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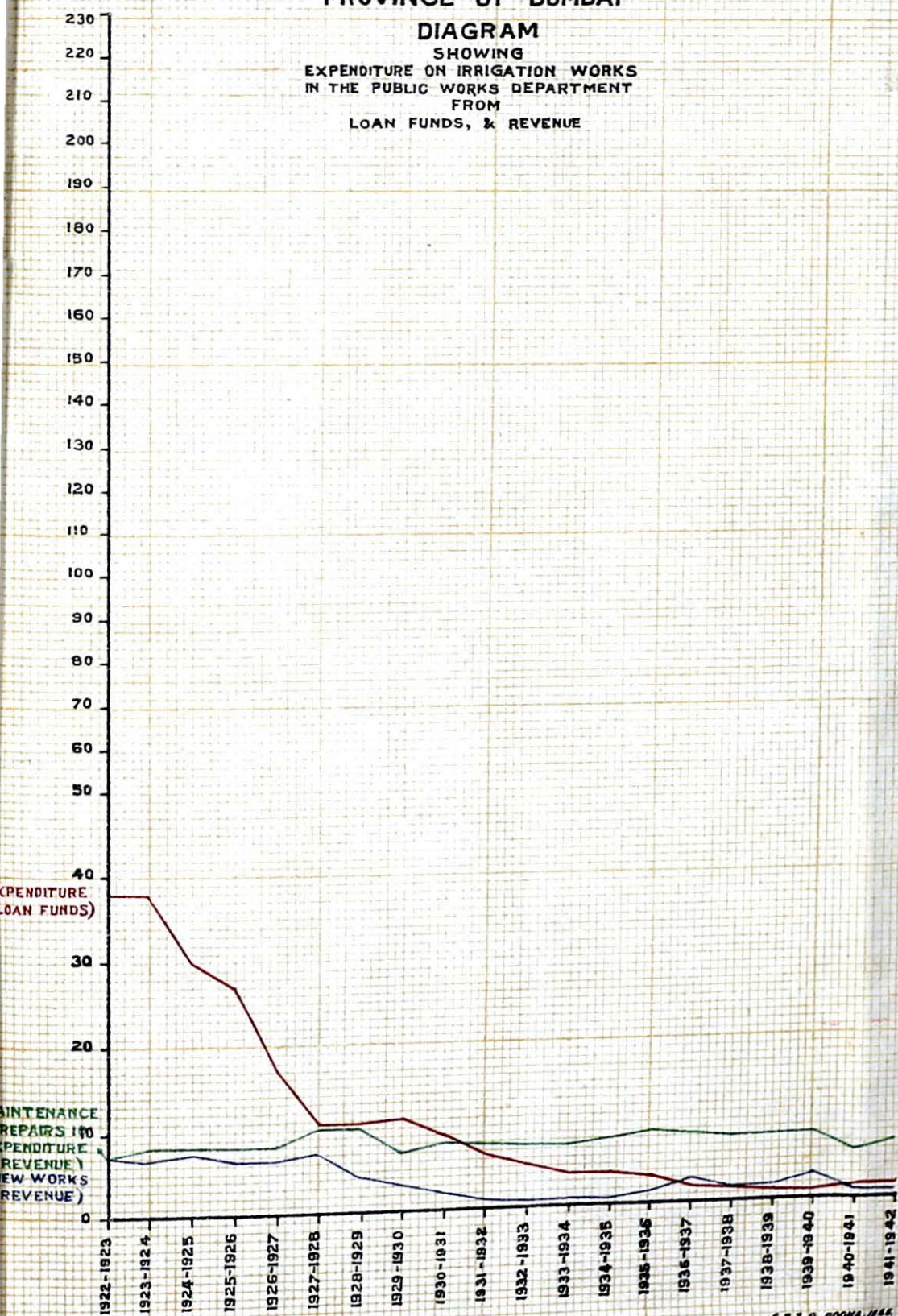
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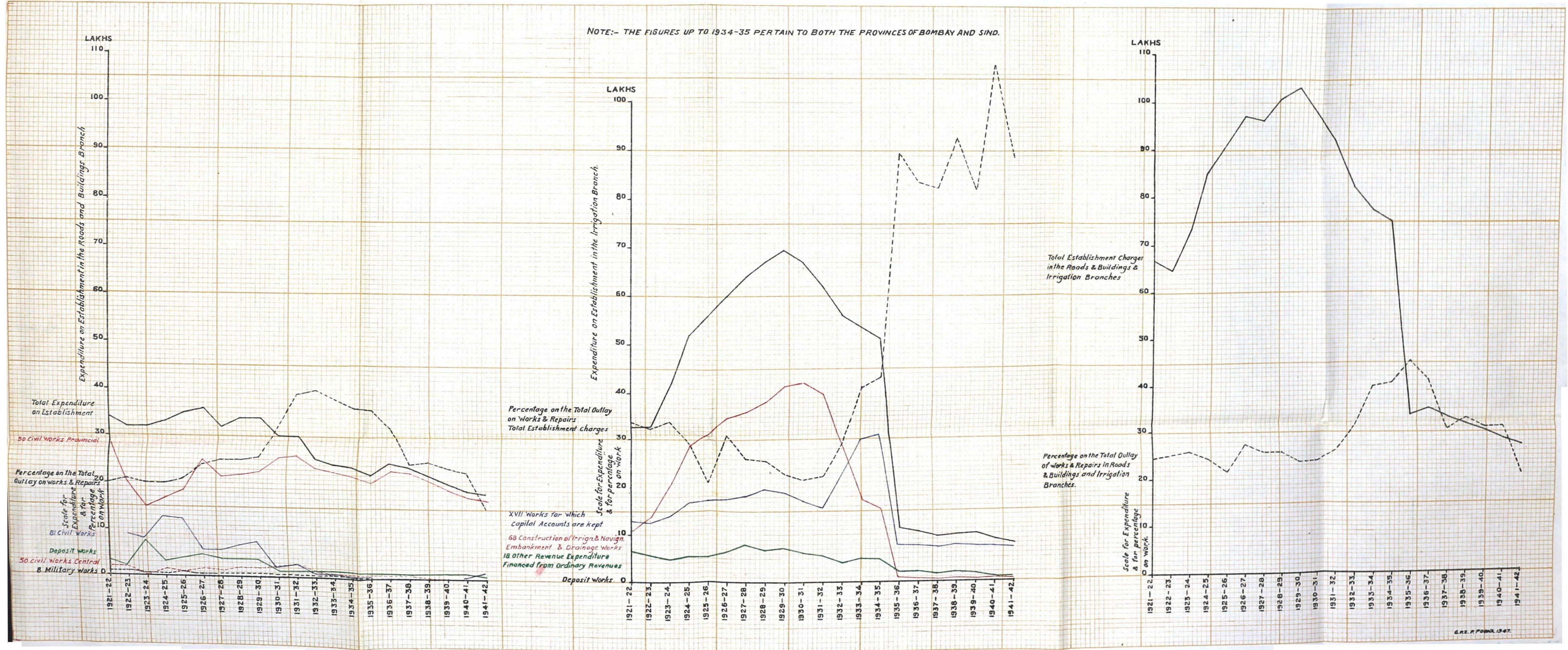
## PROVINCE OF BOMBAY

DIAGRAM  
 SHOWING  
 EXPENDITURE ON IRRIGATION WORKS  
 IN THE PUBLIC WORKS DEPARTMENT  
 FROM  
 LOAN FUNDS, & REVENUE



**PROVINCE OF BOMBAY**  
**DIAGRAM SHOWING EXPENDITURE**  
**ON ESTABLISHMENT**  
**IN THE**  
**ROADS & BUILDINGS & IRRIGATION BRANCHES**  
**OF THE**  
**PUBLIC WORKS DEPARTMENT**  
**AND**  
**PERCENTAGE TO THE TOTAL OUTLAY ON WORKS AND REPAIRS.**

NOTE:- THE FIGURES UP TO 1934-35 PERTAIN TO BOTH THE PROVINCES OF BOMBAY AND SIND.



**IRRIGATION ADMINISTRATION REPORT, PROVINCE OF BOMBAY, PART I**  
**1941-42**

**PHYSICAL FEATURES—GENERAL DESCRIPTION OF  
IRRIGATION.**

The area under irrigation in the Province of Bombay is not compact. Rainfall is available for agricultural operations but is often precarious. Tanks and canals provide irrigation for valuable crops such as sugarcane and also provide a source of supply to other crops when the rainfall is deficient or irregular. The old irrigation works consist chiefly of a few small canals and moderately large tanks, some 12,000 smaller tanks mostly in the southern part of the Province and in Gujarat, and of about 400 bandharas in Nasik and Khandesh districts. The tanks have earthen dams and the larger ones irrigate areas up to 1,300 acres, and the smaller ones up to 500 acres, situated immediately below the dams. The chief crop irrigated is rice. The bandharas are masonry weirs built across rivers to head up the water to a level sufficient to irrigate lands on the banks of the streams by means of channels taking off from the flanks of the bandharas. The areas irrigated are up to 800 acres and the chief crops are sugarcane, wheat, bajri and gram. From these small beginnings have evolved the magnificent irrigation works, which now form such a conspicuous feature in the Deccan and have so successfully fulfilled their beneficent purpose in banishing the famines which formerly devastated this portion of the Province.

2. The irrigation works in the Deccan are fundamentally different from those in Sind, the Punjab, Egypt or Mesopotamia, where wide alluvial plains have been formed by great deltaic rivers in perennial flow. The Bombay Deccan consists of a sloping table-land running eastward from the ridge of the Western Ghats. These form a ridge running parallel to the sea-coast at a distance from it of 50 to 100 miles; precipitous on the western side, they fall away more gradually to the east. The heaviest rainfall occurs on the peak of the ridge, where anything up to 270 inches of rain is recorded in the four monsoon months. The intensity of the rainfall rapidly decreases as we go eastward from the highest ridge, reaching a figure of 20 or 25 inches at a distance of 100 or 150 miles east of the Ghats. The rivers in the Deccan rise in the valleys close to the ridge, flow in an eastward direction, and are dry or practically so for 7 or 8 months of the year. The line of the Ghats, like the ridge of a roof, divides the rainfall into two parts; one the smaller portion falling westward into the Indian Ocean, and the other flowing through long lengths of tortuous rivers to the east and joining the rivers, which reach the sea on the south-eastern coast of the peninsula. These rivers are in flow during the monsoon months only, and if no artificial means of conserving their waters were provided, the whole monsoon rainfall would be wasted so far as the Bombay Deccan is concerned, and would simply flow away to the sea benefiting but to a small extent the country traversed.

3. The large irrigation systems in the Deccan are all of the same type. Each depends upon a storage lake near the head of one of the river valleys, where sufficient water is collected during the monsoon to supply the country on either side of the river valley below. The water stored during the rains is let out during the dry months of the year in accordance with requirements; and at a point on the river, which may be as far as 50 miles from the main storage lake, a "pick-up-weir" is constructed across the river-course to divert the water into canals which take off on either side of the weir. In one case only, that of Lake Fife at Khadakwasla near Poona, do the canals take off from the flanks of the dam itself. The canals are always constructed at a considerably flatter slope than that of the river, and consequently are able to diverge from the river itself on each side of the valley; as a rule each canal only irrigates the area between itself and the river.

## SECTION I.

## COMPRISING IRRIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

## GENERAL REMARKS.

Works in operation 4. The following list includes all the works in operation (43 in number):—

Serial No.	Name of Work	Area of four month's crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain	Whether storage works completed or proposed	Remarks
		Acres			
1	Hathmati and Khari Cut Canals.	24,000	Dependent on local rain.	No storage work. Bokh reservoir, Chandola tank and Wasal reservoir, completed.	The catchment of the Hathmati river is hilly, covered partly with forest and that of the Khari is undulating ground at its source and then plain ground with cultivated fields. The supply depends upon the flow in the rivers, and the contents of the Bokh reservoir, Chandola tank and Wasal reservoir.
2	Wangroli Tank ..	3,400	Do.	.. Completed	.. The catchment is ordinary plain ground and cultivated fields.
3	Savli Tank ..	3,000	Do.	.. Do.	.. Ordinary catchment on undulating ground.
4	Saiat Tank ..	2,000	Do.	.. Do.	.. Ordinary catchment on flat ground.
5	Tranza Nagrama Tanks.	800	Do.	.. Do.	.. The Tranza tank has no independent catchment. The Nagrama has a catchment of 1.59 sq. miles. Both are fed by the Matar drainage channel which is not reliable as it seldom flows.
6	Futelao Tank ...	800	Do.	.. Do.	.. Hilly catchment.
7	Nira Left Bank Canal including Shetphal Tank.	100,000	Reliable	.. Lake Whiting (Lloyd Dam) completed.	Ghat catchment.
8	Nira Right Bank Canal.	180,000	Do.	.. Do.	.. Do.
9	Mutha Canals including Matoba Tank.	40,000	Do.	.. Lake Fife: completed.	Do.
10	Kasurdi Tank ..	40	Dependent on local rain.	Completed	.. Deccan catchment.

Serial No.	Name of Work	Area of four month's crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain	Whether storage works completed or proposed	Remarks						
11	Shirsuphal Tank ..	Acres 1,150	Dependent on local rain.	Completed	.. Deccan catchment.						
12	Bhadalvadi Tank ..	1,123	Do.	.. Do.	.. Do.						
13	Godavari Right Bank Canal	44,000	} Reliable	.. Lake Beale completed.	Ghat catchment.						
	Godavari Left Bank Canal.	26,000									
14	Girna Canal ..	9,000	Do.	.. Chankapur Tank completed.	Do.						
15	Kadwa River Works { Palkhed Canal. Ojhar Tambat Canal. Wadali Canal.}	7,689	Do.	.. Waghad Tank completed.	Do.						
						10	Pravara Right Bank Canal.	18,480	} Do.	.. Lake Arthur Hill (Wilson Dam) completed.	Do.
17	Bhatodi Tank ..	1,461	Dependent on local rain.	Completed	.. Deccan catchment.						
18	Ekruk Tank ..	13,070	Do.	.. Do.	.. Do.						
19	Mhaswad Tank ..	14,000	Do.	.. Do.	.. Do.						
20	Koregson Tank ..	416	Do.	.. Do.	.. Hilly catchment.						
21	Ashti Tank ..	3,382	Do.	.. Do.	.. Deccan catchment.						
22	Pathri Tank ..	3,094	Do.	.. Do.	.. Hilly catchment.						
23	Jazda Canals	42,000	Girna river supply not reliable.	Water is issued from the Chankapur Tank when available.	Ghat catchment for a small part and for the rest Deccan catchment.						
24	Hartala Tank ..	978	Dependent on local rain.	Completed	.. Deccan catchment.						
25	Mhaswa Tank ..	3,256	Do.	.. Do.	.. Do.						



Serial No.	Name of Work	Area of four month's crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain	Whether storage works completed or proposed	Remarks
26	Shahada Channel ..	Acres. 2,000	Reliable ..	No storage work	Hilly catchment, Supply is perennial.
27	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.
28	Krishna Canal ..	6,412	Reliable ..	Proposed	Ghat catchment.
29	Rewari Canal ..	439	Dependent on local rain.	No storage work	Deccan catchment.
30	Upper Man River Works.	373	Dependent on local rain.	Pingli Tank completed.	Deccan catchment.
31	Yerla River Irrigation Works.	1,182	Do. ..	Nehr Tank completed.	Do.
32	Chikhli Canal ..	358	Do. ..	No storage work	Do.
33	Maini Tank ..	455	Do. ..	Completed	Do.
34	Parsul Tank ..	1,440	Do. ..	Do. ..	Do.
35	Gadikeri Tank ..	416	Do. ..	Do. ..	Do.
36	Gokak Canal ..	17,027	Reliable ..	27' completed	Ghat catchment.
37	Muchkundi Tank ..	750	Dependent on local rain.	Completed	Deccan catchment.
38	Dambal Tank ..	531	Do. ..	Do. ..	Do.
39	Medleri Tank ..	281	Do. ..	Do. ..	Do.
40	Madag Tank ..	1,418	Do. ..	Do. ..	Ghat and Forest catchment.
41	Asundi Tank ..	503	Do. ..	Do. ..	Deccan catchment.
42	Dharma Canal ..	For monsoon season 12,370 acres. For rabi nil.	Do. ..	No storage work The canal takes off from the river itself.	Forest catchment.
43	Mavinkop Tank ..	617	Do. ..	Completed	Do.

Ekruk tank, Gadikeri tank, Mavinkop tank and Shahada channel are the only productive works and the rest are unproductive.

## 5. The interest account for the year was as follows :—

	Productive Works.	Unproductive Works.	Total.
	Rs.	Rs.	Rs.
Total interest charges during 1941-42 ..	46,361	41,29,253	41,75,614
Net revenue realised during 1941-42 ..	1,80,653	39,29,935	41,10,588

Net loss, i.e., difference between interest and net revenue—Rs. 65,026.

## 6. The financial results of the year by main heads were as under :—

	Area irrigated.	Revenue realised.			Working expenses.	Net revenue.
		Direct receipts.	Share of land revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Productive .. .. .	7,758	2,04,709	9,305	2,14,104	33,451	1,80,653
Unproductive .. .. .	320,436	51,38,353	10,515	54,48,868	15,18,933	39,29,935
Total .. .. .	328,194	56,43,062	19,910	56,62,972	15,52,384	41,10,588

\* Inclusive of 12,107 acres under consolidated assessment.

The gross revenue and the net revenue show increases of Rs. 15,16,406 and Rs. 14,62,058 respectively, as compared with the figures for the previous year.

7. The figures of the area irrigated, the revenue assessed and realised and the Area irrigated, working expenses, as compared with those of the previous revenue, etc. three years, are given below :—

Year.	Area irrigated.†	Revenue.		Working expenses.
		Assessment.	Realisations.	
	Acres.	Rs.	Rs.	Rs.
1938-39 .. .. .	270,650	31,17,788	32,06,922	16,80,195
1939-40 .. .. .	304,889	40,39,667	33,86,941	14,55,339
1940-41 .. .. .	309,960	43,86,341	41,46,566	14,98,036
Average .. .. .	295,166	38,41,265	35,80,143	15,44,520
1941-42 .. .. .	328,194	48,10,444	56,62,972	15,52,384

† Inclusive of the area under consolidated water and land assessment.

8. The gross area under command is 1,764,000 acres. The area irrigable at present is 626,920 acres.

## 9. The state of Revenue collections was as follows:—

	Rs.
Balance of demands unrealised at the commencement of the year ... ..	22,11,475
Demands of the year—	Rs.
Rabi, 1940-41 ... ..	9,81,976
Kharif, 1941-42 ... ..	33,29,734
Miscellaneous receipts ... ..	5,53,090
	48,64,800
Total ... ..	70,76,275
<i>Deduct—</i>	
Remissions ... ..	41,456
	70,34,819
Amount unrealised at the close of the year ... ..	13,93,633
Actual receipts of the year ... ..	Rs. 56,55,112
<i>Add—</i>	
Share of land revenue ... ..	19,910
	56,75,022
<i>Deduct—</i>	
Refunds of revenue ... ..	12,050
Revenue realised ... ..	56,62,972

The remissions and refunds together amounted to Rs. 53,506.

Unrealised irrigation revenue at the close of the year amounted to Rs. 13,93,633 which is made up as follows:—

	Rs.
Ekrak Tank ... ..	6,192
Hathmati and Khari Cut Canals ... ..	10,565
Bhadalvadi Tank ... ..	3,279
Krishna Canal ... ..	89,581
Lower Panjhra River Works ... ..	4,068
Yerla River Irrigation Works ... ..	4,334
Mutha Canals and Matoba Tank ... ..	1,51,538
Gokak Canal ... ..	30,004
Mhaswad Tank ... ..	22,146
Jamda Canals ... ..	4,798
Nira Left Bank Canal and Shetpal Tank ... ..	3,09,688
Chankapur Tank—Girna Canal ... ..	63,728
Kadwa River Works ... ..	69,116
Godavari Canals ... ..	1,02,850
Nira Right Bank Canal ... ..	3,38,075
Pravara River Works ... ..	1,61,552
Other Works ... ..	22,119
Total ... ..	13,93,633

10. The working expenses of the year amounted to Rs. 15,52,384 as compared with Rs. 14,98,036 during the previous year. The following table compares the charges under the principal heads with those of the previous three years :—

	1938-39.	1939-40.	1940-41.	1941-42.
	Rs.	Rs.	Rs.	Rs.
Works .. .. .	1,37,680	11,949	47,841	67,123
Repairs .. .. .	5,78,687	5,91,355	5,83,283	6,67,207
Establishment .. .. .	8,69,198	7,64,259	7,61,490	6,77,815
Tools and Plant .. .. .	10,327	6,710	6,757	7,394
<b>Total in the Public Works Department.</b>	<b>15,95,892</b>	<b>13,74,273</b>	<b>13,99,371</b>	<b>14,19,539</b>
Collection charges .. .. .	77,144	75,037	92,359	1,25,502
Indirect charges .. .. .	7,159	6,029	6,306	7,343
<b>Total working expenses .. .. .</b>	<b>16,80,195</b>	<b>14,55,339</b>	<b>14,98,036</b>	<b>15,52,384</b>

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

Name of work.	Average incidence of water rate per acre.	Cost of measurement.		Working expenses in the Public Works Department.	
		Total cost.	Per acre.	Per mile of canal.	Per acre irrigated.
	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Left Bank Canal and Shetphal Tank ..	11.29	1,442	0 0 5	728	2.40
Pravara Canals .. .. .	17.96	1,941	0 1 0	853	3.87
Girna Canal .. .. .	10.65	745	0 0 11	1,428	4.34
Godavari Canals .. .. .	19.44	2,051	0 1 2	1,529	9.75
Mutha Canals and Matoba Tank .. .. .	11.25	1,137	0 1 3	504	5.22
Kadwa River Works .. .. .	9.89	73	0 0 6	783	7.53
Nira Right Bank Canal .. .. .	16.16	1,635	0 0 6	591	5.52
Krishna Canal .. .. .	9.14	786	0 2 4	500	3.26
Yerla River Irrigation Works .. .. .	5.19	443	0 1 8	383	3.04
Upper Man River Works .. .. .	5.52	37	0 2 0	360	21.08
Maini Tank .. .. .	4.77	80	0 1 3	592	5.52
Jamda Canals .. .. .	5.34	81	0 1 0	142	13.05
Ekruk Tank .. .. .	6.60	330	0 1 2	496	4.82
Ashti Tank .. .. .	5.17	131	0 0 7	1,124	7.71
Mhaswad Tank .. .. .	5.31	93	0 0 9	876	10.08
Gokak Canal .. .. .	5.29	664	0 1 0	322	1.52
Dharma Canal .. .. .	4.70	319	0 10 0	172.78	.51
Dambal Tank .. .. .	6.96	..	..	418.35	6.94
Medleri Tank .. .. .	6.88	..	..	124.29	6.43
Madag Tank .. .. .	4.25	..	..	511.11	9.58
Asundi Tank .. .. .	5.00	..	..	350.41	9.31
Hathmati and Khari Cut Canals .. .. .	2.08	No separate establishment was maintained.		1,350	9.46

12. The gross assessed revenue, direct and indirect, amounted to Rs. 48,10,444 as compared with Rs. 43,66,341 in the previous year. The details of the gross assessment are as under :—

	Direct revenue.			Indirect revenue.	Total.
	Water rate.	Other receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Productive .. ..	38,558	1,65,918	2,04,476	9,395	2,13,871
Unproductive .. ..	41,98,836	3,87,172	45,86,058	10,515	45,96,573
Total .. ..	42,37,444	5,53,090	47,90,534	19,910	48,10,444

The net assessed revenue of the year, after deducting working expenses (Rs. 15,52,384), amounted to Rs. 32,58,060 as compared with Rs. 28,68,305 during the previous year.

13. The following table gives the percentage return earned during the year on capital outlay on the principal works in operation :—

	Total capital outlay (direct and indirect).	Gross receipts (direct and indirect).	Working expenses (direct and indirect).	Net Revenue.	Percentage return on capital outlay.
	Rs.	Rs.	Rs.	Rs.	Rs.
Elkruk Tank .. ..	13,40,336	1,96,073	23,822	1,72,251	12.85
Hathmati and Khari Cut Canals	13,18,729	16,353	70,184	53,931	....
Nira Left Bank Canal and Shetphal Tank .. ..	1,46,97,936	10,69,564	1,79,172	8,90,392	6.03
Nira Right Bank Canal .. ..	4,12,21,355	9,96,082	3,10,387	6,85,695	1.63
Mutha Canals and Matoba Tank .. ..	70,19,578	4,49,542	83,632	3,62,910	5.17
Godavari Canals .. ..	1,06,52,612	9,77,745	3,57,995	6,19,750	5.82
Chankapur Tank—Girna Canal .. ..	20,74,087	1,43,479	54,638	88,841	4.28
Kadwa River Works .. ..	10,35,876	59,317	29,758	29,559	2.85
Pravara River Works .. ..	1,51,02,276	13,48,132	2,24,429	11,23,703	7.44
Mhaswad Tank .. ..	20,96,016	64,143	22,283	41,860	2.00
Lower Panjhra River Works .. ..	4,68,621	23,547	7,569	15,978	3.41
Krishna Canal .. ..	9,49,807	52,745	17,617	35,128	3.70
Gokak Canal .. ..	15,62,515	74,827	16,668	58,160	3.72

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

Productive works	...	...	...	Rs. 6.60
Unproductive works	...	...	...	13.60

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

		1940-41.	1941-42.
		Rs.	Rs.
Water rates	...	38,36,295	42,37,444
Other receipts—			
Plantations	...	7,982	10,104
Water power	...	21,035	14,419
Miscellaneous	...	4,80,389	5,28,567
	Total	5,09,406	5,53,090
Share of land revenue	...	20,640	19,910
	Grand Total	43,66,341	48,10,444

16. The principal crop acreages irrigated during 1940-41 and 1941-42 are given below :—

Crop acreage.	1940-41.	1941-42.
	Acres.	Acres.
Garden and orchards	8,545	10,249
Sugarcane	74,642	74,023
Wheat	9,118	11,824
Rice	4,325	13,187
Jowar	66,624	69,934
Bajri	18,149	14,921
Gram, etc.	9,604	13,535
Groundnut	16,932	7,204
Cotton	6,151	18,091
Condiments	6,487	6,767

The total estimated value of the crops irrigated was Rs. 494.66 lakhs as compared with Rs. 302.16 lakhs during the previous year.

## DETAILED REPORTS BY LOCAL OFFICERS.

### NORTHERN CIRCLE.

The year under review was marked by good monsoon which broke in the first week of July and ended by the beginning of September. The rainfall was above the average and of good intensity but not well distributed. There was good runoff from the catchments of the rivers. The flow in the Hathmati River was utilized in filling up the reservoirs and tanks and for rice irrigation. The transplanted area could not be protected fully by canal water. The total area protected by irrigation under the Hathmati and Khari Cut Canals including the extra area in the Kalam-bandhi villages of the Khari sluices system was about 7,420 acres.

The rainfall gauged at Ahmedabad and at Prantij was 44.48 and 24.51 inches, respectively, as compared with 19.43 and 19.01 inches, the average precipitation, respectively, of the last three years. Similarly at Bareja, which is situated in the centre of the area irrigated by the Khari Cut Canal, the rainfall was 46.72 inches as compared with 19.60 inches, the average of the last three years. At Himatnagar, where the Head Works of the Hathmati Canal are situated, it was 34.84 inches as compared with 20.10 inches, the average of the past three years.

The principal irrigation works in operation in this Circle are (1) the Hathmati and Khari Cut Canals, (2) the Wangoli Tank, (3) the Savli Tank, (4) the Saiat Tank, (5) the Tranza-Nagrama Tanks and (6) the Futelao Tank.

No. (1) is a work which includes the Bokh Storage Reservoir with a capacity of 300 million cubic feet of water and several small tanks with small independent catchments depending on local rainfall. The other works are storage tanks all depending on local rainfall.

The six works are financially unproductive, as the annual revenue is not sufficient to cover the working expenses.

### AHMEDABAD AND KAIRA AND PANCH MAHALS DIVISIONS.

#### HATHMATI AND KHARI CUT CANALS.

This is the most important canal system in Gujarat. The Hathmati Canal irrigates a tract of land lying between the Sabarmati and Khari rivers and this system in addition to irrigating the area dependent on it, is designed to pass surplus water, when available, first into the Bokh Reservoir and then into the Khari River direct via the Bhujwa Channel. The Bokh Reservoir does not provide any direct irrigational supplies but only acts as a storage reservoir for the Khari Cut Canal. Further downstream on the Khari River are situated two small irrigation systems and these utilize the natural flow of the river and also any surplus water which can be made available from the Hathmati canal; the Khari water is abstracted at the so-called "Khari Sluices" for direct irrigational purposes, while the surplus water from the Hathmati is diverted through an artificial cut called "the Khari Cut" into a natural channel and this in its turn supplies a system of distributaries, several small tanks and the large Chandola Tank situated near Ahmedabad. The system was first opened in 1873-74 and has cost more than Rs. 13 lakhs.

The Hathmati River was thrice in floods of good duration due to good rainfall in the catchment of the river. The area irrigated under this canal was 1,460 acres in the Kharif season and 1,897 acres in the Rabi season. The average daily discharge admitted into the canal at its head during the Kharif season was 125 cusecs of which quantity only 69 cusecs were utilised for irrigation carried out under the canal, the balance being let down into the Bokh Reservoir. During the Rabi season the average daily discharge admitted into the canal at its head was 37 cusecs which were utilized for irrigation carried out under this canal.

The Khari River rose in flood moderately 5 times during the season. The floods were of fair duration and of good volume. The flood waters were dealt with according to the terms of the provisional agreement in force this year. Under this canal the area irrigated was 4,063 acres in the Kharif seasons and nil in the Rabi season.

The area irrigated, the revenue assessed and the working expenses in connection with the Hathmati and Khari Cut Canals compared with the average of the three preceding years are as under :—

Year.	Kharif.		Rabi.		Total.		Working expenses.
	Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Average	2,101	5,705	134	282	2,285	6,047	35,643
1941-42	5,523	10,284	1,897	5,146	7,420	15,430	70,184

Remissions amounting to Rs. 8,901 and Rs. 75 were sanctioned during the year during Kharif and Rabi seasons. The gross revenue realized from all sources amounted to Rs. 15,982 while the working expenses were Rs. 70,184. These figures show a net loss of 4.11 per cent. on the total capital outlay of Rs. 13,18,729.

#### FIRST CLASS IRRIGATION TANKS IN GUJARAT.

The five first class tanks, viz. Wangroli, Savli, Saiat, Tranza-Nagrama and Futelab were constructed between the years 1904 and 1917 at the aggregate cost of Rs. 11 lakhs. They rarely yield any net return, as the demand for water from them is small in years of good rainfall, whereas in years of scarcity the tanks themselves store deficient supplies. The first four tanks are situated in Kaira Collectorate, while the last one is the Broach and Panch Mahals Collectorate.

The area irrigated, the revenue assessed and the working expenses in connection with the tanks during the year are compared with the average of the preceding three years as below :—

Name of tank.	Year.	Kharif.		Rabi.		Total.		Working expenses.
		Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Wangroli	Average	1,008	4,062	24	84	1,032	4,746	6,003
	1941-42	1,822	8,710	93	373	1,915	9,083	7,031
Savli	Average	648	3,180			648	3,180	5,311
	1941-42	2,298	11,373			2,298	11,373	5,712
Saiat	Average	398	1,559			398	1,559	3,205
	1941-42	764	3,057	14	57	778	3,114	3,283
Tranza-Nagrama	Average	280	980	8	16	288	996	1,760
	1941-42	280	980			280	980	11,712
Futelab	Average	144	80	114	345	158	431	3,064
	1941-42	15	60	129	387	144	447	1,289



## WANGROLI TANK.

The rainfall gauged at the site of the tank was 33·15 inches. The tank was filled to F. S. L. and the water was utilized in irrigating Kharif crops mainly of rice. The available water was utilized in irrigating Rabi Crops. The miscellaneous revenue realised during the year amounted to Rs. 1,963 compared with Rs. 1,812 received during the previous year. No remissions were granted during the year.

## SAVLI TANK.

The rainfall gauged at the site of the tank was 37·14 inches. The tank was filled to F. S. L. and the water was fully utilized in irrigating Kharif crops mainly rice. The miscellaneous revenue realized amounted to Rs. 1,269 compared with Rs. 1,016 received during the previous year. Remissions amounting to Rs. 314 were sanctioned during the current year in deserving cases.

## SAIAT TANK.

The rainfall gauged at the site of the tank was 38·83 inches. The tank was filled to F. S. L. and the water was utilized in irrigating Kharif crops mainly of rice. The available water was utilized in irrigating Rabi crops. The miscellaneous revenue realised amounted to Rs. 1,397 compared with Rs. 1,299 received in the previous year. No remissions were granted during the current year.

## TRANZA-NAGRAMA TANKS.

The rainfall gauged at Tranza-Nagrama was only 44·72 inches. Due to excessively heavy rain the tanks were partly filled and were damaged. The water was utilized for irrigating Kharif crops mainly of rice. The miscellaneous revenue realised amounted to Rs. 780 compared with Rs. 2,361 received in the previous year. No remissions were granted during the year.

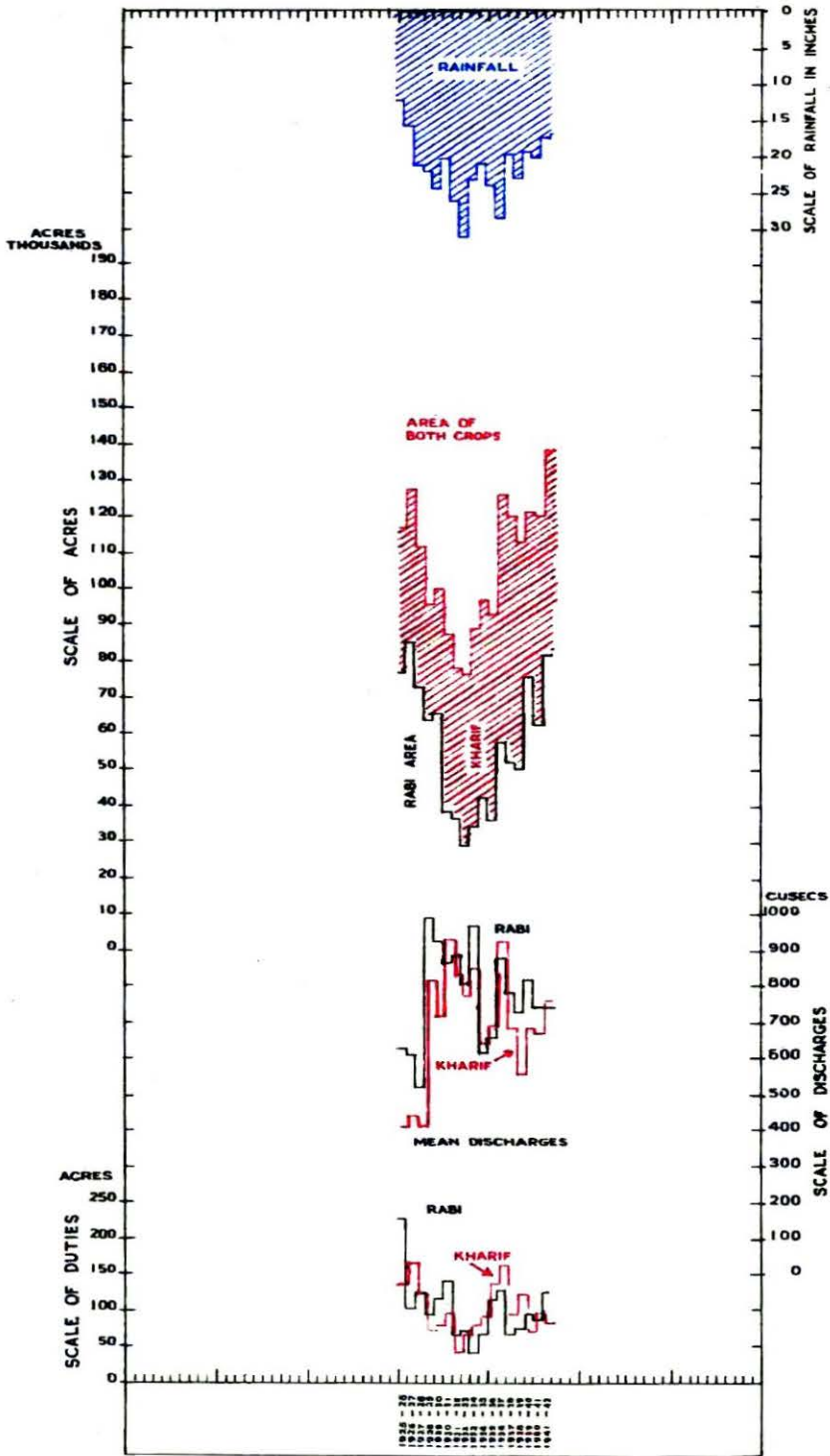
## FUTELAO TANK.

The rainfall gauged at the site of the tank was 29·83 inches during the year. The tank was filled to F. S. L. and some irrigation was done during Kharif and Rabi seasons. Although the supply of water was sufficient, the reason for less irrigation as compared with the storage of water in the tank is that the Bhills in this are very poor and illiterate to take sufficient advantage by sowing best crop of the water available by way of irrigation. The ordinary crops they sow, mature well by water in the fields when rainfall is timely and sufficient. The miscellaneous revenue realized amounted to Rs. 20 compared with Rs. 76 received in the previous year.

The percentage returns obtained during the year from the working of these tanks are shown below :—

Name of Tank.	Gross assessment.	Gross realization.	Less working expenses.	Net revenue.	Capital outlay— direct and indirect— to end of 1941-42.	Percentage of return.
Wangroli .. ..	Rs. 11,046	Rs. 9,597	Rs. 7,031	Rs. 2,566	Rs. 2,93,295	·87
Savli .. ..	12,642	10,481	5,712	4,769	2,55,210	1·86
Saiat .. ..	4,511	5,018	3,283	1,735	1,84,029	·94
Tranza-Nagrama .. ..	1,760	949	11,712	—10,763	2,80,635	—3·83
Futelao .. ..	467	379	1,289	—910	1,16,461	—·78

# WORKING RECORD FOR NIRA R.B. & L.B. CANALS . 1925-1942.



G. I. P. POONA. 1947.

  
**SUPERINTENDING ENGINEER**  
 DECCAN IRRIGATION CIRCLE

  
**EXECUTIVE ENGINEER**  
 NIRA CANALS DIVISION.

### DECCAN IRRIGATION CIRCLE.

The rainfall during the year under report was quite unsatisfactory on all the Canals in this Circle. The post monsoon showers were conspicuous by their total absence which resulted in heavy demand for rabi crops which was met as far as possible. Failure of late rains (a common feature in the Deccan this year) necessitated early draw off from the various lakes in the Deccan Irrigation Circle.

The general condition of the irrigated crops was satisfactory throughout the year. The Gul rates throughout the year were generally good and the demand for cane was, therefore, keen but new sanctions had to be restricted due to unsatisfactory storage conditions.

#### SUGAR FACTORIES.

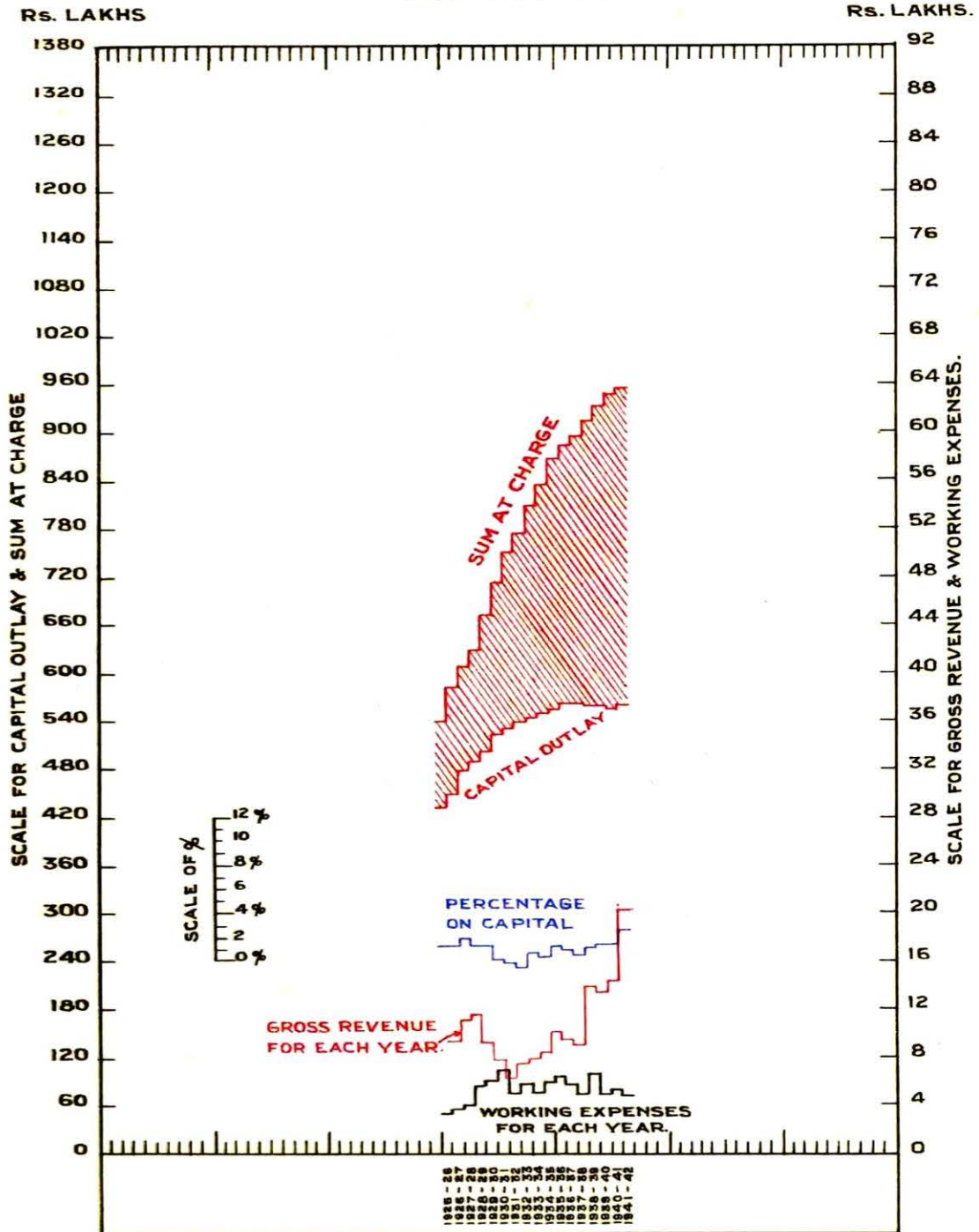
The following ten sugar factories have been established on the Deccan Canals and the acreages for which water is guaranteed at present is noted against each :—

Name of sugar factory.	Annual guarantee of water supply for areas of sugarcane.	Capacity in tons per day.
	Acres.	
1. The Belapur Company, Harigaon, Pravara Left Bank Canal.	3,050	1,000
2. The Maharashtra Sugar Mills, Limited, near Belapur, Pravara Left Bank Canal.	4,250	1,000
3. Messrs. Marsland Price and Company, Limited, at Kalamb, Nira Left Bank Canal.	3,500	1,250
4. The Phaltan Sugar Works, Limited, near Tadwali, Nira Right Bank Canal.	2,500	500
5. The Saswad Mali Sugar Factory, Limited, near Akhuj, Nira Right Bank Canal.	1,600	450
6. The Ravalgaon Sugar Farm, Limited, near Ravalgaon, Girna Canal.	1,400	600
7. The Brihan Maharashtra Sugar Syndicate, Ltd., on Nira Right Bank Canal.	1,600	350
8. Belwandi Sugar Farm near Visapur, Visapur Canal . .	No guarantee in respect of area is given but $\frac{1}{4}$ th of the water available in the Visapur tank is guaranteed annually.	250
9. Godavari Sugar Mills, Limited, on Godavari Right and Left Bank Canals.	2,350	650
10. Shree Changdeo Sugar Mills, Ltd., on the Godavari Right Bank Canal.	1,000	350

The areas of sugarcane planted by the sugar factories during the year were 25,600 acres.

A number of drainage projects to save lands from damage due to intensive cultivation of sugarcane by Sugar Companies has been prepared and construction work of some of these schemes in various sugar factory areas has been completed and works in case of others were in progress during the year under report.

# NIRA CANALS DIVISION FINANCIAL RECORD FOR NIRA R. B. & L. B. CANALS FROM 1925-42



*Abdul*

SUPERINTENDING ENGINEER  
DECCAN IRR. CIRCLE.

*K. V. N. S. Rao*  
6/10/42

EXECUTIVE ENGINEER  
NIRA CANALS DIVISION.

G.P.Z.P. POONA, 1547.

Note:-The intercepts between the two red lines show arrears of interest unpaid upto end of each year which being added to the capital give sum at charge. The intercepts between the black and red lines show the net income of each year.

The total area irrigated in the Deccan Irrigation Circle during the year was 259,211 acres as compared with 250,912 acres during the previous year and the gross revenue amounted to Rs. 41.95 lakhs as compared with the figure of Rs. 38.11 lakhs for the previous year.

#### NIRA CANALS DIVISION.

##### LLOYD DAM AT BHATGAR AND NIRA RIGHT BANK CANAL.

The Nira Right Bank Canal is the largest canal in the Deccan. The original estimate of the project framed in 1910 provided for :—

- (1) The raising of the Dam at Bhatgar by 60 feet in order to increase its storage capacity from 5,300 million cubic feet to 24,000 million cubic feet ;
- (2) The construction of a canal 109 miles long on the right bank of the Nira river having a capacity of 1,500 cusecs at head ; and
- (3) The enlarging of the existing Nira Left Bank Canal in order to increase its discharge from 450 to 760 cusecs.

The total cost was estimated at about Rs. 258 lakhs and the area to be irrigated annually at 190,000 acres. The project was submitted to the Government of India in May 1911, sanctioned by the Secretary of State in June 1912 and the work was started in the same year. Before the work of raising the Bhatgar Dam was commenced, however, it was decided for technical reason to build an entirely new dam. Owing to this change and to the unprecedented rise in the cost of labour and materials due to the Great War, a revised estimate amounting to Rs. 491 lakhs was framed in 1920 and submitted to the Government of India in September 1921. The revised project provided for :—

- (1) The construction of a new dam at Bhatgar designed to increase the storage from 5,300 million cubic feet to 24,000 million cubic feet ;
- (2) The construction of a canal 106½ miles long on the right bank of the Nira river ; and
- (3) The enlargement of the Nira Left Bank Canal, including the expenditure of Rs. 3½ lakhs already incurred on widening the Nira Left Bank Canal.

It was anticipated that 132,000 acres would be irrigated annually as a result of this scheme and that the gross revenue would amount to Rs. 15.22 lakhs and the net revenue to Rs. 11.92 lakhs yielding a return of 2.4 per cent. on the capital outlay. The revised project was sanctioned by the Secretary of State in June 1922.

The Lloyd Dam at Bhatgar, 190 feet high, 5,333 feet long including the waste weir (4,266 feet long excluding the waste weir) and 124 feet wide at the base, was completed in 1928 at a cost of Rs. 172 lakhs. It is one of the largest dams in the world and contains 21½ million cubic feet of masonry. The lake formed by the construction of the dam has a length of 17 miles at full supply level with a corresponding storage capacity of 24,000 million cubic feet. The catchment area is 128 square miles in extent with an annual rainfall varying from 250 inches in the Ghats to 40 inches at Bhatgar. In addition to the sluices required for releasing water for irrigation purposes there are 81 waste weir gates for the control and regulation of the flood level in the lake.

The Nira Right Bank Canal has its head works at Vir, 17 miles from the Lloyd Dam. The designed discharges of the canal at head and at tail are 1,500 and 414 cusecs, respectively, the corresponding full supply depths being 8.5 and 6.5 feet, respectively. The canal about 106½ miles in length commands lands situated in the Satara and Sholapur Districts and the Phaltan State. Water was first supplied

from the canal for the irrigation of rabi crops in 1924-25. The works on the main canal are completed. The Lloyd Dam was completed in the year 1928 and the Nira Right Bank Canal Project was completed in the year 1937-38. There are 3 branches and 69 distributaries taking off from the canal, while the culturable area commanded by it is 448,000 acres. The water regulation and distribution works on the canal are constructed on modern lines and the latest types of Standing Wave Flume measuring devices are provided at distributary heads on the channels. The whole of the perennial area under the canal has been surveyed and the soil classification carried out before designing the channels, while the lands suitable for perennial and other crops have been classified by the Irrigation Research Division and shown on maps.

On the 1st April, the level of the water in Lake Whiting at Bhatgar was 90.56 feet (full supply level 143 feet) above the sill of the sluices, the corresponding contents being 7,154.00 million cubic feet. The lowest level of 71.80 feet was reached on the 21st June, the corresponding contents being 3,310.38 million cubic feet. The lake began to fill subsequently and received replenishment nearly to its full supply level, i.e., 142.60 feet on the 28th August when the draw-off for irrigation purposes commenced. On the 31st March 1942 the water level was 90.59 feet, the corresponding contents being 7,164.11 million cubic feet. The rainfall gauged at Bhatgar during the year was 41.33 inches, while the rainfall in the Nira Right Bank Canal tract averaged 10.05 inches and that on the Nira Left Bank Canal averaged 16.75 inches.

The following table gives the area irrigated, revenue assessed, etc., during the year as compared with the corresponding averages of the past three years:—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1941-42	Average.	1941-42	Average.	1941-42.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
58,246	42,959	9,08,820.	5,91,604	9,27,061	6,09,611

Working expenses.		Realizations.		Rainfall.	
1941-42	Average.	1941-42.	Average.	1941-42	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
3,10,387	3,36,672	9,98,082	6,00,756	10.05	18.69

During the Kharif season of 1941-42 water from the Nira Right Bank Canal was issued for irrigation on Branch No. III to supplement water from the Mhaswad Tank. The area thus irrigated on Branch No. III during the year was 9,928 acres and gross assessed revenue amounted to Rs. 53,748.

The increase in the area irrigated and revenue was due to increase in cane area and rabi irrigation. The area under sugarcane was 18,408 acres as compared with 17,287 acres in the previous year. The areas of sugarcane blocks and two-season blocks were 5,824 acres and 8,685 acres as compared with 6,041 and 8,946 acres, respectively, in the previous year. The area of garden and fruit blocks totalled 101 acres as compared with 112 acres of the previous year. The remissions sanctioned during the year amounted to Rs. 5,640.

The cost of the measuring establishment employed was pies 6 per acre as against pies 7 of the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 3,09,073. The perennial section of the Nira Right Bank Canal extended up to mile 79.

#### NIRA LEFT BANK CANAL.

This canal forms part of the scheme known as the Nira Valley Development Project and irrigates lands situated on the left bank of the Nira river. It is one of the pioneer irrigation works in the Deccan and protects a tract in the Poona District, with a very precarious rainfall. The original scheme consisted of—

- (a) A ghat-fed storage tank at Bhatgar (Lake Whiting) about 32 miles south of Poona on the Yelwandi river, impounding 5,300 million cubic feet of water;
- (b) A pick-up-weir at Vir on the Nira river about 17 miles downstream from Bhatgar;
- (c) A canal about 100 miles long irrigating about 80,000 acres annually; and
- (d) The Shetphal Tank at the tail of the canal with an effective capacity of 592 million cubic feet for the purpose of storing a portion of the surplus monsoon discharge.

The original masonry dam at Bhatgar, 127 feet high has since been replaced by the higher Lloyd Dam mentioned above. The original works were commenced in 1881 and the canal came into operation in 1885-86. The canal originally had a capacity of 456 cusecs but it has now been remodelled to carry a discharge of 720 cusecs. The canal, together with the tank, commands a gross area of 201,000 acres while the area commanded by the Shetphal Tank itself is 23,500 acres. The culturable area under the canal is 149,821 acres.

#### NIRA VALLEY DEVELOPMENT PROJECT.

This project was designed for the complete development of irrigation in the Nira Valley. It provided, *inter alia*, for the widening and remodelling of the Nira Left Bank Canal in order that the canal should irrigate an additional area of 19,000 acres of various types of crops and the construction of a new dam at Vir designed to supplement the storage of 24,000 million cubic feet impounded by the Lloyd Dam at Bhatgar. The construction of the Vir Dam, estimated to cost about a crore of rupees which was abandoned on the assumption that by economical distribution of the water available, the storage at Bhatgar would be sufficient to meet all irrigation requirements of the Nira Valley, will however have to be reconsidered owing to the development of irrigation by the opening of sugar factories in the Valley. The remodelling of the Nira Left Bank Canal, which was started in the year 1925-26, has made considerable progress and the work is expected to be completed by the end of the year 1942-43. The expenditure incurred during the year amounted to Rs. 18,244.

The rainfall at Bhatgar was 41.33 inches as compared with 45.63 inches of the previous year. The rainfall along the Nira Left Bank Canal was 16.75 inches. The water in the Shetphal Tank reached its lowest depth of 16.20 feet on the 2nd July 1941, the corresponding contents being 90.44 million cubic feet. The tank reached the full supply level of 38.00 feet on the 24th September 1941 the corresponding contents being 611.00 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
74,746	74,280	8,43,801	7,46,237	8,56,892	7,61,052

Working expenses.		Realizations.		Rainfall.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,7,172	2,09,924	10,69,564	7,72,868	16.75	19.30

The area of sugarcane blocks was 16,574 acres on the Nira Left Bank Canal and that on the Shetphal Tank, 1,540 acres compared with 16,848 and 1,641 acres, respectively, during the previous year, while the area under two-season blocks on the Nira Left Bank Canal was 18,125 acres and on the Shetphal Tank 1,436 acres compared with 19,901 and 1,755 acres, respectively. The cost incurred on the measuring establishment employed was 5 pies per acre—against the same amount of the previous year. Remissions and refunds amounting to Rs. 2,216 and no refunds were sanctioned during the year under report. The cost of maintenance and repairs amounted to Rs. 1,78,420.

The perennial section of the Nira Left Bank Canal is up to mile 75 and that of the Shetphal Tank is up to mile 10 of the Shetphal Channel.

#### POONA IRRIGATION AND RESEARCH DIVISION.

##### MUTHA CANALS.

This system came into operation in 1874-75. The canals were constructed at a cost of about Rs. 65½ lakhs, including the cost of a large ghat-fed storage reservoir (Lake Fife) on the Mutha river at Khadakwasla, about 12 miles from Poona. The dam is 107 feet high, spanning the valley of the Mutha. The system comprises two canals, the Mutha Right Bank and Mutha Left Bank Canals, 70 and 18 miles long, respectively. The maximum designed discharges of the two canals at their



heads are 412 and 38·5 cusecs, respectively. Both the canals take off direct from the lake, which has a storage capacity of 3,091\* million cubic feet, of which 456 million cubic feet are reserved for the Poona Water Supply system as a margin of safety in the event of replenishment being received late. The storage is partly utilized for drinking and domestic purposes in Poona and partly for irrigation. The supply available for irrigation being insufficient the perennial limit of the Mutha Right Bank Canal is restricted to the reach between the head of the canal and mile No. 23 $\frac{1}{2}$ , i.e., up to and including Distributary No. 9. Even so the supply available, in the lake is totally inadequate to meet the increasing demands on it and a project for increasing the storage is under consideration. The Matoba tank is a tail tank receiving the surplus supply of the canal during the monsoon months.

On 1st April, the level of water in Lake Fife was 19·80 feet above the sill of the canal sluices, the corresponding contents being 1,350 million cubic feet, as compared with 15·25 feet and 949 million cubic feet in the previous year. The lowest level reached was 9·05 feet above sill level on the 5th of June when replenishment commenced. The lake filled to the level of the sills of the waste weir on 30th June and water was stored to nearly 34 feet (contents being 3,091 million cubic feet) above sluices on 13th October and the draw off commenced from 15th October 1941. The run-off from the catchment of the lake (196 square miles) amounted to 35,791 million cubic feet. The level of water on the 31st March 1942 was 16·60 feet, the corresponding contents being 1,063 million cubic feet as compared with 19·85 feet and 1,355 million cubic feet, respectively in the previous year. The rainfall at Khadakwasla was 28·55 inches as compared with 40·70 inches in the previous year. The Matoba tank water level on the 15th February 1941 was 16·90 feet. Replenishment from the Mutha Right Bank Canal commenced from the 2nd July. The full-supply level of the tank (29 feet) was reached on the 4th October 1941, the corresponding contents being 184 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
16,603	15,611	1,86,798	1,60,767	4,37,797	3,64,886

Working expenses.		Realizations.		Rainfall.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
86,632	1,02,457	4,49,542	3,49,428	16·71	19·67

\* During the year under report the work of contouring of the lake basin was carried out and the contents now worked out are 3,091 M.C.ft. against the original contents of 3,955 M.C. ft.

The area cultivated under sugarcane was 2,093 acres as compared with 1,938 acres in the previous year. The area under two season blocks on the Mutha Canals was 981 acres and that on Matoba Tank 1,504 acres as compared with 1,954 and 1,723 acres, respectively, in the previous year. The quantities of water supplied to the Poona Cantonment and Poona City Municipality during the year was 1,479 and 3,368 million gallons, respectively, as compared with 1,432 and 3,109 million gallons, respectively, in the previous year. The revenue assessed amounted to Rs. 59,171 and Rs. 1,42,072 respectively compared with Rs. 57,346 and Rs. 1,27,201, respectively, during the previous year. The cost incurred on the measuring establishment employed was equivalent to a figure of Re. 0-1-3 per acre against Re. 0-1-0 in the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 86,252.

#### KASURDI TANK.

This tank, which dried up on 2nd November 1940, received its first replenishment on 4th June 1941 to a level of 17·30 feet with corresponding contents of 0·83 million cubic feet and dried on 9th June 1941. The tank received second replenishment on 12th September 1941 and immediately dried on 22nd September 1941. The third replenishment was received on 2nd October 1941 to a level of 15·50 feet with corresponding contents of 0·67 million cubic feet and dried on 14th October 1941. The tank is almost completely silted up to a depth of 16 feet and hence there is very little irrigation under this tank. The area irrigated and assessed revenue was 2 acres and Rs. 5, respectively. The leasing out of the tank bed for cultivation is the main source of revenue. The gross assessed revenue amounted to Rs. 1,078 and working expenses to Rs. 735 during the year under report. The cost of M. & R. came to Rs. 732. The rainfall was 16·10 inches against 16·30 inches, the average of past 3 years.

#### NASIK IRRIGATION DIVISION.

##### GODAVARI CANALS.

This is one of the major irrigation works undertaken in the Deccan for the protection of areas liable to faminae. It was started in 1907 and completed in 1915-16 at a cost of about 1 crore of rupees. The system comprises—

(1) A storage reservoir (Lake Beale) on the Darna River, a tributary of the Godavari, situated about 20 miles from Nasik ;

(2) A pick-up-weir at Nandur-Madhmeshwar on the Godavari 47 miles below the Darna Dam, which impounds the water released from the storage reservoir ; and

(3) Two canals, the Right Bank Canal, 69 miles long, which serves the northern tracts of the Ahmednagar District and the Left Bank Canal, 48 miles long, which irrigates lands north of the Godavari in the Nasik and Ahmednagar Districts.

The length of the Darna Dam (inclusive of its waste weir) exceeds a mile and the dam has a maximum height of 92 feet above its lowest foundation level. The lake has a storage capacity of 7,763 million cubic feet and the cost of the dam was Rs. 34·27 lakhs. The catchment area is 156 square miles. The weir at Nandur-Madhmeshwar is a work of considerable magnitude, its length being 3,618 feet inclusive of the Right and Left Bank Canal regulators. It has a maximum height of 34 feet above the level of the river bed. Scouring sluices have been constructed close to the head regulators of the two canals with the object of keeping the approach channels to the latter clear of silt. The total area under the command of the canals is 232,390 acres. The two canals (Right Bank and Left Bank) are designed to discharge 384 and 223 cusecs at their heads, respectively, with full supply depths of 7 feet and 6 feet, respectively.

On the 1st April, the level of water in the lake was 62·9 feet, the corresponding contents being 4,282 million cubic feet. The lowest level of 23·6 feet was reached on the 28th June, the contents being 337 million cubic feet, when the lake began to receive replenishment. The draw-off for irrigation purposes commenced on the 4th November with a water level of 74·6 feet, the corresponding contents being 7,625 million cubic feet. On the 31st March 1942, the level of water was 60·30 feet, the corresponding contents being 3,713 million cubic feet. The perennial limit of the Right Bank Canal is up to mile 69 and that of the Left Bank Canal up to 44 miles. The average rainfall in the catchment area of the lake was 43·47 inches.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Lake Beale	498	491	1,619	1,615	7,40,792	6,01,912
Godavari Right Bank Canal	21,005	20,562	4,04,271	3,32,620		
Godavari Left Bank Canal	15,222	14,083	3,09,951	2,41,812		

Name of work.	Working expenses.		Realizations.		Rainfall.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Lake Beale	3,57,995	2,62,258	9,77,745	5,26,512	43·47	66·20
Godavari Right Bank Canal					16·30	20·64
Godavari Left Bank Canal					18·00	21·46

The increase in the area irrigated and the assessed revenue was due to increase in Rabi seasonals due to unsatisfactory rainfall. The area of sugarcane blocks was 12,490 acres as compared with 12,567 acres in the previous year. The area of two-seasonal blocks was 1,527 acres against 1,281 in the previous year. The cost of the measuring establishment employed was 14 pies per acre as against 12 pies of the previous year. The remissions sanctioned during the year amounted to Rs. 15,547. The cost incurred on maintenance and repairs amounted to Rs. 3,56,190. The Godavari Left Bank Canal breached at 4 places due to heavy rainfall on the night of 1st July 1941. A diversion of the Canal was decided upon, the work of which was commenced on 4th July 1941 and water was admitted through the new diversion on 4th August 1941.

## CHANKAPUR TANK--GIRNA CANAL.

This is comparatively small irrigation system situated in the Nasik District having its storage reservoir at Chankapur fed from a catchment of 100 square miles in extent and its pick-up-weir at Thengoda situated further downstream on the Girna river, from which weir the Girna canal (19 miles in length) takes off. The tank is situated on the Girna river, a tributary of the Tapti and has been formed by the construction of a masonry dam 140 feet high, which impounds 1,500 million cubic feet of water. The dam and the canal (up to mile 13) were completed in 1909-10 and the canal has been in operation since then. The extension of this canal designed to carry about 40 cusecs, up to mile 19 was completed in 1920-21. The designed discharge of the canal at its head is 90 cusecs and at its tail 15 cusecs, the corresponding full supply depth being  $4\frac{1}{2}$  feet and 2 feet, respectively. The total area under the command of the canal is 29,182 acres and the irrigable area is 8,500 acres.

On the 1st April, the level of water in the tank was 84.90 feet, the corresponding contents being 1,151 million cubic feet. The lowest level of 65.80 feet was reached on the 29th June (contents 520 million cubic feet) when the lake began to receive replenishment. The first draw off for irrigation purposes commenced on the 21st October with the level of water at 92 feet, the corresponding contents being 1,548 million cubic feet. On the 31st March 1942, the level of water 76.10 feet, the contents then being 798 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
12,589	10,364	1,34,045	1,10,347	1,36,340	1,12,257

Working expenses.		Realizations.		Rainfall.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
54,638	66,338	1,43,479	1,07,172	13.49	27.43

The increase in area irrigated and assessed revenue was due to increase in Rabi seasons. The cane area was 3,589 acres as compared with 3,654 acres in the previous year. The cost of measuring establishment was equivalent to 11 pies per acre as compared with 10 pies obtained during the previous year. There were no remissions sanctioned during the year under report. The expenditure incurred on maintenance and repairs amounted to Rs. 54,362

## KADWA RIVER WORKS.

These works, which came into operation in 1868-69, consist of three small canals, viz., the Palkhed, the Ojhar Tambat and the Wadali, taking off from weirs constructed across the Kadwa river and its tributary the Banganga. The system comprises 38 miles of canals and distributaries. The storage reservoir is at Waghad (a ghat-fed storage) situated on the Kolwan river in the Nasik District. The catchment of the tank is 29 square miles in extent. The tank is remarkable for the size of its earthen dam, which has a maximum height of 96 feet. The designed discharges of the Palkhed canal at its head and at its tail are 63 cusecs and 15 cusecs, respectively, the corresponding depths at full supply being  $3\frac{1}{2}$  feet and 2 feet. The designed discharges of the Ojhar Tambat canal at its head and at its tail are 33 cusecs and 5 cusecs, respectively, the depths at full supply being 3 feet and 1 foot, respectively. The designed discharges of the Wadali canal at its head and at its tail are 19 cusecs and 5 cusecs, respectively, the depths at full supply being 2 feet and 1 foot, respectively.

On the 1st April, the level of the water in the tank was 42.4 feet above the sill, the corresponding contents being 440 million cubic feet. The lowest level of 28.65 feet, was reached on 29th June, the contents being 179 million cubic feet when the lake began to receive replenishment until it overflowed on the 1st July 1941. The draw-off for irrigation purposes commenced on the 5th November with a water level of 45.70 feet, the corresponding contents being 532 million cubic feet. On the 31st March 1942, the level of water was 33.75 feet, the corresponding contents being 259 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of Canal.	Area irrigated.		Water rates assessed.		Gross revenue assessed.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Palkhed Canal .. ..	1,955	1,965	19,134	17,143	41,983	36,933
Ojhar Tambat Canal .. ..	1,127	1,023	11,454	9,839		
Wadali Canal .. ..	886	646	8,649	7,831		

Name of Canal.	Working expenses.		Realizations.		Rainfall.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Palkhed Canal .. ..	29,758	32,854	52,317	33,406	28.74	31.63
Ojhar Tambat Canal .. ..					22.92	27.45
Wadali Canal .. ..					22.16	29.40

The increase in the assessed revenue was due to increase in demand for cane and onion crops. The expenditure on maintenance and repairs amounted to Rs. 27,606.

The cost incurred on the measuring establishment employed was 6 pies per acre as against 9 pies for the previous year. Remissions sanctioned during the year amounted to Rs. 15.

**AHMEDNAGAR DIVISION.**  
**PRAVARA RIVER WORKS.**

This canal system, which was constructed at a cost of Rs. 1½ crores, comprises :—

(1) The Wilson Dam at Bhandardara on the Pravara river. This dam which impounds the water on the Lake Arthur Hill, is one of the highest dams in the world having a height of 282 feet. It is 1,600 feet in length and the lake formed by the dam has a storage capacity of some 12,092 million cubic feet.

(2) A pick-up-weir, 890 feet long, situated at Ojhar, 53 miles down stream from Lake Arthur Hill, and about 8 miles east of Sangamner ; and

(3) Two canals, the Pravara Right Bank Canal, 33 miles long, and the Pravara Left Bank Canal, 48 miles long, which take off at the weir at Ojhar.

These canals irrigate lands in the Ahmednagar District and command an area of 228,720 acres. The designed discharges of the two canals (Pravara Right and Left Bank Canals) at head are 152 and 530 cusecs, respectively, the corresponding full supply depths being 5 feet and 8 feet. The work of remodelling the first 16½ miles of the Pravara Left Bank Canal and the Northern Branch has been completed in order to meet the increased demand for water from the sugar factories established on the Left Bank Canal and the work of remodelling Distributaries Nos. 8 and 9 has also been completed. The remodelling work of Water Course Nos. 32, 33 and 34 of the Pravara Left Bank Canal is in progress. With the remodelling of the canal and the rotational running now practised weeds do not appear at present. The Ojhar weir has been raised by two feet in order to obtain the necessary supplies in the two Canals. The height of the waste weir at Bhandardara was raised by 5.45 feet by constructing a crest wall. The construction of the Wilson Dam, which impounds the water of Lake Arthur Hill, was commenced in 1911 and completed in 1926. The catchment area of the lake is 47 square miles ; it is situated in the ghats and has an assured run-off. The dam is designed to impound a maximum depth of water of 270 feet and is constructed across a gorge in the valley of the Pravara river. At present water is impounded to a depth of 265.70\* feet giving a storage 11,189 million cubic feet and this could be increased to 12,092 million cubic feet with a corresponding depth of 270 feet by the erection of automatic gates on the waste weir or by the construction of syphon spillways and the raising of the waste weir.

On the 1st April, the level of water in the lake was 224.40 feet, the corresponding contents being 5,195 million cubic feet. The lowest level of 159.20 feet was reached on the 27th June, the contents being 1,216 million cubic feet. Replenishment commenced with effect from the 28th June and the full supply level of 265.70 feet was reached on the 18th July, the contents being 11,189 million cubic feet. The maximum flood occurred on the 11th August, when the level was 268 feet, which lasted for about 12 hours. The full supply level was maintained till the 22nd September 1941 and the draw off for irrigation purposes commenced on this date. The level of water gradually fell to 229.40 feet on the 15th February 1942, the contents being 5,724 million cubic feet. The level of water on the 31st March 1942 was 212 feet, the corresponding contents being 4,059 million cubic feet. The yield from the catchment (47 square miles) of the lake was 18,295.88 million cubic feet while the average rainfall of the several raingauge stations was 229.97 inches. The rainfall was very poor.

\* This change (from 265.45 to 265.70 feet) is due to the finishing off of the crest of the waste weir whereby it has been raised by 0.25 feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years:—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Pravara Right Bank Canal	13,593	10,953	1,94,234	1,43,767	1,97,841	8,23,500
Pravara Left Bank Canal	44,400	41,022	8,46,993	6,49,482	8,51,082	

Name of work.	Working expenses.		Realizations.		Rainfall.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Pravara Right Bank Canal	2,24,429	2,83,125	13,48,132	7,37,204	11.06	20.28
Pravara Left Bank Canal					12.23	23.31

The increase in the area irrigated and the irrigation assessment was due to increase in sugarcane and Rabi irrigation. The total area of sugarcane blocks was 7,792 acres while the area under two-seasonal blocks was 7,510 acres as compared with 7,179 acres and 183 acres, respectively, in the previous year. The remissions sanctioned during the year amounted to Rs. 9,419. The cost of the measuring establishment was equivalent to 12 pies per acre against the same amount of the previous year. The expenditure incurred on maintenance and repairs to the Wilson Dam and the two canals amounted to Rs. 2,33,500.

#### BHATODI TANK.

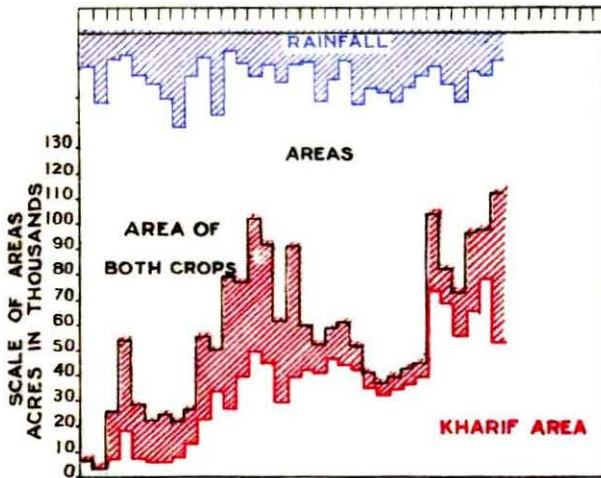
THIS IS A SMALL TANK situated on the Mehakri river about 12 miles from Ahmednagar. It depends entirely on local rains for its supply. Due to silting, the storage capacity of the tank has been reduced from 154 million cubic feet to about 40 million cubic feet. The first replenishment was received on 4th September, which raised the level of water to 19.10 feet. The highest level of 23.50 feet was reached on 14th September, and the waste weir overflowed to a depth of 1 foot. The lowest level in the tank was 16.00 feet on the 30th December 1941.

# AHMEDNAGAR DIVISION

## GODAVARI AND PRAVARA CANALS.

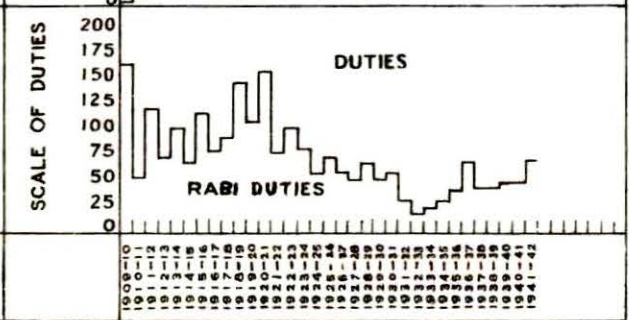
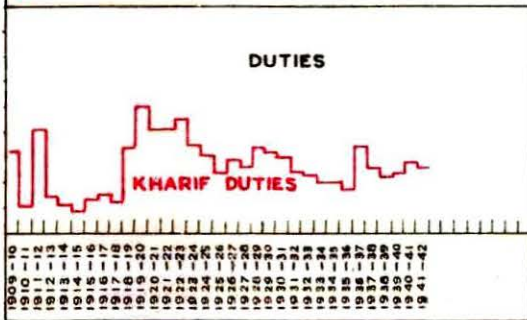
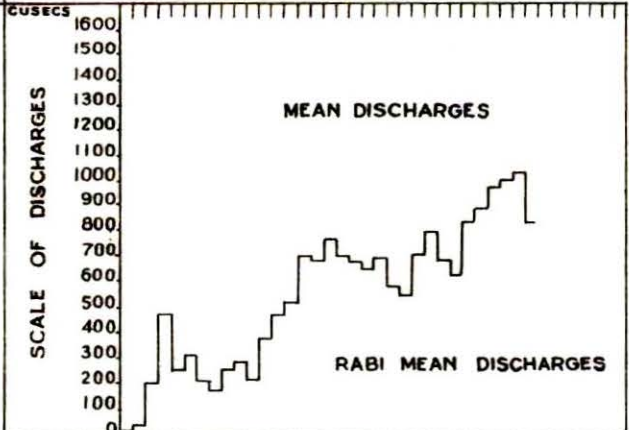
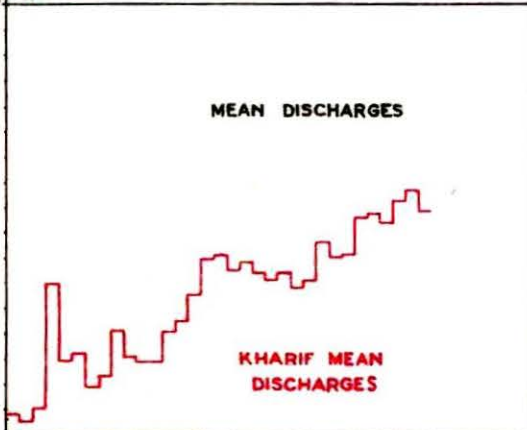
### COMBINED WORKING RECORD

### FOR THE YEAR 1941-42.



NOTE:-

- (1) THE INTERCEPTS IN THE RED AREA SHOW THE RABI AREAS EACH YEAR.
- (2) THE AREAS SHOWN EXCLUDE THOSE OF THE LAKH CHANNEL TILL IT WAS AMALGAMATED WITH THE PRAVARA LEFT BANK CANAL IN 1925-26.
- (3) THE DISCHARGES ARE AVERAGE DISCHARGES AT HEAD CALCULATED ON THE TOTAL NUMBER OF DAYS OF THE SEASON CONCERNED.
- (4) THE DUTIES ARE CALCULATED ON THE ABOVE AREAS AND DISCHARGES.
- (5) THE RAINFALL IS AVERAGE RAINFALL OF ALL THE STATIONS ON THE CANALS.
- (6) THE DISCHARGES AND DUTIES FOR KHARIF AND RABI 1912-13 ARE FOR GODAVARI R.B. CANAL AND PRAVARA CANALS ONLY. FIGURES FOR GODAVARI L.B. CANAL ARE NOT AVAILABLE.



G.P.Z.R. POONA 1947

*(Signature)*

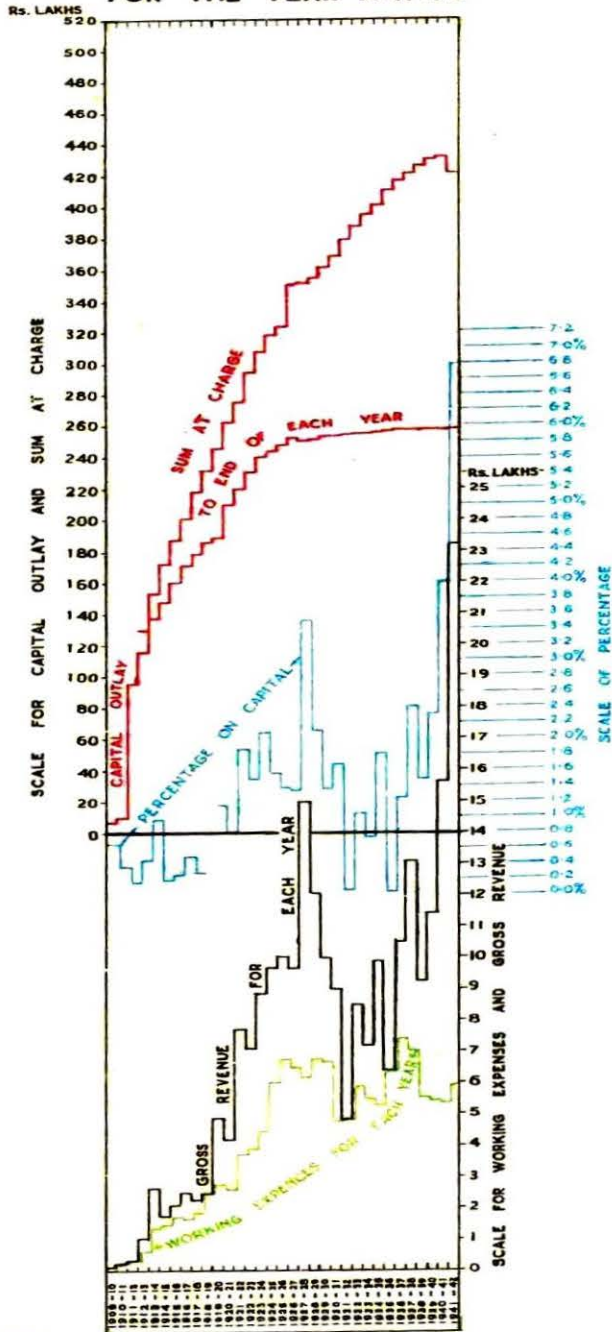
SUPERINTENDING ENGINEER  
DECCAN IRRIGATION CIRCLE.

*(Signature)*

EXECUTIVE ENGINEER  
AHMEDNAGAR DIVISION.



# AHMEDNAGAR DIVISION GODAVARI AND PRAVARA CANALS. COMBINED FINANCIAL RECORD FOR THE YEAR 1941-42.



**NOTE :-**  
THE INTERCEPT BETWEEN THE TWO RED LINES SHOWS ARREARS OF INTEREST UNPAID UP TO END OF EACH YEAR, WHICH BEING ADDED TO THE CAPITAL GIVES SUM AT CHARGE.  
THE INTERCEPT BETWEEN GREEN & BLACK LINES SHOWS THE NET INCOME EACH YEAR.

NAME OF CANAL	CONSTRUCTION COMMENCED IN	CANAL WAS OPENED IN
PRAVARA CANALS	1907	1911-12
GODAVARI CANALS	1909	1909-10

*[Signature]*  
**EXECUTIVE ENGINEER  
AHMEDNAGAR DIVISION.**

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
339	564	1,610	2,529	4,290	3,658

Working expenses.		Realizations.		Rainfall.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
4,591	2,774	5,286	5,579	17·49	23·77

Due to uncertainty of water no two-seasonal blocks were sanctioned. No remissions were sanctioned during the year under report. The expenditure incurred on maintenance and repairs during the year amounted to Rs. 1,181.

### CENTRAL CIRCLE.

#### POONA DIVISION.

#### SHIRSUPHAL TANK.

On the 1st April, the level of water in the tank was 16·60 feet, the corresponding contents being 56·44 million cubic feet. Replenishment was received on the 15th September. The highest level reached was 22·15 feet on the 9th October, the corresponding contents being 126·75 million cubic feet. The tank did not fill to its full supply level. The supply available was fully utilized for irrigation. The full supply level of the tank is 31 feet, the corresponding contents being 356·60 million cubic feet. The rainfall during the year was 12·96 inches, against 18·97 inches, the average of the preceding three years.

#### BHADALWADI TANK.

On the 1st April, the level of water in the tank was dry owing to the scanty rainfall during the last year. The tank received replenishment on 1st September and the highest level of 30·0 feet was reached on the 10th September, the corresponding contents being 124·08 million cubic feet. The full supply level of the tank is 35 feet with corresponding contents of 190·74 million cubic feet. The rainfall gauged during the year was 11·60 inches, against 25·31 inches, the average of the preceding three years. The tank became dry on 10th November i.e., a month after the beginning of the Rabi Season.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of tank.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Shirsuphal .. ..	1,043	1,177	5,929	6,157	3,165	2,928
Bhadalwadi .. ..	527	1,150	2,741	5,853	3,555	2,925

#### SATARA DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the 6 works mentioned below as compared with the averages of the preceding three years are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1. Krishna Canal ..	6,883	5,989	63,297	52,576	17,617	25,902
2. Rewari Canal ..	248	614	1,586	3,445	2,291	2,476
3. Upper Man River Works ..	349	1,033	2,212	5,308	6,304	8,251
4. Yerla River Irrigation Works	4,842	4,042	26,812	22,282	12,755	10,620
5. Chikhli Canal ..	418	333	2,695	2,210	1,620	1,668
6. Maini Tank ..	1,422	1,405	8,443	7,175	5,474	4,316

#### KRISHNA CANAL.

The total rainfall gauged at Retre Budruk, which is situated in the centre of the canal track, was 22·33 inches, as compared with the average of 25·13 inches for the past three years. Water could not be made available for sugarcane beyond mile 16/4 of the canal, because of insufficient summer flow in the river and of very little storage capacity at the head works.

#### REWARI CANAL.

The rainfall gauged at Rewari, which is situated one mile below the bandhara, was 13·71 inches, as compared with 23·37 inches, the average of the preceding three years. The decrease in area irrigated and revenue was due chiefly to shortage of water in the canal on account of less rainfall.

## UPPER MAN RIVER WORKS.

*(Pingli Tank.)*

On the 1st April, the level of water in the tank was at R. L. 2,360·17 equivalent to a storage of 17·94 M. cft. The first replenishment was received on the 28th May, when the water level rose to R. L. 2,357·29 i.e. by 0·20 which was equivalent to a storage of 0·93 million cubic feet. A further replenishment was received on the 4th June when the level rose to R. L. 2,357·19 (0·10 feet over silted bed) equivalent to 0·49 million cubic feet. The highest level of 3·25 feet (over silted bed) was reached on the 7th October with the corresponding contents of 18·93 million cubic feet (over silted bed). The waste weir did not overflow this year. The rainfall gauged at Gondawla, which is situated 3 miles below the tank, was 6·05 inches compared with 20·19 inches, the average of the preceding three years.

## YERLA RIVER IRRIGATION WORKS.

*(Nehr Tank.)*

On the 1st April the level of water in the tank was at R. L. 2,659·99 = 19·37 feet (above silted bed) equivalent to a storage of 253 million cubic feet. The first replenishment was received on the 1st June which raised the water level to 17·20 feet (over silted bed) i.e. to R. L. 2,657·82 equal to 194 million cubic feet. Part of this supply was utilized for hot weather irrigation. The highest level was reached during the year on the 6th October when the level rose to 20·90 feet over the silted bed) the contents being then 274 million cubic feet and the R. L. 2,660·52. Water did not flow over the waste weir this year. The rainfall gauged at Nehr was 20·03 inches as compared with 24·82 inches, the average of the preceding three years. Due to shortage of rainfall, there was an increased demand for water which resulted in increased area during the Rabi Season.

## CHIKHLI CANAL.

On the 1st April, there was no flow in the river Nandni from which the canal receives its supply. It was 9·5 ft. in height but lasted only for two hours. The first flood occurred on the 5th April. The second flood occurred on the 9th April. The heaviest flood was received on 3rd July when the flood depth was 6 feet over the weir and the waste weir began to overflow. The rainfall gauged at Chikhli was 16·95 inches compared with 12·43 inches, the average of the preceding three years.

## MAINI TANK.

On the 1st April, the level of water in the tank was at R. L. 2,302·63 i.e., 6·11 feet equivalent to a storage of 46 million cubic feet. The first replenishment was received on the 18th June raising the level to 3·5 feet (over the silted bed) or to R. L. 2,300·02 the contents being 175 million cubic feet. The new replenishments were received on 3rd and 4th September with the R. L. at 2,303·52 = 7 feet, the contents being 59 million cubic feet. The water level attained its maximum height on 15th September when the tank over-flowed slightly with a depth of 0·30 foot only over the crest of the waste weir. The waste weir again overflowed on 24th September and also from 5th to 14th October. The tank became dry on 5th December. The rainfall gauged at Maini was 12·71 inches as compared with 20·95 inches, the average of the preceding three years.

## SHOLAPUR DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the tanks in the Sholapur Division, as compared with the corresponding averages of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1941-42	Average.	1941-42	Average.	1941-42	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank	4,940	4,147	1,97,358	1,54,781	23,822	20,874
Koregaon Tank	182	453	1,023	2,046	3,763	1,990
Ashti Tank	4,010	3,177	30,477	17,754	30,915	12,193
Pathri Tank	511	653	9,440	10,848	3,551	3,568

## EKKUK TANK.

The Ekruk Tank, situated near Sholapur, which came into operation in the year 1872-73, is an artificial reservoir formed by the construction of a large earthen embankment 7,000 feet long and having a maximum height of 76 feet. It supplies water not only for irrigational purposes but also to the town of Sholapur, the mills in Sholapur and the Great Indian Peninsula Railway for non-irrigational purposes. Under unfavourable conditions of replenishment, which occur periodically, the supply available from the tank is not sufficient to meet all the demands which arise, and the question of providing a supplementary storage is under consideration.

On the 1st April, the level of the water in the tank was 32·77 feet above the sill of the outlet. The storage available on the 31st May was 1,285·85 million cubic feet only, which was sufficient for accepting Kharif demand and hence 500 acres of hot weather and 1,000 acres of monsoon crop in addition to 240 acres of sugarcane was allowed.

Arriving good rainfall in September the contents of the tank on 1st October, i.e., at the beginning of the Rabi season were 1938·82 million cubic feet which was sufficient to admit of 1,400 acres of Rabi non-leased area in addition to the leased area of 1,500 acres. The highest level of water reached was at R. L. 1,517·60 i.e. 35·0 feet on 27th September. The mean rainfall gauged at the five stations in the catchment area of the tank was 20·22 inches as compared with 24·51 inches, the average of the preceding three years, and the total replenishment received amounted to 1,153·49 million cubic feet. The waste weir did not overflow during the year.

## KOREGAON TANK.

On the 1st April, the level of water in the tank was at R. L. 81·96 feet. No replenishment was received till August. Kharif irrigation was therefore not allowed. The tank received a total replenishment of 30·997 million cubic feet during September and October and the supply was utilized towards Rabi irrigation. The waste weir did not overflow. The rainfall recorded was 18·75 inches as compared with 28·58 inches, the average of the preceding three years. The highest level of water reached during the monsoon was at R. L. 88·40 on 4th October 1911.

## ASHM TANK.

On the 1st April, the tank was dry. The tank received replenishments in the month of September and in all received 665.49 million cubic feet of fresh supply which was sufficient to admit of full Rabi leased demand. The waste weir did not overflow during the year. The mean rainfall gauged at the two stations situated in the catchment was 12.86 inches as compared with the average 21.38 inches for the preceding three years. The highest level during the monsoon was at R. L. 225.27 on 5th October.

## PATHRI TANK.

The tank supplies water to the town of Barsi and the mill industries, as well as for irrigational purposes. On the 1st April, the level of the water in the tank was at R. L. 237.47 i.e., 28.17 feet above the sill of the outlet. Though there were rains in the month of June, the tank did not receive good replenishment. Hence water could not be allowed for Kharif irrigation. Substantial replenishments were, however, received from July to October. The supply available was utilized to meet the demand of lease holders in full after due reservation of the storage for the Barsi Municipality. The waste weir did not overflow. The mean rainfall gauged at the two stations, situated in the catchment area was 13.79 inches as compared with 26.70 inches, the average of the preceding three years. The highest level reached during the monsoon was at R. L. 235.88 on the 5th October.

## MHASWAD TANK.

This irrigation tank is formed by an earthen dam built across the Man river, the dam being 9,000 feet long and 80 feet high at its highest point. The tank which is situated on the eastern border of the Satara District, has a storage capacity of 2,602 million cubic feet and supplies water for the irrigation of lands situated mostly in the Sholapur District. Owing to the precarious nature of the rainfall received in the catchment area the supply is not reliable. The tank is provided with a masonry overflow waste weir. The project was commenced in 1876-77 and completed in 1888-89. There is only one canal taking off from the left flank of the dam, previously called Mhaswad Canal No. 1 and now termed Mhaswad Canal, Part I. The designed discharge of the canal is 180.7 cusecs, whereas the present actual discharge is about 146 cusecs with a full supply depth of 4 feet. The Nira Right Bank Canal cuts across the Mhaswad Canal at mile 15 and the old Mhaswad Canal has been remodelled to function as Branch III of the Nira Right Bank Canal passing a discharge of 300 cusecs. No water from the Nira Right Bank Canal is now available for Branch III of the Nira Right Bank Canal system and the irrigation on this branch is being carried out with water obtained from the Mhaswad Tank but the supply is always insufficient to meet the full demand. Hence water from the Nira Right Bank Canal has to be borrowed so as to meet the demand of the irrigators.

On the 1st April, the level of water in the tank was 22 feet above the sill of the outlet and this was utilized for hot weather irrigation. To meet the demand water from Nira Right Bank Canal had to be obtained during Kharif. The tank received replenishments in September and October with the result that the waste weir overflowed on 5th October. Rabi demand was fully met with.

The rainfall in the Canal tract was 8.59 inches compared with 20.41 inches, the average of the preceding three years.

The following table shows the area irrigated, revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
2,166	2,067	14,986	13,475	22,283	20,014

The area irrigated and gross revenue assessed during the year on Branch No. III of the Nira Right Bank Canal referred to above, were 9,928 acres and Rs. 53,748 respectively.

#### KHANDESH DIVISION.

##### JAMDA CANALS.

These canals receive their supply from the Girna river and the supply is supplemented from time to time by water obtained from the Chankapur Tank in the Nasik Irrigation Division. During the year under report no water could be obtained from the Chankapur Tank. The rainfall during the year was 17·35 inches, as compared with 27·15 inches, the average of the preceding three years. The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,244	1,400	8,743	10,200	16,229	17,887

##### HARTALA TANK.

The tank derives its supply solely from local rains and this supply is precarious. On the 1st April, the storage of the tank amounted to 18·16 million cubic feet. The first replenishment which was received on the 30th June, raised the contents to 5·51 million cubic feet. The maximum storage of 53·82 million cubic feet was reached on the 24th September. The year closed with a of storage of 19·18 million cubic feet on 31st March 1942. The rainfall gauged at the tank was 24·70 inches as compared with 34·12 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
47	37	159	149	659	921

#### MHASWA TANK.

The tank derives its supply from local rains. On the 1st April, the storage of the tank amounted to 89·56 million cubic feet, which gradually diminished to 47·38 million cubic feet. The first replenishment was received on the 1st July when the contents increased to 172·30 million cubic feet. The maximum storage of 172·30 million cubic feet was reached on the 12th July; on the 31st March, the storage was 8·90 million cubic feet. The rainfall gauged at the tank was 17·50 inches as compared with 29·85 inches, the average of the preceding three years.

The area irrigated, the gross assessed revenue and the working expenses, as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
613	456	3,613	3,095	1,355	1,277

#### SHAHADA CHANNEL.

The channel is fed by the Gomai river, which has a perennial flow. The rainfall gauged at Shahada was 21·65 inches as compared with 24·68 inches, the average of the preceding three years. There was sufficient supply of water throughout the year and the demand for water was normal in both Kharif and Rabi seasons.



The area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.				Gross assessed revenue. Working expenses.			
Patasthal.		Jirayat.					
1941-42	Average.	1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,014	986	901	940	12,045	11,555	9,244	6,971

#### LOWER PANJHRA RIVER WORKS.

These works comprise 8 bandharas and 9 channels situated between Dhulia and Betawad on the Panjhra river, and the Mukti Tank, which is situated about 4 miles to the South-West of Dhulia. The channels obtain their supply from the river but when the supply is insufficient it is supplemented by water obtained from the Mukti Tank.

On the 1st April, the contents of the tank were 178·22 million cubic feet, which gradually diminished to nil. The first replenishment was received on the 2nd July which raised the contents to 13·59 million cubic feet. The maximum storage of 105·85 million cubic feet was reached on the 17th September. The year closed with a storage of 33·33 million cubic feet. The rainfall gauged within the catchment at Dayana and Sadgaon during the year was 13·5 inches as compared with 21·13 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.				Gross assessed revenue. Working expenses.			
Patasthal		Jirayat.					
1941-42	Average.	1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,277	1,278	492	1,153	22,600	26,554	7,509	4,311

## NASIK DIVISION.

## PARSUL TANK.

This tank is formed by an earthen dam across the Parsul river in the Malegaon Taluka of the Nasik District. It depends solely on local rains for its supply. The storage capacity of the tank is 119 million cubic feet with a depth of 35 feet. There is no canal and the irrigation is done by small channels taking off the Parsul river itself downstream of the tank.

On the 1st April, the level of water in the tank was at R. L. 1,858.08 i.e. at the outlet sill. The tank was dry on 12th May 1941. The first replenishment was received on 4th July when the level of water reached R. L. 1,847.33 i.e. 9.7 million cubic feet and continued to rise till 9th August to 1,862.18 F.S.L. the corresponding contents being 46.2 million cubic feet. The tank was dry from January to 31st March 1942. The average rainfall in the catchment areas of the tank was 13.15 inches compared with 18.21 inches, the average of the preceding three years.

The following table gives the figures of area irrigated, revenue assessed, etc. during the year as compared with the averages of the past three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1941-42	Average.	1941-42	Average.	1941-42	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,056	959	5,552	4,719	1,797	2,130

The cost of the measuring establishment employed was equivalent to 8 annas 1 pie per acre. An expenditure of Rs. 700 was incurred on maintenance and repairs during the year.

## SOUTHERN CIRCLE.

## BELGAUM DIVISION.

## GADIKERI TANK.

The lands under the command of the tank are all assessed at consolidated rates. The area irrigated and the irrigation share of the land revenue assessed were 423 acres and Rs. 2,344 respectively.

## GOKAK CANAL.

This canal system is the most important irrigation scheme in the Southern Circle and consists of a reservoir formed by a masonry weir across the Ghatprabha river at Dhupdal in the Belgaum District, together with 16 miles of main and branch canals and 36 miles of distributaries. The canal commands an area of 18,668 acres, the area irrigable being 17,627 acres. Although the Dhupdal Storage is mainly intended for irrigating lands under the Canal, a stipulated quantity of water is issued to the Gokak Mills Company in accordance with an agreement between Government and the Company, in consideration of which a sum of Rs. 14,313 is annually paid by the Company subject to a rebate in the event of the supply falling short of the quantity contracted for. During the year under report, a rebate of Rs. 409 was paid to the Company.

Water was supplied to the M. & S. M. Railway Company at their Hukeri Road Station at a charge of Rs. 50 per month. The total amount recovered from the Railway Company on this account was Rs. 600.

On the 1st April, the gauge reading of the water level in the Dhupdal Reservoir was 21·14 feet. The level gradually decreased to 15·90 feet on the 17th May. Owing to replenishment received the water in the reservoir rose to 18·21 feet on the 21st May. The level again gradually decreased to 15·60 feet on the 6th June. Then it began to rise, causing continuous overflow over the weir from the 8th June up to 22nd August. During the whole monsoon, the highest flood depth over the crest was 3·84 feet on the 9th July. The maximum discharge for the day was 55,844 cusecs. In order to store more water from the post monsoon floods, the raising of four feet temporary crest excepting the top two feet of the 100 reserve bays was commenced on the 15th September and completed on the 10th October. The closure of the 100 reserve bays was carried from the 20th October to 25th October. After completion of the reserve bays, the level of water began to rise from 23rd October and the Full Supply Level of 26·06 feet was reached on the 19th November. This level continued until the 23rd November and then gradually began to decrease. The level on the 31st March 1942 was 17·80.

The following table gives information regarding the area irrigated and revenue assessed as compared with the average of the previous three years :—

						Area irrigated.	Gross assessed revenue.
						Acres.	Rs.
Average	..	..	..	..	..	9,745	70,329
1941-42	..	..	..	..	..	10,929	77,303

#### BIJAPUR DIVISION.

##### MUCKKUNDI TANK.

This tank is solely dependent on local rains for its supplies and the storage of water in the tank is uncertain owing to the scanty rainfall in the area and the smallness of the catchment. The rainfall recorded during the year was less than the average of the previous three years. There was no water in the tank available for issue for irrigation from the 14th June 1941 to 31st March 1942. The supply of water in the tank was insufficient for irrigating the lands dependent on it. The highest level of water during the year was R. L. 1,791·19 or 5·25 feet above the sill of the outlet on the 1st April 1941 as against R. L. 1,792·2 or 11·26 feet on the 1st April 1940. The lowest was R. L. 1,788·94 or 3 feet above the sill of the outlet on the 31st March 1942. The gross assessed revenue was Rs. 901.

#### DHARWAR DIVISION.

##### DAMBAL TANK.

On the 1st April, the water level was at R. L. 141·90 i.e. 5·20 feet above the silted bed of the tank. The tank did not receive any replenishment during the year under report and it was empty from the 17th February 1942 to 31st March 1942.

Part of the land dependent on this tank is assessed at water rates, the balance being assessed at consolidated rates. The total area irrigated and the assessment levied under water rates were 53 acres and Rs. 369 as compared with 124 acres and Rs. 633, the corresponding averages of the previous three years. The irrigated area under consolidated assessment and the Irrigation share of the land revenue assessed were 144 acres and Rs. 916 respectively. The total assessed revenue was Rs. 1,785.

#### MEDLEBI TANK.

On the 1st April, the water level in the tank was at R. L. 172·26 i.e. 7·96 feet above the sill of the outlet. The tank received its first replenishment on the 20th May. The highest level reached during the year was at R. L. 180·20 i.e. 0·20 feet above full supply level. The water supply was adequate and the level of water reached on the 31st March 1942 was at R. L. 170·28 i.e. 5·28 feet above the sill of the outlet.

The area irrigated and the assessment levied thereon were 109 acres and Rs. 750 as compared with 54 acres and Rs. 456 respectively, the averages of the past three years. The gross assessed revenue was Rs. 1,023.

#### MADAG TANK.

On the 1st April, the water level in the tank was at R. L. 1,876·78 i.e. about 3·5 feet above the sill of the outlet. The tank received its first replenishment on the 12th June and overflowed from that date to the 31st March 1942. The highest level reached during the year was at R. L. 1,885·15 i.e. 7·44 feet on the 12th July 1941, above the crest of the waste weir. The water level on the 31st March 1942 was at R. L. 1,877·29 i.e. 4·3 feet above the sill of the outlet. The water supply was more than sufficient for the irrigated area in all the seasons.

The area irrigated and the assessment levied thereon were 480 acres and Rs. 2,040, respectively, as compared with 416 acres and Rs. 1,859, respectively, the corresponding averages of the previous three years. The increase in both area irrigated and assessment was mainly due to more irrigation of paddy during the year under report. The gross assessed revenue amounted to Rs. 2,269 as compared with Rs. 2,108, the average of the previous three years.

#### ASUNDI TANK.

On the 1st April, the water level in the tank was at R. L. 103·27, i.e. 4·27 feet above the sill of outlet. It received its first replenishment on the 8th June and the level of water reached on that day was at R. L. 102 i.e. 3 feet above the sill of the outlet. The highest level reached during the year was 104·30 i.e. 5·30 feet above the sill of the outlet. The tank was empty from the 12th January 1942 to 31st March 1942. Owing to scarcity of water no water was available for issue to non-consolidated area during the kharif and rabi seasons.

The lands under this tank are partly assessed at water rates and partly at consolidated rates. The area irrigated and the assessment levied thereon under the former head (water rates) were 1 acre and Rs. 5 as compared with 123 acres and Rs. 684 respectively, the corresponding averages of the past three years. The area under the consolidated assessment was 182 acres and the irrigation share of land revenue assessed thereon was Rs. 711. The gross assessed revenue amounted to Rs. 1,120 as compared with Rs. 1,979, the average of the past three years.

**DHARMA CANAL.**

The canal is fed by the Dharma river and a number of tanks are in turn fed by the canal. The canal began to flow continuously by end of June. During the year the rainfall was on the whole fairly satisfactory. The crop in the whole of the canal zone was in good condition.

The canal is an old one and is dependent on the rains for its supply. There is no storage reservoir. To overcome these difficulties, a project for constructing a storage reservoir at Yemagalli is under the consideration of Government.

The lands commanded by this canal are assessed partly at water rates and partly at consolidated rates. The area irrigated and the assessment levied thereon were 508 acres and Rs. 2,389, respectively, as compared with 425 acres and Rs. 2,427 respectively, the corresponding averages of the previous three years. The gross assessed revenue (after deducting Rs. 23,156 to be credited to old work) amounted to Rs. 1,386.

**KANARA DIVISION.****MAVINKOP TANK.**

The irrigation management of this tank has been entrusted to the Revenue Department. The rainfall was 51.09 inches. The supply of water in the tank was adequate for irrigation. The area irrigated which is assessed at consolidated rates amounted to 479 acres and the irrigation share of land revenue was Rs. 2,013 as compared with 669 acres and Rs. 2,029 for the previous year. The gross assessed revenue was Rs. 2,013.

## SECTION II.

COMPRISING IRRIGATION WORKS FOR WHICH NEITHER CAPITAL  
NOR REVENUE ACCOUNTS ARE KEPT.

## DETAILED REPORTS BY LOCAL OFFICERS.

## NORTHERN CIRCLE.

AHMEDABAD, KAIRA AND PANCH MAHALS AND SURAT AND  
BROACH DIVISIONS.

## KHARI SLUICES.

The flow in the Khari river was quite satisfactory owing to good rainfall. The area of transplantation of rice under irrigation was about 4,703 acres. As the flow in the Khari river was supplemented by the share of division of the Bokh and Hathmati canal water at Raipur weir, the whole area was protected.

The Khari sluices including the Bherai and the Naika reservoirs were maintained in good order at a cost of Rs. 4,548. Besides a sum of Rs. 1,961 was spent in making good the damages caused by the heavy floods. The miscellaneous revenue under the Khari Sluices System amounted to Rs. 418 compared with Rs. 959 received in the previous year.

The following table compares the areas irrigated and the assessment levied during the year with the respective averages of the previous three years :—

	Average.		1941-42.	
	Area.	Revenue after deducting remissions.	Area.	Revenue after deducting remissions.
	Acres.	Rs.	Acres.	Rs.
I. Irrigation above Kalambandhi villages (of Mahij, Bidaj and Lali) .. ..	147	78	103	223
II. Irrigation from tanks that can be fed by the river Khari—				
Goblaj .. ..	127	532	328	525
Galki .. ..	21	641	73	..
III. Irrigation from Khari sluices proper (i.e., 11 Kalambandhi villages) .. ..	5,375	18,197	4,810	32,307
<b>Total ..</b>	<b>5,670</b>	<b>19,448</b>	<b>5,312</b>	<b>33,145</b>

\* Revenue remained unrealized.

The assessment in respect of irrigation dependent on the Khari sluices in the Kalambandhi villages is consolidated. The average rates per acre for land and water respectively were as under :—

	Irrigation share.	Land share.	Total consolidated.
Government land .. .. .	0 5 4	6 9 3	6 14 7
Alienated land .. .. .	0 5 3	1 15 0	2 4 3

#### MUVALIA TANK.

This is an important tank situated in the vicinity of Dohad town in the Broach and Panch Mahals Collectorate and has a catchment area of about 30 square miles. During the year under review, it received a good replenishment. Due to favourable and timely rainfall there was less demand for water during the Kharif season. The demand for water in Rabi season was, however, great which was satisfied as far as possible by the tank water. The area irrigated was 1,293 acres and the net assessment amounted to Rs. 3,865. The miscellaneous revenue amounted to Rs. 499 compared with Rs. 517 received in the previous year. On this tank the following works were carried out at the cost mentioned against each :—

	Rs.
(1) Maintenance and repairs to Muwalia Reservoir and Canals including damage work .. .. .	6,514
(2) Strengthening the bund of Muwalia Tank (remaining work postponed to next scarcity) .. .. .	1,385
(3) Maintenance and Repairs to Muwalia Service Road .. .. .	2,004

#### OLD TANKS.

Improvements to 6 tanks in the Ahmedabad Division and 5 tanks in the Kaira and Panch Mahals Division and repairs to 42 tanks in the Ahmedabad Division, 40 tanks in the Kaira and Panch Mahals Division and 33 tanks in the Surat and Broach Division were carried out at a total cost of Rs. 9,930 and Rs. 1,07,900 respectively, including the cost of making good the damages caused by flood. The areas irrigated and the revenue derived from the old irrigation tanks and bunds were as under :—

Name of Collectorate.	Area irrigated.	Revenue.		Total consolidated assessment.
		Irrigation share.	Land share.	
	Acres.	Rs.	Rs.	Rs.
Ahmedabad .. .. .	13,511	11,045	46,755	57,800
Kaira .. .. .	895	3,897	66	3,963
Panch Mahals .. .. .	270	689	1,436	2,125
Broach .. .. .	809	1,481	5,015	6,496
Surat .. .. .	1,199	2,001	12,406	14,407

## DRAINAGE CHANNELS.

The drainage channels in the Ahmedabad, Kaira and Panch Mahals and Surat and Broach Divisions, were maintained in good order at a cost of Rs. 17,942, Rs. 20,753 and Rs. 10,480 respectively.

## DECCAN IRRIGATION CIRCLE.

## NIRA CANALS DIVISION.

## RAKH TANK.

This tank is situated about 5 miles from Walha railway station of the Madras and Southern Mahratta Railway and is formed by an earthen dam constructed across a nala near Rakh village in Purandhar Taluka of the Poona District. The catchment area of the tank is 5·38 square miles and its capacity is only 34·2 million cubic feet. The tank has two channels of a total length of 3½ miles. The area under command on channel No. 1, which is on the left bank, is 265 acres and that on channel No. 2 is 321 acres. The main channel is designed to discharge 12·8 cusecs leaving sufficient margin for all losses in transit. An area of 162 acres was irrigated and the revenue assessed amounted to Rs. 384 as compared with 198 acres and Rs. 1,350 respectively during the previous year.

## POONA IRRIGATION AND RESEARCH DIVISION.

## EFFLUENT IRRIGATION ON THE MUTHA RIGHT BANK CANAL.

The total area of sugarcane irrigated on effluent during the year was 904 acres as compared with 671 acres during the previous year. The average discharge pumped during the year was 12·09 cusecs and the whole discharge was utilized for purposes of irrigation. The total area irrigated was 1,943 acres as compared with 1,550 acres during the previous year. The assessed revenue amounted to Rs. 79,910 as compared with Rs. 58,895 during the previous year. The rate for the supply of effluent for sugarcane was Rs. 72 per acre during the year under report. The increase in the assessed revenue was due to the increase in cane, other perennials and two-seasonal crops during the year.

## BANDHARAS (POONA DISTRICT).

Bandharas are small weirs built across streams in order that the level of the water flowing in the streams may be raised sufficiently to command the lands to be irrigated. The following table gives the area irrigated and the consolidated assessed revenue on the bandharas in the Haveli Taluka of the Poona Collectorate during the year as compared with the average of the past three years :—

	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1941-42	29	73	174	247
Average	29	73	174	247



## BANDHARAS (NASIK DISTRICT).

There are numerous bandharas situated in this District. There are in all 299 such bandharas on the list. The expenditure incurred on repairs to bandharas (48 in number) during the year amounted to Rs. 25,891. The following table gives the area irrigated and the consolidated assessed revenue during the year as compared with the averages of the past three years :—

	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1941-42	27,094	2,24,242	61,070	2,85,312
Average	27,125	1,97,708	54,616	2,52,324

## AHMEDNAGAR DIVISION.

## VISAPUR TANK.

The Visapur Tank dam which is situated about 2 miles from the Visapur railway station on Dhond-Manmad Railway line is built across the Hanga river, a tributary of the Bhima river. It was started as a famine relief work in 1896 and was subsequently completed in successive stages by criminal tribes and convict labour by June 1927. This earthen dam which is 7,440 feet long and 84 feet high, forms a lake having a net capacity of 1,136 million cubic feet. The estimated cost of the whole scheme was Rs. 41 lakhs of which a sum of Rs. 21 lakhs was spent on the dam and head works and the balance on the construction of the canal, distributaries and minors, which aggregate 46 miles in length. The total area under command is 95,000 acres of which 26,000 acres are irrigable. The catchment area of the tank is 159 square miles in extent and it has a capacity of 1,172 million cubic feet. Irrigation from this tank was first started during the rabi season of 1929-30. Owing to an increased demand for water due to the starting of a small sugar factory on the Chimbla Distributary, the waste weir was raised by 2 feet in March 1934 to increase the storage in the tank by 130.20 million cubic feet.

On the 1st April, the level of water in the tank was 23.20 feet above the sill of the outlet, the contents being 366.10 million cubic feet. The lowest level of 13.75 feet was reached on the 3rd September 1941, the corresponding contents then being 103.17 million cubic feet. Replenishment was received in the tank on the 4th September, the corresponding contents being 167.66 million cubic feet the depth of water being 16.6 feet. The highest level of 32.30 feet was reached on the 5th October 1941 with a storage equivalent to 820.21 million cubic feet. The tank did not overflow during the year under report. The area irrigated, the irrigation assessment and the gross assessed revenue were 2,739 acres, Rs. 18,633 and Rs. 27,926 as compared with 2,948 acres, Rs. 22,832 and Rs. 26,025 respectively, the averages of the past three years. The expenditure incurred on maintenance and repairs to the tank and canal amounted to Rs. 8,890.

### MANDAVGAN TANK.

This tank is situated on a nala about 2½ miles away from Mandavgan village, taluka Shrigonda in the Ahmednagar District. The earthen dam is 1,605 feet in length. The tank has a hilly catchment of about 5·33 square miles. It is entirely dependent on local rains for its supply of water. This tank has been taken over from the District Local Board, Ahmednagar, from the rabi season of 1932-33, for irrigation management. Replenishment was received on the 14th September the corresponding contents being 39·08 million cubic feet. The area irrigated, and the water rates assessed during the year were 111 acres and Rs. 557 respectively, as compared with 41 acres and Rs. 160 respectively, during the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 1,260.

### POONA IRRIGATION AND RESEARCH DIVISION.

#### KHAMGAON TANK.

This tank which is situated in mile 23 of the Mutha Right Bank Canal is only partially completed. It receives replenishment during the monsoon from the Mutha Right Bank Canal Distributary No. 17. The supply available was issued for the irrigation of 363 acres and the gross assessed revenue was Rs. 1,799, the corresponding figures for the previous year being 322 acres and Rs. 1,637 respectively.

### CENTRAL CIRCLE.

The area irrigated and the gross assessed revenue on small tanks were 758 acres and Rs. 4,987 respectively. The area irrigated and the irrigation share of revenue on the old bandharas and channels in the Khandesh Division were 8,698 acres and Rs. 64,110 respectively.

### SHOLAPUR DIVISION.

#### WADSHIVNE TANK.

On the 1st April, the level of the water in the tank was at R. L. 437·46 feet i.e., 1·46 feet above the sill of the outlet. No replenishment was received upto end of August and hence Kharif irrigation was not possible. Due to subsequent replenishments the situation was improved. The total replenishment of 75·21 m. cft. was utilized to meet the Rabi demand. The highest water level in monsoon was at R. L. 446·50 on 5th October.

During the year under report, the area irrigated and the gross assessed revenue were 373 acres and Rs. 2,049 as compared with 540 acres and Rs. 2,421, the corresponding averages of the previous three years.

The rainfall gauged at the tank was 16·55 inches, as compared with 20·71 inches the average of the preceding three years.

### KHANDESH DIVISION.

#### TALWADA TANK.

The supply in this tank is generally uncertain. On the 1st April, the contents in the tank were 10·45 million cubic feet which gradually diminished to *nil*. The first replenishment was received on the 14th September when the contents were 12·77 million cubic feet. The maximum storage of 15·08 million cubic feet was reached on the 17th September. The year closed with a storage of *nil* m.cft. on 31st March 1942.

The rainfall gauged at the tank was 13·3 inches as compared with 18·76 inches, the average of the preceding three years. The area irrigated was 31 acres and the gross assessed revenue amounted to Rs. 239. The revenue realized from water rates during the year was Rs. 163 the miscellaneous realization being Rs. 76. The expenditure incurred on the maintenance and repairs to the tank and canal was Rs. 487.

#### OLD WORKS.

The old bandharas and channels are grouped as under :—

1. The Upper Panjhra river group including Gondur Tank.
2. The Kan river group.
3. The Burai river group.
4. The Girna river group.
5. The Bori river group.

The subjoined table shows the area irrigated and the revenue derived from these works as compared with the averages of the preceding three years :—

Area irrigated.		Revenue.					
		Irrigation share.		Land share.		Total.	
1941-42.	Average.	1941-42.	Average.	1941-42.	Average.	1941-42.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
8,698	8,595	64,110	64,120	14,206	13,315	78,316	77,435

The expenditure on these Bandharas was as under :—

					18-A-Irrigation Works Civil.
					Rs.
Maintenance and Repairs	...	...	...	...	9,980
Extensions and Improvements	...	...	...	...	3,167
Survey work	...	...	...	...	1,952
				Total	15,099

An expenditure of Rs. 249 was also incurred on river and rain gauge operations during the year.

#### NASIK DIVISION.

##### KHIRDI SATHE TANK.

This is a small tank in Yeola Taluka of the Nasik District. The tank is formed by an earthen dam and is dependent on local rains for its supply which is generally sufficient for crops grown during the monsoon and rabi seasons.

On the 1st April, the level of water in the tank was at R. L. 218·40, the contents being 4·58 million cubic feet. Replenishment commenced on the 5th June when the water level rose to R. L. 217·90 the contents being 3·70 million cubic feet. On the 1st of November, the level was at R. L. 221·60, the contents being 9·9 million cubic feet. The draw off for irrigation purposes commenced on the 18th October when the level of water was 221·05 and the contents were 10·2 m. c.ft. The tank was dry from 1st January to 31st March 1942. The area irrigated during the year was 354 acres as compared with 317 acres, the average of the previous three years.

The increase was due to more cultivation of sugarcane than in the previous year. The assessed revenue on account of water rates amounted to Rs. 2,699 as compared with Rs. 2,239, the average of the previous three years, the miscellaneous receipts being Rs. 416.

### **SOUTHERN CIRCLE.**

#### **BELGAUM DIVISION.**

There are approximately 525 second class irrigation tanks situated in the Belgaum Division. During the year under report, repairs to 81 tanks were carried out at a cost of Rs. 29,973 and in addition to this sum, an expenditure of Rs. 2,923 was incurred on the survey of the old tanks. The area irrigated during the year was 17,275 acres, the irrigation share of land revenue being Rs. 1,21,815. The total direct and indirect receipts amounted to Rs. 1,22,165 as compared with Rs. 1,21,924 during the previous year. The remissions sanctioned during the year amounted to Rs. 2,507.

#### **BIJAPUR DIVISION.**

There are 14 tanks in this Division, out of which 4 have been declared as second class Irrigation tanks. During the year under report, an expenditure of Rs. 1,084 was incurred on repairs to 2 tanks. The area irrigated during the year was 1,114 acres and the irrigation share of land revenue amounted to Rs. 2,886. The remissions granted during the year amounted to Rs. 143. The total direct and indirect receipts during the year under report were Rs. 5,586 against Rs. 4,396 for the previous year.

The work of constructing an Irrigation tank at Nandargi, taluka Indi (Minor Irrigation Works) was first started as a scarcity work in the year 1938 to provide work to the scarcity stricken people in the area. An expenditure of about Rs. 12,997 was incurred during the year under report against the revised estimated amount of Rs. 1,25,965. On the cessation of scarcity conditions, the work has been let out on contract in January 1939. The work has been completed.

#### **DHARWAR DIVISION.**

There are about 2,931 second class Irrigation tanks. During the year under report, an expenditure of Rs. 84,800 was incurred on repairs to about 222 tanks and a sum of Rs. 9,678 was spent on extensions and improvements, etc. The area irrigated during the year was 84,997 acres and the irrigation share of land revenue amounted to Rs. 2,06,729. The remissions granted during the year amounted to Rs. 21,990. The total direct and indirect receipts were Rs. 2,07,324 as compared with Rs. 1,95,519 for the previous year.

The work of improvements to the tank in S. No. 198 at Ganjigatti estimated to cost Rs. 15,107 was commenced during the year under report and an expenditure of Rs. 3,549 was incurred thereon. The work is in progress.

#### **KANARA DIVISION.**

In this Division, there are about 192 second class Irrigation tanks. During the year, an expenditure of Rs. 17,471 was incurred on repairs to 93 tanks. In addition, a sum of Rs. 3,636 was spent on "surveying irrigation tanks and preparing projects for their improvements". The area irrigated during the year was 35,144 acres and the irrigation share of land revenue was Rs. 96,681 and the whole amount was actually realized during the year. The remissions granted during the year amounted to Rs. 2,697.

#### **RATNAGIRI DIVISION.**

There are only four tanks in this Division. The area irrigated was 1,374 acres and the irrigation share of land revenue was Rs. 7,645, the whole of which was realized during the year.

## SECTION III.

## RESEARCH WORK.

## POONA IRRIGATION AND RESEARCH DIVISION.

In the Deccan, when a large perennial canal is opened, widespread water-logging is liable to ensue. Some of this water-logging dries out later, but the damage often extends rapidly into the valleys, and unless steps are taken to set matters right, the damage, consisting mainly of salt-efflorescence, becomes permanent. The seriousness of the menace was realized as early as 1888 and the controversy regarding the relative effect of channel losses and wasteful irrigation and the best methods to adopt to safeguard the land became yearly more acute. Various experiments were carried out at the instance of the Agricultural Department but by 1913, it was clear that all the methods tried so far had failed. It was eventually decided to open a Special Irrigation Division in order that the question of canal development, especially as regards safeguarding the soil, might form the subject of investigation. In June 1916, the Division (now called the Poona Irrigation and Research Division) was formed and the work entrusted to it was the contouring of the commanded areas, the carrying out of a careful survey and classification of the surface and sub-soil, the selection and marking out of definite areas suitable for "blocks" for perennial and other crops, the designing of the drainage works required, the indication of suitable lines of communication and centres for the establishment of crushing, grinding and refining and other machinery for trade purposes and the study of the question of the reclamation of waste lands and areas damaged by water-logging and salt-efflorescence and the growth of useful timber in such tracts and along the main canal. In short, research and investigation into all the problems relating to irrigation by means of actual experiment has been the sphere of work of this Division.

The investigations coming within this sphere may be broadly grouped under four heads, viz. :—

- (1) Irrigation management.
- (2) Irrigation requirements or the inter-action of agricultural requirements and irrigation limitations,
- (3) Soil physics of irrigated tracts,
- (4) Drainage and reclamation.

The work done by this Division may be classified as under :—

- (1) Sub-soil survey and observation of sub-soil water levels,
- (2) Irrigation and blocks,
- (3) Sub-soil drainage construction,
- (4) Drainage schemes for allotted sugar factory areas,
- (5) Irricultural research.

A brief account on the work done during the year under each of these heads is given below :—

(1) SUB-SOIL SURVEY AND OBSERVATIONS OF SUB-SOIL WATER LEVELS.

The biennial observations of damage to lands on the Nira Left Bank Canal and Pravara Canals were completed. The damage on the Nira Left Bank Canal has a tendency to decrease on account of the drainage construction in factory areas and clearing up some of the Nalas while the damage on the Pravara canals is on the increase due

to increase in cane plantation. The construction work of drainage projects in respect of sugar factories on the Pravara Canals is in progress. The work of damage classification on the Nira Right Bank Canal and Godavari Canals is in progress. In addition to above the work of damage, classification in factory areas on all the Canals was carried out during the year under report.

#### (2) IRRIGATION AND BLOCKS.

Individual inspection of lands as regards the drainage and the suitability of the soil for fruit-gardens for which applications were received were carried out during the year. Applications for exemption from the rule disallowing perennial irrigation within one-fourth mile limit of towns and villages were also investigated.

#### (3) SUB-SOIL DRAINAGE CONSTRUCTION.

Detailed observations were made in the areas served by the drainage schemes already constructed. The improvement in the condition of the damaged areas continues.

#### (4) DRAINAGE SCHEMES FOR ALLOTTED FACTORY AREAS.

Considerable progress was made in the projects for land drainage in the allotted sugar factory areas and plans and estimates for several projects of drainage schemes in respect of the various Sugar Factories on the Deccan Canals were prepared and the construction works of drainage Projects are in progress in various Sugar Factory areas during the year under report. A careful watch is being kept on the factory areas in many catchments in which full sugarcane concentration has been reached.

#### (5) IRRICULTURAL RESEARCH.

In the Hadapsar Effluent Experimental Area, field experiments were carried out with a view to find out the best varieties of sugarcane and the most suitable treatment and methods of cultivation of sugarcane manured by effluent. The question of the disposal of the increasing quantity of effluent by more concentrated and prolonged application and the effect on the soil of effluent manuring year after year was also under investigation. The effect of effluent on different types of soils was under investigation. Experiments of vegetables and fruit trees best suitable for effluent irrigation were also carried out.

In the Baramati Experimental Salt Area, field experiments on soil reclamation after drainage based on the data from laboratory and plot scale experiments were carried out. Method of cultivation, fertilizers, green manures and sugarcane varieties and other varieties of crops suited to the process of reclamation were tested with satisfactory results. This research has wide application on the damaged areas on the Deccan Canals.

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**STATEMENT**  
*Statement of Area irrigated by Irrigation Works in the*

No.	Name of Work.	Area irrigated.			Double cropped.			Percent- age of total area.
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	
1	2	3	4	5	6	7	8	9
<b>WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.</b>								
<b>PRODUCTIVE.</b>								
<i>Southern Circle.</i>								
1	Gadikeri Tank .. .. .	*423	..	*423	*423	..	..	..
2	Mavinkop Tank .. .. .	*470	..	*470	*470	..	..	..
<i>Central Circle.</i>								
3	Ekrak Tank .. .. .	{ (1,706) 1,948	{ (2,773) 2,992	{ (4,569) 4,940	} 4,925	15	..	..
4	Shahada Channel .. .. .	{ (300) 406 (559) *686	{ (476) 496 (353) *328	{ (866) 902 (912) *1,014				
Total, Productive .. .. .		{ 2,354 *1,688	{ 3,488 *328	{ 5,842 *1,916	} 5,827	15	19	..
<b>UNPRODUCTIVE.</b>								
<i>Northern Circle.</i>								
5	Hathnati and Khari Cut Canal .. .. .	{ 1,460 4,063	{ 1,897 ..	{ 3,357 4,063	{ 3,330 2,970	{ 27 1,093	..	..
6	Wangroli Tank .. .. .	1,822	93	1,915	1,805	110	1,915	..
7	Savli Tank .. .. .	2,298	..	2,298	2,272	26	2,298	..
8	Solat Tank .. .. .	704	14	778	778	..	778	..
9	Tranza Nagratma Tanks .. .. .	280	..	280	280	..	280	..
10	Futclao Tank .. .. .	15	120	144	144	..	144	..
Total, Unproductive (N. C.) .. .. .		10,702	2,133	12,835	11,579	1,250	5,415	..
<i>Deccan Irrigation Circle.</i>								
11	Nira Left Bank Canal .. .. .	{ (23,050) 53,134	{ (49,436) 15,638	} 68,772	68,528	244	476	0.41
		{ (2,684) 4,432	{ (3,308) 1,542					
12	Nira Right Bank Canal .. .. .	{ (29,655) 31,872	{ (29,107) 24,374	} 56,240	56,033	210	13	0.38

I-E.

*Province of Bombay, during the year 1941-42.*

Average Discharge, cubic feet per second.		Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.					
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.		Rabi.	
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.		Rabi.	
10	11	12	13	14	15	16	17	18		19	
				Acres.	Acres.	Acres.	Acres.				
..	..	..	..	..	..	..	..	} 15th February to 14th October.		} 15th October to 14th February.	
..	..	..	..	..	..	..	..				
15.46	33.58	15.46	33.58	131	97	131	97	Do.	..	Do.	
14.67	31.28	14.67	31.28	68	45	68	45	Do.	..	Do.	
..	..	..	..	..	..	..	..				
\$125	37	\$69	37	11.7	51.3	21.1	51.3	} 15th June to 15th November.		} 16th November to 14th February.	
23	..	23	..	170.6	..	170.6	..				
140.67	5.8	140.67	5.8	12.95	16.03	12.95	16.03	Do.	..	Do.	
141.47	..	141.47	..	16.9	..	16.9	..	Do.	..	Do.	
75.46	3.6	75.46	3.6	10.12	3.88	10.12	3.88	Do.	..	Do.	
16.94	..	16.94	..	16.53	..	16.53	..	Do.	..	Do.	
2.5	21.58	2.5	21.58	6.0	5.97	6.0	5.97	Do.	..	Do.	
..	..	..	..	..	..	..	..				
457	516	383	335	50	98	60	147	} 15th February to 14th October.		} 15th October to 14th February.	
21	28	21	28	128	120	128	120	Do.	..	Do.	
507	487	343	333	(a)53	(a)60	(a)86	(a)76	Do.	..	Do.	

\$125-69=56 cusecs brought down for irrigation under Khari Cut Canal and Khari sluices via Bhujwa and Bokh Reservoir.



## STATEMENT

No.	Name of Work.	Area irrigated.			Double cropped.			Percent- age of total area.
		Khariif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
<b>WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT</b>								
<i>—contd.</i>								
<b>UNPRODUCTIVE—contd.</b>								
<i>Deccan Irrigation Circle—contd.</i>								
13	Mutha Canals .. ..	{ (11,636)	{ (9,834)	13,776	13,647	129	90	..
		{ 11,984	{ 1,792					
13	Matoba Tank (c) .. ..	{ (2,287)	{ (2,220)	2,827	2,827	..	12	..
		{ 2,310	{ 517					
14	Lake Beale—Darna Dam .. ..	{ (346)	{ (152)	498	..	498	..	..
		{ 346	{ 152					
14	Godavari Right Bank Canal .. ..	{ (9,709)	{ (9,892)	21,005	20,619	386	532	2.77
		{ 18,542	{ 2,403					
14	Godavari Left Bank Canal .. ..	{ (7,616)	{ (8,390)	15,222	12,425	2,797	517	3.36
		{ 13,458	{ 1,704					
15	Chankapur Tank—Girna Canal .. ..	{ (3,912)	{ (5,020)	12,589	12,582	7	..	..
		{ 8,279	{ 4,310					
16	Kadwa River Works {	Palkhed Canal .. .. { (682)	{ (1,116)	1,955	1,933	22	2	..
		{ 1,112	{ 843					
		Ojhar-Tambat Canal .. .. { (593)	{ (634)					
{ 592	{ 545							
Wadali Canal .. .. { (262)	{ (456)	886	886	..	..	..		
{ 556	{ 330							
17	Pravara Right Bank Canal .. ..						{ (7,221)	{ (9,313)
		{ 12,798	{ 795					
17	Pravara Left Bank Canal .. ..	{ (27,395)	{ (31,650)	44,400	44,146	254	2,938	6.6
		{ 30,424	{ 13,976					
18	Bhatodi Tank (c) .. ..	{ (108)	{ (198)	339	339	..	..	..
		{ 122	{ 217					
19	Kasurdi Tank .. ..	{ (2)	{ ..	2	2	..	..	..
		{ 2	{ ..					
<b>Total Unproductive (D. I. C.) .. ..</b>		<b>189,953</b>	<b>69,258</b>	<b>259,211</b>	<b>254,664</b>	<b>4,547</b>	<b>5,745</b>	<b>2.22</b>

I-E—contd.

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.		
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.	
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	18	19	
10	11	12	13	14	15	16	17	18	19	
Acres.		Acres.		Acres.		Acres.				
169	141	149	106	71	70	79	04	15th February to 15th October to 14th October. 14th February.		
17	14	14	14	136	159	105	159	Do.	..	Do.
..	..	..	..	..	..	..	..	Do.	..	Do.
227	188	227	188	43	53	43	53	Do.	..	Do.
122	118	122	118	62	71	62	71	Do.	..	Do.
86	103	86	103	45	49	45	49	Do.	..	Do.
15	17	15	17	45	66	45	66	Do.	..	Do.
6	9	6	9	99	70	99	70	Do.	..	Do.
7	8	7	8	37	57	37	57	Do.	..	Do.
127	121	113	120	(b) 57	(b) 77	(b) 64	(b) 78	Do.	..	Do.
416	401	404	401	(b) 66	(b) 79	(b) 68	(b) 79	Do.	..	Do.
4.8	5.5	4.8	5.5	23	36	23	36	Do.	..	Do.
..	..	..	..	..	..	..	..	Do.	..	Do.
..	..	..	..	..	..	..	..	..	..	..

## STATEMENT

No.	Name of work.	Area irrigated.			Double cropped.		Percent- age of total area.		
		Kharif.	Rabi.	Total.	Flow.	Lift.			
1	2	3	4	5	6	7	8	9	
<b>WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—contd.</b>									
<b>UNPRODUCTIVE—contd.</b>									
<i>Central Circle.</i>									
20	Shirsuphal Tank ..	(129) 132	(879) 911	(1,008) 1,049	1,043				
21	Bhadalwadi Tank ..	..	(440) 527	(440) 527	527				
22	Mhaswad Tank ..	(546) 595	(1,431) 1,571	(1,977) 2,166	2,081	85			
23	Parsul Tank ..	(602) 621	(406) 435	(1,008) 1,050	1,050				
24	Koregaon Tank ..	..	(165) 182	(165) 182	178	4			
25	Ashti Tank ..	..	(3,731) 4,010	(3,731) 4,010	4,010				
26	Pathri Tank ..	(9) 10	(467) 501	(476) 511	511				
27	Jamda Canals ..	(330) 371	(801) 873	(1,140) 1,244	1,244				
28	Hartala Canal ..	..	(48) 47	(48) 47	47				
29	Mhaswa Tank ..	(41) 42	(550) 571	(591) 613	613				
30	Lower Panjhra River Works..	(246) 253 (1,181) *1,181	(234) 239 (96) *96	(480) 492 (1,277) *1,277	492		257	14.55	

I-E—contd.

Average Discharge, cubic feet per second.		Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.					
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.		
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.				
10	11	12	13	14	15	16	17	18	19		
				Acres.	Acres.	Acres.	Acres.				
8.0	8.0	8.0	8.0	16	110	16	110	15th February to 14th October.	15th October to 14th February.		
..	5.5	..	5.5	..	80	..	80	Do.	Do.		
31.0	49.0	31.0	49.0	18	29	18	29	Do.	Do.		
2.7	2.06	2.07	2.06	230	212	230	212	Do.	Do.		
..	1.49	..	1.49	..	111	..	111	Do.	Do.		
..	16.14	..	16.14	..	231	..	231	Do.	Do.		
..	4.80	..	4.80	..	97	..	97	Do.	Do.		
17.65	25.60	17.65	25.60	20	41	20	41	Do.	Do.		
..	0.18	..	0.18	..	239	..	239	Do.	Do.		
0.24	23.47	0.24	23.47	171	23	171	23	Do.	Do.		
..	..	..	..	..	..	..	..	..	..		
..	6.17	..	5.34	6.17	5.34	237	130	237	130	Do.	Do.

## STATEMENT

No.	Name of work.	Area irrigated.			Double cropped.		Percent- age of total area.	
		Kharif.	Rabi.	Total.	Flow.	Lift.		
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
<b>WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—contd.</b>								
<b>UNPRODUCTIVE—contd.</b>								
<i>Central Circle—contd.</i>								
31	Krishna Canal .. .. .	{ (3,002) 5,209	{ (1,404) 1,674	{ (5,094) 6,883	{ 5,984	{ 919	{ 89	{ 1.05
32	Bevari Canal .. .. .	{ (81) 111	{ (114) 137	{ (195) 248	{ 248	{ ..	{ 10	{ 5.13
33	Upper Man River Works .. .. .	{ (50) 60	{ (249) 289	{ (299) 349	{ 345	{ 4	{ 2	{ 67
34	Yerla River Irrigation Works .. .. .	{ (799) 977	{ (3,391) 3,865	{ (4,190) 4,842	{ 4,774	{ 68	{ 380	{ 9.06
35	Chikhli Canal .. .. .	{ (317) 387	{ (25) 31	{ (342) 418	{ 410	{ 8	{ 15	{ 4.39
36	Maini Tank .. .. .	{ (110) 325	{ (881) 1,097	{ (991) 1,422	{ 1,401	{ 21	{ 51	{ 5.15
	Unproductive Total (C-C) .. .. .	{ 9,093 *1,181	{ 16,960 *96	{ 26,053 *1,277	{ 24,944 *1,277	{ 1,109	{ 804	{ ..
<i>Southern Circle.</i>								
37	Gokak Canal, First Section .. .. .	6,546	4,383	10,929	10,719	210	1,288	11.79
38	Muchkundi Tank .. .. .	6	..	6	6	..	..	..
39	Dambal Tank .. .. .	{ 31 *144	{ 22 ..	{ 53 *144	{ 53 *144	{ ..	{ ..	{ ..
40	Medleri Tank .. .. .	86	23	109	107	2	..	..

## I-E—contd.

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.		
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.	
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.			
10	11	12	13	14	15	16	17	18	19	
				Acres.	Acres.	Acres.	Acres.			
60.09	61.64	60.09	61.64	81	82	81	82	15th February to 15th October to 14th October. 14th February.		
0.55	0.57	0.55	0.57	149	316	149	316	Do.	..	Do.
0.81	0.71	0.81	0.71	67	362	67	362	Do.	..	Do.
16.57	26.00	10.57	20.00	51	139	51	139	Do.	..	Do.
0.82	0.56	0.82	0.56	394	177	394	177	Do.	..	Do.
2.50	4.21	2.50	4.21	47	213	47	213	Do.	..	Do.
..	..	..	..	..	..	..	..			
59.77	52.05	59.77	52.07	103.41	124.68	103.41	124.68	15th February to 15th October to 14th October. 14th February.		
..	..	..	..	..	..	..	..	Do.	..	Do.
1.19	0.41	1.19	0.41	147.05	53.66	147.05	53.66	16th January to 16th October to 15th October. 15th January.		
2.79	2.46	2.79	2.46	30.82	9.35	30.82	9.35	Do.	..	Do.

## STATEMENT

No.	Name of Work.	Area irrigated.				Double cropped.			
		Khari.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percent- age of total area.	
1	2	3	4	5	6	7	8	9	
<b>WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—concl'd.</b>		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.		
<b>UNPRODUCTIVE—concl'd. Southern Circle—cont'd.</b>									
41	Madag Tank .. ..	335	145	480	480	..	..	..	
42	Asundi Tank .. ..	{ ..	{ 1	{ 1	{ 1	{ ..	{ ..	{ ..	
		{ ..	{ *182	{ *182	{ *182	{ ..	{ ..	{ ..	
43	Dharma Canal .. ..	{ 508	{ ..	{ 508	{ 508	{ ..	{ ..	{ ..	
		{ *8,648	{ ..	{ *8,648	{ *8,648	{ ..	{ ..	{ ..	
Total, Unproductive (S. C.) ..		{ 7,512	{ 4,574	{ 12,086	{ 11,874	{ 212	{ 1,288	{ ..	
		{ *8,792	{ *182	{ *8,974	{ *8,974				
Grand Total, Unproductive ..		{ 217,200	{ 92,925	{ 310,185	{ 308,061	{ 7,124	{ 13,252	{ ..	
		{ *9,973	{ *278	{ *10,251	{ 10,251				
Grand Total, Productive and Unproductive .. ..		{ 219,614	{ 96,413	{ 316,027	{ 308,888	{ 7,139	{ 13,271	{ ..	
		{ *11,561	{ *606	{ *12,167	{ *12,167				

Note.—The bold figures in brackets represent areas actually irrigated during the respective seasons and the duties have irrigated. To obtain correct duties therefore these crops have to be added to the rabi areas.

(a) Low duties on the Nira Right Bank Canal are due to scattered nature of irrigation.

(b) The duties on the Pravara canals are low due to high proportion of sugarcane and other perennial crops.

(c) There is generally no supply in the Matoba and Bhatodi tanks in the hot weather season. Even during the number of days on which the channels were in flow has therefore been taken for purpose of calculating average discharge.

(d) The difference between the discharges at head and utilized in respect of the Nira Left Bank Canal was due Pravara Canals and the Mutha Canals it was due to water having run to waste through escapes, etc.

\*Area under consolidated assessment.

I-E—concl'd.

Average Discharges, cubic feet per second.		Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.			
Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.		
At Head.	Utilized.	Discharged at Head.	Utilized.	Discharged at Head.	Utilized.	Kharif.	Rabi.		
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
		Acres.	Acres.	Acres.	Acres.				
2.65	4.06	2.65	4.06	126.42	35.80	126.42	35.80	16th January to 15th October.	16th October to 15th January.
2.45	3.54	2.45	3.54	..	516.95	..	516.95	Do.	Do.
43.35	4.79	43.35	4.79	211.21	..	211.21	..	Do.	Do.
..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..

been calculated on these figures. In the rabi season in addition to pure rabi crops, perennial and eight month's crops are

monsoon and rabi seasons the channels are closed for days together due to rainfall and other causes. The actual and duties.

to water having been let into the Shetphal Tank and run to waste through scouring sluices. In regard to the



## STATEMENT I-F.

Statement showing water-rates per acre in force during 1941-42 on  
Irrigation Works in the Province of Bombay.

WATER RATES.												
No.	Name of Work.	Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering. (Post Seasonal).	Occupier's rate.	Owner's rate.	Water advantage.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
<b>WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT</b>												
<b>PRODUCTIVE.</b>												
<i>Southern Circle.</i>												
1	Gadikeri Tank*	.. ..	..	..	..	..	..	..	..			
2	Mavinkop Tank*	.. ..	..	..	..	..	..	..	..			
<i>Central Circle.</i>												
3	Ekruk Tank a	.. ..	{ A 35 B 17½	8	3	5	7	..	2	Nil.	Nil.	Nil.
4	Shahada Channel a	.. ..	{ A 28 B 14	8	3	5	6	..	2			
<b>3a UNPRODUCTIVE.</b>												
<i>Northern Circle.]</i>												
4	Hathmati Canal	.. ..	..	..	3 for rice 1 for crops other than rice.	3	6	..	2			
5		.. ..	..	..	..	..	..	..	..			
	Khari Cut Canal	.. ..	..	..	5 for rice. 1 for crops other than rice.	5	6	..	1 2†			
6	Wangroli Tank (a)	.. ..	..	..	Other	4	6	For 1½ rice				
					Khari crop Rs.2½			Rs. 5.				
7	Tranza Nagrama Tank(b)	.. ..	..	..	Do. Rs. 2	4	6	Do. Rs. 4	1			
8	Savli Tank (c)	.. ..	..	..	Do. Rs. 4	4	6	Do. Rs. 5	1½			
9	Sajat Tank (c)	.. ..	..	..	Do. Rs. 2½	4	6	Do. Rs. 4	1½			
10	Futalao Tank (c)	.. ..	..	..	Do. Rs. 2	3(f) 2 (g)	5	Do. Rs. 4	1(h)			

||Single seasonal rates for the season during which water is taken shall be levied.

†For single watering for those crops for which no application for irrigation water throughout the season was received.

STATEMENT I-F—contd.

WATER-RATES.

No.	Name of Work.	Irrigation in blocks.	WATER-RATES.							Single watering. (Post Seasonal).	Occupier's rate.	Owner's rate.	Water advantage.		
			Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Rs.						
WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—contd.															
UNPRODUCTIVE—contd.															
Deccan Irrigation Circle.															
11	Nira Left Bank Canal ...	\$ 19	M 45 C 66 B 22½	8	3	5	7		(e) 2						
	Shetphal Tank (d) ..	₹ 16													
12	Nira Right Bank Canal (d) ..	\$ 19	M 45 C 66 B 22½	8	3	5	7		(e) 2						
		₹ 16													
13	Mutha Canals and Matoba Tank (d)—Sugarcane under the Mutha Canals within the Poona City and Suburban Municipal and Cantonment limits or within one mile of those limits. ...		50												
	On all remaining land commanded by both the canals. ...	M 45.		8	3	5	7		(e) 2	Nil.	Nil.	Nil.			
	Pan gardens. ...	O 66													
	Perennial crops other than Sugar Cane and pan gardens. ...	B 22½													
	Pomegranates. ...	15													
	Matoba Tank ..	64													
14	Godavari Right Bank Canal (d).	\$ 19	M 45 C 66 B 22½	8	3	5	7		(e) 2						
	Godavari Left Bank Canal (d).														

STATEMENT I-F—*contd.*

No.	Name of Work.	WATER-RATES.									
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering, (Post Seasonal).	Occupier's rate.	Owner's rate.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT— <i>contd.</i>											
UNPRODUCTIVE— <i>contd.</i>											
Deccan Irrigation Circle— <i>contd.</i>											
15	Chankapur Tank—										
	Girna Canal (d) .. ..	M 28 B 22½	8	3	5	6	..	(e) 2			
16	Kadwa River Works (d)—										
	Waghad Tank .. ..	X	8	3	5	6	..	(e) 2	Nil.	Nil.	Nil.
	Palkhed Canal .. ..										
	Ojher-Tambat Canal .. ..										
	Wadali Canal .. ..										
17	Pravara Canals (d) .. § 19	M 45 O 66 B 22½	8	3	5	7	..	(e) 2			
18	Bhatodi Tank (d) .. ..	X	8	3	5	6	..	(e) 2			
19	Kasurdi Tank (d) .. ..	X	8	3	5	6	..	(e) 2			
Central Circle.											
20	Shirsuphal Tank (d) .. ..	X	8	3	5	6	..	(e) 2	Nil.	Nil.	Nil.
21	Bhadalvadi Tank (d) .. ..										
22	Parsul Tank a .. ..										
23	Koregaon Tank a .. ..										
24	Ashti Tank a .. ..	A 28 B 14	8	3	5	6	..	(e) 2			
25	Pathri Tank a .. ..										
26	Mhaswad Tank a .. ..										
27	Jamda Canals a .. ..	A 28 B 13	7	3	4	6	..	(e) 2			
28	Hartala Tank a .. ..	A 12 B 9	5	2	3	4	..	(e) 1			
29	Mhaswa Tank a .. ..										

STATEMENT I-F—*contd.*

No.	Name of Work.	WATER-RATES.								Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering, (Post Seasonal).			
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT— <i>concl.</i>												
UNPRODUCTIVE— <i>concl.</i>												
<i>Central Circle—contd.</i>												
30	Lower Panjhra River Works a	.. ..	A 28 B 14	8	3	5	6	..	(e) 2			
31	Krishna Canala	.. ..	A 32 B 16	6	3	5	8	..	(e) 2			
32	Revari Canal a	.. ..	A 28 B 14	8	3	5	6	..	(e) 2			
33	Upper Man River Works a	.. ..	A 28 B 14	8	3	5	6	..	(e) 2	Nil.	Nil.	Nil.
34	Yeria River Irrigation Works a	.. ..	A 28 B 14	8	3	5	6	..	(e) 2			
35	Chikhli Canal a	.. ..	A 28 B 14	8	3	5	6	..	(e) 2			
36	Maini Tank a		A 28 B 14	8	3	5	6		(e) 2			
<i>Southern Circle.</i>												
37	Gokak Canal, 1st Section and Storage Works (u)	.. ..	(b <sup>1</sup> ) 27½ (b <sup>2</sup> ) 20φ	8	3φ	5 <sup>7</sup> / <sub>16</sub>	15	..	2	Nil.	Nil.	Nil.
38	Muchkundi Tank (s)	.. ..	(b <sup>1</sup> ) 10 (b <sup>2</sup> ) 8		2	2	5	..	1			
39	Dambal Tank (w)	.. ..	(b <sup>1</sup> ) 14 (z) 7½	(y) 8 (m) 7½	4 (n)	4½ (l)	7	..	(j) 1 (k) 2			
40	Medleri Tank (w)	.. ..	(b <sup>1</sup> ) 14 (z) 7½	(y) 8 (m) 7½	4 (n)	4½ (l)	7	..	(j) 1 (k) 2			
41	Madag Tank (w)	.. ..	(b <sup>1</sup> ) 12 (z) 7½	(y) 6 (m) 7½	4 (n)	4½ (l)	7	..	(j) 1 (k) 2			
42	Asundi Tank (w)	.. ..	(b <sup>1</sup> ) 14 (z) 7½	(y) 6 (m) 7½	4 (n)	4½ (l)	7	..	(j) 1 (k) 2			
43	Dharma Canal (a <sup>3</sup> )	.. ..	.. ..	(e) 4½	..	..	..	..	(j) 1 (k) 2			

<sup>a3</sup> Sanction is accorded to the levy of single seasonal rate for sugarcane and other perennial cultivation on all irrigation works in Gujarat, vide G. R. No. 3343/27 P. W. D. of 8th October 1929.

<sup>b4</sup> Rates sanctioned in G. R., P. W. D., No. 5996/27 of 26th May 1936 for quinquennium ending 14th February 1942. Rate of Rs. 7 rice, reduced to Rs. 5 per acre as per G. R., P. W. D., No. 2488/36 of 23rd March 1939.

(a) Rates continued up to 14th February 1948 as per G. M., P. W. D., No. 3404/36/I dated 23rd April 1940.

(b) Rates continued up to 14th February 1943 as per G. R., P. W. D., No. 2704/36 of 23rd November 1938 to end of 31st July 1943.

(c) Rates continued up to 14th February 1943 as per G. M., P. W. D., No. 3494/36-I of 23rd April 1940.

(f) For ordinary Rabi.

(g) For restorative crops grown after rice.

(h) In either Kharif or Rabi.

*Note.*—(1) For lift irrigation in the Deccan Irrigation Circle the orders contained in G. R. No. 4771/27, dated 23rd December 1931, are that lift from Budkis should not be allowed at all in areas under the flow command of a canal and that in other areas it may be allowed only when the supply of water for irrigation is in excess of the demand at half the flow rates for all crops if water is taken by mot and  $\frac{3}{4}$ th if it is taken by power pumps, in accordance with G. R. No. 2488/36 dated the 23rd March 1939.

(2) For lift irrigation half the ordinary rates are charged in other circles.

(3) Double or treble the ordinary rates are charged as penal rates for taking water without permission.

(4) Leakage or percolation rates are the same as ordinary rates.

(5) Water-rates for non-irrigational purposes are charged at the rates sanctioned by Government in each case.

(6) Preseasonal waterings are allowed at the rate of Rs. 4 per acre. Such waterings should commence in every case not earlier than 1st May.

(7) A reserve rate of Rs. 3 per acre as a minimum rate has been sanctioned for lands let out for cultivation in the basin of Lake Beale—*vide* G. R. No. 2484, dated 12th June 1925.

(8) A flat rate of Rs. 2-8-0 per acre of culturable area has been sanctioned for the supply of water from the irrigation channel of Sangvi village near Bhatgar—*vide* G. R. No. 1849/27, dated 5th January 1932.

(9) The supply of water to roadside trees, etc., is charged as follows :—  
Rs-5 per 100 Nos. per annum.

Monsoon season ..	..	Rs. 1 0 0	per 100 Nos.
Rabi season ..	..	Rs. 1 8 0	do.
Hot-weather season ..	..	Rs. 2 8 0	do.

(10) Short term cane and other perennials are charged in accordance with the scales laid down in G. R. Nos. 8670, dated 13th January 1927 and 3098/27, dated 6th November 1929 and 5602/27, dated 4th December 1935.

\*Lands wholly assessed at consolidated rates.

§Block rate for blocks in 1 : 3 proportion of sugarcane.

¶Block rate for blocks in 1 : 4 proportion of sugarcane.

φIn the case of Pomogranates (perennial eight months) if water is supplied during the period from 15th June to 31st December it should be charged for at the rate of Rs. 8 per acre.

A—For sugarcane and pan gardens.

B—For perennial crops other than sugarcane.

C—For pan gardens for the whole year. If water is given for part of the year the charge will be on the basis of thrice the medium seasonal rates for the seasons concerned—*vide* G. R. No. 5602/27, dated 9th December 1931.

M—For sugarcane.

X—For sugarcane and pan gardens double the seasonal rates and for other perennial crops single seasonal rate shall be charged.

(d) Rates sanctioned in G. R. No. 2488/36, dated 23rd March 1939 and G. M. No. 929/36-1, dated 3rd August 1939. Rates sanctioned in G. R. No. 929/36 of 1st March 1940 to be in force up to 14th February 1948—*vide* G. M. No. 929/36-I, dated the 23rd April 1940\* and continued up to 14th February 1945. *vide* G. R. No. 929/36 dated 6th December 1941 and for Kadwa river works and Bhatodi Tank *vide* G. R. No. 929/36, dated the 17th May 1940.

(e) The single-watering rate applies to one post-seasonal watering to a sanctioned crop. If more than one such watering is taken, the full seasonal rates will be charged unless specifically ordered otherwise. No post seasonal watering is allowable to Monsoon crops. If water is required, the crop shall be assessed as two seasonal one.

§<sup>4</sup> For sugarcane the short-term cane rates as per scale sanctioned in G. R. 8670, dated 13th January 1927 (which may be in force on major irrigation works); for pan gardens the same rate as on the Mutha Canals and for other perennial single medium seasonal rates will be charged—*vide* G. R. No. 5602/27, dated 9th December 1931.

- (j) From 15th June to 14th October.
- (k) From 15th October to 14th June.
- (l) From 15th February to 14th June.
- (m) From 15th June to 14th October or 15th July to 30th November.
- (n) From 15th October to 14th February.
- (o) For four months from 15th June to 15th October or 15th July to 15th November.
- (p) In force upto 14th February 1945 *vide* G. R. No. 5594/36 dated 8th December 1941.
- (q) In force up to 14th February 1945 *vide* G. R. No. 1604/36 dated 12th September 1941.
- (r) Rates sanctioned in G. R. No. 3994/36, dated 18th November 1939 to be in force upto 14th February 1945.
- (s) For eight months from 15th June to 14th February.
- (t) For eight months from 15th October to 14th June or 1st August to 31st March.

a Rates to be in force up to 14th February 1943—*vide* G. R. No. 929/36, dated 20th January 1940, and G. M. No. 929/36, dated 23rd April 1940 and continued up to February 1945 *vide* G. R. No. 929/36 dated 6th December 1941.

a<sup>3</sup> Rates sanctioned in G. R. No. 4996/36 dated 18th February 1941 are to be in force up to 31st March 1943.

(b<sup>1</sup>) Rate for perennial 12 months.

(b<sup>2</sup>) Rate for perennial 8 months from 15th June to 14th February.

(b<sup>3</sup>) Single seasonal rates are charged—*vide* G. R. No. 3343/27, dated 6th October 1929.

¶ When "San" is grown along with the Maize the water rate for this mixed crop for the monsoon season should be Rs. 2 per acre. When "San" is grown for manufrial purpose only the water rate therefore should be Rs. 1 per acre.

Tur when sown as a mixed crop with any Kharif crop in the monsoon season shall be charged the monsoon season rates plus the single waterings rate for post seasonal waterings that may be required in the cold weather season. The concessional rates should continue until further orders, *vide* G. R. No. 1604/36, dated the 3rd January 1940.

For irrigation by lift by Mota worked by bullocks and for irrigation by lift by power pumps, the water rates should be half and three-fourths of the flow rates respectively.

*Statement showing expenditure on establishment in the Roads and Buildings, and percentage on the total outlay on works and repairs*

Year.	Expenditure on Establishment in the							
	50—Civil Works—Provincial.	81—Civil works.	50—Civil Works—Central.	8—Military Works.	Deposit Works.	Total Establishment charges.	Percentage on the total outlay on works and repairs in the Roads and Buildings Branch.	68—Construction of Irrigation, Navigation, Embankment and Drainage Works
1	2	3	4	5	6	7	8	9
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.
1921-22 ..	29,06,955	....	1,98,683	45,258	2,84,992	34,35,888	19·26	11,53,734
1922-23 ..	20,14,640	8,34,450	1,78,163	71,481	77,143	31,75,877	20·79	14,20,751
1923-24 ..	15,84,488	8,10,645	67,892	38,560	6,88,354	31,89,939	19·88	21,87,793
1924-25 ..	16,89,892	12,25,632	1,19,721	27,802	2,52,556	33,15,663	19·67	29,10,785
1925-26 ..	18,89,417	12,05,078	1,01,876	69,049	2,58,535	35,23,955	20·66	32,21,647
1926-27 ..	25,30,286	5,97,486	1,68,896	5,882	3,94,389	36,96,939	23·76	35,56,059
1927-28 ..	21,99,448	5,59,107	1,49,132	5,042	2,97,270	32,09,999	24·96	36,98,956
1928-29 ..	22,40,393	6,56,713	2,29,540	2,240	2,56,180	33,85,066	25·03	39,04,670
1929-30 ..	22,45,450	7,83,867	1,56,773	3,638	2,34,897	33,74,025	25·26	42,26,873
1930-31 ..	25,51,711	1,80,139	1,72,163	2,415	86,444	29,91,872	32·35	42,88,966
1931-32 ..	25,93,104	2,32,929	1,22,799	3,182	44,132	29,96,146	38·70	40,37,972
1932-33 ..	23,74,603	71,981	85,143	3,334	17,156	25,52,217	39·79	28,70,427
1933-34 ..	22,73,945	31,807	71,866	3,810	30,502	24,11,930	37·97	17,40,090
1934-35 ..	21,88,729	36,278	62,472	2,693	47,694	23,39,866	35·82	15,36,830
1935-36 ..	20,51,807	808	89,984	1,539	54,593	21,98,731	35·75	1,37,301
1936-37 ..	23,14,593	619	61,859	1,124	57,679	24,35,874	31·66	74,021
1937-38 ..	22,61,823	699	58,352	998	47,319	23,47,689	24·46	68,679
1938-39 ..	20,85,355	....	10,113	769	65,701	21,61,938	25·28	53,922
1939-40 ..	19,38,566	....	17,245 —11,702*	810 547*	63,725	20,09,191	23·37	37,362
1940-41 ..	17,79,944	66,927	....	....	79,566	19,26,437	22·98	52,969
1941-42 ..	17,06,360	1,25,314	....	....	23,924	18,60,598	15·41	26,714

\*Represents the difference between the Establishment charges debited on the basis of estimated figures and those on

NOTE.—The percentage of the establishment charges on the cost of works and repairs in the Irrigation Branch establishment charges in the Irrigation Branch include the cost of Special Revenue Establishment employed entirely and that these charges also include cost of part of the time of Irrigation establishment spent on revenue management to execution of works and repairs. If these establishment charges debited in the accounts to "revenue management" repairs will not be so divergent. The increase in the rate per cent. in the R. & B. Branch is mainly due to decrease in expenditure on works is reduced. A mere overall percentage on expenditure on works is inaccurate.

The figures from the 1921-22 to 1934-35 pertain both to the Province of Bombay and Sind.

*the Irrigation Branches of the P. W. D. from the year 1921-22 to 1941-42 and the during that period in both the Branches.*

Roads and Buildings Branch.

XVII— Works for which capital accounts are kept.	18—Other Revenue Expenditure financed from Ordinary Revenue.	XLI— Receipts from Electricity schemes— Hydro- Electric Scheme.	53—Capital Outlay on Electricity schemes— Hydro- Electric Schemes	Deposit Works.	Total Establish- ment charges.	Percentage on the total outlay on works and re- pairs in the Irri- gation Branch.	Total Establishment charges in the Roads and Buildings and Irrigation Branches.	Percentage on the total outlay of works and repairs in Roads and Buildings and Irrigation Branches.
10	11	12	13	14	15	16	17	18
Rs.	Rs.			Rs.	Rs.		Rs.	
13,85,960	6,68,651	....	....	2,770	32,11,115	33·59	66,47,003	24·26
13,44,901	5,34,327	....	....	1,093	33,01,972	32·22	64,77,849	25·38
14,43,222	4,32,013	....	....	2,056	40,65,084	33·89	72,55,023	25·87
17,37,724	5,26,361	....	....	492	51,75,362	28·73	84,91,025	24·35
17,99,343	5,19,228	....	....	2,681	55,42,899	21·62	90,86,854	21·23
18,08,385	5,94,089	....	....	3,207	59,63,540	30·56	96,60,479	27·54
19,20,773	7,80,312	....	....	3,847	64,03,868	26·00	96,13,837	25·64
21,35,939	6,16,601	....	....	2,750	66,59,960	25·51	1,00,45,026	25·35
21,08,302	6,18,312	....	....	1,012	69,54,499	23·26	1,03,29,124	23·88
18,31,149	5,99,621	....	....	1,734	67,21,470	21·60	97,13,342	24·06
16,34,011	5,18,627	....	....	86	61,90,696	22·40	91,86,842	25·97
23,53,971	4,01,329	....	....	680	56,26,407	28·54	81,78,624	31·30
29,83,531	5,14,407	....	....	48,960	53,06,983	40·41	77,18,918	30·61
30,98,255	4,55,037	....	....	441	60,90,563	42·89	74,30,429	40·38
8,66,476	1,73,501	....	....	61	11,77,339	89·46	33,76,070	45·21
8,24,868	1,63,507	....	....	620	10,63,016	83·73	34,98,890	39·04
7,70,784	1,27,039	....	....	73	9,66,575	82·27	33,14,264	30·77
8,22,080	1,39,881	....	....	..	10,15,889	92·85	31,77,827	32·95
7,77,209	1,14,778	1,442	89,598	317	10,20,686	82·62	30,29,877	30·82
7,96,162	43,795	3,749	4,452	1,109	9,02,236	107·88	23,23,673	30·63
7,47,287	42,317	1,884	1,091	1,380	8,20,673	88·78	26,81,271	20·63

the basis of actuals to end of March final kept under suspense.

(column 16) is generally higher than that in the Roads and Buildings Branch (column 5). The reason is largely that the on "revenue management" work on certain canal systems which has no connection with the execution of works and repairs including the control and distribution of water, which is debited in the accounts to "revenue management" and are deducted from the total cost of establishment in the Irrigation Branch the percentage on the cost of works outlay on "works" and "repairs". Establishment charges cannot be reduced in the same ratio in which