

India. Public Works Dept; Review of irrigation in  
India. 1912/13

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**PUBLIC WORKS DEPARTMENT.**

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## PUBLIC WORKS DEPARTMENT.

*Bombay Castle, 7th August 1914*

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## CIVIL WORKS.

## Irrigation.

## REVIEW OF IRRIGATION IN INDIA IN 1912-13.

Classification  
of Irrigation  
works.

Irrigation works in India are divided into two main classes, *viz.*, major and minor works. Major works are sub-divided into—

- (a) Productive public works, the capital of which is usually provided from borrowed money.
- (b) Protective works, designed as a protection against famine, the capital of which is provided from current revenues, and is usually met from the annual grant under Famine Relief and Insurance.

Capital and revenue accounts are kept for all major works.

Minor works are constructed from funds provided from the current revenues of India, and, broadly speaking, consist of irrigation systems which are not sufficiently important to treat as major works. Some of them are old works constructed by the former rulers of this country, and extended or restored by the British Government; some are works which have been constructed by the British Government; others, again, are village works originally provided by private or communal effort, the control of which the State has been obliged to assume owing to disputes between the parties interested or their inability to maintain the efficiency of the works.

Capital and revenue accounts are maintained for the more important minor works, but for those on which the capital outlay has not exceeded half a lakh of rupees, revenue accounts only are, as a rule, maintained. There is a third class of minor works, consisting for the most part of small tanks, for which neither capital nor revenue accounts are kept. These exist principally in the Madras Presidency.

Productive  
Public Works.

2. Productive public works are expected within ten years after the probable date of their completion to yield sufficient revenue to pay their working expenses and the annual interest calculated at 4 per cent. on the capital invested. No project is now sanctioned as a productive public work unless it can be shown beyond reasonable doubt that when fully developed it will fulfil these conditions. This standard was not attained in the case of the earlier irrigation projects and thus it has happened that several large irrigation works which were financed from borrowed capital, are not remunerative. There are 13 such works, *viz.*, two in Bihar and Orissa and two in Bengal, seven in the Deccan and Gujarát and two in Madras. They are still retained on the list of productive works, but expenditure against their capital account is now charged against the current revenues of India. The total accumulated losses on these 13 works have slightly exceeded the sum of 11 crores. But though they have proved financial failures in the ordinary commercial sense, they have been indirectly of great value in securing large areas of cultivation against the vicissitudes of the seasons.

3. The remaining works in operation, 48 in number, satisfy productive conditions. These works collectively paid during the year 11·76 per cent. on their capital outlay; while after paying interest charges, the surplus revenue, which they had contributed to the general revenues of the country up to the end of 1912-13, amounted to over 43 crores of rupees against 35 crores, the capital invested on them. The financial results, the area irrigated, and the mileage in operation for all productive public works in operation are shown separately by provinces in Statement I.

Areas  
irrigated,  
and return  
realised by  
productive  
works.

4. During the year under review the total area irrigated by all the productive public works, including branches in Native States of the Punjab, amounted to 16,147,799 acres. Towards this total the Punjab canals contributed nearly 7½ million acres, Madras 3½, the United Provinces 2½, and Sind 1 million acres. In Bihar and Orissa an area of 930,000 acres was attained. The return on capital is highest in the Punjab, where the canals yielded 16·48 per cent. The next province in this respect is Madras, where a return of 14·05 per cent. was realised, excluding the Karnool and Barur systems referred to in paragraph 2, expenditure on which is charged to Revenue. In the United Provinces and Sind the returns realised were 6·83 per cent. and 4·50 per cent. respectively. Details regarding other provinces and administrations will be found in Statement I. The return on productive works as a whole was 9·53 per cent. on the capital outlay.

5. The importance of productive works may be gauged roughly by the value of the crops which are produced by their agency. In the year under review the estimated value of the crops irrigated by works of this class amounted to 67 crores of rupees, or about 20 crores more than the capital expenditure incurred on them.

6. There were in operation in the year under review 30 protective works which together irrigated a total of 403,200 acres. The most important works are the Ramtek reservoir in the Central Provinces, the Betwa and Ken canals in the United Provinces, the Rushikulya in Madras, and the Nira and Godavari systems in the Bombay Presidency. A number of small but interesting tank works are to be found in the Central Provinces. They were sanctioned as experimental works, in accordance with the recommendations of the Irrigation Commission, in order to test how far the people were willing to resort to irrigation for the maturing of their crops and what water rates they were prepared to pay. The results obtained are gratifying and show that the people are beginning to realise the great advantages of irrigation.

7. There were 109 works so classed in 1912-13, the majority of which are in Bombay and Madras. Ten are purely navigation works. The net revenue paid by works of this category amounted to Rs. 70,01,539 (excluding navigation canals) or a return of 7.61 per cent. on the capital outlay, against 7.71 per cent. in the previous year. Nearly all the minor works in Sind return exceptionally high percentages; but as some large projects with which it is intended to amalgamate many existing works are under consideration, their transfer to the major works class has been postponed for the present.

Excluding the area shown under Burma, viz., 480,923 acres, which is not under actual irrigation, but represents the area of cultivation on lands reclaimed by river flood embankments, the area irrigated by minor irrigation works during 1912-13 was 1,521,029 acres against 1,314,676 acres in the previous year.

Statement III gives particulars of individual works.

8. There are numerous works which maintain only revenue accounts. They are credited with a share of the land revenue depending on their maintenance and are debited with all expenditure incurred on construction, extension, improvements and maintenance. During the year reviewed these works irrigated an area of 2½ million acres and returned a net revenue of Rs. 34,39,458.

9. As explained in the opening paragraph of this review, practically all the works of the class which have neither capital nor revenue accounts are situated in the Madras Presidency. They consist of some 37,000 tanks and irrigation channels mainly the former, the improvements and repairs of which are executed by the Public Works Department, or, in the case of the smaller works, by civil officers. The areas irrigated by works of this class in 1912-13 aggregated 3,421,917 acres. The area irrigated in 1911-12 was 3,230,191 acres.

10. In the Punjab practically no rain fell during the early months of both kharif and rabi crops. The canal supplies were adequate during the kharif, but the absence of rainfall combined with the very low river supplies from October to February resulted in a smaller area being irrigated on several canals during the rabi than in the previous year. There was, however, satisfactory rainfall during the latter months of each season, and this was of considerable benefit to the crops. The absence of insect pests, frosts, floods and other adverse conditions during the year was marked, and enabled an unusually high proportion of the crops sown to mature satisfactorily. The total area irrigated by works of all classes including those of Native States was 8,429,381 acres, of which 8,052,910 acres matured as against 7,548,515 and 6,971,556 acres, respectively, the average of the triennium ending 1911-12.

The increase is due mainly to the extra area brought under irrigation by the Upper Chenab canal and to sufficient volumes being available in the rivers for the inundation canals during the hot weather. The results are very satisfactory, and the area irrigated would have been even larger had not the very low river supplies during the early months of the rabi resulted in a reduced area being sown in that harvest.

The Lower Chenab canal continues to show a record of remarkable progress. It served 2,240,203 acres and earned a gross revenue of Rs. 146½ lakhs. The net revenue realised from this canal was equivalent to 39.18 per cent. on the capital outlay.

There is a noticeable improvement in the return realised from the Lower Jhelum Canal, the net revenue on which system has gone up by almost 90 per cent. This is due principally to an enhancement of land revenue and *malikana*.

During the year excellent progress was made with the triple project. The Upper Chenab canal which was opened at the beginning of the year gave most satisfactory results during the first year of its working, the area irrigated being 116,162 acres against 40,000 anticipated in the project forecast. The Lower Bari Doab was opened just after the close of the year reviewed and does not therefore appear among the works in operation. Neither the Upper Chenab canal nor the Lower Bari Doab canal can work to full advantage until the Upper Jhelum canal has been completed, as they cannot get a cold weather supply until the surplus water of the Jhelum river can be made available to augment the supplies of the Chenab river on which the Upper Chenab and Lower Bari Doab systems are dependent. Every effort is therefore being made to complete the Upper Jhelum canal as soon as possible. It was hoped to open the canal during October 1914, but owing to serious damage from floods suffered by the head works at Mangla in April last this hope will not be realised, and it is feared that the system will not be in operation before the beginning of 1915. Further surveys in connection with the Sutlej valley project for the utilisation of the surplus water of the Sutlej river were found necessary and were completed during the year.

11. In the United Provinces both seasons of the year were unusually dry and the demand for canal irrigation was intense.

The monsoon set in late, about the middle of July, but the rainfall which was plentiful was unevenly distributed, most of it having been received in the latter half of July and August. Heavy rain at the end of September kept the early rabi demand low and enabled a very large area to be sown without canal irrigation. The winter rains failed and the demand from December till the middle of February was everywhere intense till it was reduced by rain in mid-February. In both seasons the supply was inadequate when demand ruled high. On the Ganges canal during kharif though maximum gauges were run on the Solani aqueduct it was impossible to allot supplies according to requirements. The supply in the Jumna at Delhi was except onally low throughout and in July it fell to 64 cusecs which is the minimum discharge ever recorded.

The total area irrigated was 290,000 acres above the average of the three preceding years: the increase was due to the dry nature of the seasons. This area would have been much greater had it been possible to open the Ganges canal earlier. Work on the temporary bunds at Bhimgoda which train the river into the supply channel could not, on account of meteorological conditions, be started till the first week in October and thus the canal was opened much later than usual.

The total assessments of the year amounted to nearly 113 lakhs of rupees or 12 lakhs more than in 1911-12.

12. In Madras the rainfall of both monsoons was above the average and the net cropped area in the Presidency during the year under review was 39 million acres which exceeded the previous year's figures by 1½ millions. Owing to the favourable character of the season, the area irrigated under nearly every system showed an increase on that of the previous year and on the average of the previous triennium.

13. In Sind the rainfall is usually negligible and cultivators are therefore obliged to depend almost entirely upon canal irrigation. The canals, being of the inundation class, are in turn dependent upon the height and duration of the floods in the Indus during the irrigating season. The inundation of 1912 was unfavourable, being late in arrival and ending earlier than usual. The fair irrigating level of 13 feet at Bukkur was recorded for 31 days as compared with an average of 40 days in the previous 10 years. The fair inundation level at Kotri was maintained for 59 days which is the average period in the previous 10 years. This year the rainfall was about the average, but as it was well distributed it did much good to the crops. The rabi water-supply in the great Jamrao canal was sufficient to allow of extensive rabi sowings and to give the final waterings to the kharif cotton crop. Taking Sind as a whole, the area under irrigation and gross assessed revenue during the year show an increase of 209,803 acres and 5,25,728 rupees, respectively, as compared with the figures for the previous year.

14. In Bombay (Deccan and Gujarát) the irrigation works in operation are limited in scope compared with those of other provinces. The rainfall in Gujarát during the year was better than the average of the past 30 years and there was a good supply of water from the Hathmati river. The surplus from the canal served to fill the Bokh reservoir, and by very careful management a large area of rice which was threatened by the early cessation of rain in the Khari tract was saved. The four new tanks in Kaira filled, and irrigated over 7,000 acres against only about 600 acres of the previous year.

There was a considerable rise in the area under irrigation and gross revenue assessed on works in the Central Division mostly due to the extension of irrigation on the Godavari and Pravara canals, but partly also to the greater demand for water owing to scanty monsoon rainfall. Some eastern tanks received a welcome late supply of water in November which helped for the rabi irrigation. There was copious rainfall in the Southern Division and the irrigation was, on the whole, good though slightly less than the average.

Good progress was made during the period reviewed with the Godavari and Pravara canals, two large works of the protective class. A good start was also made with the Nira Right Bank canal project, which on completion will be the largest protective irrigation system in India.

15. The canal systems in Bengal, the most important of which are the Midnapore, the Hijili Tidal canal, the Circular and Eastern and the Madaripur Bhil systems are used principally for navigation purposes. The Midnapore canal is also utilised for irrigation.

The total area irrigated by the latter was 80,958 acres, a result which is practically the same as that attained during the previous year. The financial results of this work do not fulfil productive conditions, the revenues being just sufficient to meet the working expenses. The estimated value of crops raised on the area irrigated by it amounted to Rs. 34½ lakhs.

16. In Bihar and Orissa the Sone and Orissa canals of the productive class are used both for irrigation and navigation. The area irrigated during the year was 930,014 acres showing an increase of 145,456 acres compared with the area irrigated during the preceding year. The increase occurred on the Sone canals and was partly due to scanty rainfall of the year and the premature cessation of the monsoon. The financial results of these works do not fulfil productive conditions, but the estimated value of crops raised on the area irrigated by them amounted to over 3½ crores of rupees, a sum which is a little less than two-thirds of the total capital cost of the works.

17. In Burma the rainfall of the year was on the whole sufficient and well distributed, the exceptions being in the Shwebo and Yamethin Districts where minor works in consequence showed poor results. No floods of any magnitude occurred during the year and there was therefore no serious damage to works or destruction of crops. The year was also free from outbreaks of cattle disease. Under these conditions, to which should be added the high prices obtaining for paddy, the expansion of the cultivated area followed as a matter of course and the year was a prosperous one for irrigation generally. The area irrigated by productive works amounted to 257,749 acres as compared with 205,843 acres in the previous year.

18. In the Central Provinces the rainfall was normal and well distributed in Chhatisgarh, but scanty in the western districts, where in consequence the demand for canal supplies was keen, the area under irrigation being double that of the year previous. In these Provinces the development of canal irrigated rabi crops, other than sugarcane and garden crops, is proceeding but slowly.

19. The rainfall in the North-West Frontier Province, though only about half the normal, exceeded that of the previous year. During the early rabi, September to end of January, there was practically no rainfall, and the demand for canal water was very keen. The supplies in the rivers at the same time were low, and the rainfall in February and March was consequently of great benefit to the crops. The agricultural and other conditions of the year were favourable. The irrigated area was slightly in excess of the average of previous years.

20. The following table summarises the results of irrigation works for all India during 1912-13 in comparison with those of the two previous years:—

Summary of  
irrigation  
results.

*Results of irrigation works in operation in India.*

Class of work.	Capital outlay to end of the year on works in operation.	Gross revenue during the year.	Net revenue during the year.	Percentage of net revenue on capital outlay to end of year.	Net profit during the year; i.e., net revenue less interest charges.	Area irrigated.
	Rs.	Rs.	Rs.	Per cent.	Rs.	Acres.
I.—Productive ...	47,03,47,274	6,43,53,975	4,48,33,565	9.53	2,96,85,579	16,147,799
II.—Protective ...	6,04,36,601	12,43,758	4,50,302	0.75	—15,09,876	403,200
III.—Minor Works for which Capital and Revenue Accounts are kept (including works under construction) ...	6,48,29,224	52,63,049	28,49,392	4.39	...	2,001,952
IV.—Minor Works for which only Revenue Accounts are kept ...	.....	68,01,346	34,89,458	...	...	2,540,317
V.—Works for which neither Capital nor Revenue Accounts are kept ...	.....	1,06,81,405	60,75,315	...	...	3,421,917
Total 1912-13 ...	59,56,13,099	8,83,43,583	5,76,99,032	(a) 8.08	...	24,515,185
Total 1911-12 ...	55,84,69,511	7,97,09,658	5,05,11,524	(a) 7.58	...	23,287,054
Total 1910-11 ...	53,06,04,071	7,66,71,953	4,68,34,846	(a) 7.17	...	22,519,090

(a) Percentage calculated on works of classes I, II and III.

The total area irrigated was 24½ million acres, while the value of the crops raised is roughly estimated at Rs. 83 crores.

Outlay in  
1912-13.

21. The subjoined table exhibits the outlay incurred by the State during the year 1912-13 on all classes of irrigation works :—

				Capital outlay (direct charges).	Minor additions, maintenance, and working expenses (direct charges).
				Rs.	Rs.
<i>Works under construction.</i>					
Productive	...	...	...	1,64,60,023	.....
Protective	...	...	...	24,17,879	.....
Minor	...	...	...	5,98,088	.....
			Total	1,94,15,990	.....
<i>Works in operation.</i>					
Productive	...	...	...	48,05,923	1,80,13,108
Protective	...	...	...	85,80,960	7,54,911
Minor	...	...	...	3,30,141	23,21,796
			Total	87,26,024	2,10,89,815
Works under classes IV and V	...	...	...	.....	79,54,801
			Grand Total	2,81,42,014	2,90,44,676

Comparison  
of total cropped  
area in  
various provinces  
with  
area irrigated.

22. A comparison of the acreage of crops matured by means of the Government irrigation systems, with the total area under cultivation in the several provinces, is given below :—

Province.	Net area cropped.	Area irrigated by Government irrigation works.	Percentage of irrigated area to total cropped area.	Capital cost of Government irrigation works to end of 1912-13 in lakhs of rupees.	Estimated value of crops raised on areas receiving State irrigation, in lakhs of rupees.
	Acres.	Acres.	Per cent.		
Burma	13,856,000	1,275,000	9.2	205	524
Bengal	25,955,000	108,000	0.4	227	59
Bihar and Orissa	8,006,000	971,000	12.1	662	247
United Provinces of Agra and Oudh.	35,460,000	2,698,000	7.6	1,184	1,438
Ajmer-Merwara	356,000	24,000	6.8	85	11
Punjab	22,684,000	8,388,000	34.6	1,625	3,071
North-West Frontier	2,549,000	246,000	9.6	63	84
Sind	3,991,000	3,065,000	76.8	316	821
Bombay Deccan	22,906,000	355,000	1.5	438	123
Central Provinces (excluding Berar).	17,969,000	78,000	0.2	88	14
Madras	39,120,000	7,321,000	18.7	1,081	1,831
Baluchistan	Not known.	6,000	.....	32	2
Total	192,852,000	24,515,000	12.4	5,956	8,325

23. The statement below contains a list of the irrigation systems in the several provinces and administrations in India which were completed in or since the year 1900-01:—

Irrigation works completed since 1900-01.

Province.	Name and class of work.		Total direct cost to end of 1912-13.	Irrigable area.	Principal crops that can be produced.
			Rs.		
Bombay	...	Kadwa river works ... Productive ...	9,71,741	32,723	Wheat, sugarcane and ground nuts.
		Chankapur tank project ... Protective ...	16,71,077	15,000	Wheat and gram.
		Patbri tank project ... Minor ...	6,27,825	2,500	Millets.
		4 small tank projects ... Do. ...	8,65,416	6,325	Wheat, rice and gram.
Sind	...	Jamrao canal ... Productive ...	81,47,953	300,000	Cotton, millets and wheat.
		Nasrat canal ... Do. ...	18,30,034	104,100	Cotton, millets and oil seeds.
Pungal	...	Dad canal ... Do. ...	24,20,992	145,400	Do.
		2 small canals ... Minor ...	4,63,957	53,757	Rice and millets.
		Dhaka canal ... Protective ...	5,54,835	6,337	Rice.
United Provinces	...	Ken canal ... Do. ...	49,77,584	120,000	Rice, wheat and gram.
		Dhasan canal ... Do. ...	44,12,347	57,000	Wheat and gram.
Eurma.	...	Pahuj and Garhman canals. ... Do. ...	7,94,401	17,200	Wheat, gram and rice.
		Mandalay canal ... Productive ...	52,16,006	59,115	Rice.
Central Provinces	...	Shwebo canal ... Do. ...	57,25,024	151,734	Do.
		12 small tank projects ... Protective ...	21,43,236	34,634	Do.
North-West Frontier Province.		Paharpur canal ... Productive ...	9,05,414	41,588	Wheat and millets.
Total ...			4,17,32,872	1,147,463	

24. Statements I and II appended to this review leave out of account the productive and protective works that are now in course of construction except the few that have reached such an advanced stage of construction as to have begun irrigation. In the two succeeding statements particulars are given of such works, as well as of the more important projects which are under investigation.

Works sanctioned or under construction. Sanctioned works.

Province.	Name and class of work.		Estimated cost, direct and indirect.	Expenditure to end of the year 1912-13, direct and indirect.	Irrigable area in acres.	Districts benefited.	Principal crops that will be produced.
			Rs.	Rs.			
Punjab	...	* Lower Jhelum canal ... Productive ...	1,89,63,988	1,59,05,022	760,182	Gujrat, Jhang and Shahpur.	Wheat, cotton and oil seeds.
		* Upper Chenab canal ... Do. ...	3,73,57,924	2,95,31,355	643,303	Sialkot, Gujranwala, Lahore and Montgomery.	Wheat, maize, millets, cotton and oil seeds.
		Upper Jhelum canal ... Do. ...	4,39,06,559	3,13,07,898	344,900	Gujarat ...	Wheat, cotton and oil seeds.
		† Lower Bari Doab canal. ... Do. ...	2,23,28,402	1,66,13,251	877,908	Montgomery and Multan.	Wheat, maize, cotton and grain.
N.-W. Province.		Upper Swat River canal ... Do. ...	1,99,21,287	1,16,60,901	381,582	Peshawar ...	Wheat, barley and oats.
United Provinces.	...	Permanent Head Works Upper Ganges canal. ... Do. ...	33,78,324	Not yet commenced.	86,166	Saharanpur, Muzaffarnagar, Meerut, Bulandshahar, Aligarh, Muttra, Agra, Etah and Mainpuri.	Sugarcane, wheat and cotton.
		Ghaggar canal ... Protective ...	35,04,454	2,61,946	66,000	Central up-lands of Mirzapur.	Rice and wheat.
Central Provinces.	...	Weinganga canal ... Productive ...	38,03,204	4,62,296	78,955	Balaghat and Bhandara.	Rice.
		Mahanadi ,, ... Do. ...	99,30,217	7,09,237	360,000	Raipur ...	Do.
		Tandula ,, ... Protective ...	99,98,807	22,82,040	263,412	Drug ...	Do.
		Chorkh-mara tank project. ... Do. ...	8,65,484	19,382	20,000	Bhandara ...	Do.
		Badalkhassa tank project. ... Do. ...	6,57,284	8,391	18,376	Bhandara ...	Do.
		Nalshwar tank project... Do. ...	6,32,542	75,443	12,000	Chanda ...	Do.
		* Asola Mendha canal ... Productive ...	17,07,578	18,51,010	60,000	Chanda ...	Rice and wheat.
* Ramtek reservoir ... Protective ...	22,07,853	28,4,665	48,000	Nagpur and Bhandara.	Do.		
Madras	...	Mopad reservoir ... Do. ...	21,51,000	6,28,070	12,500	Nellore ...	Rice.
		* Divi pumping scheme ... Productive ...	19,98,000	18,64,495	50,000	Kistna ...	Do.
		* Nagavalli reservoir ... Do. ...	18,16,300	15,72,156	23,814	Vizagapatam ...	Do.

\* In operation.

† Opened in April 1913.



Province.	Name and class of work.	Estimated cost, direct and indirect.	Expenditure to end of the year 1912-13, direct and indirect.	Irrigable area in acres.	Districts benefited.	Principal crops that will be produced.
		Rs.	Rs.			
Bombay Deccan.	Nira Right Bank canal ... Protective...	2,57,72,499	6,06,450	231,000	Poona, Satara, Phaltan State and Sholapur.	Jowar, wheat, bajri, rice, groundnuts, gram and sugarcane.
	* Pravara River canal ... Do. ...	76,10,826	27,21,520	60,879	Ahmednagar ...	Gram and jowar.
	* Godavari canal ... Do. ...	95,61,044	85,04,761	175,600	Nasik and Ahmednagar.	Bajri and wheat.
	Badhihal tank ... Do. ...	14,54,611	5,08,274	6,226	Sholapur ...	Sugarcane and wheat.
Bombay Sind.	* Mahiwah canal ... Productive ...	15,17,858	14,37,374	65,950	Shikarpur ...	Wheat and millets.
Bihar and Orissa.	* Tribeni canal ... Protective ...	75,27,802	68,03,779	106,000	Champaran ...	Rice.
Burma ...	* Mön canals ... Productive ...	51,31,022	53,98,667	68,000	Minbu ...	Do.
	Ye-u canal ... Do. ...	50,54,752	16,67,651	106,294	Shwebo ...	Do.
	Twanté ,, ... Do. ...	72,80,973	16,00,292	.....	Hanthawaddy ...	A navigation work.
	Total ...	25,72,21,701	14,64,91,996	4,939,602		

\* In operation.

Besides the above, a number of irrigation works of lesser importance are in course of execution, the aggregate cost of which will amount to Rs. 102 lakhs.

Projects under investigation.	Province.	Name and probable classification of work.	Estimated or approximate direct cost in lakhs of rupees.	Irrigable area in acres.	Districts benefited.	Principal crops that will be produced.
Madras ...		Cauvery reservoir project. Productive ...	370	473,000	Tanjore ...	Rice.
		Kistna reservoir project ... Do. ...	800	736,000	Kistna and Guntur ...	
		Lower Bhavani ... Do. ...	109	109,200	Coimbatore ...	
		Velgode project ... Do. ...	28	61,000	Kurnool ...	
		12 smaller schemes ... Mainly protective.	344	355,000	Ganjam, Nellore, Kurnool, Coimbatore, Anantapur and Salem.	
Bombay ...		Gokak canal extension project. Protective ...	183	132,000	Belgaum, Bijapur and the Native States of Kolhapur, Mudhol, Jankhandi, Sangli and Kurundwad.	Wheat, bajri, jowari and oil seeds.
Sind ...		Rohri canal, Sukkur Barrage and widening Eastern Nara Supply channel. Productive ...	762	2,324,000	The whole Left Bank Division comprising three Revenue districts, viz, Nawabshah, Hyderabad and Thar and Parkar.	Cotton, wheat and rice.
		Saltanwah, Bogari canal . Do. ...	16	177,700	Kukkur and Upper Sind Frontier.	Rice, jowari, bajri wheat and oil seeds.
Bengal ...		Damodar canal ... Do. ...	36	150,000	Burdwan ...	Rice.
Bihar and Orissa.		Extension of the Tribeni canal. Protective ...	10	25,000	Champaran ...	Do.
United Provinces.		Belau canal ... Do. ...	15	30,500	Khairagah Pargana, Allahabad district.	Rice and wheat.
United Provinces and Punjab.		Sarda - Ganges - Jamna feeders projects. Productive ...	646	1,524,000	In the United Provinces:— Rampur State, Pilibhit, Shahjahanpur, Hardoi, Bareilly, Moradabad, Budaan, Saharanpur, Muzaffarnagar, Meerut, Bulandshahr, Aligarh, Mathra, Agra, Etah, Malupari, Farukhabad, Etawah, Cawnpore, Fatehpore and Allahabad.	All the principal rabi and kharif crops grown in the United Provinces.
					In the Punjab:— Gurgaon, Karnal, Delhi, Rohtak, Hissar, Patiala, and Jhind States.	
Punjab ...		Sutlej Valley project ... Do. ...	875	3,000,000	Lahore, Ferozepore, Montgomery, Multan, Bikaner and Bahawalpur States.	Wheat, gram, jowar and cotton.
Burma ...		Remodelling the Kinda canal. Do. ...	15	85,000	Kyaukse ...	Rice.
Central Provinces.		Pangoli Nalla tank project. Protective ...	16	33,000	Bhandara ...	Do.
		Deena Nadi tank project. Do. ...	14 to 25	45,260	Chanda ...	Do.
		Anamber reservoir project. Productive ...	33	80,000	Loralai ...	Wheat and barley.
Baluchistan.		Torwal reservoir project. Do. ...	18	44,000	Loralai ...	Do.
		Gasuboli reservoir project. Do. ...	60	21,000	Sibi ...	Do.
		Zhob project ... Do. ...	65	202,000	Zhob ...	Do.
	Barshere reservoir project. Minor ...	17	24,000	Quetta Peshia ...	Wheat.	
	Total ...	4,417 to 4,443	9,827,000			

25. In the following statement is shown the capital outlay incurred on irrigation works during the decade 1903-04—1912-13 :—

Province or Administration.	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bombay ...	17,03,165	8,80,308	7,73,020	7,03,980	15,23,692	20,16,801	27,72,363	24,79,153	27,00,526	28,37,327	1,84,82,463
Madras ...	11,79,960	16,32,791	19,68,536	24,69,512	15,43,702	13,52,243	11,50,008	9,34,252	5,82,280	7,59,693	1,37,75,007
Bengal ...	8,76,191	7,40,107	10,75,643	11,61,814	12,19,935	11,07,631	17,24,464	12,00,085	10,44,717	1,00,960	*1,01,02,377
Bihar and Orissa.	..	..	..	..	..	..	..	..	..	7,13,501	*7,13,501
Punjab ...	24,40,531	18,73,413	45,46,915	72,89,678	80,04,531	1,02,57,971	1,10,56,037	1,20,63,781	1,60,44,907	1,28,20,613	8,76,63,521
United Provinces ...	20,03,956	22,12,043	30,61,087	30,43,342	33,12,516	24,75,562	19,81,273	21,21,137	20,61,315	22,17,210	2,51,52,443
Burma ...	13,65,830	11,72,897	13,07,032	12,76,074	11,75,838	10,18,044	12,24,290	11,15,875	20,01,044	20,54,375	1,50,12,799
Baluchistan ...	36,592	21,231	10,829	20,019	23,001	2,34,162	2,41,674	3,26,315	2,44,021	2,83,950	14,51,618
Rajputana ...	50,499	27,432	74,824	80,735	50,039	7,289	6,031	25,419	841	7,909	3,40,016
North-West Frontier Province...	24,778	1,21,037	4,03,211	4,73,378	6,20,233	13,13,930	16,91,198	21,45,650	30,38,842	30,58,266	1,29,70,509
Central Provinces and Berar ...	4,60,135	6,22,638	5,50,420	7,55,696	10,18,187	14,34,997	14,18,129	10,06,324	18,62,600	26,82,237	1,17,51,509
Total ...	1,05,01,039	93,10,000	1,37,02,164	1,78,75,234	1,91,00,823	2,19,10,583	2,31,22,505	2,41,18,606	3,06,81,852	2,81,2,014	*10,76,85,660

\* Figures for Bihar and Orissa included under Bengal up to the year 1911-12.

ORDER.—Ordered that this Review be forwarded to the Finance and Revenue and Agricultural

The Governments of Madras, Bombay, Bengal, the United Provinces of Agra and Oudh, the Punjab, Burma, Bihar and Orissa,  
The Honourable the Chief Commissioners of the Central Provinces and Assam,  
The Chief Commissioner of Coorg,  
The Honourable the Resident at Hyderabad,  
The Honourable the Agents to the Governor-General for Central India and Rajputana,  
The Honourable the Agent to the Governor-General and Chief Commissioner, Baluchistan,  
The Honourable the Chief Commissioner and Agent to the Governor-General, North-West Frontier Province,  
The Comptroller and Auditor-General.

Departments and to the Local Governments and Administrations in the Public Works Department, noted on the margin, for information.

Ordered, also, that the Review be published in the Supplement to the *Gazette of India*.

Ordered, further, that a copy of the Review be forwarded to His Majesty's Secretary of State for India for information.

(Signed) M. NETHERSOLE,  
Offg. Secretary to the Government of India."

## STATEMENT

## Results of individual Productive Irrigation Works

Number of Works.	Major Works.	Capital outlay direct and indirect to end of 1912-13.	Revenue Account for 1912-13.					Net revenue—per	
			Gross revenue.	Maintenance and working.	Net revenue.	Interest.	Net profit.	1909-10.	1908-10.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
3	<b>PRODUCTIVE.</b>								
	<b>BURMA.</b>								
	<i>Irrigation.</i>								
	Mandalay Canal ...	51,38,956	8,72,247	1,00,855	2,71,392	1,82,565	83,807	4.08	4.87
	Shwebo Canal ...	58,65,219	7,48,655	2,60,720	4,87,837	1,99,109	2,88,728	4.08	7.45
	Mon Canals ...	53,93,667	83,372	1,35,743	-52,371	1,31,597	-2,33,968	...	...
	Total, Burma ...	1,65,97,842	12,04,274	4,97,418	7,06,856	5,63,291	1,43,566	4.35	6.19
2	<b>BIHAR AND ORISSA.</b>								
	<i>Irrigation.</i>								
	Orissa Canals ...	2,68,46,949	5,85,919	4,82,492	58,457	9,18,030	-9,04,573	0.23	0.17
	Sone " ...	2,62,13,412	17,16,129	8,19,857	8,96,572	9,05,948	-9,370	4.16	4.22
	Total, Bihar and Orissa ...	5,30,60,361	22,53,378	13,02,349	9,50,029	18,23,978	-8,73,955	1.74	2.19
	<b>BENGAL.</b>								
	<i>Irrigation.</i>								
	Midnapore Canal ...	84,94,113	2,20,412	2,16,950	3,458	2,90,792	-2,87,336	...	...
	<i>Navigation.</i>								
	Hijili Tidal Canal ...	26,14,318	52,800	29,513	23,287	59,278	-65,991	...	0.22
	Total, Bengal ...	1,11,08,431	2,73,212	2,46,463	5,745	3,80,070	-3,53,327	...	0.22
6	<b>UNITED PROVINCES.</b>								
	<i>Irrigation.</i>								
	Upper Ganges Canal ...	8,55,44,279	45,03,881	11,90,734	33,13,097	11,54,770	21,58,327	11.04	9.88
	Lower Ganges Canal ...	4,16,57,022	28,10,289	10,91,214	17,19,075	13,56,982	3,62,083	5.34	4.67
	Agra Canal ...	1,20,29,351	7,36,026	3,47,292	3,89,634	3,80,340	-700	3.97	3.38
	Eastern Jumna Canal ...	51,09,801	14,47,260	3,39,105	10,58,155	1,07,024	-8,91,131	24.08	23.84
	Dun Canals ...	13,75,116	1,21,629	59,193	62,486	46,650	-15,736	2.58	0.28
	Bijnor Canals ...	3,16,199	49,051	30,150	18,501	9,890	9,011	8.55	7.01
	Total, United Provinces ...	9,60,31,668	96,68,986	31,07,686	65,61,298	31,25,666	31,35,632	8.22	7.37
1	<b>CENTRAL PROVINCES.</b>								
	Asola-Mendha Tank ...	13,51,010	2,456	16,593	-14,137	43,103	-57,240	...	...
	Total, Central Provinces ...	13,51,010	2,456	16,593	-14,137	43,103	-57,240	...	...
8	<b>PUNJAB.</b>								
	<i>Irrigation.</i>								
	Western Jumna Canal ...	1,74,72,450	29,51,510	11,49,763	18,01,747	5,52,783	12,18,964	7.81	5.97
	Upper Bari Doab Canal ...	2,12,13,203	48,76,237	17,95,667	29,80,570	7,21,106	21,59,464	11.64	11.83
	Sirhind Canals ...	2,52,96,174	46,05,010	10,63,910	35,41,100	8,40,781	27,00,319	8.22	4.86
	Upper Sutlej (including Lower Sohag and Para) Canals ...	17,85,747	5,10,165	4,09,277	1,09,048	58,381	42,567	11.49	15.65
	Lower Chenab Canal ...	3,09,18,169	1,46,72,803	25,58,377	1,21,14,426	10,43,419	1,70,71,007	22.58	27.11
	Chidnai Canal ...	13,43,125	5,28,303	1,44,178	3,84,125	45,507	3,37,618	3.83	27.94
	Lower Jhelum Canal ...	1,59,65,622	42,19,176	10,11,377	32,07,799	5,43,643	26,59,156	8.96	10.25
	Indus Inundation Canals ...	27,78,910	4,94,821	4,08,021	86,801	94,195	-7,594	...	...
	Upper Chenab Canal ...	2,95,31,355	1,35,507	1,41,422	-5,914	9,67,709	-9,73,633	...	...
	Total, Punjab ...	14,02,99,781	3,27,93,332	86,81,930	2,41,11,402	49,02,556	1,92,08,878	12.58	12.78
3	<b>NORTH-WEST FRONTIER PROVINCE.</b>								
	<i>Irrigation.</i>								
	Paharpur Inundation Canal ...	9,20,749	23,185	55,505	-27,320	31,091	-59,011	0.47	...
	Lower Swat River Canal ...	42,81,594	6,67,180	1,75,517	4,91,663	1,44,860	3,47,013	10.47	10.98
	Kabul River Canal ...	10,92,700	1,58,483	1,00,784	55,699	36,763	48,931	12.79	8.83
	TOT L, NORTH-WEST FRONTIER PROVINCE ...	62,95,126	8,81,818	3,31,806	5,50,042	2,13,109	3,36,933	9.39	8.77

## No. I.

*in operation during, and to the end of, 1912-1913.*

Cost of Capital outlay.			Revenue Account to end of 1912-13.					Miles in operation including distributaries, 1912-13.	Irrigated area.	
1911-12.	1911-12.	1912-13.	Gross revenue.	Maintenance and working.	Net revenue.	Interest.	Net profit.		1911-12.	1912-13.
			Rs.	Rs.	Rs.	Rs.	Rs.	Miles.	Acres.	Acres.
4-45	4-86	5-08	28,65,205	9,81,124	19,84,081	23,77,438	-4,93,357	156	57,766	61,557
7-43	8-33	8-62	38,62,904	11,39,818	22,58,176	16,77,241	5,75,935	360	123,110	153,056
...	...	0-97	83,372	2,08,829	-1,24,947	8,59,925	-9,84,882	162	24,967	48,136
5-99	4-07	4-26	63,41,571	23,29,271	40,12,300	49,14,599	-9,02,299	678	205,848	257,749
0-12	0-37	0-20	1,36,88,231	1,66,91,800	-30,03,561	3,72,88,967	-4,02,92,528	1,671	278,225	276,414
8-71	3-68	8-84	3,86,48,279	2,29,36,563	1,57,11,716	3,72,39,663	-2,15,27,947	1,603	505,338	653,000
1-91	2-03	1-77	5,23,36,518	3,96,28,363	1,27,08,155	7,45,28,680	-6,18,20,475	3,274	784,568	930,014
0-11	...	8-84	90,36,516	85,04,812	5,31,704	1,30,28,299	-1,24,97,295	70	80,975	80,958
...	1-04	0-39	21,79,028	17,63,889	4,15,739	35,65,035	-31,49,296	29	...	...
0-11	1-04	0-24	1,12,16,144	1,02,68,701	9,47,443	1,65,94,034	-1,56,46,891	99	80,975	80,958
9-42	8-90	9-32	14,83,14,335	5,27,27,985	9,54,86,350	5,73,52,159	3,81,34,691	5,757	980,989	1,010,868
4-58	5-12	4-13	8,64,63,653	3,61,83,970	4,99,79,683	4,78,37,956	21,41,727	4,966	791,372	860,639
3-24	2-52	3-24	2,36,13,688	1,01,10,066	1,35,03,622	1,87,82,376	-2,78,754	1,294	229,458	235,565
20-83	20-76	20-71	5,82,70,293	1,75,22,872	4,07,47,421	78,12,310	3,34,35,116	1,423	220,924	368,986
2-33	3-03	4-51	44,60,973	26,39,224	18,21,749	15,52,394	2,69,335	90	13,825	20,190
8-14	4-60	5-98	12,12,047	5,65,428	6,46,619	2,42,701	4,05,918	82	14,340	26,904
7-01	6-98	6-83	13,22,75,494	12,00,49,546	20,21,85,949	12,80,79,686	7,41,06,053	18,612	2,250,908	2,458,172
...	...	...	2,518	16,863	-14,345	1,77,147	-1,91,492	40	80	945
...	...	...	2,518	16,863	-14,345	1,77,147	-1,91,492	40	80	945
7-10	7-77	10-31	10,50,82,041	3,67,72,189	6,89,09,852	2,11,60,657	4,77,49,195	1,935	703,348	750,476
11-93	11-40	13-58	10,53,07,433	3,78,36,466	6,74,70,978	3,24,24,066	3,50,46,887	1,953	1,156,808	1,170,716
4-46	8-19	14-00	6,25,11,309	2,12,16,763	4,12,94,556	3,06,29,824	1,06,64,732	2,224	1,052,582	970,324
18-88	14-01	5-65	1,43,54,020	1,01,49,420	42,04,600	19,90,156	22,14,414	717	266,013	332,220
28-66	34-06	39-18	12,81,06,312	3,04,24,454	9,76,81,858	1,94,97,790	7,81,84,068	2,707	2,334,090	2,740,203
31-72	37-81	23-60	89,76,034	33,31,256	55,94,828	11,51,348	44,43,480	315	249,570	349,269
11-39	10-59	20-09	1,95,25,370	79,03,300	1,16,21,980	62,37,525	53,84,455	1,206	799,649	804,361
...	4-96	8-12	1,43,50,086	1,32,90,571	10,68,465	16,54,508	-5,86,108	738	278,607	249,183
...	...	...	1,35,507	1,41,421	-5,914	39,28,373	-39,34,287	349	...	116,162
13-66	16-13	10-48	45,89,57,117	10,11,15,919	29,78,41,198	11,56,74,357	17,91,66,841	12,189	6,840,967	6,862,928
...	...	...	1,19,118	2,57,725	-1,38,607	1,87,148	-3,25,755	57	25,206	32,093
10-30	9-73	11-48	1,11,35,850	29,87,232	81,48,624	45,28,916	36,19,708	209	157,650	166,976
5-75	4-60	7-84	24,02,960	11,30,266	12,72,694	5,12,146	7,60,488	76	42,304	46,461
6-86	7-09	8-74	1,36,57,374	43,75,223	92,82,651	52,28,210	40,54,441	342	225,166	245,530

Number of Works.	Major Works.	Capital outlay direct and indirect to end of 1912-13.	Revenue Account for 1912-13.				Net revenue—per	
			Gross revenue.	Maintenance and working.	Net revenue.	Interest.	Net profit.	1908-09.
	MADRAS.	Rs.	Rs.	Rs.	Rs.	Rs.		
	<i>Irrigation.</i>							
	Nagavalli River Project—							
	Including old irrigation ...	...	64,746	15,384	49,362	...	...	...
	Excluding old irrigation ...	15,72,166	31,082	13,081	18,001	52,407	-34,406	...
	Kistna Delta System—							
	Including old irrigation ...	...	36,25,314	8,26,539	28,08,811	...	...	10-00
	Excluding old irrigation ...	1,60,67,424	86,51,344	2,21,632	28,82,711	5,20,619	28,06,092	17-21
	Penner River Canals—							
	Including old irrigation ...	...	8,75,295	1,56,935	7,18,461	...	...	...
	Excluding old irrigation ...	66,51,868	6,19,200	1,01,338	5,17,461	1,07,638	3,19,924	7-08
	Cauvery Delta System—							
	Including old irrigation ...	...	44,72,989	5,54,677	39,18,312	...	...	...
	Excluding old irrigation ...	40,50,566	10,72,989	1,87,183	8,85,806	1,35,705	7,50,041	20-85
	Srivaikuntham Ancient System—							
	Including old irrigation ...	...	2,87,578	47,130	1,00,448	...	...	...
	Excluding old irrigation ...	16,46,099	1,58,578	84,630	1,23,948	64,015	60,033	4-90
	Kurnool Canal—							
	Including old irrigation ...	...	3,32,578	1,61,444	1,71,134	...	...	...
	Excluding old irrigation ...	2,28,47,156	2,90,366	1,58,558	1,31,810	7,91,180	-6,50,376	0-66
	Barur Tank—							
	Including old irrigation ...	...	23,709	12,427	11,272	...	...	...
	Excluding old irrigation ...	4,48,113	12,293	12,119	7,180	14,078	-7,495	0-16
	Periyar Project—							
	Including old irrigation ...	...	8,11,778	2,26,502	5,85,476	...	...	...
	Excluding old irrigation ...	1,05,25,017	6,05,828	1,79,127	4,26,501	3,55,316	71,185	3-47
	Divi Island Pumping Project—							
	Including old irrigation ...	...	1,36,798	81,925	54,868	...	...	...
	Excluding old irrigation ...	18,84,495	1,16,495	61,982	51,608	63,057	-12,494	1-48
	Lower Coleroon Ancient System—							
	Including old irrigation ...	...	4,56,193	94,452	3,61,741	...	...	...
	Excluding old irrigation ...	18,94,286	8,01,193	71,550	2,90,643	63,716	1,62,025	12-74
	Chhatrope Ancient System—							
	Including old irrigation ...	...	1,23,796	30,675	93,121	...	...	...
	Excluding old irrigation ...	9,32,253	1,08,795	27,207	81,591	3,097	51,551	12-03
	Tirukkoyilar Ancient System—							
	Including old irrigation ...	...	1,06,612	38,740	67,872	...	...	...
	Excluding old irrigation ...	3,74,201	48,612	28,336	20,276	12,774	7,408	0-53
	Cheyern Ancient System—							
	Including old irrigation ...	...	89,080	28,008	61,072	...	...	...
	Excluding old irrigation ...	4,18,891	50,080	21,244	28,836	14,249	14,587	7-69
	Poincy Ancient System—							
	Including old irrigation ...	...	98,272	21,149	77,123	...	...	...
	Excluding old irrigation ...	2,89,683	60,272	14,559	45,713	8,135	37,578	13-13
	Godavari Delta System—							
	Including old irrigation ...	...	43,63,091	9,71,501	33,91,587	...	...	...
	Excluding old irrigation ...	1,44,86,576	42,32,091	9,03,001	32,76,087	4,36,101	28,39,929	20-02
	Total Madras... { Including old irrigation... }	...	1,59,24,950	32,67,186	1,26,57,764	...	...	...
	Excluding old irrigation... }	8,89,50,980	1,13,76,116	27,02,049	86,74,067	27,56,684	59,17,381	9-66
	BOMBAY.							
	SIND.							
	<i>Irrigation.</i>							
	Desert Canal—							
	Including, old irrigation ...	...	3,50,931	1,00,259	1,90,672	...	...	...
	Excluding, old irrigation ...	27,20,166	3,50,931	1,00,259	1,90,672	92,420	98,246	7-02
	Unharwah—							
	Including old irrigation ...	...	1,72,429	51,932	1,21,197	...	...	...
	Excluding old irrigation ...	7,10,822	1,72,429	51,232	1,21,197	24,217	96,990	22-09

cont. of Capital outlay.			Revenue Account to end of 1912-13.					Mileage in operation including distributaries, 1912-13.	Irrigated area.	
1910-11.	1911-12.	1912-13.	Gross revenue.	Maintenance and working.	Net revenue.	Interest.	Net profit.		1911-12.	1912-13.
			Rs.	Rs.	Rs.	Rs.	Rs.	Miles.	Acres.	Acres.
...	1-29	1-14	79,992	42,580	37,412	2,57,194	-2,19,761	60	* 81,587 † 11,759	22,444 8,878
16-85	17-01	17-03	8,91,81,498	2,51,80,716	6,42,91,777	1,73,82,162	4,69,09,611	2,500	716,160 645,450	719,083 648,853
7-60	7-31	7-77	1,19,74,887	25,49,950	94,24,929	65,11,087	29,13,841	508	167,309 67,176	183,500 83,370
18-76	21-08	21-71	4,13,35,059	40,80,251	3,72,54,808	86,44,663	3,86,10,145	3,478	993,802 214,372	998,465 219,035
7-20	8-25	7-32	40,84,467	11,01,596	29,82,871	21,78,597	8,03,274	74	46,646 26,318	45,749 25,819
0-44	0-66	0-68	50,40,621	41,1,506	9,28,715	2,58,62,556	-2,49,39,841	698	87,694 78,222	79,841 69,812
3-21	1-28	1-62	2,98,647	1,72,686	1,25,961	4,21,148	-2,95,197	35	7,025 5,261	7,101 5,341
4-09	4-02	4-05	75,73,099	22,93,417	52,79,681	70,09,683	-17,90,002	299	166,386 84,548	178,184 91,128
...	0-17	2-76	4,96,758	4,35,380	61,378	3,78,816	-3,12,436	166	24,573 14,775	25,947 16,179
9-98	9-03	11-97	1,51,16,103	26,89,521	1,24,23,582	15,60,295	1,08,06,287	1,106	111,337 66,407	111,795 66,865
8-80	8-17	8-69	43,02,644	10,22,170	32,80,474	3,11,163	29,69,306	190	34,025 26,866	33,805 26,645
2-89	5-92	5-42	14,50,950	8,38,111	6,12,839	4,22,385	1,90,454	165	30,954 14,844	28,419 12,309
4-96	5-90	6-68	16,86,793	10,11,726	6,74,968	5,53,403	1,16,595	181	36,799 20,209	34,617 18,027
14-18	14-48	10-15	20,13,907	8,78,961	11,34,946	8,87,654	7,47,292	182	28,912 10,862	30,118 12,063
18-86	21-68	23-61	12,21,34,013	3,38,58,162	3,82,76,457	2,00,47,055	6,82,29,402	2,507	1,061,960 845,810	1,009,517 863,367
...	...	...	...	...	...	...	...	...	3,485,126	3,503,010
9-23	9-98	10-34	3,70,70,036	3,07,76,150	22,97,93,818	8,09,82,866	13,98,10,982	12,056	2,132,791	2,156,691
7-45	5-60	7-01	70,10,740	31,37,808	38,72,932	22,17,514	16,55,418	331	100,168 160,168	186,423 186,423
18-03	11-67	17-05	88,06,899	10,20,272	22,86,027	5,77,038	17,09,689	120	56,966 56,966	77,177 77,177

\* Includes 9,806 acres irrigated in 1909-10 and 1910-11.

† Includes 5,447 acres irrigated in 1909-10 and 1910-11.

Number of Works.	Major Works,	Capital outlay direct and indirect to end of 1912-13.	Revenue Account for 1912-13.				Net revenue—per		
			Gross revenue.	Maintenance and working.	Net revenue.	Interest.	Net profit	1908-09.	1909-10.
8	<b>BOMBAY—continued.</b> <b>SIND—continued.</b> <b>Irrigation—continued.</b>	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
	Begari Canal—								
	Including old irrigation ...	...	2,42,246	3,17,349	—75,097	...	...	...	...
	Excluding old irrigation ...	23,28,036	2,08,839	3,08,584	—90,951	78,000	—1,77,061	23.22	20.13
	Eastern Nara Works—								
	Including old irrigation ...	...	6,83,480	2,25,668	4,57,764	...	...	...	...
	Excluding old irrigation ...	68,11,901	6,79,966	2,25,322	4,54,664	2,30,887	2,24,277	5.31	5.64
	Jamrao Canal—								
	Including old irrigation ...	...	8,23,237	3,50,943	4,77,294	...	...	...	...
	Excluding old irrigation ...	83,83,679	8,28,237	3,50,943	4,77,294	2,34,162	1,93,132	1.40	3.51
	Dad Canal—								
	Including old irrigation ...	...	2,37,167	1,75,593	61,564	...	...	...	...
	Excluding old irrigation ...	25,12,296	1,63,249	1,30,324	22,865	83,686	—60,821	5.29	5.59
	Nasrat Canal—								
	Including old irrigation ...	...	2,69,804	1,85,250	84,554	...	...	...	...
	Excluding old irrigation ...	18,87,579	1,96,950	1,65,442	31,508	61,025	—32,517	0.62	6.91
5	Mahiwah—								
	Including old irrigation ...	...	1,87,587	71,135	90,452	...	...	...	...
	Excluding old irrigation ...	14,37,374	57,090	49,555	7,235	43,242	—41,007	6.23	4.04
	Total Sind ...		29,51,821	15,37,421	14,14,400	...	...	...	...
	Including old irrigation .	...	29,51,821	15,37,421	14,14,400	...	...	...	...
	Excluding old irrigation .	2,67,92,243	26,47,505	14,42,021	12,05,484	9,05,145	3,00,339	6.60	6.93
7	<b>DECCAN AND GUJARAT.</b> <b>Irrigation.</b>								
	Hathmati Canal including Khari Cut Canal ...	12,63,717	8,960	84,947	—25,987	41,119	—67,106	1.12	3.89
	Lower Panjhra River Works—								
	Including old irrigation ...	...	18,773	15,053	3,720	...	...	...	...
	Excluding old irrigation ...	4,68,621	17,583	14,934	2,649	75,588	—12,939	1.17	0.69
	Kadva River Works ...	10,13,078	30,103	11,205	18,898	31,611	—15,113	0.75	0.94
	Lakh Canal (Pravara River Works) ...	3,71,891	3,352	2,662	690	12,336	—11,646	...	...
	Mutha Canals including Matoba Tank ...	76,97,817	3,59,729	1,23,409	2,36,320	2,58,858	—22,538	3.28	3.07
	Ekruk Tank ...	13,40,386	95,793	19,312	75,981	42,984	32,697	2.08	4.17
	Krishna Canal ...	9,09,923	26,192	3,223	17,969	29,514	—11,545	4.15	5.11
	Total Deccan and Gujarat ...		5,42,002	2,15,311	3,27,591	...	...	...	...
	Including old irrigation .	...	5,42,002	2,15,311	3,27,591	...	...	...	...
	Excluding old irrigation .	1,30,65,433	5,41,712	2,15,192	3,26,520	4,34,410	—1,07,890	2.68	3.05
	Total Bombay ...		34,94,723	17,52,732	17,41,991	...	...	...	...
	Including old irrigation .	...	34,94,723	17,52,732	17,41,991	...	...	...	...
	Excluding old irrigation .	3,98,57,676	31,59,217	16,57,213	15,32,001	13,39,555	1,92,410	5.35	5.65
56	Total Imperial ...		6,64,93,159	1,92,04,171	4,72,91,986	...	...	...	...
	Including old irrigation .	...	6,64,93,159	1,92,04,171	4,72,91,986	...	...	...	...
	Excluding old irrigation .	45,59,52,802	6,16,41,819	1,85,43,515	4,30,98,304	1,51,47,986	2,79,50,318	8.25	8.20
	Native States—Punjab ...	1,52,94,375	27,12,156	9,76,895	17,35,261	...	17,35,261	7.16	6.33
	Grand Total Imperial and Native States ...		6,92,08,315	2,01,81,066	4,90,27,249	...	...	...	...
	Including old irrigation .	...	6,92,08,315	2,01,81,066	4,90,27,249	...	...	...	...
	Excluding old irrigation .	47,03,47,274	6,43,53,975	1,95,20,410	4,43,33,565	1,51,47,986	2,98,85,570	8.21	8.15

In Madras and Bombay considerable areas served by the canal systems are irrigated by old works of the capital cost of which

per cent. of Capital outlay.			Revenue Account to end of 1912-13.					Mileage in operation including distributaries 1912-13.	Irrigated area.	
1910-11.	1911-12.	1912-13.	Gross revenue.	Maintenance and working.	Net revenue.	Interest.	Net profit.		1911-12.	1912-13.
			Rs.	Rs.	Rs.	Rs.	Rs.	Miles.	Acres.	Acres.
14.30	1.37	...	1,36,67,910	46,14,117	90,53,793	26,17,455	64,36,338	240	125,861 106,881	150,371 131,391
6.05	5.62	6.67	1,88,61,946	65,47,635	1,23,14,311	80,19,022	43,01,289	286	240,000 240,016	251,619 251,619
4.14	4.60	5.60	82,96,562	37,51,207	45,45,355	44,02,606	1,42,749	600	2,31,966 223,186	242,647 222,947
5.81	3.23	0.91	14,18,029	8,82,343	5,35,686	10,55,533	-5,19,847	376	108,453 57,617	99,903 64,072
0.54	0.60	1.67	15,25,350	8,66,182	6,59,168	6,65,555	-7,387	285	79,431 48,404	93,466 65,449
4.70	...	0.50	8,04,083	4,79,058	3,25,025	5,00,719	-1,75,694	293	52,837 6,270	61,364 17,747
...	...	...	...	...	...	...	...	...	1,042,048	1,168,975
6.21	4.18	4.50	5,48,91,519	2,12,98,712	3,35,92,807	2,10,50,532	1,25,42,275	2,540	899,598	1,026,525
7.19	...	...	6,79,056	6,83,410	45,646	8,53,688	-8,08,042	117	1,473	12,218
2.41	1.45	0.57	5,54,104	2,85,918	2,68,186	7,20,718	-4,52,532	45	3,294 364	3,863 933
0.98	1.24	1.87	4,64,924	4,03,302	61,622	9,77,850	8,16,228	41	5,193	2,865
...	...	0.19	65,042	3,17,612	-2,52,570	6,08,707	-8,61,277	32	1,556	3,037
3.64	4.13	3.07	90,84,741	32,18,613	58,66,128	97,34,883	-3,63,755	175	14,029	18,062
3.70	5.41	5.67	10,18,064	6,63,937	3,54,127	10,57,901	-17,08,774	50	4,282	2,634
4.81	5.79	1.07	14,21,613	6,96,484	7,25,129	14,37,689	-7,05,560	64	5,416	3,516
...	...	...	...	...	...	...	...	...	85,231	41,106
3.69	3.42	2.50	1,32,94,544	62,10,276	70,75,268	1,63,91,486	-53,16,168	524	82,801	38,265
...	...	...	...	...	...	...	...	...	1,077,270	1,210,170
5.38	3.55	3.84	6,81,86,063	2,75,17,988	4,06,68,075	3,74,41,968	32,26,107	3,684	931,899	1,064,700
...	...	...	...	...	...	...	...	...	14,950,596	15,569,476
8.26	8.85	9.47	1,24,00,03,337	44,55,78,063	79,44,25,274	47,26,21,707	32,18,03,567	45,304	18,452,881	14,077,777
4.95	7.61	11.84	3,38,42,919	1,54,19,129	1,84,24,790	...	1,94,24,790	2,221	628,978	578,323
...	...	...	...	...	...	...	...	...	15,579,574	16,147,799
8.14	8.80	9.58	1,27,36,40,250	46,00,06,102	81,36,34,148	47,56,21,717	24,02,23,837	47,525	14,01,859	14,856,100

there is no record. The percentage of net revenue is therefore based on the recorded capital outlay only.



STATEMENT No. II.

Results of individual Protective Irrigation Works in operation during, and to the end of, 1912-1913.

Number of Works.	Major Works.	Capital outlay direct and indirect to end of 1912-13.	Revenue Account for 1912-1913.					Revenue Account to end of 1912-1913.					Mileage in operation including distributaries, 1912-13.	Irrigated Area.		
			Gross revenue.	Maintenance and working.	Net revenue.	Interest.	Loss.	Percentage of net revenue on the Capital outlay.	Gross revenue.	Maintenance and working.	Net revenue.	Interest.		Loss.	1911-12.	1912-13.
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.	Miles.	Acres.
17	<b>PROTECTIVE.</b>															
	<b>CENTRAL PROVINCES.</b>															
	<i>Irrigation.</i>															
	Khairbada Tank ...	7,53,659	13,940	11,339	7,601	24,150	16,549	1.0	44,013	30,993	13,103	1,30,617	1,17,514	57	1,796	7,442
	Khairce Tank ...	1,55,368	1,307	145	1,162	4,372	3,710	0.75	3,110	245	2,865	15,902	13,037		261	409
	Khapri-Aranda Tank ...	3,53,934	7,315	4,328	2,997	11,699	8,702	0.85	40,340	21,059	28,281	83,212	54,931	28	3,679	2,021
	Rumal Tank ...	3,03,563	2,934	1,569	1,125	10,291	9,166	0.37	3,706	2,567	1,139	47,143	46,004	17	1,060	1,357
	Chandpur Tank ...	6,55,146	17,807	9,726	8,051	21,788	13,707	1.28	43,929	28,187	15,792	1,02,383	86,591	72	4,078	6,772
	Ramtek Reservoir ...	28,42,065	18,553	8,154	10,399	93,066	82,667	0.36	27,531	9,479	18,052	3,50,197	3,32,145	209	2,752	4,803
	Marowda Tank ...	3,95,078	4,711	5,240	-533	13,161	13,699	...	24,625	2,855	3,770	96,440	94,670	24	1,016	1,278
	Wara Tank ...	1,99,408	3,395	2,403	987	6,738	5,751	0.49	4,788	4,990	-202	21,655	23,687	15	311	1,200
	Khola Tank ...	90,637	700	2,241	-1,541	3,205	4,746	...	5,514	9,080	-4,146	28,015	32,161	6	95	281
	Kusrangi Tank ...	1,23,084	1,933	4,115	-2,162	4,153	6,32	...	7,707	10,590	-2,683	35,727	38,610	8	424	647
	Khaira Datan Tank ...	91,457	1,125	1,177	-53	3,042	3,094	...	7,383	6,318	1,070	27,005	25,935	5	562	272
	Kukerdehi Tank ...	1, 3,763	2,548	1,983	560	3,133	2,373	0.54	12,540	10,041	1,899	23,223	26,324	6	112	155
	Binakheri Tank ...	1,65,958	654	4,469	-3,815	5,333	9,153	...	8,393	15,205	-6,812	39,612	46,424	10	273	103
	Hargahan Tank ...	1,20,029	3,607	1,918	1,789	4,078	2,289	1.49	15,423	10,040	5,383	31,359	26,006	13	935	920
	Pindraon Tank ...	1,76,184	4,176	5,815	-1,769	5,809	7,518	...	24,557	17,271	7,290	45,718	33,422	11	2,618	1,405
	Ghorajheri Tank ...	7,11,979	3,723	2,704	1,021	23,158	22,137	0.14	9,762	3,377	6,385	83,923	77,543	60	842	1,276
	Barera Kalan Tank ...	1,16,851	2,260	223	2,027	3,915	1,983	1.72	2,308	237	2,159	10,503	8,344	19	106	600
	<b>TOTAL, CENTRAL PROVINCES</b>	<b>73,71,753</b>	<b>95,500</b>	<b>67,568</b>	<b>27,932</b>	<b>2,41,901</b>	<b>2,13,969</b>	<b>0.37</b>	<b>2,94,754</b>	<b>2,01,603</b>	<b>93,161</b>	<b>11,86,699</b>	<b>10,93,548</b>	<b>566</b>	<b>21,572</b>	<b>30,870</b>

2	<b>BIHAR AND ORISSA.</b>															
	<i>Irrigation.</i>															
	Dhaka Canal ...	5,68,701	21,684	18,047	3,637	19,381	15,744	0.02	1,05,178	1,57,249	-52,071	1,04,922	2,16,693	42	3,619	12,217
	Tribeni Canal ...	68,99,783	52,097	49,605	3,492	2,20,393	2,16,511	0.05	92,898	90,840	2,058	11,48,467	11,46,409	102	20,313	26,625
	<b>TOTAL BIHAR AND ORISSA ...</b>	<b>73,78,484</b>	<b>73,781</b>	<b>61,652</b>	<b>7,129</b>	<b>2,39,684</b>	<b>2,32,555</b>	<b>0.09</b>	<b>1,98,076</b>	<b>2,48,089</b>	<b>-50,013</b>	<b>13,13,039</b>	<b>13,13,102</b>	<b>144</b>	<b>23,932</b>	<b>38,812</b>
4	<b>UNITED PROVINCES.</b>															
	<i>Irrigation.</i>															
	Betwa Canal ...	81,89,789	1,51,957	1,95,414	-48,457	2,73,907	3,17,964	...	32,22,125	31,77,376	44,740	53,95,211	53,50,162	765	67,120	65,155
	Ken Canal ...	51,53,297	75,010	1,24,035	-49,075	1,68,089	2,17,144	...	3,64,302	6,20,727	-2,55,925	9,91,699	12,47,624	317	31,750	41,318
	Dhasan Canal ...	45,69,361	12,294	31,401	-89,167	1,49,814	2,14,981	...	13,621	1,83,280	-1,69,609	6,54,828	8,24,437	224	11,130	5,812
	Fahuj and Garhman Canal ...	8,14,068	2,125	17,697	-15,572	27,706	43,278	...	3,850	29,175	-25,326	1,03,519	1,27,845	66	866	2,110
	<b>Total, United Provinces ...</b>	<b>1,87,26,515</b>	<b>2,41,326</b>	<b>4,18,507</b>	<b>-1,77,271</b>	<b>6,19,498</b>	<b>7,96,767</b>	<b>...</b>	<b>36,04,398</b>	<b>40,10,509</b>	<b>-4,06,111</b>	<b>71,44,257</b>	<b>75,50,368</b>	<b>1,412</b>	<b>110,966</b>	<b>117,895</b>
1	<b>MADRAS.</b>															
	<i>Irrigation.</i>															
	Gustikulya Project— Including old irrigation ...	...	2,45,523	43,711	2,01,812	...	...	...	...	...	...	...	...	...	99,310	104,037
	Excluding old irrigation ...	50,51,314	1,73,943	43,711	1,30,232	1,02,323	32,091	2.58	19,49,754	10,38,668	9,11,088	36,78,368	27,67,280	231	40,146	45,181
6	<b>BOMBAY.</b>															
	<b>DECCAN AND GUJARAT.</b>															
	<i>Irrigation.</i>															
	Pravara River Canal Project ...	27,21,520	5,593	5,196	397	72,531	72,134	0.01	9,663	10,698	-1,015	1,39,033	1,40,048	46	2,481	11,896
	Mhasvad Tank ...	20,96,016	65,774	20,806	4,963	7,194	25,226	2.15	6,35,477	4,33,205	2,02,272	23,23,666	21,21,394	110	8,788	9,302
	Chankapur Tank ...	17,23,071	11,176	11,496	-320	57,854	53,174	...	23,014	30,572	-7,558	4,13,683	4,21,341	23	2,758	3,247
	Nira Canal, including Shet- phal Tank ...	64,45,511	5,03,566	1,20,072	3,82,514	2,12,686	-1,69,829	5.93	47,69,536	17,37,200	30,32,336	61,06,207	32,73,871	246	30,227	52,399
	Godavari Canal ...	85,04,751	74,079	39,353	34,721	2,69,476	2,34,755	0.41	89,395	53,025	36,370	8,26,213	7,99,843	143	16,444	34,412
	Gokak Canal—1st Section ...	4,12,368	...	...	...	14,033	14,033	...	24,740	20,997	3,743	4,81,186	4,77,393	...	...	...
	<b>TOTAL BOMBAY ...</b>	<b>2,19,03,535</b>	<b>6,59,208</b>	<b>1,96,928</b>	<b>4,02,280</b>	<b>6,96,774</b>	<b>2,34,494</b>	<b>2.11</b>	<b>55,51,345</b>	<b>22,95,697</b>	<b>32,66,143</b>	<b>1,02,89,933</b>	<b>70,23,790</b>	<b>568</b>	<b>69,698</b>	<b>111,566</b>
30	<b>TOTAL, PRO- TECTIVE ...</b>	<b>...</b>	<b>13,15,338</b>	<b>7,93,456</b>	<b>5,21,832</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>325,378</b>	<b>403,200</b>
	Including old irrigation ...	6,04,36,601	12,43,758	7,93,456	4,50,302	19,60,178	15,09,576	0.75	1,15,98,827	77,94,566	38,14,261	2,36,12,349	1,97,93,088	2,921	266,314	344,344
	Excluding old irrigation ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

In Madras and Bombay considerable areas served by the canal systems are irrigated by old works of the capital cost of which there is no record. The percentage of net revenue is ther.fo.e based on the recorded capital outlay only.

## STATEMENT

## Results of individual Minor Works for which Capital and Revenue Accounts

[Includes both works in operation

No. of Works.	Minor Works.	Capital outlay (direct and indirect to end of 1912-13.	Revenue Account for 1912-13.		
			Gross revenue.	Maintenance and working.	Net revenue.
3	<b>RAJPUTANA.</b>	Ra.	Ra.	Ra.	Ra.
	<i>Irrigation.</i>				
	Tanks in Ajmer Sub-Collectorate ... ..	18,61,805	54,880	58,134	-7,804
	Tanks in Beawar Sub-Collectorate ... ..	11,20,281	37,011	20,036	16,975
	Tanks in Todgarh Sub-Collectorate ... ..	4,82,449	18,953	17,601	1,452
	<b>Total</b> ... ..	<b>24,64,535</b>	<b>1,10,294</b>	<b>95,671</b>	<b>14,623</b>
4	<b>BALUCHISTAN.</b>				
	<i>Irrigation.</i>				
	Khushdil Khan Reservoir ... ..	19,01,740	57,942	17,314	40,598
	Shebo Canal ... ..	7,79,891	9,263	27,211	-17,948
	Anambar Channel ... ..	1,05,219	.....	.....	.....
	Nar Nullah Project ... ..	9,89,460	.....	.....	.....
	<b>Total</b> ... ..	<b>31,76,325</b>	<b>67,210</b>	<b>44,555</b>	<b>22,655</b>
2	<b>CENTRAL PROVINCES.</b>				
	<i>Irrigation.</i>				
	Chagn Nalla ... ..	7,010	.....	.....	.....
	Gramosi Tank ... ..	21,142	.....	.....	.....
	<b>Total</b> ... ..	<b>28,752</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>
2	<b>BURMA.</b>				
	<i>Irrigation.</i>				
	Irrawaddy Embankment ... ..	37,08,691	18,26,033	8,32,606	9,93,428
	Thongwa Island Embankment ... ..	2,27,909	1,06,957	16,826	90,131
	<b>Total</b> ... ..	<b>39,36,600</b>	<b>19,32,990</b>	<b>8,49,432</b>	<b>10,83,557</b>
2	<b>BIHAR AND ORISSA.</b>				
	<i>Irrigation.</i>				
	Saran Canal ... ..	7,14,866	1,700	3,339	-1,030
	<i>Navigation.</i>				
	Orissa Coast Canal ... ..	44,79,078	24,834	66,909	-42,075
	<b>Total</b> ... ..	<b>51,93,944</b>	<b>26,534</b>	<b>70,248</b>	<b>-43,714</b>
5	<b>BENGAL.</b>				
	<i>Navigation.</i>				
	Calcutta and Eastern Canals ... ..	81,27,450	4,21,008	4,08,789	-41,881
	Maderipur-Bhil route ... ..	30,32,561	1,03,223	94,101	9,124
	Uttorbhag Lock ... ..	1,05,498	.....	.....	.....
	Other Works (2) ... ..	16,112	.....	.....	.....
	<b>Total</b> ... ..	<b>1,15,81,621</b>	<b>5,25,133</b>	<b>5,57,890</b>	<b>-82,757</b>
11	<b>UNITED PROVINCES.</b>				
	<i>Irrigation.</i>				
	Rohilkhand Canals ... ..	22,12,580	2,17,149	1,27,198	89,931
	Jhansi Lakes ... ..	81,989	6,672	7,143	-771
	Hamirpur Lakes ... ..	3,704	6,584	4,605	2,029
	Seori Lakes ... ..	1,42,183	.....	1,598	-1,603
	Sukhrao Canals ... ..	1,46,296	.....	.....	.....
	Other Works (6) ... ..	3,18,348	.....	.....	.....
	<b>Total</b> ... ..	<b>36,04,150</b>	<b>2,30,355</b>	<b>1,40,741</b>	<b>89,111</b>
2	<b>PUNJAB.</b>				
	<i>Irrigation.</i>				
	Shahpur Inundation Canals ... ..	2,15,914	90,132	71,979	18,153
	Ghaggar Canals ... ..	6,01,552	8,818	39,877	-36,059
	<b>Total</b> ... ..	<b>8,77,466</b>	<b>98,950</b>	<b>1,11,856</b>	<b>-17,906</b>

## No. III.

are kept during, and to the end of, 1912-1913.

and works under construction.]

Percentage of net revenue on capital outlay.	Revenue Account to end of 1912-13.			Mileage in operation including distributaries.	Irrigated area.	
	Gross revenue.	Maintenance and working.	Net revenue.		1911-12.	1912-13.
	Rs.	Rs.	Rs.	Miles.	Acres.	Acres.
.....	21,92,527	11,76,404	10,16,123	.....	9,085	12,089
1-32	16,31,562	10,24,816	6,06,741	.....	7,867	8,015
0-30	8,62,917	4,56,898	4,06,19	.....	1,985	4,885
0-12	46,87,006	26,58,120	21,28,886	.....	19,887	24,489
3-12	5,83,923	2,88,409	3,00,514	29	4,057	5,496
.....	3,54,982	2,76,028	78,959	24	162	920
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
0-71	9,38,905	5,59,432	3,79,473	53	4,219	6,416
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
26-79	3,00,99,044	74,27,859	2,26,71,685	.....	413,923	463,006
39-65	10,52,716	3,89,254	7,13,62	.....	27,711	27,917
27-53	3,11,51,760	77,66,613	2,38,85,147	.....	471,631	480,928
.....	2,69,806	4,45,079	-1,75,173	[Canal closed.]	.....	.....
.....	18,87,455	21,80,895	-7,43,440	180	.....	.....
.....	16,57,861	25,75,974	-9,16,613	180	.....	.....
.....	3,07,88,321	1,49,70,998	1,57,67,323	1,115	.....	.....
0-30	6,36,357	3,11,788	3,24,569	21	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	3,13,74,678	1,52,22,786	1,60,91,892	1,136	.....	.....
3-09	63,60,867	48,75,038	14,85,829	457	72,177	116,967
.....	1,72,486	1,86,479	-18,993	47	} 4,453	9,735
54-78	2,01,852	2,20,916	-19,064	29		
.....	.....	1,598	-1,528	14		
.....	.....	.....	.....	.....	.....	.....
2-49	67,35,205	52,84,031	14,51,174	547	76,630	120,702
8-40	22,38,293	13,03,835	9,34,458	138	22,806	40,954
.....	73,534	5,75,218	-5,01,684	131	6,593	48,531
.....	23,11,827	18,79,053	4,32,774	269	29,459	89,485

No. of Works.	Minor Works.	Capital outlay direct and indirect to end of 1912-13.	Revenue Account for 1912-13.		
			Gross revenue.	Maintenance and working.	Net revenue.
	MADRAS.	Rs.	Rs.	Rs.	Rs.
	<i>Irrigation.</i>				
	Chembrambakam Tank— Including old irrigation Excluding old irrigation	..... ..... 7,51,798	..... 10,274 44,274	..... 9,242 2,342	..... 51,082 41,932
	Madras water-supply and irrigation extension Project— Including old irrigation Excluding old irrigation	..... ..... 17,60,341	..... 51,643 40,643	..... 17,375 12,677	..... 34,268 23,068
	Palar Anicut System— Including old irrigation Excluding old irrigation	..... ..... 24,19,736	..... 3,19,387 1,94,388	..... 77,621 68,721	..... 2,46,707 1,26,607
	Thadapalle Channel System— Including old irrigation Excluding old irrigation	..... ..... 1,75,524	..... 1,33,912 57,014	..... 18,043 13,535	..... 1,15,819 44,379
	Pelandorai Anicut System— Including old irrigation Excluding old irrigation	..... ..... 6,02,890	..... 45,390 42,390	..... 17,373 17,163	..... 28,077 25,227
	Kalingaroyen Channel System— Including old irrigation Excluding old irrigation	..... ..... 1,77,114	..... 1,36,649 51,649	..... 20,310 15,216	..... 1,16,338 86,433
	Ganjam Minor Rivers— Including old irrigation Excluding old irrigation	..... ..... 2,05,774	..... 1,75,354 80,354	..... 15,450 15,450	..... 1,59,904 64,904
	Sagileru Project— Including old irrigation Excluding old irrigation	..... ..... 4,61,727	..... 20,846 2,834	..... 2,715 2,715	..... 18,231 719
	Muniyeru— Including old irrigation Excluding old irrigation	..... ..... 5,93,627	..... 21,698 19,407	..... 6,787 6,787	..... 14,909 12,620
	Ponnalar Tank Project— Including old irrigation Excluding old irrigation	..... ..... 1,91,378	..... 5,055 5,055	..... 23,062 23,062	..... -18,007 -18,007
	Arankota Channel System— Including old irrigation Excluding old irrigation	..... ..... 1,44,445	..... 40,877 21,877	..... 6,161 5,021	..... 34,716 16,856
	Dondapad Tank— Including old irrigation Excluding old irrigation	..... ..... 1,40,004	..... 523 523	..... 231 231	..... 292 292
	Hajipuram Tank— Including old irrigation Excluding old irrigation	..... ..... 3,08,266	..... 1,207 1,207	..... 17 17	..... 1,190 1,190
	Markapur Tank Project— Including old irrigation Excluding old irrigation	..... ..... 1,20,858	..... 6,288 3,946	..... 1,977 1,977	..... 4,311 1,909
	Atmakur Tank Project— Including old irrigation Excluding old irrigation	..... ..... 1,22,379	..... 1,342 1,342	..... 576 576	..... 460 460
	Yellanur Tank— Including old irrigation Excluding old irrigation	..... ..... 1,85,459	..... ..... .....	..... ..... .....	..... ..... .....
	Siddapur Tank— Including old irrigation Excluding old irrigation	..... ..... 3,48,331	..... ..... .....	..... ..... .....	..... ..... .....
	Berijam Project— Including old irrigation Excluding old irrigation	..... ..... 1,28,566	..... ..... .....	..... 1,335 1,335	..... -1,335 -1,335
	Other Works (15)— Including old irrigation Excluding old irrigation	..... ..... 9,63,141	..... 1,62,975 1,62,975	..... 20,630 20,630	..... 1,42,345 1,42,345
	Total ... { Including old irrigation Excluding old irrigation	..... ..... 98,85,192	..... ..... 11,82,918 7,30,780	..... ..... 2,33,900 2,07,055	..... ..... 9,49,318 5,23,725

Percentage of net revenue on capital outlay.	Revenue Account to end of 1912-13.			Mileage in operation including distributaries.	Irrigated area.	
	Gross revenue.	Maintenance and working.	Net revenue.		1911-12.	1912-13.
	Rs.	Rs.	Rs.		Acres.	Acres.
5-57	12,73,365	1,59,776	11,13,589	12	91,659 9,129	18,069 5,539
1-57	9,72,755	6,31,592	3,41,163	11	9,324 3,414	10,966 4,566
5-19	54,85,644	30,43,456	24,42,189	331	1,02,744 33,781	111,391 41,431
25-28	14,71,078	5,59,671	9,11,507	76	15,698 5,538	5,893 5,673
4-18	3,74,129	7,07,336	1,66,293	64	12,358 10,133	12,169 9,949
20-57	8,82,577	7,31,359	1,51,218	61	22,184 5,534	22,726 6,076
24-42	15,84,205	7,65,653	8,18,552	344	82,350 31,090	76,563 25,603
0-15	51,008	65,036	-14,028	14	4,726 -484	5,304 779
2-13	1,89,142	1,26,992	62,150	67	5,208 4,663	5,300 4,759
	7,791	23,190	-15,408	7	*1,431 *1,431	903 908
11-66	4,55,149	3,51,401	1,03,748	24	5,010 2,270	2,288 2,543
0-21	8,843	9,261	-418	7	495 424	111 111
0-33	1,889	57	1,732	4	†330 †330	152 152
1-69	15,091	6,415	8,646	7	1,747 1,055	1,745 1,053
0-36	1,847	2,543	-1,196	4		449 448
14-78	45,32,276	12,72,188	32,60,088	269	67,258 27,391	72,407 31,216
8-30	1,78,06,284	84,56,461	93,49,823	1,302	352,362 134,712	359,681 140,802

\* Includes 290 acres irrigated in 1910-1911.

† Includes 512 acres irrigated in 1910-1911.

No. of Works.	Minor Works.	Capital outlay direct and indirect to end of 1912-13.	Revenue Account for 1912-13.		
			Gross revenue.	Maintenance and working.	Net revenue.
	<b>MADRAS—continued.</b>	<b>Rs.</b>	<b>Rs.</b>	<b>Rs.</b>	<b>Rs.</b>
	<i>Navigation.</i>				
	Buckingham Canal ... ..	90,10,614	72,585	1,40,930	—68,315
	Ganjam Gopalpur Canal ... ..	1,55,193	82	198	—161
	Vedaramivam Canal ... ..	1,86,432	1,260	9,787	—8,497
	Chilka Lake Canal ... ..	31,027	22	334	—312
	<b>Total</b> ... ..	<b>93,33,566</b>	<b>73,899</b>	<b>1,51,214</b>	<b>—77,315</b>
	<b>Grand Total</b> ... { Including old irrigation ..	.....	12,56,817	3,84,814	8,72,003
	... { Excluding old irrigation ..	1,92,18,753	8,04,679	3,58,269	4,46,410
	<b>BOMBAY.</b>				
	<i>SIND.</i>				
	<i>Irrigation.</i>				
	Sukkur Canal—				
	Including old irrigation ... ..	.....	1,91,827	76,605	1,15,222
	Excluding old irrigation ... ..	14,26,250	1,07,021	63,248	43,773
	Ghar Canal—				
	Including old irrigation ... ..	.....	9,86,888	3,12,527	7,74,361
	Excluding old irrigation ... ..	5,72,386	8,51,976	1,93,696	6,57,690
	Marak Great Canal—				
	Including old irrigation ... ..	.....	1,73,140	55,205	1,17,875
	Excluding old irrigation ... ..	2,15,716	1,13,703	31,960	31,843
	Sarfranzah—				
	Including old irrigation ... ..	.....	62,944	17,790	45,154
	Excluding old irrigation ... ..	1,24,680	44,138	9,999	34,169
	Fuleli—				
	Including old irrigation ... ..	.....	6,23,780	3,72,693	4,51,087
	Excluding old irrigation ... ..	19,84,061	5,79,231	2,56,332	3,22,899
	Sattah Canal—				
	Including old irrigation ... ..	.....	23,049	16,931	9,118
	Excluding old irrigation ... ..	1,60,079	9,904	7,713	2,191
	Hasan Ali Canal—				
	Including old irrigation ... ..	.....	43,351	28,611	19,740
	Excluding old irrigation ... ..	3,04,805	42,435	25,153	17,282
	Alibhar Kacheri Canal—				
	Including old irrigation ... ..	.....	28,995	9,323	19,672
	Excluding old irrigation ... ..	23,917	11,400	57	11,433
	<b>Total</b> ... { Including old irrigation ..	.....	23,41,974	7,89,745	15,52,229
	... { Excluding old irrigation ..	43,32,524	17,69,293	5,88,013	11,71,235
	<b>DECCAN AND GUJARAT.</b>				
	Jamda Canals ... ..	10,41,689	14,646	13,367	1,279
	Paraul Tank ... ..	2,11,995	501	1,063	—567
	Pravara River Works—Ojhar Canal ... ..	3,47,680	21,543	7,829	13,714
	Bhatodi Tank ... ..	3,79,707	3,440	2,993	442
	Shirsuphal Tank ... ..	2,24,563	2,997	1,903	1,089
	Bhadalvadi ... ..	2,27,422	3,652	2,791	861
	Ashti ... ..	8,36,001	23,695	8,250	20,645
	Upper Man River Works ... ..	4,39,233	5,325	1,988	3,337
	Yerla River Irrigation Works ... ..	7,64,370	23,270	6,896	16,374
	Maini Tank ... ..	4,87,650	6,500	2,633	3,367
	Madag ... ..	1,67,593	2,367	2,368	309
	Muchkundi Tank ... ..	1,58,707	1,309	232	1,027
	Gokak Canal, 1st Section, and Storage Works ... ..	9,69,256	66,520	13,737	62,783
	Wangodi Tank ... ..	2,70,043	3,843	4,557	—714
	Tranga Nagrama Tank ... ..	2,79,603	595	2,197	—1,602
	Savli Tank ... ..	2,55,210	1,366	3,673	—2,307
	Sahist Tank ... ..	1,8,029	1,060	3,686	—2,623
	Mhasva Tank ... ..	1,38,956	1,077	3,410	—2,333
	Pethri Tank ... ..	6,41,990	6,949	2,305	4,554
	Other Works (14) ... ..	8,83,908	16,252	10,956	5,296
	<b>Total, Deccan and Gujarat</b> ... ..	<b>89,12,613</b>	<b>2,12,607</b>	<b>96,979</b>	<b>1,15,028</b>
	<b>Total, Bombay</b> ... { Including old irrigation ..	.....	25,54,581	8,86,724	16,67,857
	... { Excluding old irrigation ..	1,37,45,137	10,71,905	6,84,992	12,86,913
	<b>Grand Total</b> ... { Irrigation ... { Including old irrigation ..	.....	56,73,997	18,65,921	38,08,076
	... { Navigation ... { Excluding old irrigation ..	3,94,32,903	46,39,183	16,37,644	30,01,539
	<b>Total</b> ... { Including old irrigation ...	.....	62,97,368	26,41,934	36,55,929
	... { Excluding old irrigation ...	6,48,29,224	52,63,049	24,13,657	28,49,392

In Madras and Bombay considerable areas served by the canal systems are irrigated by old works of the capital cost of which

Percentage of net revenue on capital outlay.	Revenue Account to end of 1912-13.			Mileage in operation including distributaries.	Irrigated area.	
	Gross revenue.	Maintenance and working.	Net revenue.		1911-12.	1912-13.
	Rs.	Rs.	Rs.		Acres.	Acres.
.....	41,94,830	47,28,791	-5,33,961	262	.....	.....
.....	441	4,518	-4,077	.....	.....	.....
.....	28,841	1,85,503	-1,56,662	34	.....	.....
.....	824	24,457	-24,133	8	.....	.....
.....	42,24,436	49,43,269	-7,18,833	304	.....	.....
.....	.....	.....	.....	.....	352,362	359,681
..... 2-32	2,20,30,720	1,33,99,733	86,30,987	1,606	134,712	140,802
.....	.....	.....	.....	.....	68,601	70,222
..... 3-07	46,26,443	23,10,114	23,16,329	130	21,857	23,278
.....	.....	.....	.....	.....	232,118	262,398
..... 114-90	2,63,83,662	74,77,661	1,89,06,001	296	131,245	211,525
.....	.....	.....	.....	.....	66,013	70,755
..... 37-93	26,00,720	8,41,275	17,59,445	171	22,613	27,355
.....	.....	.....	.....	.....	28,433	38,575
..... 27-41	9,79,861	5,29,823	4,60,038	111	17,193	22,340
.....	.....	.....	.....	.....	333,543	387,582
..... 16-27	1,70,00,630	78,24,153	91,76,472	1,015	272,754	276,788
.....	.....	.....	.....	.....	12,416	13,274
..... 1-22	1,07,924	1,01,409	6,515	37	2,875	3,733
.....	.....	.....	.....	.....	16,385	17,330
..... 5-67	3,30,417	1,99,155	1,37,262	95	13,547	15,042
.....	.....	.....	.....	.....	12,533	13,107
..... 47-80	2,55,643	99,943	1,55,705	53	-6,584	-6,010
.....	.....	.....	.....	.....	820,047	868,793
..... 24-24	5,22,91,305	1,93,83,533	3,29,07,767	1,913	525,605	574,051
.....	2,32,858	5,11,317	-2,28,459	114	3,410	4,835
.....	47,938	26,633	21,250	5	1,030	1,080
..... 3-95	2,75,950	3,32,864	-57,514	40	6,496	8,061
.....	1,89,171	1,89,040	131	10	1,156	361
..... 0-12	81,361	83,944	-2,583	12	344	547
.....	87,522	72,527	14,995	10	1,290	1,126
..... 0-48	2,08,703	2,30,186	-21,483	23	3,362	3,763
.....	1,31,230	1,66,413	-35,183	24	1,352	740
..... 0-38	3,89,516	3,02,298	37,218	37	4,591	4,469
.....	1,92,327	1,49,022	43,305	17	1,464	1,561
..... 2-47	91,120	36,506	4,614	9	663	594
.....	12,511	12,443	68	.....	.....	.....
..... 0-65	9,01,333	2,22,567	6,78,766	52	9,641	8,935
.....	27,709	38,622	-10,913	14	3,140	4,761
.....	5,106	22,970	-17,364	8	49	713
.....	12,653	15,747	-3,094	10	.....	2,902
.....	2,652	11,542	-8,990	10	.....	1,422
.....	40,476	48,845	-8,369	7	488	1,036
.....	19,983	12,145	7,838	8	1,392	1,593
..... 0-71	5,20,279	3,75,050	1,45,229	43	3,203	2,925
.....	.....	.....	.....	.....	.....	.....
..... 1-30	34,69,698	29,10,736	5,58,962	459	43,071	51,463
.....	.....	.....	.....	.....	863,118	920,256
..... 9-36	5,57,61,003	2,22,94,274	3,34,66,729	2,372	563,576	625,514
.....	.....	.....	.....	.....	1,316,309	2,001,952
.....	.....	.....	.....	.....	.....	.....
..... 7-61	11,96,61,896	4,93,43,066	7,03,18,830	4,543	1,304,117	1,488,331
.....	3,69,86,569	2,23,56,950	1,46,29,619	1,570	.....	.....
.....	.....	.....	.....	.....	1,816,309	2,001,952
..... 4-39	15,66,43,465	7,17,00,016	8,49,48,449	6,113	1,304,117	1,488,331

there is no record. The percentage of net revenue is therefore based on the recorded capital outlay only."

By order of His Excellency the Right Honourable the Governor in Council,

H. F. BEALE,  
Secretary to Government.