Working Expenses	76,002	1,43,611	77,423

REPORT, 1902-1903 to 1904-1905.

WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

District.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
12	2	2	2	*Ten improved or repaired tanks added.
Acres.	Acres.	Acres.	Acres.	
12,681	8,710	8,351	7,757	
Rs.	Rs.	Rs.	Rs.	
8,062	47,620	46,087	28,497	
467	176	121	982	
.....	
8,529	47,796	46,208	29,479	
-90,483	35,783	34,899	20,505	
75,648	374	1,032	1,991	
10,532	5,668	3,831	3,042	
10,977	1,156	1,775	1,958	
1,018	53	63	63	
807	4,762	4,608	1,920	
99,012	12,013	11,309	8,974	

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Surat

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	Number of Works	301	307	302
		Acres.	Acres.	Acres.
2	Area irrigated	13,758	13,928	13,830
	<i>Revenue.</i>	Rs.	Rs.	Rs.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	33,906	34,159	17,573
4	Direct Receipts.—Water-rates from Irrigation and Miscellaneous Receipts ...	488	832	1,328
	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
5	Total, Revenue	34,394	34,991	18,901
6	Net Revenue	—4,068	5,760	—20,814
	<i>Working Expenses.</i>			
7	Extensions and Improvements ... ..	.....	.....	3,705
8	Maintenance and Repairs	27,985	20,604	23,014
9	Establishment	6,622	4,822	8,938
10	Tools and Plant	416	306	2,168
11	Share of Collection Charges in the Civil Department	3,439	3,499	1,890
12	Total, Working Expenses	38,462	29,231	39,715

REPORT, 1902-1903 TO 1904-1905.

WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

District.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
302	281	288	291	The figures in columns 6 to 9 relate to end of triennial period.
Acres.	Acres.	Acres.	Acres.	
13,839	12,397	12,318	12,369	Decrease in number of tanks is due to Revision Survey in some talukas.
Rs.	Rs.	Rs.	Rs.	
28,546	42,511	47,533	49,399	
883	69	236	410	
.....	
29,429	42,580	47,769	49,809	
-6,374	24,314	33,990	19,597	
1,235	103	.....	9,078	
23,868	10,930	7,186	10,936	
6,794	2,751	1,712	4,867	
963	164	107	293	
2,943	4,258	4,774	4,978	
35,803	18,266	13,779	30,212	

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Khândesh

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	No. of Works	82	82	82
		Acres.	Acres.	Acres.
2	Area irrigated	9,026	8,828	9,937
	<i>Revenue.</i>	Rupees.	Rupees.	Rupees.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	57,242	57,015	58,029
4	Direct Receipts—Water-rates from Irrigation and Miscellaneous Receipts ...	8,574	2,910	2,105
	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
5	Total, Revenue	65,816	59,925	60,134
6	Net Revenue	39,405	31,590	14,633
	<i>Working Expenses.</i>			
7	Extensions and Improvements	5,975	6,824	9,515
8	Maintenance and Repairs	3,724	5,359	12,621
9	Establishment	9,882	9,935	16,965
10	Tools and Plant	251	226	332
11	Share of Collection Charges in the Civil Department	6,579	5,991	6,012
12	Total, Working Expenses	26,411	28,335	45,445

REPORT, 1902-1903 TO 1904-1905.

ONLY REVENUE ACCOUNTS ARE KEPT.

District.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
82	82	82	82	
Acres.	Acres.	Acres.	Acres.	
9,264	8,661	9,111	9,112	
Rupees.	Rupees.	Rupees.	Rupees.	
57,429	58,122	58,266	58,647	
4,529	113	238	48	
.....	
61,958	58,235	58,504	58,695	
28,561	31,541	20,869	26,121	
7,433	8,667	12,664	10,464	
7,235	1,406	2,893	1,675	
12,260	10,534	15,923	14,208	
270	265	304	363	
6,194	5,822	5,851	5,864	
33,397	26,694	37,635	32,574	

DECCAN AND GUJARAT TRIENNIAL

MINOR WORKS AND NAVIGATION—WORKS FOR WHICH

Ndsik

Items,	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	No. of Works	271	271	271
		Acres.	Acres.	Acres.
2	Area irrigated	28,200	29,110	28,991
	<i>Revenue.</i>	Rupees.	Rupees.	Rupees.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	1,62,622	1,64,482	1,60,305
4	Direct Receipts—Water-rates from Irrigation and Miscellaneous Receipts ...	613	1,315	595
	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
5	Total, Revenue	1,63,235	1,65,797	1,60,900
6	Net Revenue	1,05,774	1,02,859	1,00,704
	<i>Working Expenses.</i>			
7	Extensions and Improvements ...	11,401	18,572	6,608
8	Maintenance and Repairs	13,504	8,912	13,658
9	Establishment	15,658	18,375	16,838
10	Tools and Plant	575	503	7,007
11	Share of Collection Charges in the Civil Department	16,323	16,576	16,090
12	Total, Working Expenses	57,461	62,938	60,196

REPORT, 1902-1903 TO 1904-1905.

ONLY REVENUE ACCOUNTS ARE KEPT.

District.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
271	271	271	271	
Acres.	Acres.	Acres.	Acres.	
28,767	27,626	28,456	28,360	
Rupees.	Rupees.	Rupees.	Rupees.	
1,62,470	1,62,434	1,62,439	1,61,384	
841	1,007	1,337	1,359	
.....	
1,63,311	1,63,441	1,63,776	1,62,743	
1,03,113	1,25,691	1,13,567	92,551	
12,194	7,064	11,337	17,502	
12,023	1,328	2,786	3,996	
16,957	12,627	19,147	31,790	
2,695	332	565	646	
16,329	16,339	16,374	16,258	
60,198	37,750	50,209	70,192	

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Belgaum

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	No. of Works	67	67	67
		Acres.	Acres.	Acres.
2	Area irrigated	9,910	9,910	9,910
	<i>Revenue.</i>	Rs.	Rs.	Rs.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	33,049	33,049	33,049
4	Direct Receipts—Water-rates from Irrigation and Miscellaneous Receipts ...	39	55	52
	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
5	Total, Revenue	33,088	33,104	33,101
6	Net Revenue	—12,422	—20,014	—31,979
	<i>Working Expenses.</i>			
7	Extensions and Improvements ... ..	.....	.....	.....
8	Maintenance and Repairs	22,353	40,167	49,500
9	Establishment	5,142	9,183	11,375
10	Tools and Plant	508	463	900
11	Share of Collection Charges in the Civil Department	17,507	3,305	3,305
12	Total, Working Expenses	45,510	53,118	65,080

REPORT, 1902-1903 TO 1904-1905.

WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

District.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
67	67	67	67	
Acres.	Acres.	Acres.	Acres.	
9,910	9,910	9,910	9,910	
Rs.	Rs.	Rs.	Rs.	
33,049	33,049	33,049	32,977	
49	49	108	1	
.....	
33,098	33,098	33,157	32,978	
-21,471	13,358	16,563	22,076	
.....	.....	.....	1,325	
37,340	13,023	10,363	3,766	
8,567	2,993	2,373	2,246	
623	419	553	267	
8,039	3,305	3,305	3,298	
54,569	19,740	16,594	10,902	

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Dhárwār

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	Number of Works	473	473	473
		Acres.	Acres.	Acres.
2	Area irrigated	54,487	54,811	54,544
	<i>Revenue.</i>	Rs.	Rs.	Rs.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	1,73,085	1,73,909	1,74,021
4	Direct Receipts—Water-rates from Irrigation and Miscellaneous Receipts ...	2,217	1,226	1,672
	<i>Deduct—Refunds</i>	16	.....	.....
5	Total, Revenue	1,75,286	1,75,135	1,75,693
6	Net Revenue	98,504	64,678	26,166
	<i>Working Expenses.</i>			
7	Extensions and Improvements ... ..	.....	.....	.....
8	Maintenance and Repairs	47,239	62,207	92,088
9	Establishment	23,768	29,121	36,500
10	Tools and Plant	2,470	1,629	3,412
11	Share of Collection Charges in the Civil Department	3,305	17,500	17,527
12	Total, Working Expenses	76,782	1,10,457	1,49,527

REPORT, 1902-1903 to 1904-1905.

WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

District.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895 96.	Remarks.
6	7	8	9	10
473	473	473	474	
Acres.	Acres.	Acres.	Acres.	
54,614	52,562	62,528	62,348	
Rs.	Rs.	Rs.	Rs.	
1,73,671	1,72,957	1,72,937	1,72,325	
1,705	3,047	2,320	1,912	
5	.....	.....	.....
1,75,371	1,76,001	1,75,257	1,74,237	
63,116	80,929	98,491	78,234	
.....	108	4,847	13,624	
67,178	46,462	27,400	28,844	
29,796	29,182	26,183	34,311	
2,504	1,822	888	1,836	
12,777	17,501	17,448	17,388	
1,12,255	95,075	76,766	96,003	

DECCAN AND GUJARAT TRIENNIAL
MINOR WORKS AND NAVIGATION—WORKS FOR
Panch Maháls, Broach, Ahmednagar, Poona, Sátára,

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
1	Number of Works	55	55	55
		Acres.	Acres.	Acres.
2	Area irrigated	3,979	4,011	3,996
	<i>Revenue.</i>			
		Rs.	Rs.	Rs.
3	Irrigation share of consolidated Revenue collected in the Civil Department ...	15,760	15,748	14,510
4	Direct Receipts—Water-rates from Irrigation and Miscellaneous Receipts ...	625	906	919
	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
5	Total, Revenue	16,385	16,654	15,429
6	Net Revenue	242	4,728	—1,285
	<i>Working Expenses.</i>			
7	Extensions and Improvements	282	1,928	2,740
8	Maintenance and Repairs	11,660	6,660	8,514
9	Establishment	2,411	1,596	3,622
10	Tools and Plant	168	94	346
11	Share of Collection Charges in the Civil Department	1,622	1,648	1,492
12	Total, Working Expenses	16,143	11,926	16,714

REPORT, 1902-1903 TO 1904-1905.

WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

Bijapur, Ratnagiri and Kanara Districts.

Average for the triennium under report.	1899-1900 to 1901-02.	1896-97 to 1898-99.	1893-94 to 1895-96.	Remarks.
6	7	8	9	10
55	54	56	55	
Acres.	Acres.	Acres.	Acres.	
3,995	4,317	4,517	4,370	
Rs.	Rs.	Rs.	Rs.	
15,339	16,154	16,987	16,811	
817	1,201	669	820	
.....	
16,156	17,355	17,656	17,631	
1,228	7,852	10,195	9,034	
1,650	853	7	1,245	
8,945	5,253	4,397	2,395	
2,543	1,632	1,240	3,146	
203	90	58	52	
1,587	1,675	1,759	1,759	
14,928	9,503	7,461	8,597	

MINOR WORKS AND NAVIGATION.

**WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE
ACCOUNTS ARE KEPT.**

(DECCAN AND GUJARAT.)

DECCAN AND GUJARAT TRIENNIAL

Minor Works and Navigation—Works for which

Items.	Particulars.	1902-1903.	1903-1904.	1904-1905.
1	2	3	4	5
		Acres.	Acres.	Acres.
1	Area cultivated	3,717	3,800	3,826
		Rs.	Rs.	Rs.
	<i>Revenue.</i>			
2	Land share of consolidated Revenue collected in the Civil Department ...	12,474	12,474	12,474
3	Irrigation share of do. ... ..	.....	.....	.....
4	Miscellaneous Receipts	721	1,581	2,195
5	<i>Deduct—Refunds</i> ... ..	.....	.....	.....
6	Total, Irrigation Revenue (3+4-5) ..	721	1,581	2,195
	<i>Expenditure.</i>			
7	New Works	2,13,336	10,438	89,528
8	Maintenance and Repairs	21,314	26,915	29,892
9	Establishment	43,041	22,053	27,274
10	Tools and Plant	766	-2,650	6,675
11	Suspense Account	893	-510	-3,351
12	Total, Expenditure	2,82,400	56,246	1,50,018

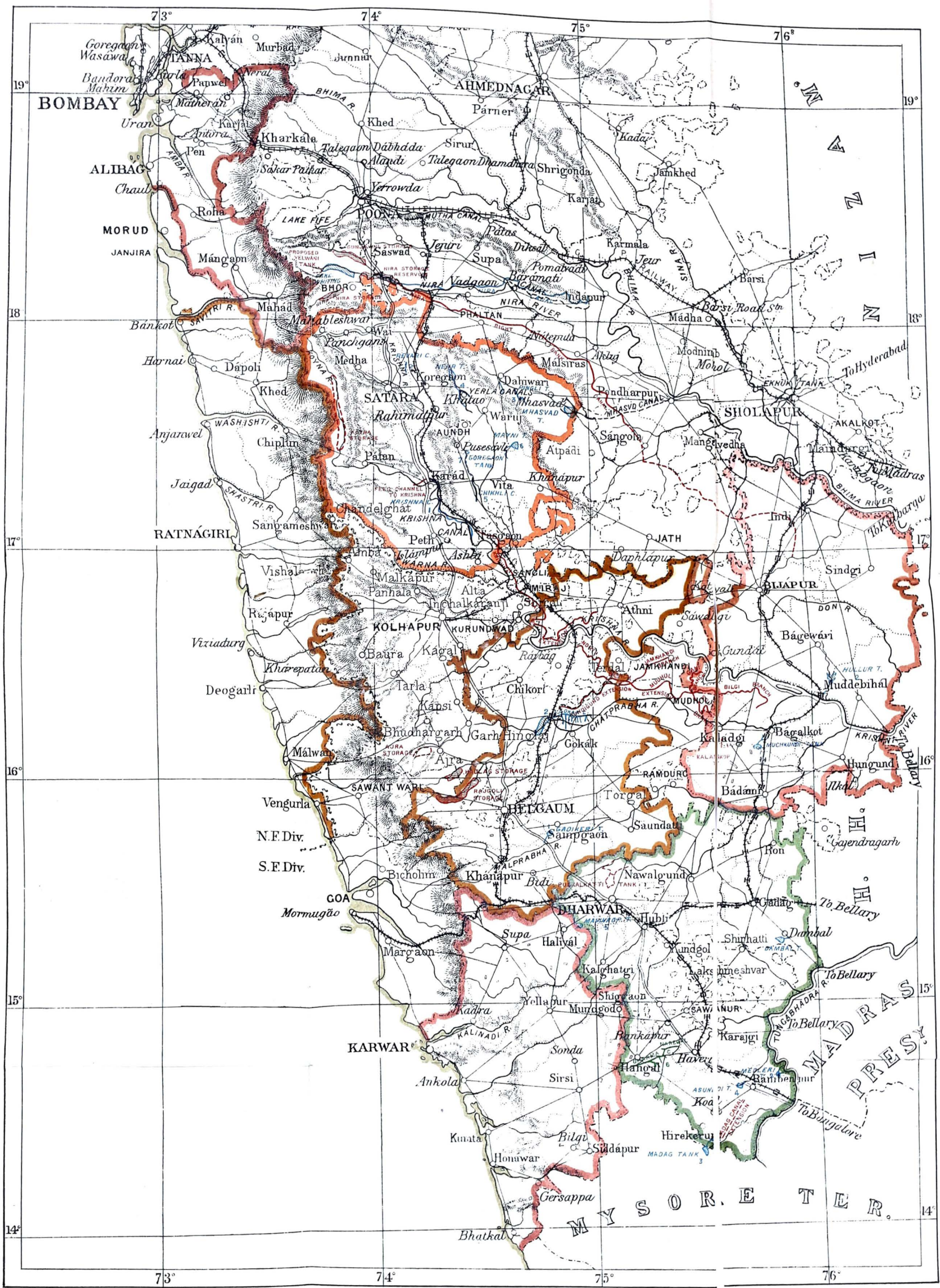
REPORT, 1902-1903 TO 1904-1905.

neither Capital nor Revenue Accounts are kept.

Average for the triennium under report.	1899-1900 to 1901-1902.	1896-1897 to 1898-1899.	1893-1894 to 1895-1896.	Remarks.
6	7	8	9	10
Acres.	Acres.	Acres.	Acres.	The area and revenue are in respect of the Drainage Channels in the Broach District and the Khámgaon Tank in the Poona District.
3,781	3,556	3,714	3,461	
Rs.	Rs.	Rs.	Rs.	
12,474	11,975	12,608	11,855	
.....	11	.....	.....
1,499	1,774	537	535	
.....	
1,499	1,785	537	535	
1,05,434	91,447	41,608	14,051	
26,057	13,026	8,985	8,313	
30,789	13,592	9,961	5,869	
1,597	478	1,513	98	
-989	506	614	-299	
1,62,888	1,19,049	62,686	28,032	

SOUTHERN DIVISION BOMBAY PRESIDENCY

Scale 20 Miles to one Inch



SATARA

- WORKS IN OPERATION**
1. KRISHNA CANAL.
 2. REVARI CANAL.
 3. UPPER MAIN RIVER WORKS (PINGLI TANK)
 4. YERLA RIVER IRRIGATION WORKS (NEHR TANK)
 5. CHIKHLI CANAL.
 6. MAINI TANK.
- INCOMPLETE WORKS**
7. GOREGAON TANK.
- PROPOSED WORKS (SHOWN IN RED)**
- KOYNA STORAGE
 - FEED CHANNEL TO KRISHNA
 - KRISHNA CANAL EXTENSION

BIJAPUR

- WORKS IN OPERATION**
1. MUCHKUNDI TANK
- INCOMPLETE WORKS.**
2. HULLUR TANK
- PROPOSED WORKS (SHOWN IN RED)**
- NIRA RIGHT BANK CANAL (DOTTED NOT ACCURATE)
 - KALASKOP TANK

BELGAUM

- WORKS IN OPERATION**
1. GADIKERI TANK
 2. GOKAK CANAL - 1st SECTION AND STORAGE WORKS (PROVINCIAL)
- PROPOSED WORKS (SHOWN IN RED)**
- AJRA STORAGE.
 - HADLAG STORAGE
 - RAUGOLI STORAGE
 - GOKAK CANAL EXTENSION.

DHARWAR IRRIGATION

- WORKS IN OPERATION**
1. DAMBAL TANK
 2. MEDLERI TANK
 3. MADAG TANK
 4. ASUNDI TANK
 5. MAVINKOP TANK.
 6. DHARMA AND NAREGAL CANALS (2nd CLASS)
- PROPOSED WORKS (SHOWN IN RED)**
- PUDHALKATTI TANK
 - MADAG CANAL EXTENSION.

17. 10. 1905

Triennial Revenue Report of Irrigation Works in the Bombay Presidency, excluding Sind, for 1902-1903 to 1904-1905—Review of the.

NO. W. I.—1426 OF 1906.

Public Works Department.

Bombay Castle,
29th May 1906.

Read—

Triennial Revenue Report of Irrigation Works in the Bombay Presidency, excluding Sind, for 1902-1903 to 1904-1905.

RESOLUTION.—Copies of the Report should be forwarded to the Government of India and the Secretary of State.

2. The form of the Report decided upon in August 1903, when the first Triennial Report was issued, appears, in the opinion of His Excellency the Governor in Council, to serve the purpose well, as the statements prepared for each canal or group of canals enable the position of irrigation in Deccan and Gujarat during the past triennium as compared with the previous ones, to be properly appreciated. Minor details as to the working in any particular year can be obtained from the Annual Reports which have been published.

3. In their Resolution No. 3—61—I. F., dated 13th March 1901, the Government of India directed that certain preliminary investigations should be carried out in connection with the protective value of existing irrigation works and the possibility of making a more extensive use for agriculture of the water-supply available in the country and the Bombay Government were requested to confine their investigations to the Presidency Proper. In pursuance of these orders, Mr. Beale was specially appointed to carry out this work. The special work done by that officer during the triennium under review included investigations for canals on the Godaveri, Ghod, Nira Right Bank, the Bhima, Mina, Kukari, Mula, Ghataprabha at Gokak and Pravara to command some 4,200,000 acres and it is satisfactory to note that good progress has been made with the projects.

4. Another satisfactory feature of the period under review is the greater progress made with the repair and improvement of Second Class Works in the Southern Maratha Country and Gujarat. The systematic carrying out of repairs and improvements to these tanks was somewhat hampered by the rule which required a contribution of 10 per cent. of the estimated cost of a work to be levied from the cultivators concerned. This rule having been abolished in 1902, it is now possible to repair tanks without waiting for contributions.

5. The special work alluded to in paragraph 3 above is the thorough and systematic hydrographic and hydrological survey of all the catchment areas in the Ghats and an examination of all possible sites of storage works and was undertaken on the recommendation of the Irrigation Commission; Mr. Beale and a special staff have been engaged on this survey during the triennium under review; the results of their labours cannot be shown, in statistical form, but a very large amount of excellent work has been done and it is desirable that this work should be generally known. The Report, by the Officiating Chief Engineer for Irrigation, on the Proposed Protective Works for the Bombay Deccan, condenses in a convenient form the information which has been obtained, and should be published as a supplement to the Triennial Report, the map being omitted.

E. M. PROES,

Under Secretary to Government,

[P. T. O.]

To

The Revenue Department, Secretariat.
The Financial Department, Secretariat.
The Commissioner in Sind.
The Commissioner, N. D.
The Commissioner, C. D.
The Commissioner, S. D.
The Director of Land Records and Agriculture.
The Superintending Engineer, C. D.
The Superintending Engineer, Indus Left Bank Division.
The Superintending Engineer, S. D.
The Superintending Engineer, N. D.
The Superintending Engineer on Special Duty.
The Superintending Engineer, Indus Right Bank Division.
The Engineer and Secretary, Indus River Commission.
All Executive Engineers having charge of Irrigation Works, Deccan and Gujarat.
The Examiner of Public Works Accounts.
The Government of India.
The Secretary of State for India. } By letter.
The Editors' Table.

Class A.

Exd. C. S. P.

No. _____ of 1906.

Copy forwarded for information and guidance to

SUPPLEMENT
TO THE
TRIENNIAL REVENUE REPORT
OF
DECCAN AND GUJARAT.

**INDEX TO REPORT ON PROPOSED PROTECTIVE WORKS
FOR THE BOMBAY DECCAN.**

Para.	Contents	Page
1.	The rivers reported on	1
2.	The Godáveri Project—	
	Statement 1. Unanda Storage rejected	2
	2. Karanjawan do. rejected	2 & 3
	3. Aundh do. rejected	3
	4. Darna do. proposed	3 & 4
	5. Karwa do. proposed	4
	6. Godáveri do. under investigation	4
3.	The Pravara River Project—	
	7. Bandardára Storage proposed	5 & 6
4.	The Mula Project—	
	8. Chas Storage proposed	8
	9. Kotul Storage or Mándvi under investigation	8
5.	The Kukari Canal—	
	10. Pimpalwandi Storage	9
6.	The Mina Project—	
	11. Mina Storage at Wadgaon	10
7.	The Ghod Project—	
	12. Nirgudsar Storage	11
8.	The Bhima Project—	
	13. Bhima Storage at Káman	12
	14. Indráyani Storage at Moshi	12 & 13
9.	The Mutha Canals	13
10.	The Nira Right Bank Canal—	
	15. Gunjawni Storage at Umra	15
	16. Lake Whiting proposed enlargement	15
	17. Nira Storage at Natambi	16
	18. Nira Storage at Vir	16 & 17
11.	The Krisbna Canal—	
	19. Koyna Storage at Kamargaon	18
12.	The Gokák Canal—	
	20. Harankáshi Storage at Ajra	20
	21. Hadlag Storage	20 & 21
	22. Rájgoli Storage	21
	23. Dáddi Storage	21—23
	River Discharges at Gokak Weir	23—26
13.	Divides the projects into classes	26
14.	For comparison of projects reduces perennial and other irrigation to a common standard of four months' irrigation	26 & 27
15.	The system when perennial irrigation is practised	27
16.	For projects with large command and short supply perennial not advisable	27
17.	Compares the areas which would be irrigated on the Kukari under perennial system and the 8 months' system	28
18.	On the method of irrigation best suited for Nira Right Bank Canal	29
19.	Comparative costs of works actually estimated	29 & 30
20.	Method of estimating area irrigable by the various projects	30
21.	Method of estimating the gross revenue	31—33
22.	Working expenses	33
23.	General table showing results expected	33 & 34
24.	Alternative estimate of revenue	35 & 36
25.	On grading or selecting the alignment of the canal	36
26.	Programme of operations suggested—The Gokák Canal	36 & 37
27.	Programme continued—The Godáveri Canal and the Pravara River Project	37
28.	Programme continued —The Nira Right Bank Canal	37 & 38
29.	Programme continued—Other projects	38
30.	The probable cost of the programme	38

**Report on proposed Protective Works for the Bombay Deccan
by Mr. A. Hill, Officiating Chief Engineer, Irrigation,
Bombay Presidency.**

I am directed to submit as Chief Engineer for Irrigation a general report on the Protective Works of Irrigation contemplated for the Bombay Deccan.

A range of hills known as the Western Gháts runs from north to south of the portion of the Presidency under reference, and during three months of the year, in the south-west monsoon season, very heavy rain from 300 inches downwards falls on these hills, which rise up to 5,000 feet in height and are generally about 4,000 feet.

The locality and intensity of this reliable rainfall is indicated by contour lines on the map A which accompanies this report. Immediately to the east of these hills lies the famine area of the Bombay Deccan and is indicated by dark colour upon the map, the darker colour showing the worst famine district.

It is desired to use the waters of the rainfall of the gháts to raise crops in the famine district through which the rivers from the gháts run, but numerous spurs and low ranges of hills jut out from the gháts into the famine district and add to the difficulties of conveying the water on to the rich lands along the rivers, and as the schemes proposed are briefly described below, it will be seen that each one presents a special problem to be considered.

The rivers with which this report deals are in order from north to south :—

The Godáveri and its tributaries.

The Bhima and its tributaries.

The Nira.

The Krishna.

The Ghátprabha.

2. The Godáveri project is No. 5 on the list at page 74 of Volume II of the Irrigation Commission Report. The Godáveri rises in the Násik District, and it will be seen from the map that the northern water-shed is a range of high hills running east and west by Chándor to Nándgaon, that large stream beds or valleys run south to join the main river, and that the northern range or spur is without the limits of the reliable rainfall which is confined to the western border of the catchment.

The streams supplied by reliable rain have been examined and the best sites surveyed for tanks. These are marked on the map in red and named the Unanda Storage, the Kadva Storage, the Aundh Nalla Storage, the Darna Storage, and Karwa. A small tank is being examined on the Godáveri above Násik. The Unanda and Kadva sites, though not impracticable, are very expensive, as the rock foundations on one bank are eighty feet below ground ; the Aundh site is better, but on the Darna River excellent sites for masonry dams are available ; the best would drown the G. I. P. Railway line and the expense of making a diversion of this important line is prohibitive. The storage tank has therefore been selected so that the waters touch the railway bank but do not drown the line and the protective measures required are practicable.

The Darna Storage has therefore been selected as the tank to construct. All the reliable streams of the Godáveri combine at Nandur-Madmeshvar, and the water from any tank that may hereafter be constructed can be delivered at Nandur-Madmeshvar, where a rock barrier forms an excellent site for the head-works of the Godáveri Canals. The canal lines have been surveyed and found to pass in a suitable line along the foot of the hills in ground easy for the Deccan and giving a good command.

The left bank canal reaches the border of the Nizam's Dominion in about 49 miles, the right bank runs for 72 miles and then reaches an area which can be supplied by the next tributary of the Godáveri named the Pravara.

The Darna Storage and the weir at Nandur-Madmeshvar and the two canals are the Godáveri project already sent to the Government of India.

The weir supplies the canal during the monsoon months and also supplements the supply from the storage during the rest of the year.

Should any of the other tanks be constructed to irrigate locally in the Násik District, all surplus or leakage waters will be caught at this weir.

The small tank, the Karva, remains to be considered. It is on the extreme right of the basin above Nandur-Madmeshvar weir on the nalla to the east of the Darna River, and, as it is 67 feet above the Darna Reservoir, can irrigate lands that cannot be reached by any other tank and which lie immediately below the fine system of bandhara irrigation in the Sinnar Táluka of Násik; it will therefore be best to use the tank for a small canal direct from the reservoir.

It would not be advantageous to combine its supply with that of the Darna Reservoir.

The weir at Nandur-Madmeshvar has a large catchment area, 1,650 square miles, and can give a reliable monsoon supply for the size of canal proposed. The two tanks have small catchments, the floods come in large volumes at intervals, and to give the canal the same supply that could be obtained at Nandur-Madmeshvar it would be necessary to draw off from the storage reservoirs during the monsoon months and then with an irregular monsoon the tanks would be liable to be left unfilled at the end of the monsoon.

The project for a storage at the Darna site with a weir at Nandur-Madmeshvar and two canals is therefore confidently recommended as the best for present and all future proposals. The area commanded by the canals is 240,000 acres. The probable supply available from the Darna Tank and at the Nandur-Madmeshvar weir and the data from which the figures were deduced and general information on the project are as follows:—

GODAVERI VALLEY.

1. *Unanda River Storage, Dam Site at Wajarkhed Násik. (Too expensive.)*

Catchment area	...	68 square miles.	
Rain stations	...	<i>Nil.</i>	
River gauging at dam site.	1903—1,904 mil. c. ft.	12 inches	} Subject to further examination.
	1904—1,407 "	9 "	
	1905 ...	...
		Average.	Worst.
Assumed run-off	...	20 inches	8 inches.
Volume available from rainfall	...	3,160	1,264 million c. ft.
Storage capacity above outlet	...	...	3,746 million c. ft.
Area to be submerged	...	2,530 acres	110.3 million sq. ft.
Outlet level	...	R. L. 65.	Arbitrary datum about 2,000 feet above M. S. L.
F. S. L.	...	R. L. 160.	
Probable depth of water	...	114 feet.	
Greatest depth of foundations below F. S. L.	...	135 "	
Probable cost per million c. ft.	...	Rs. 1,000 to 1,200 per million c. ft.	
Area commanded	...	.....
Surveys and trial pits complete.			
Estimates not made.			

2. *Kadva River Storage at Karanjawan. (Too expensive.)*

Catchment area	...	92 sq. miles.	
Rain station	...	One at Chárosa.	
Gauged for 4 years	...	1902-1905.	
Average fall	...	50 inches.	
Calculated fall	...	61 "	
Minimum fall	...	.....
River gauging at dam site.	1903—7,840 mil. c. ft.	36 inches	} Subject to further examination.
	1904—3,346 "	16 "	
	1905 ...	...
		Average.	Worst.
Assumed run-off	...	36 inches	20 inches.
Volume available	...	7,643	4,274 million c. ft.
Storage capacity above outlet	...	.....	6,886 million c. ft.
Area to be submerged	...	4,800 acres	209.14 million sq. ft.

Outlet level	... R. L. 80.	Arbitrary datum about 2,000 feet above M. S. L.
F. S. L.	... R. L. 160.	
Probable depth of water	120 feet.	
Greatest depth of foundations below F. S. L.	148 "	
Probable cost per million c. ft.	... Rs. 1,000 to 1,200.	
Area commanded	... ..
Surveys and trial pits completed.		
Estimates not made.		

GODAVERI VALLEY.

3. *Aundh Nalla Storage at Mukne (Lower Site). (Too expensive.)*

Catchment area	... 52 sq. miles.	
Rain gauge station	... Nil.	
River gauging	... 1904-1905—3,081 million c. ft.	} Subject to further examination.
	1905	
Assumed run-off	... Average 36 inches.	
Volume available	... 4,347 million c. ft.	
Storage capacity above outlet	... 4,514 "	
Area to be submerged	... 4,650 acres	... 202.5 million sq. ft.
Outlet level	... R. L. 65.	
F. S. L.	... R. L. 115.	
Probable depth of water	67½ feet.	
Greatest depth of foundations below F. S. L.	... 107½ "	
Probable cost per million c. ft.	Rs. 1,000.	
Area commanded	...	
Surveys completed.		
Estimates not made.		

4. *Darna River Storage at Nándgaon (selected for Godáveri Canals).*

Catchment area	... 156 sq. miles.	
Rain gauge station	... Ambevádi	... Igatpuri.
Gauged for	... 3 years (1903-05)	... 31 years (1875-1905).
Average fall	... 136 inches (177)*	... 131 inches.
Minimum	... (85)* "	... 65 "
River gauging at dam site.	1903—16,983 million c. ft.	... 46" run-off.
	1904—13,848 "	... 38" "
	1905—16,098 "	... 44" "
	Average.	Worst.
Assumed run-off	... 60 inches.	... 16 inches.
Volume available	... 21,744	... 5,798 million c. ft.
Storage capacity above outlet	... 8,818 million c. ft.	
Area to be submerged	... 7,800 acres.	
Outlet level	... R. L. 1,810 above M. S. L.	
F. S. L.	... R. L. 1,875.	
Probable depth of water	82 feet.	
Greatest depth of foundations below F. S. L.	... 97 "	
Probable cost per million c. ft.	... Rs. 308	

Pick-up weir at Nandur-Madmeshwar.

Catchment area	... 1,650 sq. miles.
River discharge useful for canal supply	... 8,301 million c. ft.
	<i>viz.</i> , 4 months in the monsoon at 608 cusecs = 6,323 million c. ft.
	average post monsoon discharge ... 1,978 "
Area to be submerged	... 3,000 acres.
Outlet level, R. B. Canal bed	... R. L. 1,739.52 above M. S. L.
L. B. Canal bed	... R. L. 1,740.52 "
F. S. L.	... R. L. 1,747.52 "
Canal bed level, at end—	
R. B.	... 1,688.5
L. B.	... 1,668.5
Area commanded	... 240,000 acres gross.

* By calculation on Igatpuri results.

Cost of Godáveri Project—

Direct	...	Rs. 81,16,232
Indirect	...	„ 7,07,868
Grand Total	...	<u>Rs. 88,24,100</u>

Surveys, plans and estimates complete.
Project submitted to Government.

5. *Karwa Nalla at Pimpalgaon. (Under investigation for Darna B. B. Canal.)*

Catchment area	...	67 sq. miles.	
Rain gauge station	...	<i>Nil.</i>	
Gauged for	...	years.	
Average fall	...	inches.	
Minimum	...	"	
River gauge at dam site	...	Million c. ft.	Run-off, inches.
	1908—	...	
	1904—	3,736	24 „
		Rough figure.	} Subject to further examination.
	1905—	Not available yet.	
Assumed run-off	...	Average 34 inches	... Worst 12 inches.
Volume available	...	5,294	... 1,868 million c. ft.
Storage capacity above outlet	...	5,436 million c. ft.	
Area to be submerged	...	3,140 acres	... 136.8 million sq. feet.
Outlet level and canal bed	R. L.	1,877 above M. S. L.	
F. S. L.	...	R. L. 1,965	„
Canal bed level at end	...	R. L. 1,765	„
Probable depth of water	...	128 feet.	
Greatest depth of foundations below F. S. L.	...	.....
Probable cost per million c. ft.	...	Rs. 500	
Gross command	...	93,800 acres.	
Cost of project	...	40 lakhs roughly.	
Surveys nearly completed.			
Estimates under preparation.			

GODAVERI BASIN,

6. *Godáveri Storage at Násik.*

Catchment area	...	146 sq. miles.	
Rain gauge station at	...	Trimbak.	
Gauged for	...	13 years (1893-1905).	
Average fall	...	90 inches.	
Minimum	...	43 „	
River gauging at dam site.	...	<i>Nil.</i>	
Assumed run-off	...	Average 25 inches	... Worst 10 inches.
Volume available	...	8,475	... 3,390 million c. ft.

The site is under investigation and a canal line has to be run to ascertain command on the left bank.

The probable cost of the work is Rs. 88 lakhs.

It will be convenient to consider the extent of irrigation possible after all the projects have been described.

PRAVARA.

3. The next project is on the Pravara River, a large tributary on the right bank of the Godáveri River, and is No. 1 of the list on page 74 of Volume II of the Irrigation Commission Report. There it is called Máládevi, and a large earthen dam was proposed at Máládevi, but when the puddle trench was excavated during the past famine of 1899 it was found that an extensive and deep mass of sand existed below the surface soil along the left bank and that a high earthen dam would be unsafe. Further surveys have ascertained that a good reservoir can be formed at Bandardhara higher up the river by a masonry dam 250 feet high in a remarkable gorge of hard rock and a storage of 8,800 million obtained. The water would be let down the river to a weir existing at Ojhár, where there is a small canal on the left bank, the Ojhár Canal No. 17 of the Bombay Administration Reports, and where on the right bank a canal has been sanctioned and the earthworks constructed during the past famine. The left bank canal is to be extended until it reaches the area served by the Godáveri right bank

canal. The area so commanded is 132,000 acres and the length of main canal on left bank is unusually short, 34 miles only, and the ground through which it is constructed is favourable for the Deccan.

The right bank canal is 44 miles long, commands 73,763 acres, and the boundary of the command is the Mula River; the land beyond the river is to be irrigated by the Mula project to be next described.

It has been ascertained that other storage tanks are practicable in the Pravara valley and can be constructed if required by the development of irrigation.

The existing irrigation works in this area are the Ojhar Canal above-mentioned and the Láksh Canal: both have masonry weirs built on rock as their headworks and both were constructed as single bank canals, weirs only being made where the canals crossed the streams. They are both small canals and the streams which cross the Láksh are sufficiently large to block the canal with silt when local thunderstorms occur. The cost of clearing out this silt repeatedly is so large compared with the small area irrigated that it is impracticable to work the Láksh Canal successfully as a monsoon canal depending on the river flow only.

At the Ojhar Canal the streams are smaller and the amount of silt brought in is less, and though still sufficient to hamper the canal it is practicable to maintain the canal in a working condition, and though there is no storage the monsoon water is eagerly taken and the canal frequently irrigates more than one-half of the total area at present commanded, which is 14,000 acres. Canals are not now built as single bank canals, but the drainage waters are carefully passed under or over the canals by suitable works. These two canals, though small, give most important information and lessons.

The Ojhar when cleared of silt shows the value of monsoon water in the famine area, and both show what a fatal mistake it is to construct a Deccan canal along the natural contour line without providing cross-drainage works to keep the silt of the local streams out of the canal. These two canals were amongst the first constructed by the British Government in the Deccan.

The catchment area of Bandardhara Storage tank is 47 square miles only, but is entirely in the area of the heaviest reliable rainfall and is bounded on the north by Kalsubái, the highest hill in the gháts over 5,000 feet high, and by other high hills. These picturesque and mighty rocks form a prominent feature of the view from the railway near Igatpuri; they are so rocky and steep that they absorb but little of the rainfall.

The rain has been gauged for a series of years at (a) Harischandra-Ghar, (b) Ratanwádi, (c) Shinganwádi, and 160 inches fall along the edges of the area which will form the lake, and great as this rainfall seems, when a few gaugings were taken at the place where it was registered it was found that the run-off of the small stream was greater than the rainfall at the foot of the hills. This is due to the rainfall on the hill-top being much greater than at the base; on the adjacent hill of Harischandra-Ghar a rainfall of from 200 to 300 inches is gauged.

A run-off of 80 inches, giving a supply of 8,800 million, is therefore taken as available in average years.

The information available for gauging at the Ojhar weir is given in statement below.

It has been ascertained that it is practicable to construct other tank sites on the Pravara above the Ojhar weir, but the site at Bandardhara now put forward is the best.

The land commanded is excellent and similar to that under the Godáveri.

The general information available of this project is as follows:—

GODAVERI VALLEY.

7. Pravara River Project.

Catchment area—47 square miles. Bandardhara Storage.

Rain gauge* stations for catchment—Harischandra-Ghar, Ratanwádi and Shinganwádi.

Number of years gauged—7, 11 and 3, respectively.

* Note.—Harischandra is not in the catchment area of the Pravara, but is on the top of a hill in the Mula catchment to the south and is taken as typical of the rain to be expected on the top of the hills around Bandardhara.

Average fall at each—318·73, 171·06 and 197·43 inches.
Minimum at each—161·53, 119·75 and 162·02, respectively.

River gaugings at Ojhar weir for 23 years.

Run-off catchment taken as average available $\frac{2}{3}$ ths, i. e., 84 inches.

Storage capacity of tank—8,671 million cubic feet.

Area submerged by storage works and weirs—3,500 acres.

Area commanded—205,763 acres.

Approximate cost of project—Rs. 66,84,632.

Condition of plans and surveys and estimates—Detailed survey completed.

Plans and estimates will be submitted within one month.

Catchment area above Ojhar weir—601·6 square miles.

Rain Gauge Station. Pravara River Project.

Year.	Harischandra-Ghar.		Ghát Ghar.		Batanwádi.		Shinganwádi.		Samrad,		Uddawne.			
	In.	Deci.	In.	Deci.	In.	Deci.	In.	Deci.	In.	Deci.	In.	Deci.		
1881	169	61	...	...	...	...	...	...
1882	190	94	...	...	...	...	...	...
1883	119	75	...	...	...	...	...	...
1884	158	99	...	...	...	...	...	...
1885	149	10	...	...	...	...	...	...
1886	142	05	...	...	...	...	...	...
1887	190	23	...	...	...	...	...	...
1888	198	72	...	...	...	...	...	...
1889	144	00	162	02	...	...	...	...
1890	449	25	240	20	247	60	285	79	151	23	179	05
1891	308	75	...	...	170	71	194	49	...	...	...	...
1892
1893
1894
1895
1896
1897
1898
1899
1900
1901
1902	271	84	...	...	...	...	...	...	...	...	...	...
1903	219	84	...	...	...	...	...	...	...	...	...	...
1904
1905	161	53	...	...	...	...	...	...	...	...	...	...
Total	2,231	15	240	20	1,881	70	592	80	151	23	179	05
Average	318	73	240	20	171	06	197	43	151	23	179	05

Pravara River average monthly discharges above Ojhar Canal weir in cubic feet per second.

Year.	June.	July.	August.	September.	Total.
1882	2,044·88	8,607·09	1,686·74	3,735·77	16,074·48
1883	770·76	2,211·87	1,270·94	2,923·70	7,177·27
1884	341·24	7,613·35	4,313·61	6,993·27	19,261·47
1885	162·59	4,320·10	9,543·32	2,471·20	16,497·21
1886	720·21	5,850·19	3,337·71	1,542·93	11,451·04
1887	2,802·25	11,681·49	6,992·77	4,636·51	26,113·02
1888	467·01	9,407·22	11,095·82	1,466·29	22,436·34
1889	1,358·87	5,161·61	7,196·49	5,637·64	19,354·61
1890	3,339·46	4,976·00	6,453·00	2,623·00	17,391·46
1891	1,202·22	10,231·61	4,655·68	2,710·90	18,800·41
1892	1,500·30	7,166·61	3,234·25	7,878·60	19,839·76
1893	8,157·89	3,468·65	7,750·26	2,259·20	21,636·00
1894	2,335·17	11,888·00	3,010·00	2,792·00	20,025·17
1895	858·46	6,434·00	4,314·00	2,364·00	13,970·46
1896	5,054·00	9,845·00	7,630·00	844·00	23,373·00
1897	777·16	5,372·00	6,733·00	4,681·00	17,563·16
1898	1,239·00	4,684·00	5,058·00	3,374·00	14,355·00
1899	8,238·00	6,816·00	1,106·00	165·37	16,325·37
1900	Information not available.	3,292·00	14,692·00	3,576·00	21,560·00
1901	17·21	5,743·00	6,983·00	1,222·00	13,965·21
1902	Information not available.	6,667·94	Information not available.	Information not available.	6,667·94
1903	267·25	3,992·39	3,143·50	1,544·31	8,947·45
1904	561·55	2,770·12	2,000·95	1,133·77	6,466·39
1905	163·23	5,279·59	1,698·29	647·37	7,788·48
Total	42,378·71	153,479·83	123,959·33	67,222·33	3,87,040·70
Average	1,926·30	6,394·99	5,389·54	2,922·70	16,126·70

From the year 1882 to 1898 there was a flow of from 5,758 in October and 8 cusecs in May.

From the year 1900 to 1905 there was a flow in the river till April only, the discharge in October being 702·23.

MULA PROJECT.

4. The next project is the Mula, a large tributary of the Godáveri, with a long narrow valley at the head of the river. It is No. 9 on the list at page 74 of Volume II of the Irrigation Commission Report. The river rises amongst some of the highest hills of the gháts, but the area of heavy rainfall in the catchment is limited. Excellent tank sites are available at the head of the valley, and a large command of 300,000 to 400,000 acres can be obtained by a canal on the right bank, a trial line for which has been surveyed.

The river has been gauged at Ráhuri and the rain has been gauged at the station detailed in statement and it is estimated 15,000 to 20,000 million cubic feet can be stored in average years.

The best tank site is at Chas and here 11,000 million can be stored by a masonry dam and the tank has been completely surveyed; other sites are available at Kotul and Mándvi and the storage required can be provided. To get the water from the tanks into the canal is somewhat more difficult than usual, for though the sides of the upper part of the valley are hilly and rocky, there is no rock at the river-bed level, where it is convenient to make the headworks of the canal. The best plan seems to be to put the headworks at Tas, the place lowest down the river where good rock is available, and to make about 14 miles of canal on the least difficult ground on the left bank and to carry the water across the right bank by a siphon to the right bank canal. The project will therefore probably consist of—

	Cost. Lákhs.
A tank at Chas to store 11,000 million cubic feet ...	... 36
A second tank at Kotul or Mándvi to store 4,000 ...	... 18
Tas headworks, etc. ...	... 18
Main canal ...	... 30
Distributaries ...	... 6
Total ...	108
Establishment, tools and plant and indirect charges ...	... 27
Total, including all charges ...	135

15,000 million cubic feet would be stored and about 13,000 million cubic feet available for issue, and this is taken to include all the water available in ordinary years.

The land commanded is excellent and similar to that under the Godáveri Canal.

The general information about the project is given in statement attached.

The Godáveri, Pravara and Mula Canals will all be in the basin of the main Godáveri River. It is better to make these as separate canals rather than to make one big canal starting from the weir at Nandur-Madmeshvar on the Godáveri, because the three separate projects command a much larger area of land than the single canal would, and a larger water-supply is obtained.

The tail of the Godáveri is 60 feet lower than the bed of the Ojhar Canal at the railway line and would obviously be very much lower if it had to be taken up towards the Ojhar weir. Similarly the tail of the right bank Ojhar Canal is 15 feet lower than the head of the Mula Canal. The Godáveri Canal, if extended, would command very little of the area under the Mula. If a higher canal were run from the Pravara to command the Mula it would get into such difficult ground that it would be too costly to make and would be of excessive length.

GODAVERI VALLEY.

8. *Mula Storage at Chas.*

(Catchment area—136 square miles.)

Rain-gauge stations—	Harischandragad.	Pachnai.	Kotul.	Chas.
Gauged for 8 years... { (1888-1891)... } 3 (1903-1905)	{ (1902-1905)... }	4 (1902-1905)	4 (1902-1905)	
Average fall ...	308 inches...	162	16	13
Calculated average fall... inches...		211	22	18
Minimum do. ...	162 inches...	.....	.....	.....
		Average	Worst	
Assumed run-off ...	60 inches.	86 inches.		
Volume available ...	18,960	11,376 million c. feet.		
Storage capacity above outlet ...	11,000			
Area to be submerged ...	5,180 acres.			
Outlet level ...	R. L. 2,111 above M. S. L.			
F. S. L. ...	R. L. 2,226	"		
Probable depth of water ...	154 feet.			
Greatest depth of foundations below feet.				
F. S. L.				
Probable cost per million cubic feet.	Rs. 330.			
Surveys completed.				
Estimates not made.				

9. *Mula Storage at Kotul or Mándvi.*

Additional storage ... 4,400 million cubic feet.
No surveys made yet.

Pick-up Weir on the Mula at Tas.

F. S. L. ...	R. L. 1,780 above M. S. L.
Outlet and bed of canal ...	R. L. 1,772
Bed level on R. B. beyond siphon. ...	R. L. 1,735
Bed level at end ...	R. L. 1,635
Area submerged ...	(Negligible.)
Area commanded ...	about 350,000 acres.
Approximate cost of project ...	Rs. 135 lakhs.

A preliminary canal line has been run on the right bank of the river from the point where the proposed siphon crossing is to be.

No estimates have been made.

Discharge of the Mula River above Ráhuri about 900 square miles catchment:

1902 ...	28,278 million cubic feet.
1903 ...	33,861
1904 ...	28,807
1905 ...	17,688

BHIMA BASIN.

Kukari Canal.

5. The proposals for the Godáveri and its tributaries have been described in the preceding paragraphs and the proposals for the Bhima basin are as follows:—

The water-shed dividing the Godáveri from the Bhima is a high range of hills jutting out from the gháts to Ahmednagar; the most northern tributary of the Bhima with a ghát catchment is the Kukari. It has been ascertained by survey that a canal from the Kukari will reach the ridge between the Sina and Bhima Rivers near Karjat and would have a command of over 1½ million acres, but unfortunately it is not practicable to obtain water for the whole area commanded. The whole average supply of the Kukari can be stored in a tank, at an excellent site near Pimpalwandi, where 26,000 million can be stored by a masonry dam only 114 feet high, and the canal will take off direct from the tank.

The bed of the Kukari River is higher than the beds of the adjacent streams, the Ghod and Bhima.

It is possible to divert the Mina into the Kukari Canal but not the Ghod or the Bhima.

The reduced levels at the dam sites are :—

Kukari	...	...	2,024
Mina	...	...	2,179
Ghod	...	...	1,951
Bhima	...	...	1,981

and a broad range of hills separates the Bhima from the Ghod.

Low level canals have been surveyed into which the Ghod water could be diverted but these run into difficult ground and become of great length owing to their many windings and lose most of the command of land.

The land under a tank on the Mina is excellent and would pay for irrigating and it does not seem advisable to sacrifice it entirely to the Kukari.

The proposals are therefore to make the tank at Pimpalwandi on the Kukari and a tank at Wadgaon on the Mina and to irrigate as much as possible of the land under the Kukari Canal by the whole of the water stored in the former tank and by the surplus water of the latter or Mina Tank at Wadgaon.

The best way to distribute the water available for this fine canal and the area it is possible to irrigate is discussed below in paragraph 17. It will be seen by a glance at the map that the canal can deliver water into the Shrigonda and Karjat Talukas of Ahmednagar and the Karmala Taluka of Sholapur which lie in the worst portion of the famine area and so the distribution should be as widespread as possible.

The information available regarding supply of water and the surveys of tank and canal and probable cost of works are given in the following statement :

BHIMA VALLEY.

10.—Kukari Storage at Pimpalwandi.

(Catchment area—288 square miles.)

Rain-gauge station at Junnar—			
Gauge for	...	31 years (1875—1905).	
Average fall	...	28 inches.	
Minimum	...	15 "	
			Run-off.
River-gauging at dam site	...	1903	
		1904 19,892 million c. ft.	32 inches.
		1905 14,060 "	21 "
		Average.	Worst.
Assumed run-off	...	37 inches.	18 inches.
Volume available	...	25,000	12,000 million c. ft.
Storage capacity above outlet	...	26,000 million c. ft.	1,000 million c. ft. to be obtained from Mina storage waste weir discharge.
Area to be submerged	...	18,000 acres ; 775 million square feet.	
Probable depth of water	...	114 feet.	
F. S. L.	...	R. L. 2,138 above M. S. L.	
Outlet level and canal bed	...	R. L. 2,060 "	
Canal bed at end	...	R. L. 1,885 "	
Greatest depth of foundations below F. S. L.	...	feet.	
Probable cost per million c. ft.	...	Rs. 450.	
Gross.			
Area commanded	...	250,000 acres up to Shrigonda.	
		250,000 " " Korti.	
		250,000 " " Kem (G. I. P. Railway).	
		750,000 acres.	
Probable cost storage	...	Rs. 117 lakhs.	
Canals, etc.	...	" 120 "	
		Rs. 237 lakhs for Works.	
Establishment, Tools and Plant and Indirect charges	...	Rs. 60 lakhs.	
Grand Total all Charges	...	Rs. 297 lakhs.	

The surveys for the tanks are finished, and for the canal they are still in progress. About 100 miles of line have been done. The dotted line on the map shows the preliminary survey carried out to ascertain the extent of command possible.

No estimates have been made yet.

BHIMA VALLEY.

The Mina Project.

6. The Mina project has been referred to when dealing with the Kukari in the paragraph preceding this.

The proposals are to construct a masonry dam at Wadgaon on the Mina 107 feet high to store 4,900 million cubic feet and to construct a canal along the ridge of the land bounded by the Kukari on the north-east and the Ghod and its tributary the Mina on the south-east: 69,000 acres of excellent land are commanded. The dam and cost of storage are expensive but the canal is cheap and easy to make.

The waste weir of the tank is placed so that surplus waters will be discharged into the Pimpalwandi Tank on the Kukari where they are required. It is also possible to deliver the discharge of the canal into the Pimpalwandi Tank from the Kukari Canal.

All plans are complete for this project.

The information available of the probable supply of water and the probable cost of the works is given in the following statement:—

BHIMA VALLEY.

11.—*Mina Storage at Wadgaon.*

(Catchment area—65 square miles.)

Rain-gauge station at Shewali—		
Gauged for 2 years (1904-1905)—		
Average fall	...	52 inches.
Calculated average	...	70 "
Minimum do.	...	
	Million c. ft.	Run-off.
River-gauging at dam site 1903	...	...
1904	5,315	35 inches.
1905	4,550	30 "
	Average,	Worst.
Assumed run-off	... 38 inches.	20 inches.
Volume available	... 5,788	3,020 million cubic feet.
Storage capacity above outlet	...	4,864 "
Area to be submerged	... 2,000 acres.	
Probable depth of water	... 115 feet.	
F. S. L.	... R. L. 2,294 above M. S. L.	
Outlet level and canal bed	... R. L. 2,209	"
Canal bed at end	... R. L. 1,980	"
Greatest depth of foundations below		
F. S. L.	... feet.	
Probable cost per million c. ft.	... Rs. 1,100.	
	Gross.	
Area commanded	... 79,000 acres.	{ L. B. Canal 70,000.
Probable cost—Storage	... Rs. 53½ lakhs.	{ R. B. Canal 9,000.
Canal	... " 5½ "	
	Rs. 59 lakhs for Works.	
Establishment, Tools and Plant	...	
and Indirect charges	... Rs. 15 "	
Grand Total all Charges	... Rs. 74 lakhs.	

The surveys are completed. The plans and estimates are well advanced.

BHIMA VALLEY.

Ghod.

7. The next project is on the Ghod river where a masonry dam is proposed at Nirgudsar.

The area to be irrigated by the Ghod lies on the right bank: the canal passes for 54 miles through difficult grounds and this length commands 40,000 acres only; the canal then reaches the ridge and the command is at once increased to a total of 121,000 acres.

The water-supply stored in the tank is sufficient for this area and it has been suggested that if the Kukari and Mina tanks are constructed a left bank canal should be made from the Ghod to irrigate a part of the land commanded by the Mina and so set free Mina water to be diverted to the Kukari.

Whether this should be done depends on the importance attached to the irrigation of the bad famine area on the Kukari, but as it is not the most economical way of using the water, and as the arrangement is one that can be made hereafter, if required, it is recommended that the Ghod water be used to irrigate land in the right bank only and a project has been prepared for this.

The information regarding supply of water available and probable cost of the works, &c., is given in the following statement.

The land on the average is not so good as in other projects but there is sufficient good land to use up all the water.

BHIMA VALLEY.

12.—*Ghod Storage at Nirgudsar.*

(Catchment area—284 square miles.)

Rain-gaugé station at Ghoda gauged for	...	30 years (1876—1905).	
Average fall	... ..	28 inches.	
Minimum	... ..	12 "	
River gauging at dam site	{ 1903 1904 1905 }	...	Cold weather discharge only.
		Average.	Worst.
Assumed run-off	... ..	45 inches.	20 inches.
Volume available	... ..	29,700	13,200 million c. ft.
Storage capacity above outlet	... ..		10,236 "
Area to be submerged	... ..	7,412 acres.	
Probable depth of water	... ..	100 feet.	
F. S. L.	... ..	R. L. 2,051 above M. S. L.	
Outlet level and R. B. canal bed	... ..	R. L. 1,978	"
Canal bed at end	... ..	R. L. 1,908	"
Greatest depth of foundations below F. S. L.	... ..	feet.	
Probable cost per million cubic feet	... ..	Rs. 386.	
		Gross.	
Area commanded Right Bank	... ..	121,675 acres.	
Do. Left Bank	... ..	43,904 "	
Total cost all charges Storage and R. B. Canal	... ..	Rs. 83,03,627.	
Do. do. with L. B. Canal	... ..	" 94,80,000.	

The plans and estimates of the Ghod Right Bank Canal Project with full storage have been prepared and submitted to Government. A Left Bank Canal line has been run to ascertain the possible command, but the cost is not estimated. It will command a portion of the areas under the Mina and Kukari projects and can be constructed when these require an extra supply of water.

BHIMA PROJECT.

8. The next tributary the Vel has not a reliable catchment but on the upper portion of the Bhima itself a tank could be made west of Khed with a catchment area of 146 square miles and could command, about 100,000 acres on the left bank of the Bhima but would have no useful command on the right bank.

This project has not yet been fully investigated, but the information of water-supply and probable cost so far as available is as follows:—

A storage on the Indrayani is also being examined.

BHIMA VALLEY.

13.—*Bhima Storage at Kaman.*

(Catchment area—140 square miles.)

Rain-gauge station	...	...	<i>Nil.</i>
Gauged for	...	...	years.
Average fall	...	...	inches.
Minimum	...	...	"
River gauging at dam site	{ 1903 1904 1905 }	...	<i>Nil.</i>
		Average.	Worst.
Assumed run-off	...	24 inches	10 inches.
Volume available	...	7,800	3,250 million c. ft.
Storage capacity above outlet	...	6,000 million c. ft.	taken out from cross sections.
Area to be submerged	...	Acres	(not known).
Probable depth of water	...	110 feet.	
F. S. L.	...	R. L. 2,091	above M. S. L.
Outlet level and R. B. canal bed	...	R. L. 2,016	"
Canal bed at end	...	R. L. 1,900	"
Greatest depth of foundations below			
F. S. L.	...		feet.
Probable cost per million c. ft.	...	Rs. 450.	

Pick-up-Weir for L. B. Canal at Tulapur.

Depth of water	...	40 feet.
F. S. L. weir crest	...	R. L. 1,817 above M. S. L.
Outlet and L. B. Canal bed	...	R. L. 1,811.5 "
Canal bed at end	...	R. L. 1,785 "
Area to be submerged	...	Small (no figure available).
Area commanded—		
L. B. Canal	...	72,500 acres (gross).
R. B. "	...	34,000 "
	Total	106,500

Approximate cost—		
Storage	...	Rs. 27 lakhs.
Pick-up-Weir and two canal	...	" 16 "
		Rs. 43 lakhs for Works.
Establishment, Tools and Plant and		
Indirect Charges	...	" 11 "

Total cost including all Charges ... Rs. 54 lakhs.

Only a rough survey has been made for this project to discover a dam site and ascertain the possible command.

No plans or estimates have been made.

BHIMA VALLEY.

14.—*Indrayani Storage at Moshi.*

(Catchment area—163 square miles.)

Rain gauge stations	...	Wadgaon (Maval) ...	Talegaon ...	Lanowli.
Gauged for, years	...	9 (1887—1905) ...	29 (1877—1905) ...	31 (1875—1905).
Average fall, inches	...	41 ...	20 ...	169
Minimum "	...	19 ...	6 ...	67
River gauging at dam site	{ 1903 1904 1905 }	...	<i>Nil.</i>	

		Average.	Worst.
Assumed run-off	...	...	10 inches.
Volume available*	...	...	3,790 million c. feet.
Storage capacity above outlet	...	2,000 million c. ft.	(rough figures).
Area to be submerged	...	acres	(not known).
Outlet level	...	R. L. 1840	above M. S. L.
F. S. L.	...	R. L. 1836,	"
Probable depth of water	...	58 feet.	
Greatest depth of foundations below	F.		
S. L.	...		feet.
Probable cost per million c. ft.	...	Rs. 600.	
Area commanded	...	...	...

If constructed, water could be let down from this tank to the Tulapur weir. The dam site has been investigated, but only cross sections have been taken up the valley.

No contours have been run and no estimates made.

BHIMA VALLEY.

Existing Mutha Canals.

9. The Mutha Canals are existing canals on a tributary of the Bhima, are No. 9 in the Bombay Irrigation report, and are supplied by a fine storage tank at Lake Fife with 196 square miles catchment, and which is one of the standards for comparison when estimating the probable supply available from ghat catchments.

The canal waters are mainly devoted to the cultivation of sugarcane and perennial crops for which water rates of Rs. 40 per acre are cheerfully paid. It is proposed to make two additional tanks above Lake Fife called the Panset and Warasgaon Reservoirs to store 4,666 million cubic feet together and to devote the whole of the water to the high paying perennial crops. The project is now before the Government of India recommended as a productive work and a return of 6.46 per cent. is expected.

This is project No. 10 of paragraph 172, page 74 of Volume II of the Irrigation Commission Report.

The canals are in British territory but the tanks are in Native State.

No tank or projects have been investigated for the small streams included in the area between the Bhima Project and the Mutha Canals, for as all these streams join west of Poona, the water from them cannot be delivered on to any land in the famine districts because of the low bed fall of the Bhima tanks. To irrigate highly paid irrigation locally may be practicable but these are not in the same class as the Protective works under consideration.

Mutha Canal Projects.

(Catchment area—196 square miles.)

Rain-gauge stations for catchment	... 2	(one at Ambegaon and the other at Musa).
Number of years gauged	... 2	at Ambegaon, <i>viz.</i> 1878 and 1873, and 3 at Musa, <i>viz.</i> 1878, 1879 and 1902.
Average fall at each	... 92.04.	
Run-off catchment taken as average available.	21,000 million c. ft.	
Storage capacity of Tanks	... 8,621 million c. ft.	
Area submerged by Storage Works and Weirs.	3,196 acres.	
Area commanded	... 94,087 acres.	
Approximate cost of Project	... Rs. 1,16,99,480.	
Conditions of plans and surveys and estimates.	Plans and estimates for additional Storage Reservoir have been submitted to the Government of India for sanction with this Government Letter No. W. I.—191, dated 25th January 1905, and their orders thereon are awaited.	

NIRA.

10. The Nira river is the next in order and is the most important in the irrigation system of the Deccan from its position, the quantity of water available, the facilities of storage and the area of land commanded. This project is No. 4 on page 74 of Vol. II of the Irrigation Commission Report.

The existing system of irrigation is the Nira Left Bank Canal which takes off the Nira river at Vir where a masonry weir some 2,300 feet long, 41 feet high, is built and is provided with perennial water by a fine storage reservoir holding 5,313 million cubic feet at Lake Whiting in the Bhor State. These works are shown by blue on the map. The discharge of the river at Lake Whiting has been gauged and recorded for 19 years and the results are amongst the most reliable of the Deccan returns for river discharge.

The Left Bank canal commands 274,447 acres, but much of the water available is devoted to high paying perennial crops and there is not sufficient to supply the demands for four-months crops.

A canal line has been surveyed from the right end of the weir at Vir and it is found that it commands 1,200,000 acres of land. The length of the line first surveyed is 420 miles. The line has been examined, is detailed, and the best alignment selected for 300 miles.

Surveys have been made for reservoirs on the streams which unite to form the Nira river above the weir at Vir and it has been found that it is practicable to utilise almost the whole run-off from the catchment of 635 square miles in average years. There are numerous sites for tanks but the best proposals seem to be—

To construct at the site of the present weir at Vir a dam 101 feet high to act as a large regulating tank during the monsoon and to store 9,600 million cubic feet.

To raise the dam at Bhatgarh Lake Whiting from 95 feet above bed to 155 feet, increasing the storage from 5,300 to 34,500 million.

Whether additional Storage works will be required or not depends on the manner in which the canal is worked and this is discussed in paragraphs 16 to 18 below, but suitable sites are available on the Gunjawni to store 12,000 million, on the Nira above Bhor to store 14,000 million cubic feet.

It is thus possible to utilise 57,000 million cusecs from this fine river the supply of which is assured in all average years. In the worst years, which occur at long intervals of 15 to 20 years, the supply might be reduced to nearly half, but in almost all the famine years of the Deccan the supply would have been available. Details showing this are given in the statement.

With the exception of half of the Vir reservoir all the above reservoirs would be in Native States and some of the land commanded would be in Native States.

Approximately the areas commanded are as follows:—

Statement showing Area under command.

Miles (original mileage).	Nálas at end of Section.	Command in Native States.	Command in British Territory.			Remarks.
			Acres.	District.	Táluka.	
0—12	Earhad (Limit of Sátára District).	Acres.	3,500	Sátára ...	Wái.	
12—55	Rajuri	73,000 (Phaltan)	...	...	.....
55—101	Jambalni ... ..	.....	209,500	Sholápur.	Málsiras ...	Málsiras Táluka.
101—117	Kasul (Mohod) ... ..	.....	68,000	Do. ...	Málsiras, Sangola and Pandhar- pur.	Ends at the 110th mile.
117—152	Mán River ... ..	.....	207,000	Do. ...	Sangola.	
152—193	Paikhal nála (limit of Sangola Táluka)	.....	72,000	Do. ...	Do.	
193—237	Bar river	200,000 (Jath, Sangli, &c.)	41,000	Bijápur...	Indi ...	The Bijápur Dis- trict commences at the 252nd mile.
237—303	Indi	24,000 (Jath & Sangli.)	158,000	Do. ...	Do.	
303—365	Ramanballi (limits of Indi Táluka).	.....	97,000	Do. ...	Do.	
365—430	Nizam's Territory ... ..	.....	47,000	Do. ...	Sindgi.	
	Total acres	297,000	903,000			
	Grand Total	1,200,000 acres.				

This area is in the heart of the worst famine districts of the Bombay Deccan.

The Government of India in paragraph 9 of their letter No. 18-C. W. of 18th May 1905 to the Secretary of State, forwarding the Irrigation Commission Report, write: "If water can be brought to a district like Sholápur by any

expenditure that is not actually prohibitive that expenditure should be incurred ; and Malsiras, Pandharpur and Sangola Talukas through which the canal passes are in Sholapur. Similarly, Jath State and Bijapur are bad famine districts. The whole 1,200,000 acres commanded are bad famine areas. The proper distribution of the water on this famine area is a matter of great importance and is discussed in detail in paragraph 18 below, and in this particular case it will be convenient to consider the probable cost of the works after the discussion on the manner of utilizing the water. The details available for forming estimates of available supply of water are unusually excellent and are given in the statements 15 to 18 attached ; the cost is also roughly estimated and in statement 18, the works recommended are shown to total 485 lakhs.

NIRA BASIN.

15.—*Gunjawni Storage at Umra.*

(Catchment area—183 square miles.)

Rain-gauge stations at	...	Kheda Shivapur.	Margasni.	Torna.
Gauged for	years...	4 (1902-05)	4 (1902-05)	(1902-05)
Average fall	inches...	26	39	61
Calculated average	inches...	38	57	90
Run off.				
River gauging at dam site—1902	...	11,616 miln. c. ft.	27 inches.	
	1903	15,553 "	37 "	
	1904	6,629 "	16 "	
	1905	14,232 "	33 "	
		Average.	Worst.	
Assumed run-off	...	30	12 inches.	
Volume available	...	12,750	5,100 million c. ft.	
Storage capacity above outlet	...	12,136 million c. ft.		
Area to be submerged	...	5,570 acres	243 million sq. ft.	
Probable depth of water	...	179 feet.		
F. S. L.	...	R. L. 2116.9 above M.S.L.		
Outlet level	...	R. L. 1978.9	"	
Greatest depth of foundations below				
F. S. L.	...	194 feet.		
Probable cost per million c. ft.	...	Rs. 750.		
Surveys and trial pits complete.				

An estimate was made for a dam at this place when submitting the preliminary report on the Nira project in March 1903. The cost was Rs. 632 per million cubic feet stored.

16.—*Yelwandi Storage at Bhatghar (Lake Whiting).*

Catchment area—128 square miles.

(Raising present water level.)

Rain-gauge station at			
Gauged for	years.		
Average fall,	inches		
Minimum,	inches		
River gauging at the dam site (<i>see below</i>).			
(From 1887—1905.)			
		Average.	Worst.
Assumed run-off	...	113 inches.	52 inches.
Volume available	...	33,676	15,556 million c. ft.
Storage capacity above outlet	...	.....	34,552 million c. ft.
Area to be submerged	...	18,365 acres	800 million sq. ft.
Probable depth of water	...	155 feet.	
F. S. L.	...	R. L. 2,045.1 above M. S. L.	
Outlet level	...	R. L. 1,902.4	"
Greatest depth of foundations below			
F. S. L.	...	179 feet.	
Probable cost per million c. ft.	...	Rs. 300.	

No surveys have been made for the higher contour and extension of dam. The present tank has F. S. L. at R. L. 1,934.1 and depth of water 95 feet.

No estimate has been made. The increased storage is so great for the rise of 60 feet that a low rate per million c. ft. may safely be taken.

River-gauging at the dam site.			Discharge, Million c. ft.	Run-off in inches.
Year.				
1887	...	...	35,219	118
1888	...	...	32,596	110
1889	...	...	25,926	87
1890	...	...	33,912	114
1891	...	...	39,178	132
1892	...	...	37,876	127
1893	...	...	37,131	125
1894	...	...	44,045	148
1895	...	...	38,306	129
1896	...	...	58,502	197
1897	...	...	35,946	121
1898	...	...	35,127	118
1899	...	...	15,556	52
1900	...	...	40,411	136
1901	...	...	33,417	86
1902	...	...	26,773	90
1903	...	...	29,396	99
1904	...	...	21,837	73
1905	...	...	26,460	89

17.—Nira Storage at Natambi.

(Catchment area—86 square miles.)

Rain-gauge stations at—		Nighurghar.	Sirgaon.
Gauged for	years...	4 (1902-05)	4 (1902-05)
Average fall	inches...	93	215
Calculated average	inches...	110	25
			Run-off.
River-gauging at dam site	1902...	11,256 million c. ft.	56 inches.
	1903...	14,931 "	75 "
	1904...	12,026 "	60 "
	1905...	13,881 "	70 "
		Average.	Worst.
Assumed run-off	...	80	40 inches.
Volume available	...	16,000	8,000 million c. ft.
Storage capacity above outlet	...	14,123 million c. ft.	
Area to be submerged	...	7,370 acres	321 million sq. ft.
Probable depth of water	...	182 feet.	
F. S. L.	...	R. L. 2124.9	above M. S. L.
Outlet level	...	R. L. 1979.9	"
Greatest depth of foundation below			
F. S. L.	...	195 feet.	
Probable cost per million c. ft.	...	Rs. 450	
Surveys and trial pits, complete.			

An estimate was made for a dam at this place when submitting the preliminary report on the Nira project in March 1903. The cost was Rs. 419 per million c. ft. stored.

NIRA BASIN.

18.—Nira Storage at Vir.

Catchment area	...	635 sq. miles.*
Net area	...	238 "

* This includes the areas above

Umra	...	183
Bhatghar	...	128
Natambi	...	86

397

Rain gauge station the same as for the three Ghat tanks, Umra, Lake Whiting and Natambi.

Gauged for	years
Average fall	inches
Minimum	"

River gauging at dam site... { 1903 } Nil.
 { 1904 }
 { 1905 }

Assumed run-off	...	...	...
Volume available	...	...	...	If the 3 Ghat tanks are constructed of the size shown, very little water will flow down to Vir, but if the Gunjawni Storage be omitted the Vir basin will always fill. The Gunjawni is by far the most expensive of the 3 tanks and the catchment area is unfavourable.
Storage capacity above outlet	...	...	...	9,606 million cubic feet.
Area to be submerged...	...	...	...	6,653 acres.
Probable depth of water	...	...	...	101 feet.
F. S. L.	...	...	...	R. L. 1,902.40.
Outlet level and canal bed	...	...	...	R. L. 1,833.90.
Canal bed at 100 miles	...	...	...	R. L. 1,754.
" at 300 "	...	...	...	R. L. 1,599.
" at end	...	...	...	R. L. 1,490.
Probable cost of Vir dam per million cubic feet	...	...	...	Rs. 450.

The surveys for raising the Vir basin are complete, and only a few trial pits or borings remain to be done. The present F. S. L. at Vir is 1,842.4, and depth of water 41 feet.

Area commanded	...	...	1,200,000 acres.
Approximate cost of project—			
Vir Storage	...	...	Rs. 43 lakhs.
Bhatghar Storage	...	...	" 104.5 "
Canal, etc.	...	...	" 240 "
			Rs. 387.5 lakhs for Works.
Establishment, Tools and Plant and Indirect charges	...	...	Rs. 96.9 lakhs.
Total for all charges	...	...	Rs. 485 lakhs, viz., Rs. 40 per acre of gross command.
Additional Storage Works—			
Umra Storage	...	...	Rs. 91 lakhs.
Natambi Storage	...	...	" 63½ "
			Rs. 154½ lakhs for Works.
Establishment, etc.	...	...	" 38½ lakhs.
Total for all charges	...	...	Rs. 193 "
Add the previous	...	...	" 485 "
Grand Total	...	...	Rs. 678 lakhs or Rs. 56 per acre of gross command.

The canal has been carefully aligned for nearly 300 miles in length. The preliminary line has been run for a total length of 420 miles.

The estimates are under preparation.

Probably the additional storage works will not be wanted and the 485 lakh project be the best.

THE KRISHNA.

11. The next river basin is the Krishna and unfortunately it is not practicable to convey the Krishna waters by gravity on to the Famine lands.

The storage sites and the rainfall are the best in the Bombay ghats, but the land between Bijápur and Sátára is higher than the levels of the heads of the canals in the gháts.

A trial canal line has been surveyed and is shown in red running close along the left or north bank of the Krishna river from the present Krishna canal at Karád to Ainápur near Athni. The fall of the bed of the Krishna is six inches a mile only or less than the fall of the canal.

The lands commanded along the river are rich fertile lands and a large part of them is occasionally flooded and produces wonderful crops and the area commanded is not in need of protection; the Krishna is not put forward as a Protective canal and is not included in the lists of canals in paragraph 23. It may be found a paying arrangement to construct the tanks and canals and

devote the whole of the area to highly paying crops like sugarcane, irrigating at least half the area annually and cultivating it highly, but this has not been investigated in detail.

The information available is given in the following statement and shows the large storage capacity of the tank in the small area commanded for the length of canal :

KRISHNA VALLEY,

19.—*Koyna Storage at Kamargaon.*

Catchment area	...	346 sq. miles.	
Rain gauge stations at		Malcolm Peth.	Helwak
Gauged for	years	31 (1875—1905)	4 (1902—05)
Average fall	inches	272	184
Calculated average	"	...	(221)
Minimum	"	140	
River gauging	1902	98,801 million cubic feet.	Run-off, 120 inches.
below Helwak (353 sq. miles catchment)	{	1903... 123,062	150 "
		1904... 112,285	137 "
		1905... 117,328	143 "
		Average	Worst.
Assumed run-off	...	174 inches	87 inches.
Volume available	...	140,000	70,000 million cubic feet.
Storage capacity	...	5,990 million cubic feet.	
Area to be submerged	...	Acres unknown.	
Probable depth of water...	...	101 feet.	
F. S. L.	...	R. L. 2,010 above M. S. L.	
Outlet level	...	R. L. 1,927	"
Greatest depth of foundations below			
F. S. L.	...	Feet.	
Probable cost per million cubic feet	...	Rs. 350.	

A much larger tank could be made, if required. The contours for the tank area have not been run, but the dam site has been selected after investigation, and cross sections have been taken in the valley.

Pick-up Weir on the Koyna at Nisra.

F. S. L.	...	R. L. 1,885 above M. S. L.
Depth of water	...	58 feet.
Outlet	...	R. L. 1,882 above M. S. L.

A pick-up weir and feed channel are required to lead the water from the Koyna to the Krishna river, above the Khodsi weir. This will be an expensive work owing to depth of foundations. A rough survey has been made.

No estimate has been made.

Pick-up Weir on the Krishna at Khodsi.

Already constructed.

Depth of water	...	21 feet.
F. S. L.	...	R. L. 1,868 above M. S. L.
Outlet and canal bed level	...	R. L. 1,864
Canal bed at end of existing channel	...	R. L. 1,826
Canal bed at proposed end near Ugar	...	R. L. 1,760
Area commanded	...	100,000 acres.
Cost of project—		
Storage	...	Rs. 21 lakhs.
Pick-up weir and feed channel	...	" 10 "
Canal, etc.	...	" 19½ "

Rs. 50½ lakhs for Works.

Establishment, Tools and Plant and Indirect charges	...	12½ lakhs.
Total cost, including all charges...	...	63 "

A preliminary survey has been made to ascertain the possible command and probable alignment of the channel. The line remains close to the river, and the command is very small, but the land is rich, and with a superabundant water-supply, there need be no limit to the area of sugarcane cultivation.

Proper final surveys and estimates have yet to be made.

GHATPRABHA.

Gokák Canal.

12. This is project No. 3 on page 74 of Volume II of the Irrigation Commission Report.

The next river is the Ghatprabha near Gokák, where there are falls 200 feet high and a cotton mill with turbine machinery supplied with water by Government; a fine weir has been constructed and a short length of canal which, though without a perennial supply, has irrigated in one year 14,000 acres out of 17,000 acres culturable commanded. The supply in the river is abundant and a long series of observations have been made of the discharge of the weir; they are given in detail in statement below and show that for $3\frac{1}{2}$ months a supply of over 900 cusecs is certain and the weir acting as a regulating tank is able to make up the supply so that a canal supply of 1,000 cusecs can be obtained for four months without any additional storage.

It is this fact that makes the Gokák Canal so valuable; there are 1,000 cusecs to be had for nothing during the whole of one recognised season of cultivation called the kharif or monsoon season, the 4 months from 15th June to 15th September.

The discharge over and above this 1,000 cusecs is large and there are numerous places on the tributaries of the river where masonry dams of low height and small cost can store very large volumes of water and there is no engineering difficulty in storing sufficient water for the best form of irrigation for the whole area commanded. But the lands to be submerged are good and fertile, and the population to be moved larger than usual or the sites for the tanks are in the Native State of Kolhápur, and the general result is that the cost of storage is estimated at about the average per million cubic feet instead of being much less.

The area commanded by the canal is 493,089 acres and as the canal takes off above 200 feet falls at Gokák a large command is obtained by a short length of canal, the length of main canal being 89 miles only. The proposals are to make a storage tank in British Territory at Rajgoli to store 9,678 million cubic feet and another at Hadlag to store 8,567 million cubic feet to make a canal to discharge 1,087 cusecs and to command 493,089 acres. If the canal be not worked as a perennial canal but for 8 months only in the way in which the present Gokák Canal is so successful, one tank only would be required and not two.

Half the area commanded by the canal is British and the other half Native States. The British Territory is at the beginning and end of the canal and the Native State is the middle.

In order to utilise the magnificent supply of water unusual trouble has been taken with the alignment of the canal; the land is ordinary Deccan land, not an easy plain like the land under the Godaveri and Pravara canals and not so difficult as under the Ghod and very much easier than the country near the ghats, for instance, in the north of the Násik District where the Government of India have asked whether a canal is feasible; there is some rock cutting, but this is typical of Deccan canals. The unusual items are two in number: first, a tunnel 3,000 feet long at 37 miles to get through the ridge and command the land on the right bank of the Krishna which cannot be supplied from that river because, as previously explained, the bed of the Krishna is so low. Plenty of fall, however, is available to make the tunnel small and the rock is good and there is not great difficulty or cost and the estimate is certainly on the safe side for this particular length of the canal.

The second item is a more unusual feature; at 83 to 85 miles there is a saddle or low place on the ridge; by taking the canal across this saddle with the bed raised above ground it is possible to secure a command of an additional 50,000 acres. The cost of raising the canal above ground in this manner is small compared with the command obtained; in other canals much greater sums are spent in the difficult ground in the upper lengths of the canal in order to gain command at the tail; in this case the cost comes in an unusual place and is therefore noticeable, but it is not an item to discuss in detail in this

report and would not have been mentioned but for the fact that the Inspector General seemed particularly struck by it when he was hastily looking over an immense mass of survey work and plans on his visit to Bombay. The saddle can be crossed in various ways, but the broad facts are the extra command gained by the high level command exceeds 50,000 acres; of this half can be irrigated with the splendid supply of water for this canal, but taking $\frac{1}{4}$ only as the area irrigated, the number of acres would be 12,500. The Irrigation Commission estimate Rs. 140 as the Capital cost of irrigating an acre and 140 times 12,500 is 17 $\frac{1}{2}$ lakhs, whilst the extra cost for raising the canal is 3 to 5 lakhs of rupees.

If these 3 to 5 lakhs were not spent but if the canal were let down on to the saddle, it would get into more difficult ground, wind about more, require deeper rock cuts and in order to command the smaller area more money would be spent than if the saddle is crossed as proposed by a work which looks expensive but is really economical.

This result is familiar to Irrigation Engineers who have much experience of the Deccan, though it is difficult to believe or understand at first sight. In the present case it was specially investigated.

The plans and estimates for this Gokák Canal are complete and statement attached gives the main particulars.

There is no canal on the right bank, as a large tributary of the Ghatprabha named the Markandya joins the main river below the 200 feet falls and has cut back a deep gorge between rocky hills, making it impracticable to construct a canal.

GHATPRABHA VALLEY.

20.—*Harankashi Storage at Ajra.*

Catchment area	...	94 square miles.	
Rain gauge station at Ajra—			
gauged for	...	19 years (1882—1900),	
average fall	...	82 inches.	
minimum	...	42 "	
River gauging at dam site	...	{ 1903 } not available.	
		{ 1904 }	
		{ 1905 }	
		Average.	Worst.
Assumed run-off	...	...	25 inches.
Volume available	...	...	5,460 million c. ft.
Storage capacity above outlet	...	...	6,544 " "
Area to be submerged	...	4,356 acres.	
Probable depth of water	...	85 feet.	
F. S. L.	...	R. L. 2,190.	
Outlet level	...	R. L. 2,120.	
Greatest depth of foundations below F. S. L.	...	Feet.	
Probable cost per million cubic feet	...	Rs. 600	

This is a tank which could supply water to the Gokák Canal.

The surveys are completed.

Estimates not yet made.

21.—*Ghatprabha Storage at Hadlag.*

Catchment area	...	133 $\frac{1}{2}$ square miles.	
Rain gauge station at Amboli—			
gauged for	...	14 years.	{ 1878—89,
average fall	...	278 inches.	{ 1903, 1904.
minimum	...	136 "	
River gauging at dam site	{	1903. 38,620 milln. c. ft.	Run-off. 125 inches.
	{	1904. 40,204 "	130 "
	{	1905. 21,983 "	71 "

	Average.	Worst.
Assumed run-off ...	125 inches.	27 inches.
Volume available ...	28,750	8,370 million c. ft.
Storage capacity above outlet ...	8,567 million c. ft.	
Area to be submerged ...	7,607 acres.	
Probable depth of water ...	70 feet.	
F. S. L. ...	R. L. 2,321-20.	
Outlet level ...	R. L. 2,263-20.	
Greatest depth of foundations below F. S. L. ...	87 feet.	
Probable cost per million c. ft....	Rs. 384.	

For command, etc., see below "Rajgoli."

22.—*Tamraparni Storage at Rajgoli.*

Catchment area ...	206 square miles.		
Rain gauge station at	Chandgad.	Vagothar.	Patne.
gauged for ... years	26 (1880-1905)	4 (1902-05)	4 (1902-05)
average fall inches ...	102	172	94
calculated average ...	.....	(191)	(104)
minimum inches ...	59	.....	.....
			Run-off.
River gauging at dam site	{ 1903. 27,490	million c. ft.	57 inches.
	{ 1904. 28,090	"	58 "
	{ 1905. 13,763	"	29 "

	Average.	Worst.
Assumed run-off ...	58 inches.	19 inches.
Volume available ...	27,753	9,092 million c. ft.
Storage capacity above outlet ...	9,678 million c. ft.	
Area to be submerged ...	13,110 acres.	
Probable depth of water ...	61 feet.	
F. S. L. ...	R. L. 2,279-20.	
Outlet level ...	R. L. 2,239-20.	
Greatest depth of foundations below F. S. L. ...	82 feet.	
Probable cost per million c. ft. ...	Rs. 469.	

Pick-up weir at Gokak.

Already constructed—	
Canal bed level at weir ...	R. L. 1,980.
Canal bed at end ...	R. L. 1,857.
Area commanded ...	493,080 acres gross.

Cost of project—	
Fresh work (<i>viz.</i> , canal with tanks at Hadlag and Raj- goli) ...	Rs. 1,75,29,401.
Whole project (including existing work) ...	" 1,90,75,269.

The plans and estimates are complete and have been submitted to Government.

New tank sites are being investigated in order to avoid drowning so much of the Native State at Hadlag. The cost of any alternative scheme will be much the same as that already estimated.

23.—*Ghatprabha Storage at Daddi.*

Catchment area ...	420 square miles.
Rain gauge station at	Amboli, Chandgad, Vagothar and Patne (already given for Hadlag and Rajgoli basins).
gauged for ...	years.
average fall ...	inches.
minimum ...	"
River gauging at dam site ...	{ 1903 } { 1904 } not gauged. { 1905 }

	Average.	Worst.
Assumed run-off ...	... 59 inches.	18 inches.
Volume available (total of Rajgoli and Hadlag figures) ...	56,503	17,462 million c. ft.
Storage capacity above outlet ...	18,400 million c. ft.	
Area to be submerged ...	21,700 acres.	945 million sq. ft.
Probable depth of water ...	72½ feet.	
F. S. L. ...	... R. L. 2,284·20 above M. S. L.	
Outlet level ...	... R. L. 2,229·20 ,,	
Greatest depth of foundations below F. S. L....	... feet.	
Probable cost per million c. ft....	Rs. 426. The total is taken to be the same as Rajgoli and Hadlag combined.	
Surveys completed, trial pits in progress.		
No estimates made.		

This tank would, if adopted, replace the Rajgoli and Hadlag reservoirs, and would supply the requisite amount of water for the Gokák Canal.

Since the above information was written further surveys have shown that a masonry dam is quite practicable at Daddi and rough estimates indicate that the extra cost of the engineering works will be more than balanced by the saving on land compensation. To store a volume equal to the contents of Hadlag and Rajgoli combined it would not be necessary to submerge any houses in Kolhápúr State territory, and the area of land submerged in Kolhápúr State would be about 1,100 acres only, much of which is in the river-bed, instead of the 4,009 acres which would be submerged by the Hadlag tank.

Further, the surveyors have ascertained that a dam for a depth of 115 feet of water only could at the Daddi site store the very large volume of 60,000 million cubic feet, and that this quantity of water is available in all ordinary years. The river gaugings at Hadlag and Rajgoli show that in years of poor rainfall such as 1903 more than 60,000 millions would be available, or nearly 12 times the volume of lake Whiting, the biggest existing storage reservoirs in the Bombay Deccan. And this very large storage can be obtained without drowning more of the Kolhápúr State than would have been submerged by the Hadlag Reservoir to store 8,500 million cubic feet only, for the greater part of the storage is in the Rajgoli or Tamraparni valley, and by placing the dam at Daddi below the junction of the Tamraparni (Rajgoli) and Ghatprabha (Hadlag) rivers the abundant waters of the Ghatprabha can be stored in the Rajgoli valley of the Tamraparni.

The Daddi site is therefore selected as undoubtedly the best, and plans and estimates are being prepared for a dam to supply the Gokák Canal on the Left Bank of the Ghatprabha River. The dam is to be designed so that it can be raised hereafter to provide additional storage up to the 60,000 million which are available.

Surveys are now in progress to ascertain whether the water from this Daddi tank can be delivered on to the Right Bank of the Ghatprabha below the Gokák Falls. The country is hilly and broken and the canal line, if practicable, will be a difficult one.

A rough comparison of the cost of the two Rajgoli and Hadlag tanks and of the one tank at Daddi is given below :—

*Comparative Statement of cost (Engineering work only) of Daddi Storage,
of Rajgoli and Hadlag Storage combined.*

<i>Dam.</i>	Daddi storage F.S.L., R.L. 131.	Rajgoli and Hadlag storages.	Rajgoli F.S.L., R.L. 126.	Hadlag F.S.L., R.L. 163.
	Rs.	Rs.	Rs.	Rs.
Excavation foundation ...	3,44,975	.....	1,00,566	17,436
Superstructure ...	17,28,323	.....	7,30,575	1,20,455
Ironwork ...	56,526	.....	53,860	56,757
Tail and approach channels near sluices ...	.....	.....	25,028	.....
Protective wall near do. ...	.....	.....	3,795	.....
<i>Waste weir.</i>				
Excavation foundation ...	1,52,486	.....	36,592	64,761
Superstructure ...	4,75,547	.....	1,30,503	4,06,100
Ironwork ...	4,65,850	.....	2,38,150	2,13,540
Protective walls ...	.....	.....	11,054	13,745
Flank wall at end ...	.....	.....	.....	6,951
Waste weir channels ...	3,17,369	.....	1,93,012	.....
<i>General</i> ...	25,375	.....	17,492	20,257
Total ...	35,66,451	.....	15,40,627	9,20,002
Contingencies ...	1,78,323	.....	77,031	46,000
Total ...	37,44,774	.....	16,17,658	9,66,002
Subsidiary weir ...	.....	.....	.....	1,24,912
Grand total ...	37,44,774	27,08,536	16,17,658	10,90,914

*Statement showing for what length of time the net river discharge at
Gokak weir exceeded 900 cusecs.*

Days on which the discharge exceeded 900 cusecs.

Year.	From		To		No. of days.	Remarks.
	Month.	Date.	Month.	Date.		
1893	June	8	1	
	Do.	16	September	15	92	
	September	18	October	22	35	
	October	25	Do.	29	5	
	November	1	November	4	4	
	Do.	15	Do.	20	6	
	about 5 months.						143
1894	May	25	1	These are casual freshets before the monsoon and are not counted.
	Do.	27	.....	...	1
	June	5	June	6	2	
	June	14	August	28	76	
	August	30	September	25	27	
	October	8	.....	...	1
	Do.	11	October	18	8	
	November	4	.....	...	1
	Do.	6	.....	...	1
	4 months.						114

Days on which the discharge exceeded 900 cusecs.

Year.	From		To		No. of days.	Remarks.
	Month.	Date.	Month.	Date.		
1895	June	4	.....	...	...	Freshets.
	June	18	September	19	94	
	September	27	October	10	14	
	October	19	Do.	31	13	
	November	2	November	9	8	
		4 months.			129	
1896	May	26	.....	...	...
	June	6	June	7	...	
	June	18	September	19	94	
	September	28	Do.	30	3	
		3 months.			97	
1897	May	26	May	28	...	Freshets.
	June	6	.....	...	...
	June	13	June	15	3	
	Do.	17	Do.	19	3	
	Do.	21	July	3	13	
	July	7	October	10	105	
		4 months.			124	
1898	April	25	.....	...	...
	June	9	June	11	3	
	Do.	13	Do.	26	14	
	Do.	30	August	28	60	
	August	30	October	17	49	
	October	27	Do.	29	3	
	November	9	November	11	3	
	Do.	13	Do.	14	2	
		4½ months.			134	
1899	June	14	August	1	49	
	August	7	September	30	55	
	October	24	October	26	3	
		3½ months.			107	
1900	June	18	September	16	91	
	September	19	Do.	30	12	
	October	3	October	5	3	
	Do.	8	.....	...	1	
	Do.	15	October	16	2	
		3½ months.			109	

Days on which the discharge exceeded 900 cusecs.

Year.	From		To		No. of days.	Remarks.
	Month.	Date.	Month.	Date.		
1901	April	29	April	30	...	
	May	3	.....	...	...
	Do.	16	May	...	19	
	June	13	September	9	89	
	September	12	Do.	13	2	
	Do.	17	Do.	29	13	
	October	5	October	13	9	
	Do.	18	Do.	19	2	
	Do.	23	Do.	26	4	
					119	
		4 months.				
1902	June	13	June	20	8	
	Do.	30	.....	...	1	
	July	5	August	14	41	
	August	19	September	23	41	
	October	5	October	24	20	
	Do.	26	Do.	29	4	
	November	1	November	2	2	
	Do.	4	Do.	8	5	
	December	7	December	16	10	
	Do.	18	Do.	22	5	
					137	
		4½ months.				
1903	June	13	June	18	6	
	Do.	24	September	30	99	
	October	6	October	9	4	
	Do.	13	.....	...	1	
	Do.	18	October	22	5	
	Do.	24	.....	...	1	
	November	3	.....	...	1	
					117	
		4 months.				
1904	June	11	September	24	106	
	September	28	October	1	4	
	October	9	Do.	12	4	
	Do.	22	Do.	24	3	
	Do.	26	.....	...	1	
					118	
		4 months.				

N.B.—When one or two reservoirs are constructed in the Ghats the supply will be restricted to some extent. The worst year is the only one that need be considered. The catchment areas are:—

Rajgoli	...	...	...	206	sq. miles.
Hadlag	...	...	...	133.5	"
Gokák	...	...	...	1,080	"

Therefore if Hadlag be constructed $\frac{1}{3}$ of the drainage area will be cut off ; if both Rajgoli and Hadlag be constructed $\frac{1}{3}$ of the area will cease to count.

The discharge required for the canal and mills is $1,087 + 136 = 1,223$ cusecs. We require to know for how many days the discharge will, in the worst year, exceed:—

$$\frac{8}{7} \times 1,223 = 1,400 \text{ cusecs.}$$

$$\text{or } \frac{3}{2} \times 1,223 = 1,835 \text{ cusecs.}$$

The details for 1896 however show that there is no great difference between the periods of flow of 900 cusecs and 1,500 cusecs. In ordinary years while the new tanks are filling the early floods at Gokák may be assumed at $\frac{4}{5}$ or $\frac{2}{3}$ of their usual size, but after weir discharge begins the latter flood volumes will be the same but distributed over a greater number of days due to the moderating influence of the tanks.

Worst year 1896.

	Cusecs.		Cusecs.		Cusecs.
May ...	26 1,259	September ...	16 1,516	October ...	1 869
June ...	6 3,858		17 1,128		2 849
	7 3,186		18 1,501		3 644
	18 6,341		19 1,513		4 140
	19 16,132		20 150		5 163
	20 19,014		21 176		6 166
	etc.		22 176		7 166
July ...	Excess.		23 176		8 164
August ...	Excess.		24 174		9 164
			25 174		10 524
			26 174		etc.
			27 440		
			28 926		
			29 926		
			30 903		

13. The whole of the projects under investigation have been briefly indicated and it is now convenient to describe their chief characteristics for they may be at once divided into classes.

The first class are projects with ample storage and possibilities of extra storage and a large monsoon supply in the river in addition.

I. The Godaveri and the Gokák and Pravara river projects come under this class.

The second class are projects where the water is sufficient but where the whole or almost the whole is stored and there is little or no extra monsoon supply in the river and no extra storage can be obtained hereafter.

II. The Karva, Ghod, Mina and Bhima come under this class.

The next class is where all the water is stored and is not sufficient for the area commanded.

III. The Kukari and Mula come under this class.

The Nira Project, owing to the very large area commanded, is really a class by itself, but may be placed either in class I or II.

IV. The Krishna canals with storage much in excess of ordinary requirements are a fourth class by themselves.

14. The manner in which water should be used requires special study for each project, and it is obvious at once that different methods should be followed for projects of class I where water is abundant and class III where it is insufficient, and it will be convenient now to explain the different ways in which the water can be used.

For cultivation in the Deccan the year is conveniently divided into three seasons of four months each—

- four months for kharif or monsoon crops,
- four months for cold weather or rabi crops,
- four months for hot weather crops,

whilst perennial crops occupy the whole 12 months and 8 months crops the first two seasons.

Now with a high duty for perennial crops and a low one for the 4 months monsoon and 4 months rabi the same volume of water can irrigate two acres of monsoon or kharif crops or one acre of perennial and similarly can irrigate two acres of rabi or one acre of perennial.

For corn crops like bajri or the bulrush millet during the monsoon season over 120 acres can be irrigated for one cubic foot per second and for corn crops like jowári or great millet over 120 acres can be irrigated per cusec.

In the Deccan even in famine years there is always some rain and these duties are obtained without difficulty. It will be at once apparent that this is possible from consideration of the careful experiments by Mr. Kennedy in the

Punjab and by others which show that 7 inches of water is sufficient to raise a crop of wheat and that ordinary irrigation took 12 inches only, so that if only 5" of rain fell in the season for wheat the canal water would have material help from the rainfall and even in famine years 5" falls. The duties for monsoon and rabi crops in the Deccan are, therefore, higher than in a rainless place like Sind. 120 acres per cusec may therefore be taken for monsoon crops, a little more might be taken for rabi, but it will be convenient to take 120 also for rabi. For perennial irrigation a duty of 60 acres can only be obtained by the most careful arrangements where crops are in large masses.

For a broad consideration of the use of water these duties are convenient. Hence as one cubic foot of water may be considered able to irrigate 2 acres of corn crops or one acre of perennial, it follows that for every acre of perennial irrigated, water must be given to it, sufficient for 2 acres of ordinary crops during the monsoon, 2 acres of ordinary crops during the rabi, and during the remaining hot weather season water must be delivered to the perennial in quantity sufficient to irrigate 2 acres of ordinary crop during a rabi or monsoon 4 months and in addition all the loss incurred in running water down the canal, &c., must be provided for, and this, it has been proved repeatedly, notably by Mr. Kennedy, is in the hot weather at least equal to the amount of water which reaches the crops and so this loss would be sufficient to irrigate at least 2 acres of monsoon or rabi crops. One item of loss is the evaporation on the surface of the tank, during the hot weather; this is from $\frac{1}{4}$ to $\frac{1}{2}$ inch a day or from $2\frac{1}{2}$ to 5 inches every ten days, so that from each acre of water surface in the tank more water is lost than is required for an acre of sugarcane irrigation and when the tank surface is wide the loss becomes a very large proportion of the water consumed. Hence for every acre of perennial crops irrigated at least 8 acres of ordinary dry-crops must be sacrificed.

When comparing various projects it is therefore misleading to compare the area which it is proposed to irrigate on one project with the area on another unless they have the same proportion of irrigation in each season and when making a general comparison of all the projects it will be convenient to reduce the irrigation to a common standard of 4 months irrigation, perennial crops being reckoned as equal to eight times a four months crop and eight months crops equal to two four months.

15. When water is sufficient the best and most paying system of cultivation is to divide the area cultivated each year into four equal parts—

Monsoon,
Rabi,
Eight months, and
Perennial;

by this arrangement during the season of eight months, half the canal is devoted to perennial and the other half to ordinary crops, monsoon and eight months during the monsoon season, rabi and eight months during the rabi season. In the hot weather the canal would run half supply and irrigate perennial only.

This method would be adopted for works of classes I and II, paragraph 13 above, with this difference that in class I where monsoon water is abundant monsoon crops would be encouraged and in class II where almost all the water has to be stored monsoon irrigation would not be encouraged as it does not pay such a high rate as other seasons.

16. For projects with a large command but short supply, as the works are intended for protection it becomes necessary to consider whether it is justifiable to allow water to be concentrated in perennial irrigation and whether 8 acres of corn crops are not a more desirable object to aim at procuring than one acre of perennial, for corn crops are the normal crops of the famine districts and it is possible to ensure the supply of water for the corn crops whilst it is not possible to ensure that perennial crops will be at once grown as they take time and capital to develop. Therefore if a canal is constructed and laid out for perennial irrigation when a famine comes it will not be able to give the aid and assistance it could if constructed to irrigate a wider area of corn crops only.

If perennial irrigation is allowed water must be given to the costly crops; it is impossible to take it away and issue it to corn crops and perennial irrigation should be concentrated at the head of the canal to avoid loss by leakage, &c., in the hot weather and the canal cannot give the whole of its discharge to the famine crops but only the portion not occupied by perennial.

17. In addition to the direct extra security against famine which is obtained by working a protective canal for 8 months only, there are several other important advantages, one of which is the use and encouragement of well irrigation to which all Governments attach great importance and it will be convenient to discuss two projects, the Kukari and the Nira, to explain the advantages that would be obtained in their case by irrigating for 8 months only.

The storage tank to supply the Kukari Canal is at Pimpalwandi where a tank to store 26,000 millions can be obtained with a dam only 114 feet high, but it seems that in average seasons not more than 24,000 millions can be expected to be available for issue. At the duties taken in paragraph 14 above this would be sufficient for approximately

22,000 acres, perennial
22,000 acres, 8 months
22,000 acres, monsoon
22,000 acres, rabi

88,000

or a total of 88,000 acres, but as the tank would have an unusually wide spread of water and the losses in distributing water to the perennial crops would be large the perennial area would probably be considerably less ; however for the purpose of this comparison it is sufficiently correct to take 88,000 acres as the area that could be irrigated on the perennial system.

If, however, all the water be issued during 8 months for monsoon crops in the monsoon season and rabi in the cold weather then 264,000 acres could be irrigated.

In the first case the canal would be laid out for 4 times the area irrigable or for 352,000 acres and in the second for about twice the area or 528,000 acres.

When water is issued for perennial crops the lands which take it first are those where wells exist and the result of perennial irrigation is to cause the disuse of the wells ; this is very noticeable on the Nira Canal and Mutha Canals, but if a canal be worked for 8 months only then all the wells are used during the hot season and having had rest for 8 months of the year are able to give a larger supply than if constantly worked.

Wells below small tanks are a familiar instance of this.

With the 8 months canal not only will the area irrigated by the canals be much larger than in a perennial canal but also the area irrigated by the existing wells will be increased.

Further as all the water is to be used up in 8 months the tank-bed will be run dry entirely for 4 months and a very large proportion for over 6 months and although this will be the rainless season of the year, it will be possible to grow some kind of crops on the lands as they are exposed for they are thoroughly saturated with water and wherever there are wells in the tank-bed they will have an abundant supply and hot-weather crops can be raised.

This system of irrigation as the water falls is common along big rivers in India, is practised on the border of the tanks above the Vir weir of the Nira Canal and the Gokák weir of the Gokák Canal and though the comparison is not fully applicable to a tank where 100 feet depth of water is drawn off, still it is certain that considerable cultivation will be possible and that wherever there are wells it will be valuable and that it will probably pay to sink wells in the saturated soil. An example familiar to the Bombay Government is the valuable cultivation of vegetables in the bed of the lake at Mahábaleshvar as the water falls.

The Kukari Canal, if worked for 8 months only, would be able to ensure the production of crops on 264,000 acres, would extend the irrigation under the present wells in the areas served by the canal and instead of throwing out of cultivation the land submerged by the tank would actually benefit and probably increase the cultivation on that area.

If worked as a perennial canal, 88,000 acres only would be irrigated, the wells under the canal would be abandoned and the area submerged by the tank would be almost entirely thrown out of cultivation as a large area of water would have to be saved up for hot-weather irrigation.

18. The Nira Right Bank Canal is a special case and has to be considered most carefully. It is a very long canal but commands 1,200,000 acres in Sholápur and Bijápur which the Government of India desire so particularly to irrigate.

The great length almost at once prohibits the working of this canal as a perennial canal, the length is 400 miles and the discharge at the head will probably be a little over 3,000 cusecs and the loss along the canal by irrigation throughout the hot weather months would probably be 900 cubic feet a second, and it is impossible to acquiesce in such an enormous loss in the worst Famine area in Bombay for it would be sufficient to irrigate another 108,000 acres of corn crops; so that for this reason only it would be desirable to work the canal as an 8 months canal.

The most important reason however is that for a perennial canal four reservoirs will be required, of which the three largest must be in the Native State of Bhor and the smallest mainly in British territory, and by working the canal as an 8 months canal not only can the lands to be drowned by the largest reservoir be made available for cultivation in the manner explained for the Kukari Canal in the preceding paragraph, but also two of the reservoirs can be entirely dispensed with and yet all the water used in famine years.

This is rendered possible by the construction of the remaining reservoir at the head works of the canal, where it can act as a Regulating tank storing and issuing the monsoon water to a large canal, so that the waters are issued for irrigation in the monsoon months instead of being stored up for the hot weather as there is seldom any rain in the monsoon in the area to be irrigated and as failures of crops are notoriously frequent, the advantages of this method of using the water and saving two costly reservoirs in a Native State are very great.

In a general report like this, details cannot be conveniently given and further explanation must be reserved for the report to accompany the Project.

19. From this report it will have been gathered that for each project the amount and nature of the irrigation must be separately investigated and made to suit the supply of water, and also that the cost of the works varies greatly, a canal in easy country like the Godávári being much cheaper than a canal in difficult country like the Ghod, and the cost of storage tanks being affected by the varying expense due to foundations, value of land, villages and roads and railways submerged and to whether the site is in Native or British territory.

It is therefore impossible to make a general comparison that will be strictly accurate in this report, but a very large amount of surveying and estimating has been done and the information gained from the projects estimated in detail is some guide to the probable cost of canals not yet estimated.

A table of this information gained from the works constructed and estimated is here given.

COMPARATIVE COST OF WORKS.
Cost (Direct and Indirect) per acre of Gross Command.

Name of Work.	Gross command.	Total charges, Direct and Indirect.	Cost per acre.
	Acres.	Rs.	Rs.
<i>Constructed Works.</i>			
Nira L. B. Canal	274,447	61,04,435	22
<i>Projects.</i>			
Gokák	493,089	1,90,75,26)	39
Godávári	239,698	88,24,100	37
Ghod—			
R. B. Canal	121,675	83,03,627	68
L. B. Canal	43,904	(94,30,000)	(58)
	(165,579)		

H. F. BEALE,
Superintending Engineer on Special Duty,

Comparison of Dams including waste weirs.

Name.	Depth of water above river-bed.	Total cost of works and land compensation.	Volumes of water stored above outlet, million cubic feet.	Cost per million cubic feet.	Remarks.
<i>Constructed Works.</i>					
Lake Whiting ...	95	20,94,278	5,313	394	
Lake Fife ...	(?) 86	26,38,198	3,833	688	
<i>Projects.</i>					
Hadlag ...	70	23,06,866	8,567	384	
Rajgoli ...	61	45,38,418	9,678	469	
Darna ...	82	27,19,705	8,818	308	
Nirgudsar ...	100	39,46,161	10,236	386	

H. F. BEALE,

Superintending Engineer on Special Duty.

Statement showing estimated Cost of Main Canals (Works only) and rates per unit length, area and discharge.

No.	Name of the Project.	Cost of works.	Gross command.	Length.	Discharge at head, cusecs.	Cost per mile, whole canal.	Cost per acra.	Cost per cusec.
1	2	3	4	5	6	7	8	9
		Rs.	Acres.	Miles.		Rs.	Rs.	Rs.
1	Gokak Main Canal ...	33,75,313	220,763	88½	1,057	43,789	17-55	3,565
2	Do. Branches ...	14,19,690	272,326	84	...	16,901	5-2	...
3	Godavari Right Bank Canal ...	15,82,964	151,974	72	386	21,986	10-4	4,101
4	Godavari Left Bank Canal.	7,93,619	66,790	48½	222	16,363	9-14	3,575
5	Ghod Right Bank Canal ...	23,03,357	121,675	59	352	39,040	18-93	6,543

H. F. BEALE,

Superintending Engineer on Special Duty.

20. In order to compare the areas that can be irrigated by the proposed works, it is convenient to reduce these areas to the standard of 4 months irrigation in the manner explained in paragraph 14 above, for although this does not represent accurately the areas each of the works will probably be designed and laid out to irrigate, it correctly represents what can be done with the water and seems to be the fairest way of comparing the various works.

Using this standard each 1,000 million cubic feet of water is able to irrigate 11½ acres of cereal crops for four months, but as a measure of safety and convenience 10 acres per million have been taken.

The table in paragraph 23 below of this report has been prepared in this manner and if studied will give a fair idea of the various works.

A similar table could be prepared with the areas it is possible to irrigate reduced to the standard of equal perennial, 8 months monsoon and rabi, explained in paragraph 15 above as desirable for perennial irrigation and 1,000 million cubic feet would then irrigate 3½ acrés. The figures would be ½ of these in column 8 of the table submitted, but would not be correct because in some cases, such as the Nira, the monsoon water is plentiful and though available for monsoon crop is not for rabi and perennial, it is therefore thought better to submit the one table only which represents the area it is really possible to protect.

21. So far this report has been limited to the engineering aspect of the projects and it now becomes necessary to indicate as far as possible what will be the financial results of the works, but financial results are dependent on the rates levied, the way in which they are levied, on the policy of Government, and on whether the projects are to be designed and worked as perennial canals as short as possible. There is, however, one method of examination which at once eliminates most elements of uncertainty and enables an accurate forecast to be made of the final values of these proposed works. If these projects are worked as famine protective works and the water used to ensure that there shall always be cereal crops on the number of acres that can be effectually protected by each work then this number of acres will have good crops every year and should be able to pay a uniform rate every year. It would not be advisable to introduce such a rate immediately but after twenty years' working of the canals when the power of the canals to protect the crops has been demonstrated and is known the rate justifiable might be levied just as it now is on all the old established irrigation in the Bombay Presidency.

Viewed in this way the table prepared as above described and given below in paragraph 23 shows at once what the gross revenue would be from the works if a rate be settled per acre.

The present rates on the Gokák Canal for monsoon 4 months crops are Rs. 2, and for rabi 4 months crops Rs. 5, so that the mean would be Rs. $3\frac{1}{2}$. On this canal the water is assured and certain and there is no perennial to take away the water whilst the cultivators see their rabi crops withering and the distribution is excellent. On the Mutha Canals, Mátoba Tank and Nira Canals, the rates are 2 and 3, so that the mean would be $2\frac{1}{2}$ but these canals are devoted to perennial irrigation; monsoon irrigation is discouraged, the canal water being used to fill tail tanks to grow a few perennial and hot-weather crops and also no facilities for distribution are provided on the Mutha and Nira and though cultivators, when their rabi crops are withering, are willing to combine and to go to great expense in digging channels to lead water to the fields they cannot always get the water because most is reserved for perennial.

On the Ekrúk Tank which has a fairly good supply, the rates are 2 and 4 and mean 3. On Ashti which sometimes fails as this year, the rates are 1-8 and 3-8 or mean $2\frac{1}{2}$. On Mhaswad the mean is $2\frac{1}{2}$.

The mean rate for an assured supply from Ghát rivers for the proposed protective works may therefore be taken at Rs. 3.

An independent manner of checking this rate on which considerable reliance may be placed is to compare it with the rates actually levied on old established irrigation on the system of equal proportion of perennial, 8 months, monsoon and rabi irrigation.

It has been shown in paragraph 14 above that

1 of perennial	=	8 of 4 months
1 of 8 months	=	2 of 4 months
1 of monsoon	=	1 of 4 months
1 of rabi	=	1 of 4 months

Four acres on the perennial system = 12 acres of 4 months crops only, so that if the above rate of Rs. 3 taken as an average for 4 months crops is correct then the rate per acre of the perennial system explained should be rupees nine.

A statement is attached showing the areas, water-rates of 53 bandhára system in the Násik and Khándesh Districts and the water-rates for the total of 10,049 acres average 10·2 rupees.

It will be noticed that many of these bandháras have a higher water-rate than rupees nine.

Rupees 3 therefore seems to be a fair and just rate to levy for the protection that can be afforded, provided the protective water is given and not devoted to perennial irrigation.

Statement showing Areas and Assessment in respect of the Bandhárás in the Khándesh Irrigation District, each paying an Irrigation Assessment of Rs. 9 and above per acre cultivated.

Number on the printed list.	Name of Bandhára.	Area irrigated.	Assessment.	Division of Assessment.			
				Government Revenue.		Inámdár's Revenue.	
				Irrigation share.	Land share.	Irrigation share.	Land share.
	<i>Khándesh Collectorate.</i>	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
8	Kirwada ...	114	1,145	1,019	117	8	1
9	Dahiwal ...	5	57	50	7	...	...
18	Shewali ...	10	97	88	9	...	...
25	Pankheda, Lower ...	122	1,207	1,058	130	17	2
27	Pimpalner Borban ...	188	1,972	1,604	237	72	9
28	Do. Pánthal ...	191	2,294	1,930	311	47	6
30	Samoda ...	387	4,910	4,289	577	38	6
36	Shenpur ...	194	2,652	2,318	292	38	4
37	Dhadna ...	338	4,638	4,051	509	69	9
38	Malpur ...	229	3,221	2,768	335	61	7
39	Saina ...	24	284	259	25	...	...
39A	Kasara ...	320	4,481	3,860	541	71	9
40	Nagzari ...	8	97	86	11	...	...
40	Nagpur ...	45	492	434	42	15	1
40	Kokle ...	158	2,058	1,778	243	34	3
43	Bhadana Raiwat ...	338	3,812	3,065	438	217	42
45	Mahal Mana ...	181	1,781	1,343	233	175	20
	<i>Násik Collectorate.</i>						
1	Kanasi ...	191	2,175	1,969	206	...	...
4	Gosrana Upper ...	19	253	234	24	...	...
8	Pale Khurd ...	21	255	228	27	...	...
13	Jirwada ...	96	1,002	891	111	...	...
14	Kalvan Khurd ...	54	563	506	57	...	...
14	Do. Budruk ...	171	1,737	1,537	200	...	...
17	Bez ...	523	7,197	6,535	662	...	...
18	Desrana ...	25	295	275	20	...	...
22	Sawki ...	58	690	606	84	...	...
34	Munjewad ...	169	1,760	1,599	161	...	...
36	Satána ...	642	6,822	5,941	881	...	...
37	Arai Inámdár's ...	373	4,077	3,494	533	...	...
46	Maharpatna ...	36	392	349	43	...	...
46	Patna ...	641	9,032	7,914	1,118	...	...
47	Dabhadi ...	397	5,322	4,653	669	...	...
48	Chandanpuri ...	143	1,704	449	69	1,062	124
61	Antapur ...	296	3,444	3,138	306	...	...
62	Domwada ...	14	181	165	16	...	...
63	Kutgar ...	316	3,827	3,427	400	...	...
64	Taharabad ...	43	568	510	58	...	...
65	Sompur ...	231	2,980	2,658	322	...	...
67	Tándulwádi ...	47	528	481	47	...	...
68	Jaikheda ...	308	3,379	2,965	414	...	...
70	Waghala ...	191	2,030	1,795	235	...	...
71	Bhavardar ...	19	198	183	15	...	...
72	Nampur ...	458	5,474	4,843	631	...	...
75	Morana ...	458	4,805	4,193	612	...	...
76	Ambason ...	115	1,447	1,286	161	...	...
77	Chatana ...	24	242	37	3	197	5
77	Walwada ...	164	1,763	1,559	204	...	...
78	Wadner ...	256	2,976	2,601	375	...	...
	Total ...	9,351	1,12,321	97,021	12,921	2,121	258

Statement showing Areas and Assessment in respect of the Bandhárás in the Násik and Ahmednagar Irrigation District, each paying an Irrigation Assessment of nearly Rs. 9 and above per acre cultivated.

Number in Canal Return No. VIII for 1904-05.	Name of Bandhára.	Area cultivated during the year.	Net Assessment of the year.	Division of Assessment.	
				Irrigation share.	Land share.
	NA'SIK COLLECTORATE.	Acres.	Rs.	Rs.	Rs.
	<i>Táluka Dindori.</i>				
16	Bandhára at Lakhamápur ...	49	482	426	56
25	Do. at Tisgaon and at Khedgaon ...	205	1,974	1,674	300
	<i>Táluka Niphád.</i>				
4	Bandhára Mathacha (Varel at Ozar Tám-bat.)	151	1,558	1,249	309
6	Do. at Wadali ...	81	939	798	141
9	Do. at Raktapir at Basvant ...	212	1,824	1,785	39
	Total ...	698	6,777	5,932	845

22. The working expenses will now be considered. The small works in the Bombay Presidency can give no reliable guide regarding the working expenses, the charges for establishment being so variable and generally excessive.

A large work can be worked cheaper than a small one and a number of large ones cheaper than one large work.

The largest work in the Deccan is the Nira Canal, with a gross command of 274,447 acres and working expenses of Rs. 61,755 averaging for the last 5 years.

This gives an average of .22 per acre of gross command.

The average rate per acre irrigated was however 2.0 as perennial irrigation is encouraged.

In Sind where there are large canals and much irrigation, the cost of maintenance is Re. 0.60 per acre. In Sind silt clearance of canals is a heavy item not met in the Deccan and, on the other hand, the Deccan is subject to heavy storms of rain not common in Sind, but it seems probable that for large canals in the Deccan worked as 8 months canals, the maintenance would not cost more than it does in Sind on the area finally protected.

0.50 per acre of 4 months irrigation is equivalent to Rs. 1.50 per acre on the perennial system and to Rs. 4 per acre of sugarcane; this would give for the Godávári Canals a total of Rs. 61,000 for working expenses and as the gross command of this canal is 240,000 acres, the rate per acre of gross command is 0.25 per acre. A rate of 0.50 per acre of final 4 months irrigation would therefore probably be sufficient, but in order to be on the safe side it is proposed to take 12 annas or Re. 0.75 an acre which is equivalent to Rs. 2.25 per acre on the perennial system and this is less than the actual cost on the Nira Canals.

The table in paragraph 23 has been completed accordingly and it is believed that it gives a fair general idea of the financial return that may finally be expected from these works.

23. Some allowance must now be made for losses of revenue, it is impossible to forecast accurately, but which it is known from experience will occur, such as loss by locusts, blight, and apparently about once every 20 years a partial failure of the Ghát rain which would reduce the supply available to half the average. This allowance can best be made by a reduction of 10 per cent. on the estimated return of capital expenditure and in this manner the figures in the column No. 15 of the table are obtained.

No.	Name of work.	Area commanded.			Storage in tanks above outlets.	Water available in millions cubic feet deducting losses.	Possible irrigation of 4 months crops only at 10 acres per million.	Cost per acre of 4 months crops irrigated.	Estimated cost of works, total Direct and Indirect Charges.	Gross Revenue at Rs. 8 per acre.	Working expenses at annas 12 per acre.	Net Revenue.	Percentage of net Revenue on Capital.	Return expected on Capital.	Remarks.	
		Gross.	Culturable at 80 per cent. of gross.	One-third culturable.												
					Million C. ft.			Lakhs.	Rs.	Rs.	Rs.					
	Godavari	240,000	192,000	64,000	8,818	{ Tank 7,200 } { River 6,600 }	138,000	64	88½	4,14,000	1,03,500	3,10,500	3.50	3.15		
	Darna Right Bank Canal	93,800	75,040	25,013	5,200	4,800	48,000	83	40	1,44,000	36,000	1,08,000	2.70	2.43		
	Pravara	205,000	164,000	54,667	8,600	{ T. 8,000 } { R. 5,300 }	123,000	50	67	3,99,000	99,750	2,99,250	4.46	4.02		
	Mula	350,000	280,000	93,333	15,000	13,000	130,000	104	135	3,90,000	97,500	2,92,500	2.16	1.94	For the Mula and Kukári a better return of Capital can be obtained by reducing the length of canal and area commanded to suit the supply of water available.	
	Over															
	Kukári	750,000	600,000	200,000	26,000	22,000	220,000	135	297	6,60,000	1,65,000	4,95,000	1.66	1.49		
	Mina	79,000	63,200	21,067	4,864	4,400	44,000	168	74	1,32,000	33,000	99,000	1.34	1.20		
	Ghod	165,000	132,000	44,000	10,236	9,200	92,000	102	94	2,76,000	69,000	2,07,000	2.20	1.98		
	Nira Right Bank ...	1,200,000	960,000	320,000	34,500	{ T. 31,000 } { R. 23,000 }	550,000	88	485	16,15,000	4,12,500	12,02,500	2.55	2.29		
	* Gokák Canal with one tank only ...	493,000	394,400	131,467	14,800	{ T. 12,000 } { R. 10,500 }	225,000	67	150	6,75,000	1,68,750	5,06,250	3.36	3.02	* Figure for Gokák Canal with one tank omitted from total.	
	Alternative Gokák with two tanks ...	493,000	394,400	131,467	23,000	{ T. 18,200 } { R. 10,500 }	287,000	64	185	8,61,000	2,15,250	6,45,750	3.49	3.14		
	Total ...	3,575,800	2,860,640	953,547	...	.....	1,642,000	...	1,465½	49,26,000	12,31,500	36,94,500	...	...

24. An endeavour will now be made to forecast what the results of the works would be, if instead of the uniform rate of rupees three per acre of area actually protected and having crops, the cultivators were allowed to pay nothing when they had bumper crops due to rain and to pay water-rates only during years of famine when they apply for remissions because it is a famine year and their neighbours without crops are getting remissions.

On this system the Irrigation Department would not be satisfied with Rs. 3 uniform rate, for the canals have to bear the cost of providing the water, whether it is taken or not, and the cultivator is able to sow and cultivate his field with the confidence that he can get water if he wants it eventually to protect his crop and rates of Rs. 2 for monsoon irrigation and Rs. 5 for rabi for which water has to be stored longer and more losses incurred would be demanded.

The projects could not then afford to empty their reservoirs by the end of the rabi season and if water were not required for monsoon and rabi would store it up and issue it in the hot weather. There would then be great danger of the larger canals commencing perennial irrigation in their upper reaches and so blocking the passage of water to the lower parts of the canal when a time of famine comes. This, however, might be prevented by strict orders not to grow perennial on the large canals, but to keep them clear and ready for rabi crop; the surplus water would then be used for hot weather only.

Under these conditions the monsoon irrigation in the Famine District would be fairly constant because early rains as a rule fail there; probably one year in five is about the average of good monsoon rain. The area, however, would probably not be as large as with the uniform system, but might be taken as two-thirds.

It will be convenient to consider a definite unit of irrigation and to take 120,000 acres of land irrigated or protected on the system of uniform rate and to compare it with the probable area irrigated otherwise. Instead of half of the 120,000 or 60,000 acres being monsoon, probably 40,000 acres only would be irrigated in 4 years out of 5 and nothing in the 5th, or an average of 32,000 acres.

The rabi season is the one in which rains most frequently come to the famine area and about twice in every five years there would be times when the area of rabi irrigated would be limited only by the rate at which the water could be put on to the ground when it is wanted to save crops sown with early rains. About two waterings only would be required, but the Irrigation Department would demand full payment of the rabi season rate because the projects have been storing water for such an emergency.

The areas then irrigated of rabi would probably be at least 25 per cent. in excess of the area taken for the uniform rate and so would be 75,000 instead of 60,000. In one year out of 5 the rabi rains would probably fail and the area of rabi be normal or 60,000 and in the remaining two years water would not be taken.

The average for rabi would therefore be $\frac{75,000+75,000+60,000}{5}$, or an average of 42,000 acres.

In the remaining two years of the five the rabi water would have to be stored on to the hot weather and issued to such hot weather catch crops as might be irrigated. As there is uncertainty about this form of irrigation the hot weather rate must be lower than for assured perennial irrigation and probably Rs. 8 would be the rate levied, but as explained in para. 14 the area which could be irrigated would certainly be less than one-fourth of the possible rabi or less than $\frac{60,000}{4}$ and may be taken as 10,000 for two years.

The average for the 5 years would thus be 4,000 of hot weather crop and the general average result would be—

				Rs.
32,000 of monsoon at Rs. 2	...	...	...	64,000
42,000 of rabi at Rs. 5	...	...	...	2,10,000
4,000 of hot weather at Rs. 8	...	...	...	32,000
				3,06,000

instead of the steady return of $1,20,000 \times 3 = 3,60,000$ rupees to be obtained by the uniform rate and the revenue which can be had from cultivating the tank beds must also be sacrificed.

The gross returns would then be about one-sixth less.

25. *Grading or selecting the alignment of the canal.*—A brief explanation of the work that has been done in selecting the alignment for these canals is necessary. The Deccan is subject at times to very heavy rain in thunder-storm and is an undulating country with many streams and it is essential that the flood water from these streams be kept out of the canals, or they would quickly block up the canals with silt. The problem to be solved in selecting the alignment is not merely to obtain a line with the least cutting at ridges and least embankment at valleys, but the number and cost of the drainage works has also to be considered and these are a very large proportion of the cost of the canal.

It is generally practicable to save drainage works by putting the canal into deeper cutting and along a line where the water caught by the upper bank can be conveniently diverted to an adjacent drainage work and similarly, though as a rule it is desirable to avoid embankments, it is frequently more costly to follow the line which would give half cutting and half embankment than to construct a shorter line with more expensive embankments not only because the line is shorter, but because it saves additional masonry drainage works, for flood waters cannot be diverted along the upper banks of the canal if these are kept following the contour line; the rapidly accumulating flood waters head up and breach the banks of the canal unless they have suitable area and fall provided above the upper canal bank to convey them to the next drainage works.

At the larger streams the cost of foundations and means of securing a reliable masonry work that will not be damaged by floods is generally the most important and expensive item which determines the line of the canal crossing.

The shortening of the canal by cuts across ridges is another item to be carefully considered and costs calculated, but this is a comparatively simple matter and it is in the proper and suitable provision of drainage work that the greatest skill is required and as a general rule the line with most drainage works is the worst line.

Up to date in all the projects for which estimates are prepared very great trouble has been taken to select the best alignment; all parts of the lines have been personally examined by officers of the Executive Engineer Grade and at all difficult places they have personally made alternative surveys and estimates. These have been submitted to the Superintending Engineer on Special Duty who is preparing these projects and who has had special experience in constructing canals of this kind, notably on the Nira Left Bank Canal, and at any difficult place the Superintending Engineer himself has examined it personally and had additional surveys made when necessary. The Superintending Engineer has also repeatedly ridden along the whole alignment of these canals.

When therefore a project and estimate are sent up with a line selected in this manner it is certain that it is a sound practical line.

It is not pretended that it is impossible to improve on the line in such a country as the Deccan and in the long number of years which will be required to construct the larger canals and with additional experience that will be gained in these years improvements at places should be devised, but the lines selected are reliable lines on which a canal can be constructed and on which estimates can be framed.

Another minor item is that the Deccan murum is an excellent material for the outer parts of banks and is not affected by water and will not slip so that banks with the outer parts of murum are better than banks of soil only.

The problem to be solved in a Deccan canal is not what is the cheapest cross section, but what is the cheapest way of getting from beginning to the end of the canal and it is hoped that this note will show that much time and pains are being taken by experienced men to devise the cheapest line.

26. I am now to formulate a programme of operations and suggest that the first portion of the Gokak Canal should be immediately undertaken. It is the

only place in the Bombay Presidency where a reliable supply of 1,000 cusecs is available for four continuous months without any additional storage and the construction of 37 miles of this canal will give immediate protection to the area of 77,000 acres which is all British territory with the exception of a small patch of 5,000 acres. Of this 18,000 acres are under existing canal so that additional area protected would be 59,000 acres.

The cost of this first portion is about Rs. 21 lakhs for Works only, or Rs. 23½ lakhs for all charges and does not include a tunnel or any unusual difficulty.

The remainder of the scheme may be considered at leisure on its merits which are excellent, but there is no occasion to withhold from the British subjects under the first portion of the Gokák Canal the protection for which they are begging.

The work will, it is believed, be sanctioned finally as a perennial canal and the entire sum of 185 lakhs might be expended in 12 years at the rate of 15 lakhs a year.

27. The next works in order of merit seem to be the Godáveri Canal and the Pravara River Project. These are better than the Gokák as a whole; the land submerged and the territory through which the Canal passes are all British and there is little difficulty about the storage of either, but they are not so good as the first miles of the Gokák without storage as described in the preceding paragraph.

As the Pravara River Project has an existing weir and short left bank canal at Ojhar and as the earthwork of the right bank canal is completed the first work which should be done is to complete the masonry work and head regulator of the Right Bank Ojhar Canal, but both these projects are excellent and should be undertaken, for the water supply is ample and additional storage tanks can be made hereafter if required and the canals will be first class perennial canals.

The costs of these works are :—

The Godaveri	... 88½ lakhs.
Pravara	... 67 lakhs.

If undertaken simultaneously the expenditure would probably be at the rate of about 15 lakhs a year, or the works would be completed in ten years.

28. Of the works already recommended, the Godáveri and Pravara Projects are in the north and the Gokák in the south of the famine area of the Deccan, and as it is desirable to distribute the Protection provided a work in the centre is desirable. The Nira Right Bank Canal has the largest command with the best supply of water of any of the Protective Projects in Bombay; it also commands the famine area in Sholápur and Bijápur which the Government of India are so anxious to protect and as it is possible to utilise the whole of the water in the Nira it seems certain that the project will commend itself to the Government of India. It is clear and plain that this canal must use all the water in the river and it is urgently necessary that the canal be commenced at once from the head and constructed complete mile by mile as it progresses, for it is a very long canal which will take a number of years to complete. How long the canal should be, whether it should run for 8 months and be as long as possible and command as much as possible, or whether it should be a shorter canal with less command and a perennial supply and how much should be finally expended are matters for mature consideration, but need not delay the construction of the first part of the canal. The project, as explained in paragraphs 10 and 18 above, consists of a Regulating Tank at the Vir Weir or Head works of the canals, a large storage tank at Lake Whiting and a long canal 400 miles long. The Regulating Tank at Vir will hold 9,600 million cubic feet which is equal to 3,300 cusecs for one month and as the intervals in the monsoon 4 months season when the supply falls low are less than a month, this Regulating Tank alone will be able to keep the canal supplied during the monsoon season. The first 54 miles of the canal run through the Native State of Phaltan and commands 74,000 acres, but if the canal be extended to 100 miles a command of 344,000 acres is obtained and the additional command is in Sholápur. The monsoon

water supply is sufficient to irrigate monsoon or kharif crops over the whole and will be superabundant.

The cost of the Regulating Tank at Vir and the first 100 miles of the canal would be about Rs. 180 lakhs, but the figures cannot be accurately given until estimated in detail.

The expenditure would probably be about 15 lakhs a year and this portion of the work would require 12 years.

If the four works selected are all in progress at once about Rs. 45 lakhs would have to be spent yearly.

These four works have all good monsoon supplies in the river and can make use of much of it with comparatively small or no storage and it is this advantage which places these projects well above all the others in order of merit.

29. For the other projects, the Mina, Ghod and Bhima have good storage. The Dharna Right Bank storage at Karva requires further observations and further observations are advisable on the Mula, and for the Kukari the area commanded is so large and important and the tank such a large one that it is advisable to postpone work on the Kukari until data have been collected to indicate what is the largest tank that can be filled. The Kukari should therefore be classed as one of the most important works, but should not be constructed for another 15 years until observations have given the data wanted.

Should it be desired to construct any work to give protection in the Bhima basin probably the Ghod would be the best to select for protection, and the Mina as giving the best return on capital.

30. The works and immediate expenditure now recommended are thus—

	Lakhs.
The Gokák Canal, first 37 miles only	... 26½
The entire Godáveri Project	... 88
The entire Pravara Project	... 66
The first 100 miles of the Nira Right Bank Canal with Regulating Tank at Vir	... 180
Total	... 360½

and it is recommended that consideration be given to the completion of the

	Lakhs.
Gokák Canal as a perennial canal which would bring the cost up to	... 185
And the completion of the Nira Canal as an eight months canal which would bring the cost up to about	... 485
And would make the total of the four works, Rupees instead of Rupees	... 824
	... 330½

as above, and at an expenditure of Rs. 45 lakhs a year would require 19 years to complete.

It is probable that the cost of the Nira Canal is over-estimated in the above figures, but as the costs of canals vary so much in the Deccan and no estimates have previously been made for so large a canal, a high rate per acre of gross command, namely Rs. 40, has been taken. Estimates in detail are in progress.

A. HILL,
Officiating Chief Engineer, Irrigation.