
IRRIGATION REVENUE REPORT

OF THE

BOMBAY PRESIDENCY

(EXCLUDING SIND)

1916-17

[For official use only.]

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**IRRIGATION REVENUE REPORT,
BOMBAY PRESIDENCY, EXCLUDING SIND,
1916-1917.**

PART I.

**COMPRISING FIRST CLASS IRRIGATION WORKS FOR WHICH
CAPITAL AND REVENUE ACCOUNTS ARE KEPT.**

GENERAL REMARKS.

Works in operation.

The following list includes all the works in operation (43 in number):—

Collectorate.	Number.	Names of Works.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon season and 120 acres for the rabi season per cusec.	Whether Supply is reliable or dependent on local rain.	Storage Works completed or proposed.	Remarks.
		MAJOR WORKS.	Acres.			
		<i>Protective Works.</i>				
Ahmednagar ...	1	Pravara River Works —Pravara Right Bank Canal.	24,656 for complete d canal.	Dependent on local rain.	Storage work at Lake Arthur Hill in progress.	Ghat catchment.
Nasik ...	2	Girna Left Bank Canal.	Information not available.	Reliable	Chankapur Tank completed.	Do.
Nasik ...	3	Godavari Left Bank Canal.	21,133	Do.	Lake Beale completed.	Do.
Ahmednagar ...		Godavari Right Bank Canal.	35,600. These are projected figures subject to alteration.			
Poona ...	4	Nira Canal including Shetpal Tank.	100,000	Do.	Lake Whiting completed.	Do.
Sholapur ...	5	Mhaswad Tank	17,975	Dependent on local rain.	Completed	Deccan catchment.
		<i>Productive Works.</i>				
Ahmadabad ...	9	Hathmati Canal and Khari Cut.	24,000	Dependent on local rain.	No storage work: Bokh Reservoir and Chandola Tank Wasai Reservoir completed.	Forest and hilly catchment. Supply depends chiefly on the flow in the Hathmati and Khari Rivers, contents of the Bokh Reservoir and the Chandola Tank, and Wasai Reservoir.
West Khandesh ...	10	Lower Panjhra River Works.	8,173	Panjhra River supply not reliable.	Mukti Tank completed.	Ghat catchment for one part and Deccan catchment for the rest.
Nasik ...	11	Kadwa River Works. { Palkhed Canal. Ojhar Tambat Canal. Wadali Canal.	7,228	Reliable	Waghad Tank completed.	Ghat catchment.
			550			
			970			
Ahmednagar ...	12	Pravara River Works —Lakh Canal.	562	Reliable for monsoon and rabi.	Storage work at Lake Arthur Hill in progress.	Ghat catchment.
Poona ...	13	Mutha Canals including Matoba Tank.	43,000	Reliable	Lake Fife completed.	Do.
Sholapur ...	14	Ekrak Tank	13,070	Dependent on local rain.	Completed	Deccan catchment.
Satara ...	15	Krishna Canal	6,412	Reliable	Proposed	Ghat catchment.

Collectorate.	Number.	Names of Works.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon season and 130 acres for the rabi season per cusec.	Whether Supply is reliable or dependent on local rain.	Storage Works completed or proposed.	Remarks.
		MINOR WORKS AND NAVIGATION.	Acres.			
Kaira	16	Wangroli Tank	3,400	Dependent on local rain.	Completed	Ordinary catchment on plain ground.
	17	Tranza-Nagrama Tank.	600	Do.	Do.	Tranza Tank has no independent catchment. Nagrama Tank has a catchment of 150 sq. miles. Both are fed by the Matar Drainage channel which is not at all reliable.
	18	Savli Tank	3,000	Do.	Do.	Ordinary catchment on sloping ground.
	19	Saiat do.	2,000	Do.	Do.	Ordinary catchment on flat ground.
Fanch Mahals	20	Futaho Tank	800	Do.	Do.	Hilly catchment.
East Khandesh	21	Hartala do.	978	Do.	Do.	Deccan catchment.
	22	Mhaswa do.	3,256	Do.	Do.	Do.
	23	Jamda Canals	42,000	Girna River supply not reliable.	Storage Tanks on the Girna, the Manad and the Panjan Rivers under contemplation. Water is issued from the Chankapur Tank when available.	Ghat catchment for a small part and for the rest Deccan catchment.
Nasik	24	Parsul Tank	3,400	Dependent on local rain.	Completed	Deccan catchment.
Ahmednagar	25	Pravara River Works—Pravara Left Bank Canal.	6,852	Do.	Storage work at Lake Arthur Hill in progress.	Ghat catchment.
	26	Bhatodi Tank	1,461	Do.	Completed	Deccan catchment.
Poona	27	Kasurdi do.	150	Do.	Do.	Do.
	28	Shirsuphal do.	1,350	Do.	Do.	Do.
	29	Bhadalvadi do.	1,600	Do.	Do.	Do.
Sholapur	30	Koregaon do.	416	Do.	Do.	Hilly catchment.
	31	Ashti do.	3,352	Do.	Do.	Deccan catchment.
	32	Pathri do.	3,094	Do.	Do.	Hilly catchment.
	33	Rewari Canal	439	Do.	Nil	Deccan catchment.
Satara	34	Upper Man River Works.	973	Do.	Pingli Tank completed.	Do.
	35	Yerla River Irrigation Works.	1,182	Do.	Nehe do.	Do.
	36	Chikhli Canal	355	Do.	Nil	Do.
Bijapur	37	Maini Tank	455	Do.	Completed	Do. Supply from catchment is good.
	38	Muehkundi Tank	750	Do.	Do.	Deccan catchment.
Belgaum	39	Gadikeri do.	418	Do.	Do.	Supply reliable.
	40	Gokak Canal, 1st Section.	10,387	Reliable	Rabi Storage only.	Ghat catchment.
	41	Dambal Tank	531	Dependent on local rain.	Completed	Deccan catchment.
	42	Medleri do.	231	Do.	Do.	Do.
Dharwar	43	Asundi do.	303	Do.	Do.	Do.
	44	Madag do.	1,418	Do.	Do.	Ghat and forest catchment—reliable.
	45	Mavinkop do.	617	Do.	Do.	Forest catchment reliable.
	46	Dharma Canal	For monsoon season 6,560 acres. For Rabi nil.	Do.	No storage works, but canal takes off from the river itself.	Ghat catchment.

Nos. 6, 7, 8, 47 and 48—Maladevi, Budhihal, Nira Right Bank Canal, Victoria Tank, and the Suki River Project—are not included as the works were not in operation in the year under report. No. 49—Gokak Canal, 2nd Section—is in abeyance.

Interest Account.

2. The interest account to end of the year stands as follows:—

	Amount.				Amount.		
	Protective Works.	Productive Works.	Total.		Protective Works.	Productive Works.	Total.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Total Interest charges to end of 1915-16 ...	1,32,50,200	1,78,91,203	3,09,71,403	Not revenue realized to end of 1915-16 ...	47,66,992	81,41,573	1,29,08,554
Do. during 1916-17 ...	13,10,332	4,19,712	16,30,104	Do. during 1916-17 ...	4,44,895	4,07,166	8,52,051
					52,11,867	85,48,738	1,37,00,605
				Balance net Interest charges to end of 1916-17...	92,78,725	95,62,177	1,83,40,902
Total end of 1916-17 ...	1,44,90,592	1,81,10,915	3,26,01,507	Total ...	1,44,90,592	1,81,10,915	3,26,01,507

3. The gross revenue realized from all sources during the year, after deducting refunds of revenue (Rs. -9,115), was Rs. 16,46,539, of which Rs. 16,37,419 were direct and Rs. 9,120 indirect receipts. The net revenue actually realized was Rs. 9,17,191. The gross revenue shows an increase of Rs. 62,370 while the net revenue shows an increase of Rs. 57,690 as compared with the figures of 1915-16.

4. The gross area under command was 1,262,012 acres and the area irrigable at present is 448,804 acres.

5. The financial results of the year by main heads were as follows:—

	Area irrigated.	Revenue realized.			Working expenses.	Net Revenue.
		Direct Receipts.	Share of Land Revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Class I.—Works for which Capital and Revenue Accounts are kept.</i>						
Major Works. { Protective Works.	63,020	7,93,695	...	7,93,695	3,48,810	4,44,835
{ Productive Works.	27,208	6,71,574	4,064	6,75,638	2,68,472	4,07,166
Total ...	90,228	14,65,269	4,064	14,69,333	6,17,282	8,52,051
Minor Works ...	30,911	1,72,150	5,056	1,77,206	1,12,066	65,140
Total Class I ...	121,139	16,37,419	9,120	16,46,539	7,29,348	9,17,191

The area shown as irrigated includes 10,970 acres on which a consolidated land and water assessment has been and is proposed to be levied. This is derived from old works on which expenditure on improvements only has been incurred.

6. The figures showing areas irrigated, revenue assessed and realized, and working expenses, as compared with former years, are as follows:—

Areas irrigated.

Years.	Area irrigated.	Revenue.		Working expenses.
		Assessment.	Realization.	
	Acres.	Rs.	Rs.	Rs.
1906-07	108,787	9,47,167	8,58,820	3,67,062
1907-08	130,808	10,87,554	11,01,106	3,80,332
1908-09	142,928	10,99,014	10,67,329	3,89,423
1909-10	145,155	11,22,916	12,55,165	4,16,046
1910-11	123,356	10,95,369	12,51,247	4,38,524
1911-12	142,934	13,31,017	13,76,101	4,68,047
1912-13	197,365	15,83,168	14,13,527	5,09,099
1913-14	203,338	17,59,548	17,39,483	6,51,890
1914-15	159,730	16,05,516	16,98,838	7,50,066
1915-16	136,375	15,29,165	15,84,169	7,21,668
Average for ten years ...	149,077	13,16,043	13,34,578	5,09,516
1916-17	1,10,169	15,03,154	16,46,539	7,29,343

The decrease of 26,206 acres in the total area irrigated as compared with the previous year was distributed over the several classes of works as follows:—

	Acres.
Protective Works	—20,525
Productive Works	+1,196
Minor Works	—6,877
Total	<u>—26,206</u>

The variations in the areas irrigated may be remarked upon as follows:—

Deccan Irrigation Division.

The total area irrigated shows a decrease of 25,067 acres as compared with the previous year, and this was due to seasonable rainfall.

Central Division.

There was a decrease of 2,003 acres under "Productive Works" and 2,893 acres under "Minor Works," making a total decrease of 4,896 acres in the area irrigated during the year below that of last year. This decrease was due to less demand for canal water for rabi crops under all the works generally, in the Central Division owing to copious and timely rainfall. The kharif area under irrigation also showed a decrease as compared with that for the preceding year except on the Mhaswa and Ashti Tanks.

Southern Division.

The total area irrigated shows a decrease of 6,867 acres as compared with the average of the previous three years and of 2,447 acres as compared with the total area of 1915-16. This latter decrease is distributed as follows:—

	Acres.
Productive Works	— 25
Minor Works	— 2,422
Total	<u>— 2,447</u>

The total area irrigated according to seasons is as follows :—

				Kharif.	Rabi.	Total.
				Acres.	Acres.	Acres.
1916-17	...	...	...	7,924	6,834	14,758
1915-16	...	...	...	8,102	9,103	17,205
	Average of previous three years			9,952	11,673	21,625

There were decreases of 178 acres and 2,269 acres in the kharif and rabi seasons respectively.

There was a total increase of 387 acres in the kharif area irrigated by the Krishna and the Rewari canals, the Upper Man River Works and the Dambal, the Asundi and the Madag tanks, but this was more than counterbalanced by the total decrease of 565 acres in the case of the other works, especially the Yerla River Irrigation Works, the Maini tank and the Gokak canal. During the rabi season the total increase of 68 acres in the case of Medleri, the Asundi and the Madag tanks was insignificant as compared with the total decrease of 2,337 acres of rabi area in the case of the other works, especially the Yerla River Irrigation Works, where the decrease of 1,344 acres was remarkable. The net decreases in area during both the seasons were mainly due to seasonable rainfall, rendering the use of canal and tank water unnecessary.

Northern Division.

The rainfall during the year, though not much below normal, was not satisfactory, being local and not continuous. The Khari catchment besides did not get the benefit of much of this. It was not well distributed during the four monsoon months, June to September, though the monsoon broke as usual in the middle of June.

The total area irrigated by both the Hathmati and Khari Cut canals was 6,344 acres against 1,508 acres irrigated by them in the previous year. The total areas irrigated respectively by the Wangroli, Tranza-Nagrama, Savli, Saiat and Futelao tanks were 859, *nil*, 970, *nil* and 89 acres against *nil*, *nil*, 550, *nil* and *nil* acres irrigated by them in the previous year.

Collections of revenue.

7. The state of the collections was as follows :—

					Rs.
Balance of demands unrealized at the commencement of the year	...	...	...	...	49,823
					Rs.
Demands of the year—					
Rabi, 1915-16	...	...	...	3,18,032	
Kharif, 1916-17	...	...	...	9,96,281	
Miscellaneous receipts	...	...	...	3,40,801	
					16,55,114
				Total	17,04,937
Deduct—					
Remissions	...	...	...	...	2,000
				Net Total	17,02,937
Amount unrealized at the close of the year	...	...	...	...	74,633
Actual receipts for the year	...	...	...	...	16,28,304
Add—					
Share of Land Revenue	...	...	...	...	9,120
				Total	16,37,424
Deduct—					
Refunds of Revenue	...	...	...	...	—9,115
Revenue realized as per paragraphs 3, 5 and 6	...	...	...	...	16,46,539

The remissions and refunds together amount to Rs. -7,115. The amount unrealized at the close of the year, viz., Rs. 74,633, is considerably more than that at the close of the last year; the total is made up as follows:—

	Rs.
1. Mutha Canals, including Matoba Tank	17,509
2. Godavari Canal	16,813
3. Ekruk Tank	14,016
4. Krishna Canal	8,825
5. Dharma Canal	7,557
6. Hathmati and Khari Cut Canal	5,074
7. Madag Tank	1,616
8. Ashti Tank	1,483
9. Nira Canal, including Shetphal Tank	779
10. Wangroli Tank	773
11. Gokak Canal	519
12. Dambal Tank	265
13. Kadwa River Works	232
14. Other Works	-828
Total ...	74,633

The Superintending Engineers state that efforts are being made to recover the amounts outstanding.

8. The total working expenses for the year amounted to Rs. 7,29,348 against Rs. 7,24,668 in the previous year, showing an increase of Rs. 4,680 distributed as follows:—

	1915-16.	1916-17.	Difference.
	Rs.	Rs.	Rs.
Major Works—			
Protective Works	3,62,720	3,48,810	-13,910
Productive Works	2,50,732	2,68,472	+17,740
Total ...	6,13,452	6,17,282	+3,830
Minor Works and Navigation	1,11,216	1,12,066	+850
Grand Total ...	7,24,668	7,29,348	+4,680

The increases and decreases are explained by the Superintending Engineers as follows:—

Superintending Engineer, Deccan Irrigation Division.

The total working expenses for the year amounted to Rs. 5,60,792 against Rs. 5,49,273 in the previous year, showing an increase of Rs. 11,519 distributed as follows:—

	1915-16.	1916-17.	Difference.
	Rs.	Rs.	Rs.
Major Works—			
Protective Works	3,62,720	3,48,810	-13,910
Productive Works	1,72,055	1,94,327	+22,272
Total ...	5,34,775	5,43,137	+8,362
Minor Works and Navigation	14,498	17,655	+3,157
Grand Total ...	5,49,273	5,60,792	+11,519

The large increase is chiefly due to rise in the rates for chemicals used for clarifying raw water at Poona.

Superintending Engineer, Central Division.

The total working expenses amounted to Rs. 49,686 against Rs. 46,993 in the previous year, showing an increase of Rs. 2,693.

The net increase is made up of increases on certain works and decreases on others, the largest increase being on the Jamda canals, viz., Rs. 4,288, and this is mainly due to the expenditure incurred on raising the Jamda bandhara and on special repairs to the Kolgaon chauki.

Superintending Engineer, Southern Division.

The total working expenses for the year amounted to Rs. 52,515 against Rs. 55,223 of the previous year and Rs. 60,123 the average of the past three years.

Superintending Engineer, Northern Division.

The total working expenses for the year amounted to Rs. 66,355 against Rs. 73,179 of the previous year, showing a decrease of Rs. 6,824.

9. The following table contrasts the charges under the principal heads with those of the two previous years:—

	1914-15.	1915-16.	1916-17.
	Rs.	Rs.	Rs.
Works	63,835	44,105	40,179
Repairs	3,50,800	3,54,451	3,45,531
Establishment	2,17,788	2,06,274	2,34,033
Tools and Plant	15,152	24,866	8,838
Total in the Public Works Department...	6,47,575	6,29,696	6,28,581
Collection Charges	71,492	65,884	67,875
Indirect Charges	30,999	29,088	32,892
Total ...	7,50,066	7,24,668	7,29,348

The establishment charges divided between "Direction and Accounts" and "Executive" compare as follows with those of the previous year:—

	1915-16.	1916-17.	Difference.
	Rs.	Rs.	Rs.
Direction and Accounts	16,767	15,615	—1,152
Executive	1,89,507	2,18,418	+28,911
Total ...	2,06,274	2,34,033	+27,759

Details of working expenses.

10. The following table gives the details of the working expenses of some of the principal works :—

Name of works.	Average incidence of water-rate per acre.	Cost of measurement.		Working expenses total in the Public Works Department excluding Indirect charges.	
		Total cost.	Per acre.	Per mile of main canal.	Per acre irrigated.
<i>Canals.</i>					
Nira Canal, including Shetphal Tank.	12.82	1,533	0 0 8½	1,147	3.60
Hathmati and Khari Cut Canals ...	...	...	...	...	...
Girna Left Bank Canal ...	4.43	195	0 1 8	1,194	8.52
Kadwa River Works ...	7.02	320	0 1 4	998	4.72
Lakh Canal ...	...	...	...	...	...
Godavari Canals ...	11.89	830	0 0 9	1,457	5.95
Mutha Canals, including Matoba Tank.	20.90	552	0 0 9½	1,781	15.07
Pravara Right Bank Canal ...	4.47	83	0 0 7	543	7.87
Krishna Canal ...	20.13	542	0 2 7	444	4.60
Yerla River Irrigation Works ...	5.07	455	0 2 11	215	2.90
Rewari Canal ...	6.42	186	0 3 5	359	2.06
Upper Man River Works ...	4.70	195	0 4 5	163	4.21
Chikhli Canal ...	10.85	24	0 2 0	116	3.91
Gokak Canal ...	5.81	1,005	0 3 10	2,603	2.52
<i>Tanks.</i>					
Mhaswad Tank ...	6.28	202	0 0 8	212	2.90
Parsul Tank ...	6.42	110	0 2 5	Nil.	5.94
Maini Tank ...	4.27	225	0 2 5	325	2.00

11. The gross assessed revenue, direct and indirect, as shown in Statement IV-C accompanying the Irrigation Administration Report for 1916-1917, was Rs. 15,03,154. If Rs. 52,742, being the difference between the value at normal rates of water issued from the Mutha canals and the value of water supplied at special reduced rates or gratuitously for water-supply to various institutions in the Poona City, be added to the above amount, the total assessed revenue, both direct and indirect, of the year will be Rs. 15,55,896.

The details of the gross assessment were as follows :—

	Direct Revenue.			Indirect Revenue.	Total.
	Water-rates.	Other receipts.	Total.		
<i>Major Works—</i>					
Protective Works ...	Rs. 6,71,668	Rs. 23,541	Rs. 6,95,209	Rs. ...	Rs. 6,95,209
Productive Works ...	3,71,347	2,76,771	6,48,118	4,064	6,52,182
Total ...	10,43,015	3,00,312	13,43,327	4,064	13,47,391
<i>Minor Works</i>					
Minor Works ...	1,10,218	40,489	1,50,707	5,056	1,55,763
Grand Total ...	11,53,233	3,40,801	14,94,034	9,120	15,03,154

12. The net assessed revenue of the year, after deducting working expenses, including indirect and all other charges, and neglecting the items amounting to Rs. 52,742 referred to in the preceding paragraph, was Rs. 7,73,806 as compared with Rs. 8,04,497 in 1915-16.

13. The water-rates in force during the year are shown in Statement I-F accompanying the Irrigation Administration Report for 1916-17 in the remarks column of which the orders sanctioning them are quoted.

Water-rates.

14. The average water-rates per acre of land actually irrigated were:—

	1915-16.	1916-17.
	Rs.	Rs.
Protective Works ...	8.85	10.65
Productive Works ...	13.81	13.64
Minor Works ...	4.59	3.57

15. The water-rate assessments and other receipts compare with those of the previous year as under:—

	1915-16.	1916-17.
	Rs.	Rs.
Water-rates ...	11,97,927	11,53,233
Other Receipts—		
Plantations ...	11,179	12,264
Water-power ...	14,313	14,313
Water-supply to towns ...	1,74,999	1,80,769
Miscellaneous ...	1,23,336	1,33,455
Total ...	3,23,827	3,40,801
Share of land-revenue ...	7,411	9,120
Total ...	3,31,238	3,49,921
Grand Total ...	15,29,165	15,03,154

The above comparison shows increases under plantations, water-supply to towns, miscellaneous receipts and share of land revenue, and a decrease under water-rates.

The appreciable fall in water-rates is due to the exceptionally good and timely rainfall which was sufficient to bring a large area of monsoon and rabi crops to maturity without the help of canal water. The increases, which are more than counterbalanced by the decrease above referred to, call for no special remarks.

16. The principal crop acreages irrigated during 1915-16 and 1916-17 were as follows:—

	1915-16.	1916-17.	Difference.
	Acres.	Acres.	Acres.
Gardens and Orchards ...	3,208	2,950	-258
Sugarcane ...	19,629	23,013	+3,384
Wheat ...	14,446	14,634	+188
Rice ...	2,283	8,822	+6,539
Maize ...	2,323	1,889	-439
Jowari ...	33,345	18,596	-14,749
Bajri ...	10,679	6,695	-3,984
Gram, etc. ...	8,248	8,185	-63
Groundnut ...	15,690	3,384	-12,306
Condiments ...	4,724	4,172	-552
Cotton ...	194	153	-36
Fodder ...	1,392	1,096	-296

The total estimated value of crops is shown as Rs. 1,44,11,685 against Rs. 1,48,59,555 in the previous year and Rs. 1,44,78,830 for the year 1914-15. But these estimated crop values must be regarded as only roughly approximate, there being no uniform method of estimating them. This matter is now receiving the attention of Government.

17. In Statement I-E accompanying the Irrigation Administration Report for 1916-17 the duty of water on each work, as well as the basis on which the duties were calculated, etc., are shown. The results vary with the nature of the crops irrigated, perennial crops requiring much more water than cereals. To obtain a correct comparative result it is necessary to consider the area of each class of crop grown under the canals concerned. Statement G affords means for such a comparison.

DETAILED REPORTS BY LOCAL OFFICERS.

GUJARAT IRRIGATION DISTRICT.

MAJOR WORKS.

Works without storage and dependent on local rain.

(9) HATHMATI AND KHARI CUT CANALS.

18. The area irrigated, net assessment, average water rate and working expenses under these canals compare with the averages of the three preceding years as under:—

Year.	Kharif.		Rabi.		Total.		Average water rate assessed per acre.	Working expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		
Average of 3 years ...	10,790	62,906	2,989	6,141	13,779	69,047	4.5	46,004
1916-17 ...	5,642	32,179	702	1,091	6,344	33,270	5.24	38,636

19. The Hathmati river was in flood on the 17th June and 22nd August 1916, when the water level rose to 1 foot and 8.80 feet respectively above the weir. The canal was opened on the 17th June and continued to flow till the 13th December 1916, the maximum discharge being 322 cusecs on the 23rd August 1916, and the minimum 21 cusecs on the 13th December 1916. The supply available was utilized for irrigating the lands on the canal itself, the surplus water being allowed to run into the Khari river through the Bokh reservoir (in which it was stored when not required) and the Bhujwa channel.

20. The Chandola tank, mainly fed through the Khari Cut canal, could only be half filled twice upto R. L. 136.60, storing about 80 million cubic feet, which saved the rice crop over 800 to 1,000 acres in the surrounding villages. By means of the Mahijda regulator, constructed last year, the Sabarmati river flood water was stored in the Mahijda tank, thereby saving 300 acres of rice. Besides this, the Chandola tank irrigated 229 acres of bagayat land of Dani Limda and 10 acres of Behrampura, and the realizations on account of himayat thereon amounted to Rs. 565 and Rs. 26 respectively.

21. The miscellaneous revenue realized was Rs. 6,120 against Rs. 11,289 in the previous year. The decrease is attributable to the small number of babul trees sold and the want of demand for pods and grass, as in the previous year, when there was a scarcity of fodder.

22. Remissions during the year amounted to Rs. 5,018 in the kharif and Rs. 5 only in the rabi season.

23. The gross assessed revenue amounted to Rs. 39,390 and it exceeded the working expenses by Rs. 704 which shows a return of only 0.05 per cent. net (but means the loss of 0.31 per cent. on the basis of realizations) on the capital outlay of Rs. 13,15,973 on the Hathmati and Khari Cut canals combined. The amount realized was Rs. 34,614, which though much less than that of the years 1913-14 and 1914-15, i.e., Rs. 1,27,989 and Rs. 1,20,302 respectively, may be considered satisfactory, as on account of the unsatisfactory rainfall which was not continuous and seasonable, especially in the tracts commanded by these canals in the Ahmedabad District, there was extensive cultivation of rice. Though there was not as much irrigation as usual, the water stored in the several tanks proved of great value in saving the early transplanted rice-crop, and afforded some protection.

24. The rainfall gauged at Ahmednagar at the head of the Hathmati canal was 29.92 and 0.30 inches respectively in the kharif and rabi seasons

while at Raipur at the head of the Khari Cut canal it was 24.26 and 0.55 inches respectively.

MINOR WORKS AND NAVIGATION.

Works with storage tanks dependent on local rain.

25. The area irrigated, net assessment and working expenses under the Wangroli, Tranza-Nagrama, Savli and Saiat tanks compare with the averages of the previous three years as under:—

Tank.	Year.	Kharif.		Rabi.		Total.		Working expenses.
		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	
Wangroli	Average of 3 years ...	445	1,627	139	339	534	1,966	13,745
	1916-17...	451	1,765	408	976	859	2,742	8,015
Tranza-Nagrama.	Average of 3 years ...	4	13	53	200	57	213	2,806
	1916-17...	...	...	...	...	...	...	2,800
Savli	Average of 3 years ...	423	1,677	219	437	642	2,114	18,193
	1916-17...	606	2,400	364	727	970	3,127	8,001
Saiat	Average of 3 years...	265	1,048	63	232	323	1,280	21,234
	1916-17...	...	...	...	...	...	...	7,304
Futelao	1915-16...	...	...	*	*	*	*	Not known.
	1916-17...	...	...	69	268	89	268	1,790

(16) WANGROLI TANK.

26. This tank was replenished on 17th August 1916, the rainfall being 5.10 inches on that day and the supply available was utilized for irrigating kharif and rabi crops, and filling the Gam tank of Pipalwada, Malkana tank of Salun and the Gomti tank at Dakor.

27. The miscellaneous revenue amounted to Rs. 391 against Rs. 211 in the previous year. The increase was due to the large area of land let out for cultivation in the tank bed.

28. The remissions during the year amounted to Rs. 21 in the kharif and Rs. 3 only in the rabi season partly on account of mistakes made in measurement and partly owing to wrong assessment.

29. The rainfall gauged in the tank catchment was 27.12 and 1.79 inches respectively in the kharif and rabi seasons.

(17) TRANZA-NAGRAMA TANKS.

30. These tanks were empty and there was therefore no irrigation under them. They have no independent catchments of their own and there was no flow in the feeder channel. It has not been found feasible to divert the drainage via Alindra through the Chokadia and Heranj tanks, within reasonable cost.

* In the Revenue Report for 1915-16 no figures of area and assessment were given by the Superintending Engineer, N. D., for the Futelao tank. He has, however, since reported 69 acres and 78 rupees as the area and assessment for the Rabi Season for 1915-16.

31. The **miscellaneous revenue** amounted to Rs. 488 against Rs. 8 only in the previous year. The increase was due to the larger area of the land in the tank bed let out for cultivation.

32. No **remissions** were granted during the year.

33. The **rainfall** gauged at the Nagrama tank was 16.99 and 3.82 inches respectively in the kharif and rabi seasons, and it was about the same at the Tranza tank.

(18) SAVLI TANK.

34. The tank was replenished from time to time and the whole supply, viz., 44.97 million cubic feet, was wholly utilized in irrigating the kharif crops, mainly rice.

35. The **miscellaneous revenue** amounted to Rs. 548 against Rs. 362 in the previous year. The increase was due to a larger area of the land in the tank bed having been let out for cultivation.

36. The **remissions** during the year amounted to Rs. 20 in the kharif season and were granted on account of himayat.

37. The **rainfall** gauged at the tank was 23.27 and 1.48 inches respectively in the kharif and rabi seasons.

(19) SALAT TANK.

38. Owing to the scanty rainfall, there was no replenishment received at all in the tank and hence there was no irrigation during the year.

39. The **miscellaneous revenue** amounted to Rs. 723 against Rs. 72 in the previous year. The increase was due to the larger area of land let out for cultivation in the tank bed.

40. No **remissions** were granted.

41. The **rainfall** gauged at the tank was 19.30 and 0.47 inches respectively in the kharif and rabi seasons.

(20) FUTELAO TANK.

42. The tank was partially filled and the supply was utilized for irrigating the rabi crops.

43. The **miscellaneous revenue** amounted to Rs. 153 against Rs. 87 in the previous year. The increase was due to the larger area let out for cultivation in the tank bed.

44. No **remissions** were granted during the year.

45. The **rainfall** gauged at Dohad dispensary was 23.28 and 1.91 inches respectively in the kharif and rabi seasons.

POONA IRRIGATION DISTRICT.

Works with Ghat Storage.

(4) NIRA CANAL AND SHETPHAL TANK.

46. (a) The **rainfall** at Bhatghar, at the three representative stations along the canal and at Shetphal tank was satisfactory as compared with the rainfall during 1915-16 and the average of the past three years :—

Stations.	Rainfall during 1916-17.	Rainfall during 1915-16.	Average rainfall during the past three years.	Remarks.
	Inches.	Inches.	Inches.	
Bhatghar	44.50	47.60	47.57	
Pimpra	31.17	30.00	21.49	
Baramati	29.47	17.21	16.25	
Nimbgaon	37.24	30.60	19.12	
Shetphal	39.67	31.07	21.64	

(b) The following table gives the run-off during 1916 from the catchment of Lake Whiting :—

Area of catchment in square miles.	Actual run-off in 1916.	Equivalent run-off.	Remarks.
	M. c. ft.	Inches.	M. c. ft.
128	23,812*	80.08	*Flood discharge 19,394 Undersluice discharge 3,183 Evaporation, absorption and leakage 436 Increase in the contents during the period from 1st January to 31st December 1916 769 Total 23,812

47. The level of water in Lake Whiting on 31st March 1917 was 66.50 feet above the sill of undersluices against 61.40 in the preceding year.

48. The lowest depth reached was 46.40 feet on 6th June 1916, the corresponding contents being 654.40 million cubic feet.

49. The lake began to receive replenishment from the 7th June 1916, from which date draw-off from the lake was stopped, as replenishment was then received also in the Vir basin. The level in the tank gradually rose to 75 feet (crest of the waste weir) on the 16th of July 1916. On the 28th of July 1916 the level in the tank reached 81.60 feet, when the south waste weir gates were opened to pass off the flood water.

50. The total flood discharge passed over the waste weirs was 19,394 million cubic feet.

51. Water was stored upto the full supply level, viz., 83 feet above sill of undersluices, on the 1st September 1916 and could be maintained at that level upto 11th December 1916 when the draw-off from the lake commenced.

52. The average discharge in cusecs at the head of the Nira canal for each month during 1916-17 was as shown below :—

Month.	Number of days.	Discharge in day cusecs.	Remarks.
February 1916 (16th to 29th) ...	14	2,229	1 day cusec = 1 cusec for 24 hours; and if multiplied by 86,400 gives the quantity of water in cubic feet. The quan- tity of water which entered the canal is thus :— $87,739 \times 86,400 = 7,580,649,600$ or 7,580 million cubic feet. Average daily discharge = $\frac{87,739}{366}$ = 240 cusecs.
March " ...	31	6,091	
April " ...	30	6,002	
May " ...	31	6,198	
June " ...	30	7,032	
July " ...	31	6,402	
August " ...	31	8,813	
September " ...	30	5,412	
October " ...	31	9,537	
November " ...	30	6,268	
December " ...	31	11,262	
January 1917 ...	31	9,027	
February " (1st to 15th) ...	15	3,466	
Total ...	366	87,739	

53. Water in the Shetphal tank reached its lowest level, viz., 24.50 feet, on 30th May 1916. From the 31st May 1916 the tank began to receive replenishment from the Nira canal. The full supply level, viz., 37 feet, was reached on the 25th October 1916.

54. The following table shows the area irrigated, water rates levied, gross assessed revenue, working expenses, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realizations.		Average rainfall of five stations.	
1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
34,228*	60,559	4,38,946	5,45,420	4,46,619	5,53,461	1,54,665	1,46,832	4,94,676	5,61,657	36.41	25.22

* This includes 1,431 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 7,305.

55. The area of sugarcane and other perennial crops on the Nira canal and Shetphal tank is compared below with the figures for the last three years. It is slightly higher than that for the year 1915-16, although slightly lower than that for the year 1913-14:—

Year.	Area in acres.		
1913-14	9,182
1914-15	7,121
1915-16	8,628
1916-17	8,879



56. The total area irrigated on the Nira canal and Shetphal tank during the year was 34,228 acres against 50,859 acres in 1915-16. The fall in area was due to seasonable rainfall during both the monsoon and rabi seasons, which rendered it unnecessary for the cultivators to apply for canal water for a large area of monsoon and rabi crops.

57. The refunds of revenue sanctioned during the year under report amounted to Rs. 338. There were no remissions.

58. The cost incurred on measuring 34,228 acres of irrigated area amounted to Rs. 1,533, viz., 8½ pies per acre compared with nearly 5½ pies per acre in 1915-16.

(13) MUTHA CANALS INCLUDING MATOBA TANK.

59. The rainfall figures for eight representative stations on this system, as compared with those for 1915-16 and the averages of the past three years, are shown in the sub-joined table:—

Stations.		Rainfall during 1916-17.	Rainfall during 1915-16.	Average rainfall during the past three years.
		Inches.	Inches.	Inches.
Tank area	{ Khadakwasla	34.62	39.87	43.83
	{ Mussa	98.69	113.00	131.00
	{ Mutha	54.25	65.36	71.72
	{ Garli	214.82	220.03	268.60*
	{ Yegra	152.63	140.72	197.60*
Canal area	{ Poona	20.07	36.78	32.25
	{ Kedgaon	29.15	18.65	13.97
	{ Matoba	26.13	20.52	17.24

* Average of past two years.

60. The following table gives the run-off during 1916 from the catchment of Lake Fife:—

Area of catchment.	Actual run-off in 1916.	Equivalent run-off.	Remarks.
Square miles.	Mill. c. ft.	Inches.	Mill. c. ft.
196	35,483*	77.93	* Discharge over weir ... 29,300 Discharge for irrigation ... 2,777 Less due to evaporation, absorption and leakage ... 313 Increase in the contents during the period from 1st June to 31st October 1916 ... 3,033 Total ... 35,483

61. On the 1st April 1916 the water in Lake Fife was 19.82 feet above the sill of the canal sluices. The lowest water level was reached on the 14th of June 1916 when the depth was 10.70 feet. During the previous year the lowest depth was reached on 25th June 1915 when it was 6.44 feet. The lake began to receive replenishment from the 15th June 1916, and was filled to overflowing on the 26th June 1916. Water was stored upto the F. S. L., viz., 34 feet above the sill of outlet sluices on 1st September 1916.

62. The regular draw-off commenced from the 11th November 1916 as against 29th October in 1915. On the 31st March 1917 the level of water in the lake went down to 21.14 feet above the sill of the canal sluices.

63. The Matoba tank was dry upto 27th May 1916, on which date it received its first replenishment. The tank began to overflow on 29th July 1916 and continued to do so for 6 days, i. e., upto the 3rd of August 1916. It again overflowed from the 8th to 25th September 1916. The level then went down gradually and the tank had only 21.14 feet of water on 31st March 1917.

64. The following table shows the area irrigated, water rates assessed, gross assessed revenue, working expenses, etc., during the year as compared with the average figures for the past three years:—

Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realization.		Average rainfall of 6 stations.	
1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
10,402*	13,496	2,17,433	2,08,971	4,16,162	3,77,815	1,75,793	1,36,544	4,27,333	3,82,653	45.62	51.67

* This includes 540 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 2,665.

65. The area under sugarcane was 4,636 acres against 3,929 acres in 1915-16, 4,256 acres in 1914-15 and 4,334 acres in 1913-14. The sugarcane area was thus the largest on record as the surplus supply of the year 1915-16 was utilized for extra cane area during the hot weather of 1916-17.

66. The total area of all perennial crops is compared below with the figures for the past three years:—

Year.	Area in acres.
1913-14	5,676
1914-15	5,284
1915-16	5,471
1916-17	5,981

67. The working expenses for the Poona water supply and the Mutha canals proper for the year 1916-17 compare with the average of the past three years as under, the large increase being chiefly due to rise in the rates for chemicals used for clarifying raw water:—

	1916-17.	Average of past three years.
	Rs.	Rs.
Poona water supply	1,13,655	62,565
Mutha canals	62,138	73,979
Total	1,75,793	1,36,544

68. The average daily supply of filtered water delivered into the Poona water supply mains for distribution from the Poona Water Works amounted to 1,655,364 gallons against 1,571,344 gallons in the previous year.

69. The loss of revenue on account of water supplied either gratis or at reduced rates to certain charitable and public institutions in the Poona Cantonment and Suburban limits in accordance with Government orders amounted to Rs. 11,414 against Rs. 10,168 in 1915-16.

70. The actual cost of measuring the crops amounted to Rs. 552 for 10,402 acres or about 10 pies against 9.5 pies per acre in the previous year.

71. The refunds given during the year amounted to Rs. 60 and there were no remissions.

72. The total assessed revenue for the Mutha canals and Matoba tank combined for the year under report amounted to Rs. 4,16,162 made up of Rs. 2,17,433 from irrigation and Rs. 1,98,729 from other sources. The latter figure includes Rs. 1,59,238 derived from Poona Water Supply.

Storage works dependent on local rain.

73. The following table shows the area irrigated, water rates levied, gross assessed revenue, working expenses, etc., for the works named below during the year as compared with the average of the past three years:—

Name of Tank.	Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realization.		Average rainfall.	
	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Kasurdi	80*	90	245	395	286	727	625	738	554	669	25.67	17.53
Shirsuphal	752*	866	2,643	2,949	3,573	4,760	2,582	2,151	4,904	4,724	26.21	14.95
Bhadalwadi	631*	1,373	2,548	5,933	2,735	6,388	2,657	2,790	4,668	6,392	29.68	15.79

* These figures include respectively 23, 100 and 44 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 100, 334 and Rs. 224 respectively.

74. The fall in area and assessment is due to seasonable rainfall which was sufficient to bring some of the monsoon and rabi crops to maturity without the help of canal water.

75. The following table gives the run-off during 1916 from the catchments of the tanks named below:—

Name of catchment.	Area in square miles.	Actual run-off in 1916.	Equivalent run-off.
		M. c. ft.	Inches.
Kasurdi tank	6	62	4.45
Shirsuphal tank	23.5	238	4.36
Bhadalwadi tank	23	355	6.64

(27) KASURDI TANK.

76. The tank was dry upto 27th May 1916 when it began to receive replenishment. The highest level, viz., 17.46 feet, was reached on 29th May 1916. During the year under report the tank overflowed six times in all. Water was issued to rabi crops and the level then gradually went down. The tank did not dry up during the year.

(28) SHIRSUPHAL TANK.

77. The tank began to receive replenishment from the 27th May 1916. The highest level reached was 28.80 feet, i. e., 2.20 feet below weir crest on 9th November 1916. The tank did not dry up during the year.

(29) BHADALWADI TANK.

78. The tank was dry upto 27th May 1916 on which date it received its first replenishment. The highest level, viz., 35 feet, was reached on 25th July 1916. During the year under report the tank overflowed seven times in all. The overflow for the last time continued from the 23rd October to 23rd November 1916. The tank did not dry up during the year.

MALSIRAS DISTRICT.

Storage work with Deccan catchment.

(5) MHASVAD TANK.

79. For replenishment this tank depends upon the local rainfall in its large catchment of 480 square miles. On 1st April 1916 the tank had

16.40 feet of water above the level of the sill of canal sluices, the corresponding contents being 1,437.7 million cubic feet. From 20th May the tank began to receive replenishment. On 31st May and 6th June the replenishment received amounted to as much as 945.93 and 137.98 million cubic feet respectively. July 21st was the first date on which water flowed over the waste weir and the overflow continued until 16th December 1916. The maximum depth of flood over the crest of the waste weir was 1.60 feet on 21st July 1916. The tank received slight replenishments again in September and October 1916 and February and March 1917.

80. The average rainfall recorded at five rain-gauge stations in the catchment area from 1st June 1916 to 31st October 1916 was 28.63 inches, which is nearly double the average of the three previous years. The average for the whole year was 37.65 inches.

81. The following table shows the area irrigated, water rates levied, gross assessed revenue, working expenses, etc., during the year as compared with the average of the past three years :—

Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realization.		Rainfall.	
1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
4,846*	7,934	30,429	39,414	39,726	44,162	17,122	18,534	42,856	43,818	28.63	17.81

* This includes 624 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 2,494.

82. The large decrease in the area irrigated was entirely due to very heavy rainfall during both the monsoon and rabi seasons, which rendered it unnecessary for the cultivators to take canal water for some of their crops.

83. The cost of measuring the crops during the year was 8 pies as against 7 pies per acre for the last year.

84. The refunds given during the year amounted to Rs. 21 and the remissions amounted to Rs. 8.

PRAVARA CANALS DISTRICT.

(a) Canals supplied by Ghat-fed river with storage works.

(3) GODAVARI CANALS PROJECT.

85. Lake Beale on the Darna river near Asvali Station on the G. I. P. Railway is the storage falling under this head. This storage supplements the Nandur-Madhmeshvar Lake, from which the Godavari Right and Left Bank Canals take off.

LAKE BEALE (DARNA DAM).

86. The R. L. of the water surface in Lake Beale was 1,821.32, i. e., 11.32 feet above the sill level which is at R. L. 1,810. The first replenishment was received on 30th June 1916 on which date the R. L. of water surface was 1,821.40. The maximum depth of water that flowed over the waste weir was 0.80 on 7th August 1916. The quantity of water available for irrigation was 8,634.50 million cubic feet, or 81.5 million cubic feet more than in the previous year.

87. The area irrigated in the tank basin in the kharif and rabi seasons was 829 acres, and the assessment derived therefrom amounted to Rs. 1,927, which is less by Rs. 569 than the previous year's figure. The total gross assessed revenue amounted to Rs. 3,615. The decrease in assessment is due to a smaller area in the lake basin being available for cultivation, on account of the small demand for water from this storage for the Godavari canals.

88. The following table gives the **run-off** during 1916 from the following catchments :—

Name of catchment.	Area in square miles.	Actual run-off in m. c. ft.	Equivalent run-off (inches).	Remarks.
Lake Beale ...	156	21,693*	60.41	* From 1st June to 31st October 1916.
Nandur-Madhmesbvar weir.	1,650	85,289†	22.24	† From 1st January to 31st December 1916—
				Weir. Lake.
				M. c. ft. M. c. ft.
				Discharge over the weir ... 66,612 11,928
				Do. through outlet ... 4,874
				Do. undersluices ... 9,857 ...
				Evaporation, absorption and leakage... 1,165 559
				Discharge for irrigation ... 7,688 ...
				Increase in contents during the period. 567 4,532
				Total ... 85,289 21,893

GODAVARI CANALS.

89. The Godavari right and left bank canals form part of the Godavari Irrigation Project, and are fed from the Lake Beale reservoir on the Darna river in addition to the river supply. Lengths of 70½ and 48 miles respectively of these canals were in operation during the year.

90. The **designed discharges** and full supply depths and gross areas commanded are as under :—

Name of canal.	Discharge in cusecs.		Full supply depth in feet.		Gross area.
	At head.	At tail.	At head.	At tail.	
Godavari right bank canal .	384.00	114.41	7	5	Acres. 144,310
Godavari left bank canal ...	228.00	35.00	6	3	88,080

91. There was an ample supply of water in the canals, but the demand was low owing to good and timely rainfall in the commanded area.

92. The following table shows the **areas irrigated, water rates levied, gross assessed revenue, working expenses, etc.,** for the canals during the year as compared with the average figures of the past three years :—

Name of canal.	Area irrigated.		Assessment.		Rainfall.		Gross assessment.		Working expenses.		Realization.	
	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
	Acres.	Acres.	Rs.	Rs.	Inches.	Inches.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Godavari right bank canal.	15,353*	17,369	1,43,418	1,47,761	32.04	22.93	1,95,110	1,74,259	1,40,254	1,29,113	2,28,111	1,89,188
Godavari left bank canal.	3,549*	2,446	38,032	16,104	32.04	20.78						

* These figures include 6,352 acres of wheat for which water was supplied free of charge from the two canals, the loss of revenue on this account being Rs. 31,760.

93. The decrease in the area irrigated on the Godavari right bank canal is due to exceptionally good rainfall and the increase in that under the Godavari left bank canal is due to extension of sugarcane cultivation.

94. There were no **remissions and refunds** given during the year under report.

95. The **cost** incurred on the **measuring establishment** amounted to Rs. 663 and Rs. 167 on the Godavari right and left bank canals respectively, which works out to nearly 8 and 9 pies per acre. The rate for the last year was nearly 11 pies per acre for both the canals.

96. The extension of cultivation of sugarcane on the Godavari canals has been progressive and this cultivation affords full employment for local labour, prices for agricultural labour reaching a very high level.

97. The appearance of Poona and Saswad malis for sugarcane cultivation on these canals has stimulated the dormant enterprise of the local cultivator during the past four years. The local ryot is still very slow, indolent and backward, but signs of awakening are not entirely absent.

(b) Canals supplied by Ghat-fed river without storage works.

98. The Pravara River Irrigation project consists of a very high masonry dam, 270 feet high, now under construction across the Pravara river in the Ghats at Bhandardara, which will impound over 10,000 million cubic feet of water. The pick-up weir is situated near the village of Ojhar, about 53 miles below the reservoir (Lake Arthur Hill), where the Pravara left and right bank canals take off.

(25) PRAVARA LEFT BANK CANAL.

99. The work of widening and extending the old canal was started in 1910. The earth-work of the main canal is practically completed with the exception of the banks over a few masonry works. All the works on the main canal are expected to be completed by January 1919. In order to facilitate the construction of the masonry works and the widening of the existing works, which are on the old alignment, the canal has been closed for irrigation from 15th October 1918, the available water supply being run into the Pravara right bank canal.

100. The **designed discharge** of the remodelled canal (now called the Pravara left bank canal) is 530 cusecs at the head and 39 cusecs at the tail, the full supply levels being 8 and 3 feet, respectively.

(1) PRAVARA RIGHT BANK CANAL.

101. This canal runs for a length of 33 miles. All the works on this canal are completed except distributaries and water-courses at the tail and a few road and field bridges, etc.

102. The **designed discharges** are 152.62 cusecs at head and 81.79 cusecs at tail, the full supply depths being 5 and 3 feet, respectively.

103. The canal is in operation upto mile 33 but the supply of water is inadequate and will remain so until water is available from Lake Arthur Hill at Bhandardara.

104. Water for perennial irrigation can at present only be given without guarantee and this condition confines perennial irrigation to fields that have wells to fall back upon. Water was first let into this canal in the monsoon of 1909 down to mile 6 and kharif irrigation was undertaken in this length.

105. The following table shows the **area irrigated, water rates levied, gross assessed revenue, working expenses, etc.**, during the year as compared with the average of the past three years :—

Name of canal.	Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realization.		Rainfall.	
	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Pravara right bank canal.	2,278*	3,779	10,255	13,618	10,989	13,175	19,549	16,591	15,425	19,062	43.44	23.92
Pravara left bank canal.	...	566	...	1,650	2,406	4,478	6,557	6,345	6,162	7,147	43.44	23.92

* This includes 244 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 782.

106. The fall in area irrigated and assessment is due to the exceptionally heavy rainfall of the year which exceeded the average of the past three years, by nearly 100 per cent. The Pravara left bank canal was closed for widening and extension and for raising the weir at Ojhar.

107. The refunds given during the year amounted to Rs. 402 on the Pravara right bank canal; there were no remissions.

108. The cost incurred on measuring 2,278 acres amounted to Rs. 83 or 7 pies against 12 pies per acre for the last year.

Works without storage but on a river with Ghat catchment.

(12) LAKH CANAL.

109. This canal draws its supply from the Pravara river, just where it is crossed by the Dhond-Manmad Railway line near Lakh village. The canal has no reliable storage, being dependent solely on the flow in the Pravara river. The Lakh weir being situated below the Ojhar weir, the canal only receives such water as is not required by the Pravara canals and the supply is usually insufficient after October. During the year under report, however, the supply was sufficient to the end of the rabi season owing to uniformly distributed rainfall throughout the monsoon.

110. The canal has a designed head discharge of 129 cusecs. This canal has not been a financial success and does not even pay its working expenses owing to the poor supply and bad alignment. It is to be abandoned when the Pravara left bank canal is brought into full operation as the latter commands the area under the Lakh canal.

111. The following table shows the area irrigated, water rates levied, gross assessed revenue, working expenses, etc., during the year under report as compared with the average of the past three years:—

Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realization.		Rainfall.	
1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
296*	843	632	1,512	1,551	2,411	2,510	3,358	1,908	3,650	32.58	19.83

* This includes 125 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 250.

112. The area irrigated is the lowest on record owing to the exceptionally good rainfall which exceeded the average by over 60 per cent. and consequent fall in the demand for canal water.

113. The cost of measurement of crops during the year was 8 pies against 12 pies per acre for the last year.

NASIK AND AHMEDNAGAR IRRIGATION DISTRICT.

(a) Canal supplied by Ghat-fed river with storage work.

(2) CHANKAPUR TANK—GIRNA LEFT BANK CANAL.

114. The Chankapur tank on the Girna river is the storage for the Girna left bank canal. Water was stored upto R. L. 166.50 in the tank, the corresponding contents being 1,516.06 million cubic feet. The natural supply of the river derived from its tributaries being extremely good there was no demand for canal water for the kharif crops. The tank was drawn upon from 18th January 1917.

115. At the commencement of the year under report (i. e., 1st April 1916) the level of water in the tank was R. L. 154.64, i. e., 79.64 feet above the sill level (which is at R. L. 75.00). The contents of the tank at this level are 925.42 million cubic feet. The level fell to reduced level 75.00 (which is the lowest level reached during the year 1916-17) on 15th June 1916. The regular replenishment began to be received from 20th June 1916, and the tank then filled to R. L. 166.50, i. e., nearly to the full supply level in the tank which is at R. L. 167.00.

116. The supply was also used for feeding the existing bandharas on the Girna river. The tank supply actually not required for the irrigation on the

Girna left bank canal was let out to supplement the supply to the Jamda canals in the East Khandesh District. The water level on the 31st March 1917 was R. L. 150.70, i. e., 75.70 above the sill level, representing a volume of 784.27 million cubic feet.

117. The following table gives the run-off during 1916 (from 1st June to 31st October 1916) from the catchment of Chankapur tank :—

Name of catchment.	Area in square miles.	Actual run-off in m. c.ft.	Equivalent run-off (inches).	Remarks.														
Chankapur tank...	100	5,110*	22.00	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="text-align: right;">M. c.ft.</td> </tr> <tr> <td>• Discharge over the weir ...</td> <td style="text-align: right;">2,177</td> </tr> <tr> <td>Do. through outlet and irrigation ...</td> <td style="text-align: right;">99</td> </tr> <tr> <td>Evaporation, absorption ...</td> <td style="text-align: right;">110</td> </tr> <tr> <td>Leakage through waste-weir gates ...</td> <td style="text-align: right;">1,464</td> </tr> <tr> <td>Increase in contents during the period ...</td> <td style="text-align: right;">1,270</td> </tr> <tr> <td style="text-align: right;">Total ...</td> <td style="text-align: right;">5,110</td> </tr> </table>		M. c.ft.	• Discharge over the weir ...	2,177	Do. through outlet and irrigation ...	99	Evaporation, absorption ...	110	Leakage through waste-weir gates ...	1,464	Increase in contents during the period ...	1,270	Total ...	5,110
	M. c.ft.																	
• Discharge over the weir ...	2,177																	
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Evaporation, absorption ...	110																	
Leakage through waste-weir gates ...	1,464																	
Increase in contents during the period ...	1,270																	
Total ...	5,110																	

118. The following table shows the area irrigated, water rates levied, gross assessed revenue, working expenses, etc., during the year as compared with the average of the past three years. It also shows the rainfall for 1916-17 in comparison with that for the previous year :—

Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realization.		Mean rainfall of 2 stations.	
1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	1915-16.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,837*	2,251	8,132	13,721	8,392	13,951	17,226	16,652	12,627	14,275	64.43	47.16

* This includes 880 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 4,395.

119. The cost incurred on the measuring establishment amounted to Rs. 195 for an irrigated area of 1,837 acres or one anna and eight pies against one anna and six pies per acre for the previous year.

120. There were neither remissions nor refunds during the year under review.

121. The area irrigated in excess of the kayam bagayat area by the Saoki, Mahal Patna and Patna bandharas on the Girna river was 6 acres and the assessment Rs. 51 against previous year's 22 acres and Rs. 181, respectively.

Works with Ghat storage.

(11) KADWA RIVER WORKS.

122. The Waghad tank is situated on the Kolwan river and supplements the river supply to the Palkhed and Ojhar Tambat canals. At the end of the monsoon, water was stored up to R. L. 128.00 which is the maximum full supply level (which is 48 feet above the sill of outlet, i. e., R. L. 80.00). The quantity of water available for irrigation was 605.55 million cubic feet or 6.62 million cubic feet more than in the previous year.

123. On 1st April 1916 the Waghad tank had 32.24 feet of water representing 232.54 million cubic feet. The water level continued to fall until the 15th June 1916, when it was 17.65 feet above the sill, representing a supply of 65.88 million cubic feet.

124. Regular replenishment was first received on 6th July 1916 when the level began to rise, and the waste weir overflowed from 6th August 1916 to 23rd August 1916. The maximum depth flowing over the waste weir was 8.00 feet on 12th September 1916. The automatic waste weir gates were closed on 23rd August 1916, water being stored upto the maximum full supply level, i. e., at R. L. 128.00 or 48 feet above the sill level, representing a storage of 605.55 million cubic feet or 6.62 million cubic feet more than the previous year's figure, viz., 598.93 million cubic feet. There being a very poor

demand for water during both the seasons, the tank supply was more than sufficient for the area under irrigation on the Kadwa system. The regular draw-off commenced from 19th January 1917. The water in the tank on 31st March 1917 was 43'15 feet above the sill level, representing a volume of 459'18 million cubic feet.

125. The following table shows the area irrigated, water rates levied, gross assessed revenue, working expenses, etc., of the year as compared with the average of the previous three years :—

Name of work.	Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realization.		Rainfall.	
	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Waghad tank ...	...	...	...	...	455	715	3,533	2,934	456	699	68'90	66'20
Palkhed canal ...	1,255*	2,303	14,564	15,668	17,115	17,291	9,027	8,805	22,068	15,466		
Ojhar Tambat canal.	632*	782	5,767	4,825	5,923	4,945	2,152	1,256	7,273	4,258		
Wadali canal ...	193*	206	1,355	1,140	1,545	1,275	1,813	1,106	1,723	1,070		

* These figures include 562 acres of wheat for which water was supplied free of charge from the three canals, the loss of revenue on this account being Rs. 2,460.

126. There were no remissions or refunds during the year under review.

127. The actual cost of measuring the crops amounted to Rs. 320 which works out to 1 anna and 9 pies against 9 pies per acre in 1915-16.

128. The following table gives the run-off during the year 1916 from the catchment of the Waghad tank :—

Name of catchment.	Area in square miles.	Actual run-off in million cubic feet. 1916.	Equivalent run-off in inches.	Remarks.
Waghad tank ...	29	2,741*	40.68	* From 1st June to 31st October 1916—
				Discharge over weir ... M. c. ft. 2,063
				Do. through outlet ... 104
				Loss by evaporation, etc. ... 65
				Increase in contents during the period ... 509
				Total ... 2,741

Storage works with Deccan catchment.

(24) PARSUL TANK.

129. The tank is on the Parsul river. It received its first replenishment on 31st May 1916 when the R. L. was 1843'64.

130. Water flowed over the waste weir on 6th September 1916 at R. L. 1,876'38, i. e., 35'00 feet above the outlet sill level, which is at R. L. 1,841'38 and the overflow continued for three months and 18 days.

131. The maximum depth of water flowing over the weir was 9 inches. The tank supply was satisfactory throughout the year for the irrigation on this system.

132. The following table shows the area irrigated, water rates levied, gross assessed revenue, working expenses, etc., of the year as compared with the average figures for the previous three years :—

Area irrigated.		Assessment.		Gross assessed revenue.		Working expenses.		Realization.		Rainfall.	
1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
751*	1,264	3,980	5,485	3,907	5,652	4,934	2,162	6,153	5,159	26.93	14.91

* This includes 127 acres of wheat for which water was supplied free of charge, the loss of revenue on this account being Rs. 637.

133. There were neither remissions nor refunds during the year under report.

134. The actual cost of measuring the crops was Rs. 110 for an area of 731 acres or two annas and five pies per acre against one anna and nine pies per acre for the previous year.

135. The following table gives the run-off during 1916 from the catchment of this tank :—

Name of catchment.	Area in square miles.	Actual run-off in million cubic feet.	Equivalent run-off in inches.
Parsul tank	17.75	676	16.39

SHOLAPUR DISTRICT.

Storage Works with Deccan catchment.

(14) EKRUK TANK.

136. At the beginning of the year there was a balance of 2,436.62 million cubic feet in the tank, the water level being 34.19 feet above the sill of the perennial canal. The water level went down gradually till it reached the level of 31.87 feet on 1st June 1916, representing a volume of 2,080 million cubic feet. With the advent of the rains the level began to rise and with the replenishment received in July 1916 the waste weir overflowed from 2nd August 1916 to 25th December 1916. The maximum depths of water over the crests of the left and right bank waste weirs were 2.5 feet and 2.7 feet respectively on the 18th September 1916. The maximum rainfall gauged at the five stations in the catchment of 159 square miles from 1st June to 31st October 1916 was 40.81 inches. The total replenishment received was 6,116.78 million cubic feet, the proportion of run-off to rainfall over the catchment being 40.57 per cent.

137. The total area irrigated during the year was 1,429 acres against 3,338 acres which was the average for the preceding three years. The decrease is due to less demand for water owing to seasonable rains.

138. The gross assessed revenue amounted to Rs. 81,982 against Rs. 81,520, the average of the preceding three years.

139. The working expenses amounted to Rs. 12,481 against Rs. 14,084, the average of the past triennium.

(30) KOREGAON TANK.

140. The storage in the tank on 1st April 1916 was 44.72 million cubic feet, corresponding to a height of 7.58 feet of water over the tank gauge. The level of water steadily dropped till it reached 6.08 feet on 26th May 1916. The tank then received successive replenishments and the waste weir overflowed from 5th September to 24th November 1916 with a break of four days (21st and 26th October 1916). The maximum depth of water over the waste weir was 2 feet on the 18th September 1916. The rainfall gauged at Koregaon from 1st June to 31st October 1916 was 37.99 inches which gave a total replenishment of 298.24 million cubic feet and a run-off of 48.20 per cent. of the rainfall over the catchment of 7 square miles.

141. The area irrigated was 431 acres against 456 acres, the average of the preceding triennium, the decrease being due to seasonable rainfall.

142. The gross assessed revenue was Rs. 2,563 against Rs. 2,367, the average of the past three years.

143. The working expenses amounted to Rs. 922 against Rs. 1,204, the average of the preceding three years.

(31) ASHTI TANK.

144. The tank had a balance of 938.62 million cubic feet on 1st April 1916, the corresponding water level being 18.22 feet above the outlet sill. The replenishment began on 27th May 1916 and the waste weir overflowed on 5th August 1916. Thereafter there was an intermittent flow over the weir till 1st December 1916. The level then gradually fell to 19.84 feet at the end of

the year. The mean rainfall gauged at the two stations in the catchment of 92 square miles was 30.79 inches, giving a replenishment of 1,613.81 million cubic feet, the proportion of run-off to the rainfall on the catchment being 24.52 per cent.

145. The area irrigated was 2,504 acres against 3,013 acres, the average of the previous three years. The decrease is due to less demand for canal water owing to seasonable rainfall.

146. The gross assessed revenue amounted to Rs. 18,014 against Rs. 20,259, the average of the previous three years. The decrease is due to less demand for canal water owing to good rainfall.

147. The working expenses amounted to Rs. 5,573 against Rs. 6,958, the average of the previous three years.

(32) PATERI TANK.

148. The level of water in the tank was 26.88 feet above the sill of outlet at the beginning of the year, representing a storage of 282.04 million cubic feet. The tank received replenishment from 3rd June 1916, on which day the level of water was 25.05 feet, and it overflowed from the 27th July 1916 to the 15th December 1916. The mean rainfall gauged at the two stations in the catchment of 27.5 square miles was 44.20 inches, which gave a total replenishment of 1,395.76 million cubic feet, the proportion of run-off to the rainfall being 49 per cent.

149. The area irrigated was 885 acres against 1,622 acres, the average of the preceding triennium. The decrease is due to good and seasonable rainfall and consequent less demand for canal water.

150. The gross assessed revenue amounted to Rs. 4,877 against Rs. 7,920, the average of the previous triennium.

151. The working expenses amounted to Rs. 2,002 against Rs. 2,628, the average of the preceding three years.

AHMEDNAGAR DISTRICT.

Storage Works with Deccan catchment.

(26) BHATODI TANK.

152. This tank is a small one, situated on the Mehekari river about 12 miles from Ahmednagar, having a capacity at F. S. L. of 92.70 million cubic feet and depending solely on local rain for its supply, which generally suffices for the monsoon and a part of the rabi season.

153. Owing to good rainfall the tank was practically full throughout the whole year. The highest level of water was reached on 5th August 1916. This was R. L. 94.20, viz., about 24 feet above the outlet sill (R. L. 70.00) or just under six feet below the top of the masonry dam (R. L. 100.00). Water overflowed the waste weir on 21st June 1916 and again from the 5th July 1916 to 12th December 1916, so that the demands of the rabi season were fully met. The tank level on 31st March 1917 was at R. L. 91.90.

154. The area irrigated, gross assessment and working expenses for the year under report are given below in comparison with the averages for the three preceding years :—

Area irrigated.						Total gross assessment from all sources.		Working expenses.	
Kharif.		Rabi.		Total.					
1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.	1916-17.	Average of past 3 years.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
14	212	789	685	802	897	7,333	7,347	3,659	2,867

155. The rainfall during the year was 41.46 inches against 27 inches, the average of the past three years.

EAST KHANDESH DISTRICT.

Works without storage but on a river with Ghat catchment.

(23) JAMDA CANALS.

156. The source of supply is the Girna river, supplemented from time to time by water from Chankapur tank, in the Nasik District. On 1st April 1916 the discharge of the river Girna was 66'00 and on 24th July 1916 the highest discharge was 209'16 cubic feet. There were no abnormal floods in the river.

157. The subjoined statement shows area irrigated compared with the average of the preceding three years and the corresponding assessments and working expenses:—

Area irrigated.						Assessment.						Gross assessed revenue.		Working expenses, direct and indirect.	
Kharif.		Rabi.		Total.		Kharif.		Rabi.		Total.					
1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
745	660	529	1,030	1,274	1,680	5,604	4,860	1,544	2,495	7,149	7,356	10,477	9,630	13,969	9,857

158. The increase in the kharif area, which is entirely under perennial crops, indicates the growing confidence among irrigators in the surety and administration of the water supply. The increase in gross assessed revenue is due to increased revenue from the sale of mango blossom. The decrease of 491 acres under rabi is due to (a) enhancement of water rates, (b) sufficient moisture in non-irrigable areas for bringing rabi crops to maturity without the aid of canal water, (c) cultivation of cotton crop to a large extent on account of its high price, which rose from Rs. 21 in November 1915 to Rs. 32 in November and December 1916, and (d) the introduction of 8 months rabi block system which is quite new to the irrigators who are still sceptical about it. The increase in the working expenses is mainly due to the expenditure of Rs. 3,349 on raising the Jamda bandhara and of Rs. 540 for special repairs to the Kolgaon chowki.

159. The cost of measurement per acre irrigated was 6 pies nearly.

Storage works with Deccan catchment.

(21) HARTALA TANK.

160. On 1st April 1916 the contents in the Hartala tank was 91'59 million cubic feet which decreased to 64'16 million cubic feet on 5th July 1916. The tank then received replenishment, ultimately overflowing on 3rd August, and continued to do so till 6th November 1916 with small and occasional variations in the levels. The storage by the end of the year decreased to 89'38 million cubic feet against the full storage of 134'87 million cubic feet.

(22) MHASWA TANK.

161. On 1st April 1916 the contents in the Mhaswa tank was 9'23 million cubic feet. The tank was quite dry from 11th May to 2nd June 1916, on which date replenishments began, but the tank did not overflow during the year owing to the introduction of revolving gates which retain about one foot of water above the waste weir sill.

162. The following table shows the rainfall and storage of the Hartala and Mhaswa tanks:—

Names.		Rainfall, June to October.	Full supply storage.	Maximum storage reached during the year.	Storage on 31st October 1916.
		Inches.	M. c.ft.		M. c.ft.
Hartala	...	35'69	134'87	Full.	134'87 overflowing.
Mhaswa	...	28'07	172'405	Full.	153'09

163. The area irrigated during the year compared with the average of the preceding three years and corresponding assessment and working expenses are given in the statement below :—

Tank.	Area irrigated.						Assessment.						Gross assessed revenue.	Working expenses.		
	Kharif.		Rabi.		Total.		Kharif.		Rabi.		Total.					
	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.	1916-17.	Average of the 3 preceding years.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Hartala ...	15	11	24	64	29	65	144	43	60	114	204	157	533	750	1,171	548
Mhaswa ...	113	52	234	451	346	533	178	157	456	991	664	1,148	1,634	2,924	2,465	4,025

164. The small increase in kharif and decrease in rabi areas under both the tanks are due to the same causes as are explained in the case of Jamda canals. The decrease in gross assessed revenue is due to very low receipts from sale of unsubmerged lands given out for cultivation.

WEST KHANDESH DISTRICT.

Works depending on river supply from Ghat catchment supplemented by a tank with a Deccan catchment.

(10) LOWER PANJHRA RIVER WORKS.

165. The source of supply of these works is the river Panjhra, supplemented by the Mukti tank storage when the former decreases. On 1st April 1916 the contents of the Mukti tank was 188.14 million cubic feet which decreased to 181.19 million cubic feet on 16th June 1916. The first noticeable replenishment was received on 8th July, raising the storage to 182.82 million cubic feet and the maximum supply, viz., 324.23 million cubic feet, was reached on 24th July, when the water began to flow over the waste weir and continued till nearly 31st October 1916. Owing to timely and copious rain it was not necessary to let down the tank water during the whole year to supplement the flow in the river. Hence at the beginning of the year the storage in the tank was 275.07 million cubic feet.

166. The rainfall was 33.61 inches and was generally confined to the kharif season as in 1915-1916.

167. The following table shows the area irrigated during the year, the assessment and the working expenses compared with the average of the past three years :—

	Area irrigated.						Assessment.						Revenue from other sources.	Working expenses.	
	Kharif.		Rabi.		Total.		Kharif.		Rabi.		Total.				
	1916-17.	Average of the past 3 years.	1916-17.	Average of the past 3 years.	1916-17.	Average of the past 3 years.	1916-17.	Average of the past 3 years.	1916-17.	Average of the past 3 years.	1916-17.	Average of the past 3 years.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
LOWER PANJHRA RIVER WORKS.															
Mukti Tank.															
Patasbhal lands.	1,458	1,526	353	167	1,811	1,813	7,594	7,194	756	1,158	8,349	8,352	...	...	...
Jirayal lands.	123	146	455	517	617	663	729	563	2,009	2,168	2,738	2,731	2,150	1,651	7,187
Total ...	1,580	1,772	848	704	2,429	2,476	8,323	7,757	2,764	3,326	11,087	11,083	2,150	1,651	7,187

168. The area under patasthal is almost the same, but there was a slight fall in the area under dry crops, which is partially due to smaller demand of water during the kharif season owing to favourable rains. The revenue from patasthal lands is fixed under the Survey Settlement. The revenue derived from other sources is greater by Rs. 422 than that of the last year and exceeds the average of the past three years.

169. The cost of measurement of the land irrigated during the year amounted to Rs. 3-11-3 which gives a rate of one anna and 3 pies per acre.

SATARA DISTRICT.

(15) KRISHNA CANAL.

(Supply—River with Ghat Catchment.)

170. In connection with the improvements to increase the storage capacity of the pool above the Khodsi weir, an expenditure of Rs. 1,560 was incurred during the year on the construction of the buttress wall and the raising of the curved portion of the existing weir. The work of fixing falling shutters for the crest was held in abeyance on account of the rise in the price of iron work. The expenditure from the commencement of work to end of 1916-17 is Rs. 59,086.

171. The rainfall gauged at Retre budruk was less than that of the previous year and was almost equal to the average of the past ten years:—

Year.	Kharif.	Rabi.	Total.
	Inches.	Inches.	Inches.
1915-16	28·54	3·64	32·18
1916-17	17·67	10·29	27·96
Average of the previous ten years ...			27·91

172. The supply in the river as gauged in April 1916 was 123·87 cusecs. It began to increase in May and reached its maximum in August when it measured 11,405·56 cusecs. The supply decreased during the following months, and, with slight changes, stood at 488·67 cusecs in March 1917.

173. The area irrigated during the year was 3,399 acres and assessment Rs. 68,456 against 3,424 acres and Rs. 71,201 of the previous year and 4,004 acres and Rs. 59,727, the averages of the previous three years. Although the kharif area was greater by 176 acres than that of the previous year, it was more than counterbalanced by the decrease of 200 acres in the rabi area. This decrease is due to less demand for water on account of seasonable rainfall.

174. The working expenses including direct and indirect charges amounted to Rs. 16,099 or to Rs. 4·74 per acre against Rs. 13,959 or Rs. 4·03 per acre of the previous year and Rs. 3·27, the average of the previous three years.

175. Deducting working expenses, the net profit of the year was Rs. 55,476 compared with Rs. 68,276 of the previous year and Rs. 52,006, the average of the previous three years.

(33) REWARI CANAL.

(Deccan Catchment.)

176. The rainfall gauged at Rewari during the year was less than that of the previous year but greater than the average:—

Year.	Kharif.	Rabi.	Total.
	Inches.	Inches.	Inches.
1915-16	31·67	2·35	34·02
1916-17	23·63	6·71	30·34
Average of previous ten years ...			25·71

177. The **area irrigated** was 870 acres and the assessment Rs. 5,588 against 951 acres and Rs. 5,939 of the previous year and 1,058 acres and Rs. 5,342, the corresponding averages of the previous 3 years. As compared with the previous year there was an increase of 15 acres in the kharif area, but the copious rains during the rabi season caused a decrease of 90 acres in the area which used canal water. The **working expenses**, direct and indirect, amounted to Rs. 1,862 against Rs. 2,014 of the previous year and Rs. 2,156, the average of the past three years.

178. The operations of the year showed a **net profit** of Rs. 4,237, compared with Rs. 4,034 of the previous year and Rs. 4,131, the average of the previous three years.

(34) UPPER MAN RIVER WORKS.

(Deccan Catchment.)

179. The **rainfall** gauged at Gondavla during the year was greater than that of the previous year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	15.17	2.03	17.20
1916-1917	... ..	14.66	13.20	27.86
Average of previous ten years ...				17.66

180. In the beginning of the year, the supply in the Pingli tank was only 76 million cubic feet and this too gradually subsided. On 31st May 1916, however, a very substantial replenishment was received and the tank level rose to R. L. 2367.89 which is equivalent to 109 million cubic feet of water. With subsequent decrease and increase in levels of the tank, it rose to R. L. 2371.09 equal to 155 million cubic feet on the 5th July 1916, when the tank was full, and continued so till the 24th November 1916. After this the level of water began to fall owing to the utilization of water for irrigation purposes. The quantity of water remaining in the tank on 31st March 1917 was 68.30 million cubic feet.

181. The **area irrigated** was 699 acres and the assessment Rs. 3,287 as compared with 876 acres and Rs. 3,666 in the previous year and 995 acres and Rs. 3,985, the average figures of the previous three years.

182. The **working expenses**, including direct and indirect charges, amounted to Rs. 3,067 against Rs. 1,946 in the preceding year and Rs. 2,710, the average of the previous three years.

183. The increase in the working expenses is due to the repairs carried out to the masonry escapes and to embankments damaged by heavy rains.

184. The operations of the year show a **net profit** of Rs. 1,267 against Rs. 1,920 of the previous year and Rs. 1,848, the average of the previous three years.

(35) YERLA RIVER IRRIGATION WORKS.

(Deccan Catchment.)

185. The **rainfall** gauged at Khatgun was greater than that of the previous year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	25.38	1.86	27.24
1916-1917	... ..	22.59	7.83	30.47
Average of previous ten years ...				24.80

186. On 31st March 1916 the level of water in the Nehr tank was at R. L. 2658.68, equivalent to a storage of 274 million cubic feet. It continued to fall till 31st May 1916, on which date a substantial replenishment was received and water in the tank began to overflow. This state of things continued till the 26th October 1916 on which date the level of water reached 2667.40 equal to 457 million cubic feet. This was the highest level reached during the year. The level of water began to fall owing to demand for water for irrigation purposes and the balance of water left on 31st March 1917 was 334 million cubic feet.

187. The area irrigated and the assessment were respectively 2,476 acres and Rs. 12,570 against 4,003 acres and Rs. 17,256 of the previous year and 4,827 acres and Rs. 19,806, the average figures of the previous three years.

188. The working expenses, including direct and indirect charges, amounted to Rs. 7,426 against Rs. 13,339 of the previous year and Rs. 17,049, the average of the previous three years.

189. The result of the year's operations was a net profit of Rs. 5,631 against Rs. 5,792 of the previous year and Rs. 4,168, the average of the previous three years.

(36) CHIKHLI CANAL.

(Deccan Catchment.)

190. The rainfall gauged at Chikhli was greater than that of the previous year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	19.88	5.95	25.84
1916-1917	... ..	19.53	8.98	28.51
Average of the previous ten years ...				21.63

191. The area irrigated and the assessment were 193 acres and Rs. 2,095 respectively against 232 acres and Rs. 1,738 of the previous year and 346 acres and Rs. 1,720, the average figures of the previous three years.

192. The working expenses, including direct and indirect charges, amounted to Rs. 782 against Rs. 855 of the previous year and Rs. 1,416, the average of the previous three years.

193. The operations of the year showed a net profit of Rs. 2,606 against Rs. 681, the average of the previous three years.

(37) MAINI TANK.

(Deccan Catchment.)

194. The rainfall gauged at Maini was about double of that of the previous year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	25.02	2.24	27.26
1916-1917	... ..	28.75	17.83	46.58
Average of the previous ten years ...				24.27

195. The level of water in the tank was lowest on 19th May 1916, when the tank was practically dry. The water commenced to rise thereafter till it reached its maximum level of the year, viz., 2305.77.

196. The area irrigated was 1,499 acres and assessment Rs. 6,413 against 1,743 acres and Rs. 7,153 of the previous year and 1,886 acres and Rs. 7,611, the averages of the past three years.

197. The working expenses, direct and indirect, amounted to Rs. 3,141 against Rs. 2,817 of the previous year and Rs. 2,755, the average of the previous three years.

198. The result of the year's operations was a net profit of Rs. 4,808 against Rs. 4,414 of the previous year and Rs. 5,338, the average of the past three years.

BIJAPUR DISTRICT.

(38) MUCHKUNDI TANK.

199. The rainfall gauged at Muchkundi was greater than that of last year and more than double of the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	16.67	3.62	20.19
1916-1917	... ..	19.79	16.88	36.67
Average of the previous ten years ...				17.87

200. Water in the tank was below the sluice level till 21st May 1916. It began to rise from the 22nd May 1916 till it reached its maximum height of the year, viz., 6 feet above the crest of the weir on 1st November 1916.

201. Water was allowed free for irrigation under the authority of Government Order No. A. I.-3685, dated the 27th March 1914.

202. The working expenses amounted to Rs. 143 against Rs. 316 of last year and Rs. 277, the average of the previous three years.

203. The result of the year's operations was a net profit of Rs. 28 (which was entirely due to receipts from canal produce such as sale of grass) as compared with Rs. 1,192 of last year and Rs. 961, the average of the previous three years.

BELGAUM DISTRICT.

(39) GADIKERI TANK.

(Ghat Catchment.)

204. The management of this tank is in the hands of the Revenue Department.

205. The area irrigated during the year was 377 acres and the irrigation share of the consolidated assessment amounted to Rs. 2,061.

206. The working expenses, direct and indirect, were Rs. 339 against Rs. 343 of last year and Rs. 348, the average of the previous three years.

207. The result of the year's operations was a net profit of Rs. 1,722 as compared with Rs. 1,718 of last year and Rs. 1,713, the average of the past three years.

(40) GOKAK CANAL, FIRST SECTION AND STORAGE WORKS.

(Ghat Catchment.)

208. The rainfall gauged at Dhupdal was considerably greater than that of the previous year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	16.23	5.15	21.68
1916-1917	... ..	11.70	20.53	32.23
Average of the previous ten years ...				21.22

209. The water in the Dhupdal storage reached its lowest level on 13th May 1916 when it stood at 17 feet above the outlet sill. The tank began to fill from the 14th May 1916 and overflowed on the 28th idem. The maximum flood of the year occurred on the 4th August 1916, when the water level rose to 3.34 feet above the permanent weir crest (R. L. 2,008.00). This flood is estimated at 71,402 cubic feet per second, which is equal to a run-off of 0.10 inch per hour from the whole catchment area of 1,080 square miles.

210. As has been customary for some years past, the usual work of building a temporary wall two feet high, on the crest of the weir, was carried out at a cost of Rs. 2,235 with a view to impound thereby an additional storage to increase rabi irrigation and also to meet the requirements of the Gokak mills. The additional supply, thus obtained, was found to be very useful.

211. The area irrigated during the year and the assessment thereon were 4,236 acres and Rs. 24,610 respectively against 4,666 acres and Rs. 24,304 of last year and 7,217 acres and Rs. 33,381, the averages of the past three years. The decrease is due to a falling off in the demand for water on account of seasonable rainfall.

212. The area cultivated in the tank bed during the year and assessment thereon were 201 acres and Rs. 943 respectively against 147 acres and Rs. 630 of last year and 272 acres and Rs. 1,157, the averages of the previous three years.

213. The working expenses, including direct and indirect charges, amounted to Rs. 11,186 against Rs. 10,998 of last year and Rs. 11,636, the average of the previous three years.

214. The result of the year's operations was a net profit of Rs. 30,601 as compared with Rs. 31,401 of last year and Rs. 39,717, the average of the previous three years.

DHARWAR IRRIGATION DISTRICT.

(41) DAMBAL TANK.

(Deccan Catchment.)

215. The rainfall gauged was greater than that of the previous year and the average:—

Year.	Khari.	Rabi.	Total.
	Inches.	Inches.	Inches.
1915-1916	16.03	4.4	20.67
1916-1917	7.78	18.42	26.20
	Average of the previous ten years		16.52

216. Owing to good rainfall throughout the season the tank had a satisfactory supply of water throughout the year.

217. The area irrigated and the assessment were 106 acres and Rs. 398 respectively against 72 acres and Rs. 325 of last year and 117 acres and Rs. 360, the averages of the previous three years. Compared with the average, the decrease in the area irrigated and the increase in the assessment were respectively due to less demand for water owing to seasonable rainfall and increase in the water rates.

218. The area of irrigated lands assessed at consolidated rates was 144 acres and the irrigation share of revenue was Rs. 916.

219. The working expenses, including direct and indirect charges, amounted to Rs. 1,273 against Rs. 1,259 of last year and Rs. 1,015, the average.

220. The operations of the year resulted in a net profit of Rs. 688 against Rs. 219 of the previous year and Rs. 796, the average of the previous three years.

(42) MEDLERI TANK.

(Deccan Catchment.)

221. The rainfall gauged was greater than that of last year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	9·20	2·44	11·64
1916-1917	... ..	11·36	11·58	22·94
Average of previous ten years ...				12·56

222. On the 1st April 1916 the water level in the tank was at the level of the outlet sill. The tank began to receive replenishments from 22nd May 1916 and at the end of the year there was 10·70 feet of water above the outlet sill. The tank maintained a fair supply of water throughout the year.

223. The area irrigated and the assessment respectively were 50 acres and Rs. 499 against 72 acres and Rs. 528 of last year and 70 acres and Rs. 563, the averages of the previous three years. The decrease in the area and assessment was due to timely and seasonable rainfall.

224. The working expenses amounted to Rs. 863 against Rs. 919 of the last year and Rs. 1,183, the average of the previous three years.

225. The operations of the year showed a net deficit of Rs. 38.

(43) ASUNDI TANK.

(Deccan Catchment.)

226. The rainfall gauged was slightly greater than that of the previous year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	18·44	3·71	22·15
1916-1917	... ..	10·37	13·39	23·76
Average of previous ten years ...				21·17

227. On 1st April 1916 the water level in the tank was 4 feet above the actual bed of the tank. The tank received replenishments in May and subsequent months and the waste weir overflowed a little from 22nd July 1916 to 25th July 1916, and also on five days in September 1916, the highest flood level being 2 feet on the waste weir on the 11th November 1916. At the end of the year, there was 4·60 feet of water in the tank above the sill. The tank maintained a continuous and sufficient supply of water throughout the year for irrigation purposes.

228. The area irrigated and the assessment were respectively 152 acres and Rs. 727 against 130 acres and Rs. 655 of the last year and 138 acres and Rs. 615, the averages of the previous three years. The increase in the area and assessment during the year was due to sufficient supply of water in the tank to meet the requirements of the irrigators.

229. The area irrigated under consolidated assessment was 190 acres and the irrigation share of revenue was Rs. 687 or Rs. 3·62 per acre.

230. The working expenses amounted to Rs. 1,132 against Rs. 1,127 of last year and Rs. 1,269, the average of the previous three years.

231. The year's operations resulted in a net profit of Rs. 829 against Rs. 245 of the last year and Rs. 97, the average.

(44) MADAG TANK.

(Ghat Catchment.)

232. The rainfall gauged at Masur was greater than that of the last year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	16·64	5·03	21·12
1916-1917	... ..	16·11	12·65	28·76
Average of the previous ten years ...				26·42

233. On 1st April 1916 there was 2·29 feet of water in the tank above the outlet sill. The water level fluctuated slightly between 20th April 1916 and 1st May 1916 and again between 13th May 1916 and 20th June 1916 owing to small replenishments received in the intervals. The waste weir overflowed from 21st June 1916 to 9th March 1917, the highest flood level being 7·49 feet above the waste weir crest on the 6th August 1916. The tank maintained an ample supply of water throughout the year, the water level on the 31st March 1917 being 3·96 feet above the outlet sill.

234. The area irrigated was 570 acres as compared with 514 acres of the last year and 587 acres, the average of the previous three years. The assessment was Rs. 2,352 against Rs. 2,041 and Rs. 2,181, the corresponding figures of the previous year and the average.

235. The working expenses amounted to Rs. 1,874 against Rs. 1,984 of the last year and Rs. 3,136, the average of the previous three years.

236. The operations of the year resulted in a net profit of Rs. 671 against Rs. 320 of the previous year.

(45) MAVINKOP TANK.

(Forest Catchment.)

237. There is no rain gauge available for the catchment. The water level in the tank was below the sill of outlet from 1st April 1916 to 30th September 1916 and the tank had no replenishment as the rainfall was very poor during the period. The tank was rapidly replenished from the 1st October 1916 and filled by the end of November 1916. The waste weir overflowed in December 1916 by the excessive rainfall in the latter part of the monsoon and the water level afterwards fell gradually. The level of water on 31st March 1917 was at R. L. 107·70, the R. L. of waste weir being 110·50. The tank had sufficient storage of water throughout the year. The whole of the irrigated area of 597 acres is assessed at consolidated rates. The irrigation share thereof during the year was Rs. 2,244. The working expenses amounted to Rs. 2,170 against Rs. 823 of the last year and Rs. 726, the average of the previous three years. The increase in the working expenses was mainly under establishment charges and steps are being taken to cut them down as far as possible.

238. The operations of the year showed a net profit of Rs. 74 against Rs. 1,421 of last year and Rs. 1,528, the average of the previous three years.

(46) DHARMA CANAL.

(Ghat Catchment.)

239. The rainfall at Yekambi, which is in the catchment of the Dharma river, was more than that of the last year and the average :—

Year.		Kharif.	Rabi.	Total.
		Inches.	Inches.	Inches.
1915-1916	... ..	70·45	7·46	77·91
1916-1917	... ..	59·24	21·93	81·17
Average of the previous seven years ...				79·52

240. Water was admitted into the canal on the 13th June 1916 and the canal ceased to flow on 3rd November 1916. The monsoon for 1916-1917 was favourable for sowing operations. The distribution of water was tactfully managed by the irrigation subordinates and there were no complaints from the rayats.

241. The area irrigated during the year at crop rates was 508 acres against 522 acres of the previous year. The assessment was Rs. 2,201 as compared with Rs. 2,690, the corresponding figure of the previous year.

242. The area assessed at consolidated rates was 7,861 acres and the irrigation share of revenue was Rs. 18,195.

243. The total revenue from all sources amounted to Rs. 20,480 against Rs. 21,003 in the previous year.

244. The working expenses amounted to Rs. 1,158 as compared with Rs. 2,524 of the previous year.

PART II.

COMPRISING SECOND CLASS IRRIGATION WORKS FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT—AND AGRICULTURAL WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

245. The whole area of irrigation and revenue due from Second Class Irrigation Works in the Deccan and Gujarat as recorded in the register of these works is 275,570 acres and 10,21,390 rupees with the exception of districts for which lists are not prepared. The figures will be modified when new or revised lists are issued.

246. The following table shows the areas irrigated in the different districts in the Deccan and Gujarat and the consolidated revenue assessed during the year 1916-17 in respect of irrigation works on which expenditure has been incurred during the year :—

Collectorate.	Number of Works.	Area irrigated.	Revenue.			Remarks.
			Irrigation share.	Land share.	Total.	
		Acres.	Rs.	Rs.	Rs.	
(a) Ahmedabad ...	49	1,572	1,634	5,143	6,827	(a) Works in charge of the Executive Engineer, Gujarat Irrigation District.
(a) Kaira ...	83	7,517	* 7,272	16,190	23,462	* Includes Rs. 35 on account of Water rates—Direct receipts.
(a) Panch Mahals ...	34	170	† 1,873	190	2,063	† Do. Rs. 1,258 do.
Surat ...	23	911	2,219	9,484	11,703	† Do. Rs. 1,404 do.
Broach ...	...	...	...	...	...
West Khandesh ...	10	1,497	† 9,444	3,786	13,230	
East Khandesh ...	2	504	2,971	1,312	4,283	
(b) Nasik ...	34	5,690	45,400	8,412	53,812	(b) Works in charge of the Executive Engineer, Nasik and Ahmednagar Irrigation District.
Ahmednagar ...	...	...	...	...	...	Two pats, viz., Savargaon and Gordani, are struck off the list of second class irrigation works—vide G. R., P. W. D., No. 8337, dated 10th August 1916.
Poona ...	1	26	154§	...	154§	§ Water rates—Direct receipts.
Satara ...	...	...	...	...	...
Belgaum ...	16	1,052	5,223	1,306	6,529	
Dharwar ...	64	9,893	38,728	9,692	48,420	
(c) Kanara ...	17	2,525	6,523	1,631	8,154	(c) Works in charge of the Executive Engineer, Dharwar Irrigation District.
Bijapur ...	3	595	2,200	2,048	4,248	
Ratnagiri ...	2	316	1,324	46	1,370	
Total ...	336	32,268	(d) 1,25,015	59,240	1,84,255	

(d) Direct receipts—	Rs.
Water rates ...	2,851
Indirect receipts ...	1,22,164
	<u>1,25,015</u>

247. The actual expenditure and receipts for the year 1916-17 on the works referred to in paragraph 246 were as follows :—

Collectorate.	EXPENDITURE.								ACTUAL RECEIPTS.												
	Direct Charges.								Direct Receipts.			Indirect Receipts.	Grand Total, Direct and Indirect Receipts.	Less Refunds of Revenue.	Gross Receipts Less Refunds.						
	Extensions and Improvements.	Maintenance and Repairs.	Establishment.		Tools and Plant.	Total.	Share of Collection Charges.	Grand Total.	Water Rates from Irrigation.	Miscellaneous.	Total Direct Receipts.	Share of Consolidated Revenue.									
			Direction.	Executive.																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16						
Ahmedabad	Rs. 15,632	Rs. 16,644	} 5,012	} 39,721	} 1,489	} 1,65,520	} 727	} 1,66,608	Rs. ...	Rs. ...	Rs.	Rs. 1,684	Rs. 1,684	Rs. ...	Rs. 1,684						
Kaira	54,599	17,784							Rs. 291	Rs. 1,093	Rs. 97	Rs. 8,269	Rs. 526	Rs. 8,795	Rs. ...	Rs. 38	Rs. 38	Rs. 5,223	Rs. 5,261	Rs. ...	Rs. 5,261
Panch Mahals	12,546	2,098							Rs. 291	Rs. 1,093	Rs. 97	Rs. 8,269	Rs. 526	Rs. 8,795	Rs. ...	Rs. 38	Rs. 38	Rs. 5,223	Rs. 5,261	Rs. ...	Rs. 5,261
Surat	.....	6,665	300	1,131	100	8,196	222	8,418	.....	2	2	2,219	2,221	.....	2,221			
Broach	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Khandesh	74	4,616	210	820	70	5,790	874	6,664	1,404	.....	1,404	8,040	9,444	.....	9,444				
East Khandesh	.....	761	34	177	12	984	297	1,281	.....	.....	.....	2,971	2,971	.....	2,971	
Nasik	3,802	24,526	1,266	14,113	4,407	48,114	4,540	52,654	.....	.....	.....	45,400	45,400	.....	45,400		
Ahmednagar	.....	1,212	55	206	18	1,491	.....	1,491	.....	.....	.....	.....	.....	.....	.....
Poona	.....	4	.....	2	.....	6	15	21	154	.....	154	.....	154	.....	154
Satara	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgaum	868	5,915	291	1,093	97	8,269	526	8,795	.....	38	38	5,223	5,261	.....	5,261				
Dharwar	190	24,912	1,104	27,633	605	54,444	3,978	58,322	.....	172	172	39,728	38,900	.....	38,900				
Kanara	.....	.....	.....	.....	.....	.....	652	652	.....	.....	.....	6,523	6,523	.....	6,523
Bijapur	.....	144	5	44	2	195	220	415	.....	.....	.....	2,200	2,200	.....	2,200	
Ratnagiri	.....	146	5	21	2	174	132	306	.....	.....	.....	1,324	1,324	.....	1,324	
Total	87,711	1,05,422	8,282	84,966	6,802	2,93,183	12,439	3,05,622	2,851	2,613	5,464	1,22,164	1,27,628	1,27,628						

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DETAILED REPORTS BY DISTRICT OFFICERS.

WORKS FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

GUJARAT IRRIGATION AND SURAT AND BROACH DISTRICTS.

248. During the year the **rainfall** was local, badly distributed, and not sufficiently intense, especially in the catchment of the Khari river, the flow in which did not reach Pinglaj at all and consequently it was found necessary to save the rice crop on the Khari sluices by means of the channels from the Khari Cut canal. Though, on account of scanty rainfall and the absorption on the way, not more than one-fourth of the volume let down at the head of the canal at Ghodasar reached the Khari at Bidaj, the people of Navagam, the most important village, were enabled to transplant about 200 acres and those of Pinglaj about 100 acres. In Naika, Chanindra and Navagam (lower portion) some transplantation was made on the overflow of the Sabarmati river, which was heavily flooded twice owing to the extraordinarily heavy rainfall in its catchment round about "Mount Abu". In Dathal, Goblaj, Pansoli, Kanera, Malarpura, etc., some rice was transplanted on rain water. Water from the Hathmati canal, which luckily had a pretty good supply, as the Hathmati river was in flood twice (in June and August 1916), was run into the Khari river through the Bokh reservoir and the Bhujwa channel by the connecting channels recently made, and the rice crop over an area of 1,200 to 1,500 acres was thereby saved for the first time.

Khari irrigation sluices.

249. Further, with a view to reduce the loss on account of absorption and evaporation on the way, which is generally great in such years, it was arranged to issue canal water to the fields nearest the canal and its branches and only one or two waterings were given in order to save the early transplanted crop. It was almost impossible to save that which was transplanted late, as it required not less than three or four heavy waterings which could not be given. In doing so, both the objects of saving the crops over as large an area as possible and economizing the supply were achieved and every drop of water was used to the best advantage.

250. The sluices were maintained at a cost of Rs. 3,440, and Rs. 4,543 were spent on their improvements such as making feed channels, constructing bridges and providing other masonry works and repairing the Goblaj tank and the Bherai reservoir, etc.

251. Most of the small tanks were not filled at all during the year as owing to the deficient rainfall there was little or no run-off, and what little there was occasionally, was held up in the fields.

252. The **remissions** granted by the Collector owing to the deficiency of water supply and the consequent failure of the rice crop amounted to Rs. 23,978.

253. The **miscellaneous revenue** derived from the Khari sluices amounted to Rs. 1,436 during the year. The following table compares the **area irrigated** and the **assessment** levied with the average of the previous 10 and 3 years :—

	Average of 10 years ending 1915-1916.		Average of 8 years ending 1915-1916.		1916-1917.	
	Area.	* Revenue after deducting remissions.	Area.	* Revenue after deducting remissions.	Area.	* Revenue after deducting remissions.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.
I.—Irrigation above the Kalambandi villages ...	774	3,469	735	3,619	653	2,402
II.—Irrigation from tanks fed by the River Khari ...	198	572	198	506	158	386
III.—Irrigation below the Kalambandi villages ...	385	1,769	...	.....†	...	.....†
IV.—Irrigation from the Khari Sluices proper (i. e., 10 Kalambandi villages) ...	6,743	32,603	6,398	32,492	6,165‡	18,512
	8,105	38,413	7,831	36,617	7,016	21,300

* The revenue is consolidated and exclusive of Inamders' shares.

† Since the year 1912-13 no figures of irrigation are shown under the head "III.—Kalambandi villages," as the people of Kaloli (which is the only village coming under that head) objected to water-rates being levied as they received no water from the Khari River; and the water-rates amounting to Rs. 2,948 on 641 acres which had been assessed for over 20 years have been wholly remitted, and the village itself has been struck off Canal Return VIII.

‡ The reduction in the area irrigated under the head "IV.—Irrigation from the Khari Sluices proper" is chiefly due to the abandonment of land assessed to himayat by some people at the time of the Revision Survey and also to 121 acres of land having been taken up in the Gobraj tank. The decrease in revenue under all the heads is due to the scanty rainfall, as compared with the average of the three preceding years.

254. The assessment under the Khari sluices proper, i. e., of the "Kalambandi" villages being consolidated, the average rates per acre for land and water, respectively, were as under :—

	Irrigation share.	Land share.	Total consolidated.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Government land ...	1 11 1	3 4 4	4 15 5
Alienated land ...	0 4 11	0 11 11	1 0 10

255. During the year, 184 old tanks, viz., 52 in Ahmedabad (inclusive of 6 Talukdari), 79 in Kaira, 34 in Panch Mahals and 19 in the Surat and Broach Districts, were either repaired or improved at a total cost of Rs. 1,23,352, while Rs. 2,567 were spent on surveys and preparation of plans and estimates for repairs or improvements to a number of similar tanks in the Ahmedabad and Kaira and Panch Mahals Collectorates. Out of the above works 121 were completed, while repairs to the remainder were in progress. Some of the tanks repaired or improved in the Gujarat Irrigation District have been brought on to the list of tanks to be maintained by the Irrigation Department and others will be brought on as soon as their examination, which is going on in all the talukas with that object in view, is finally completed.

256. The area irrigated and the revenue derived from the old irrigation tanks and bunds are as under :—

District.	Area irrigated.	Revenue.		Total.
		Irrigation share.	Land share.	Net consolidated assessment.
		Rs.	Rs.	Rs.
Ahmedabad ...	Acres. 10,725	17,137	30,383	47,520
Kaira ...	1,897	3,232	4,430	7,662
Panch Mahals ...	170	615	190	805
Surat ...	3,498	9,249	30,322	39,571
Broach ...	775	1,243	4,055	5,298
Total ...	17,065	31,476	69,330	1,00,856

POONA IRRIGATION DISTRICT.

257. The following table gives the area irrigated, the consolidated assessed revenue and the irrigation share thereof for the six irrigation work in the Poona Collectorate for which only revenue accounts are kept for the year 1916-17 :—

Name of work.	Area irrigated.	Net consolidated revenue.		
		Irrigation share.	Land share.	Total.
	A. g.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Dam at Kasur	25 23	161 9 6	.....	161 9 6
Dam at Vadaj	150 33	649 0 2	.....	649 0 2
Dam at Agar	53 18	546 0 0	111 4 0	657 4 0
Dam at Narayangaon	427 17	3,003 14 6	1,146 5 3	4,150 3 9
Tank at Patas ... ..	...	.....	.....	.....
Vadhana tank and channel	14 39	22 4 0	8 10 0	30 14 0
Total	672 15	4,382 12 2	1,266 3 3	5,648 15 5

258. The increase in assessment is due to second revision settlement.

259. During the year under report a sum of Rs. 5-6-0 was spent on repairs to the dam at Kasur, exclusive of charges for establishment and tools and plant.

260. The following table shows the average area irrigated during the past three years and the revenue assessed on the works compared with the figures of the year under report :—

Period.	Area irrigated.	Irrigation share of revenue.
	Acres.	Rs.
For the year 1916-17	672	4,383
Average of past three years	689	3,500

NASIK AND AHMEDNAGAR IRRIGATION DISTRICT.

261. The area irrigated and the revenue derived from lands irrigated by bandharas in the Nasik Collectorate, for which only revenue accounts are kept, were as shown below :—

Area irrigated.	Net consolidated revenue.		
	Irrigation share.	Land share.	Total.
Acres. 23,199	Rs. 1,81,668	Rs. 50,293	Rs. 2,31,961

262. Remissions granted by the Revenue Department during the year under review on account of short supply to certain thals amounted to Rs. 3,482, i.e., 3,707 less than in the previous year.

263. The expenditure during the year on these works was Rs. 28,328 exclusive of charges for establishment and tools and plant. This figure is also exclusive of Rs. 5,262, which represents Inamdars' contribution towards Deothan bandhara in Baglan Taluka.

264. The water supply in general was satisfactory on account of timely and copious rainfall and the result was that on the average the harvest was extremely good.

265. The following table shows the average area irrigated during the past three years and the revenue assessed on works as compared with the figures of the year under report :—

Period.			Area irrigated.	Irrigation share of revenue.
			Acres.	Rs.
For the year 1916-17	...	...	28,199	1,81,063
Average of past three years	...	...	23,596	1,06,433

EAST KHANDESH DISTRICT.

266. The area irrigated and the revenue derived from each of the old second class irrigation works are shown below :—

No.	Name of work.	Area irrigated.	Revenue.			
			Irrigation share.	Land share.	Total.	
		Acres.	Rs.	Rs.	Rs.	
1	Patonda channel	...	171	793	313	1,109
2	Toli channel	...	70	558	151	709
3	Amalner channel	...	372	2,175	999	3,174
	Total	...	613	3,529	1,463	4,992

267. The outlay on these works was Rs. 949 against Rs. 140 in the previous year. The details are as under :—

Maintenance and repairs	...	...	...	...	Rs. 761
Establishment	...	...	...	...	177
Tools and plant	...	...	...	...	11
					949

268. This expenditure was mainly incurred on executing certain special repairs to Patonda and Amalner bandhara and channels.

WEST KHANDESH DISTRICT.

269. The area irrigated and the revenue derived from the old irrigation works are shown below :—

Year.	Area irrigated.	Revenue.			
		Irrigation share.	Land share.	Total.	
	Acres.	Rs.	Rs.	Rs.	
1916-17	...	8,872	58,204	14,184	72,388
Average of the previous three years	...	8,962	56,382	13,831	70,213

270. These figures are exclusive of old irrigation on the Lower Panjhra River Works. The outlay on these works was Rs. 5,581 as detailed below against Rs. 15,633, the average of the previous three years :—

Description.	Expenditure.			
	1916-17.	Average of the previous three years.		
	Rs.	Rs.		
Extensions and improvements	75	1,402
Maintenance and repairs	4,616	11,812
Establishment	320	2,250
Tools and plant	70	169
Total	5,581	15,633

271. The old works on the Lower Panjhra River consist of the old bandharas and channels, viz. :—

Dhulia bandhara and channel.	
Nimkhedi	do.
Japi	do.
Nahalod	do.
Kavtha	do.
Betawad	do.
Mandal	do.
Mudhi	do.

They are repaired from the annual provision of Rs. 3,000 made for maintenance and repairs of Lower Panjhra River Works under "42.—Major Works."

272. **Expenditure** as noted against each of the following works was incurred during the year—

			Rs.
Repairs to Shenpur bandhara and channel	...	...	2,096
Upper Dang Shirwada bandhara and channel	...	...	947
Lower do.	...	...	847
Providing a weir across Lendi nalla on Lower Kusumba bandhara and channel	...	...	85
Making repairs to War bandhara and channel	...	...	80
Repairs to Datarti bandhara and channel...	...	...	247

273. The area irrigated under the Shahada channel was 108 acres which is exactly the same as the average of the last three years.

BELGAUM DISTRICT.

274. The total number of second class tanks irrigating over 50 acres each in this district is 67 with an irrigated area of 9,916 acres paying a consolidated assessment of Rs. 41,319, of which the irrigation share is Rs. 33,053.

275. A sum of Rs. 5,915 was spent during the year on repairs to some of these tanks.

DHARWAR IRRIGATION DISTRICT.

276. The expenditure incurred during the year on repairs to the second class tanks in the Dharwar and Kanara Collectorates was Rs. 24,912.

277. The area under command of tanks irrigating more than 50 acres each and assessed at consolidated rates is 63,981 acres. During the year under report 61,777 acres were irrigated against 61,400 acres of the previous year and the consolidated assessment was Rs. 2,16,028, out of which remissions to the extent of Rs. 30 were granted by the Collector for shortage of water. The net consolidated assessment was thus Rs. 2,15,998, of which the irrigation share was Rs. 1,72,800. In addition to the above, the following revenue was realized from miscellaneous sources :—

<i>Revenue Department.</i>		Rs.	Rs.
Water rates		367	
Other canal produce		853	
		—	1,220
<i>Public Works Department.</i>			
Sale-proceeds of trees		...	200
			—
		Total	1,420

278. Thus, the total revenue amounted to Rs. 1,74,220 and the net profit, after deducting working expenses of Rs. 71,846, was Rs. 1,02,374.

BIJAPUR DISTRICT.

279. There are altogether 12 second class tanks in this district, which irrigate a total area of 1,219 acres assessed at consolidated rates. During the year under report 1,076 acres were irrigated, the consolidated assessment

being Rs. 6,682, of which Rs. 3,891 was the irrigation share. An expenditure of Rs. 123 was incurred during the year on repairs to two of these tanks.

RATNAGIRI DISTRICT.

280. There are four irrigation works in the Ratnagiri Collectorate, which irrigated 1,229 acres during the year. The consolidated assessment and the irrigation share were Rs. 7,176 and Rs. 4,572 respectively. A sum of Rs. 123 was spent on maintaining two of the tanks.

SATARA DISTRICT.

281. There are only two second class works in the Satara District, viz. :— the bandharas at Boregaon and Sap. The total area irrigated by these two works, which are assessed at consolidated rates, is 163 acres. During the year under report 131 acres were irrigated, the consolidated and irrigation share being Rs. 1,715 and Rs. 1,030 respectively.

AGRICULTURAL WORKS.

WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

GUJARAT IRRIGATION AND SURAT AND BROACH DISTRICTS.

282. All the drainage channels in the Surat and Broach and Gujarat Irrigation Districts worked satisfactorily and were maintained at a total cost of Rs. 4,800 and Rs. 5,063 respectively.

POONA IRRIGATION DISTRICT.

KHAMGAON TANK.

283. This partially completed tank was dry from 18th to 28th May 1916, when it began to receive replenishment. During the year under report the tank overflowed twice, the overflow for the first time lasting for 25 days and for the second time for 36 days. The highest depth of water passing over waste weir was 1.10 feet. The crest of the waste weir is at R. L. 98 and the sill of sluice at R. L. 61.25. During the kharif season 35 acres were irrigated and during the rabi season 24 acres, the total area irrigated during the year being 59 acres and the gross assessed revenue Rs. 340. The corresponding figures for the last year were 29 acres for the kharif and 78 acres for the rabi season, the total area irrigated and gross assessed revenue being 107 acres and Rs. 513 respectively.

SHOLAPUR DISTRICT.

WADSHIVNE TANK.

284. The storage in the tank on 1st April 1916 was 5.11 feet equivalent to a volume of 22.77 million cubic feet. Replenishments began to be received from 27th May and the waste weir began to flow on 8th September and continued doing so till 12th December 1916. As rainfall was seasonable the storage remained unused. The rainfall gauged at the two stations in the catchment of 14.5 square miles was 28.82 inches, which gave a total replenishment of 213.27 million cubic feet, the proportion of run-off to the total rainfall in the catchment being 21.97 per cent.

285. There was no demand for canal water during the year and hence the irrigated area was *nil*. The average area of the preceding three years was 401 acres.

286. The gross assessed revenue amounted to Rs. 131 against Rs. 2,243, the average of the preceding three years. The water rate assessed was *nil*. The decrease is due to the fact that no canal water was required for irrigation during the year.

287. The working expenses amounted to Rs. 672 against Rs. 1,113, the previous three years' average.

WEST KHANDESH DISTRICT.

TALWADA TANK.

288. The rainfall was 29.91 inches which was more by 2.82 inches than the average of the past three years.

289. On 1st April 1916 the contents of the tank were 17·07 million cubic feet and the first replenishment was received on 19th July 1916, raising the contents from 11·77 million cubic feet to 20·20 million cubic feet. The maximum supply received was only 66·98 million cubic feet on 27th October 1916. This was not a satisfactory supply.

290. The area irrigated was 261 acres and the revenue assessed Rs. 1,066 against 210 acres and Rs. 849 respectively of the previous three years' average.

BELGAUM DISTRICT.

291. A sum of Rs. 868 was spent during the year on re-building the damaged portion of the bandhara across the Badchi nalla in the Athni Taluka. The work is in progress.

Revenue Report of Irrigation Works in the
Bombay Presidency excluding Sind for
1916-1917—Review of

GOVERNMENT OF BOMBAY.

PUBLIC WORKS DEPARTMENT.

Resolution No. W.I.—5830.

Bombay Castle, 6th June 1918.

Letter from the Superintending Engineer, Central Division, No. 5917, dated 17th September 1917.

Submits Irrigation Revenue Report for his Division for 1916-1917 in Parts I and II.

Letter from the Superintending Engineer, Deccan Irrigation Division, No. 6210, dated 10th October 1917.

Forwards Irrigation Revenue Report for the Deccan Irrigation Division for the year 1916-1917.

Read letter from the Superintending Engineer, Central Division, No. 6647, dated 13th October 1917.

Letter from the Superintending Engineer, Deccan Irrigation Division, No. 6326, dated 13th October 1917.

In continuation of his No. 6210, dated 10th October 1917, submits general remarks in connection with the Irrigation Revenue Report for 1916-1917, pertaining to his Division.

Read letter from the Superintending Engineer, Deccan Irrigation Division, No. 6433, dated 17th October 1917.

Read memorandum from the Superintending Engineer, Deccan Irrigation Division, No. 6477, dated 20th October 1917.

Letter from the Superintending Engineer, Southern Division, No. 4361, dated 24th October 1917.

Submits Irrigation Revenue Report for his Division for 1916-17.

Read letter from the Superintending Engineer, Deccan Irrigation Division, No. 6666, dated 27th October 1917.

Letter from the Superintending Engineer, Northern Division, No. 8950, dated 7th November 1917.

Submits Irrigation Revenue Report for his Division for 1916-1917, in Parts I and II.

Letter from the Superintending Engineer, Central Division, No. 7662, dated 23rd November 1917.

With reference to his No. 5917, dated 17th September 1917, submits general remarks in connection with the Irrigation Revenue Report for his Division for 1916-1917.

Read letter from the Superintending Engineer, Deccan Irrigation Division, No. 7271, dated 24th November 1917.

Read letter from the Superintending Engineer, Deccan Irrigation Division, No. 7272, dated 24th November 1917.

Read letter from the Accountant General, Bombay, No. B.K.—23—1—2699, dated 12th January 1918.

RESOLUTION.—The Irrigation Works, dealt with in this report, are of three kinds, *viz.* :—

(i) Works for which Capital and Revenue Accounts are kept, commonly called First Class Works;

(ii) Works for which only Revenue Accounts are kept and known as Second Class Works in the Presidency proper; and

(iii) Works for which neither Capital nor Revenue Accounts are kept, which are called Agricultural Works.

The First Class Works are described in detail in Part I of this report and those coming under the Second Class and Agricultural Works being very small and numerous, a brief general account thereof is given in Part II.

2. The total capital outlay on the First Class Irrigation Works up to the end of 1916-1917 was Rs. 6,18,92,320 and the net revenue realized was Rs. 9,17,191. During the year under review, the direct and indirect capital expenditure on these works amounted to Rs. 25,60,371 of which sum nearly Rs. 15 lakhs were spent on the Nira Right Bank Canal and a little over Rs. 10 lakhs on the Godavari and Pravara River Projects. The Godavari Canals system has been completed and full lengths of both the canals were in operation during the year. Good progress continued to be made with the Pravara Canals which have also been practically completed with the exception of a few masonry works on the Left Bank Canal and distributaries and water-courses at the tail of the Right Bank Canal. They will, however, not be in full operation till the Lake Arthur Hill at Bhandardara is completed.

3. Excluding an area of 10,970 acres on which consolidated assessment is levied, the area irrigated was 110,169 acres, as against 136,375 acres of the previous year. In the Northern Division the supply in the canals, though better than last year, was considerably less than normal. The decrease of 26,206 acres occurred mainly in the Deccan and Southern Maratha Country. Here the demand for irrigation varies with the season. When, as in the year under report, the rainfall is favourable particularly for rabi crops, the cultivators reduce the supply they take from the canals. On the other hand, a substantial increase was obtained under sugarcane.

4. With the decrease of irrigation, there was a fall in the gross assessed revenue which amounted to Rs. 15,03,154 against Rs. 15,29,165 of the previous year. When compared with the average of the previous ten years, the assessed revenue shows an increase of Rs. 1,87,111.

5. To stimulate the production of wheat water for that crop was supplied free of charge during the rabi season of the year under report in the Deccan Irrigation Division; the area of wheat actually irrigated was 11,052 acres and the revenue foregone amounted to Rs. 53,346. Though the increase so obtained may not have been large, the measure taken at least prevented a decrease such as occurred under other rabi crops.

6. Including the previous year's outstandings, the unrealized balance at the close of the year amounted to Rs. 74,633, showing an increase of Rs. 25,140 over the previous year's figure. About half of this amount is outstanding in the Deccan Irrigation Division, and the balance is nearly equally divided between the Central and Southern Divisions, the Northern Division being responsible for about 6,000 rupees only. An effort should be made to effect prompt recovery of these large outstandings.

7. The working expenses show an increase of Rs. 4,680 on the figures for the year 1915-1916 (Rs. 7,24,668).

8. The resulting net revenue for the year was :—

	Rs.
(i) on the basis of assessment	7,73,806
(ii) on the basis of realization	9,17,191

as compared with Rs. 8,04,497 and 8,59,501 respectively during the previous year.

9. The present figures show that the total area under irrigation from Second Class Irrigation Works in the Deccan and Gujarat is 275,570 acres and the revenue obtained Rs. 10,21,390. During the year a sum of Rs. 3,05,622 was spent on the improvement and repair of 338 works out of an approximate total on the list of 8,443.

10. The irrigation officers and all officers concerned with the distribution of water should be thanked for their efficient management of the works.

11. Copies of the report and of this review should be forwarded to the Government of India. Copies should also be sent to the Secretary of State for India.

W. N. CARTLAND,
Under Secretary to Government.

G. R. No. W.I.—5830, P. W. D., dated 6th June 1918.

To

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|--|---|
| *The Revenue Department, Secretariat. | *The Accountant General, Bombay. |
| *The Financial Department, Secretariat. | *All Executive Engineers in charge of Irrigation Works. |
| *The Commissioner in Sind. | †The Government of India. |
| *The Commissioner, Northern Division. | †The Secretary, Revenue and Statistics Departments, India Office. |
| *The Commissioner, Central Division. | †The Secretary, Public Works Department, India Office. |
| *The Commissioner, Southern Division. | †The Registrar and Superintendent of Records, India Office. |
| *The Director of Agriculture. | |
| *The Settlement Commissioner and Director of Land Records. | |
| *The Chief Engineer in Sind. | |
| *All Superintending Engineers of Divisions. | |

*With copies of the Report.

†By letter.

Class A.

Exd. J. P. R.

No. of 1918

Copy forwarded for information and guidance to