

- (1) பக்கங்களின் எண்ணிக்கை 26
 (2) புதுக்கித் திருப்பிய நாள் செடி - 90
 (3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் 10/9

தமிழ்நாடு ஆவணக் காப்பகம்.

(15)

தமிழ்நாடு அரசு

P. W. D. துறை

அரசாணை எண். மு. கோப்புத் தாள் எண்.	2437	அச்சகம் பலவகை
நாள் :	4 - 9 - 1889	198

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

13. Sheets



ADMINISTRATION REPORT OF
CIVIL WORKS

OF THE

PUBLIC WORKS DEPARTMENT,

GENERAL BRANCH,

BOMBAY PRESIDENCY,

FOR THE YEAR

1888-89.

BOMBAY
PRINTED AT THE GOVERNMENT CENTRAL PRESS

1889.

2437



ADMINISTRATION REPORT OF
CIVIL WORKS

OF THE

PUBLIC WORKS DEPARTMENT,

(GENERAL BRANCH),

BOMBAY PRESIDENCY,

FOR THE YEAR

1888-89.

Bombay.

PRINTED AT THE GOVERNMENT CENTRAL PRESS.

1889.

2437
3

ADMINISTRATION REPORT OF CIVIL WORKS

OF THE

PUBLIC WORKS DEPARTMENT, BOMBAY PRESIDENCY,

(GENERAL BRANCH)

FOR THE YEAR 1888-89.

GENERAL REMARKS.

I. Early in 1887 Government took into consideration the subject of the revision of the Public Works establishments, with a view to economy in expenditure and increased efficiency of administration. Proposals of an important character were formulated, and formed the subject of protracted correspondence with the Government of India. During 1887-88 certain of the changes were carried out, and in the year under report the proposals as a whole, having been sanctioned by the Government of India and the Secretary of State, were carried fully into effect. The subject was dealt with succinctly in an address delivered by His Excellency the Governor, before the Chamber of Commerce on Thursday, 11th April 1889, from which the following is an extract:—

I come next to a department—that of the Public Works—about which you say that its re-organization would alone afford material for an extensive inquiry by qualified experts. You consider that the charges for superintendence of work seem out of all proportion to the actual value of work done, and that under this head a revision with a view to economy is desirable. On that point I can heartily agree with what you say, because your remarks on the subject were followed up by the action which I took, and on which, I am afraid, I shall have to enter into rather minute details. The subject, as you say, is intricate. The Finance Committee really left it alone, and the Government of Bombay, I believe, is the first Government which has taken in hand the question of the superintendence of the Public Works Department. A very able Indian administrator wrote to me quite recently that he himself had found the Public Works a subject on which it was hopeless to have a policy: this shows how extremely difficult the subject is. Our policy was to execute out of the funds at our disposal a maximum of works with a minimum of establishment. In 1862, a little over 26 years ago, the Government of the late Sir Bartle Frere inaugurated a separate Irrigation Department for the Deccan under the presidency of a distinguished officer—Captain (now General) Fife, R. E. Sir Bartle Frere, as well as General Fife, had a large experience of Sind, a country in which the cultivation almost entirely depends on irrigation, and in which water has only to be made available to (within the limits of the capacity of the population) be immediately made use of with avidity. At the time the formation of a separate Irrigation Department was ordered, all the eastern districts of the Deccan and Khândesh were threatened with famine from drought, and the view which presented itself to Government was that, while this was the case, every stream rising in the Western Ghâts had for two months been pouring down such volumes of water, as would have sufficed, if raised to the level of the Eastern plains, to ensure luxuriant crops; the Government further enunciated the view that works which would ensure water during the monsoon months only, would secure very valuable crops in every part of the Deccan, and also that such works could be constructed at a very moderate outlay, on almost every river which is fed from the Western Ghâts. The department so formed grew and extended, as all departments constantly tend to do. In 1887, it consisted of a Chief Engineer and an Assistant, with an establishment of eight separate Executive charges, costing Rs. 3,95,017 per annum, the expenditure for the year being Rs. 6,50,000, and the direct revenue administered by the department being Rs. 3,38,057. Of the expenditure Rs. 4,40,000 was capital outlay on works, then drawing to completion. In the meantime the anticipations as regards the utility of works affording a supply during the monsoon months had been fully tested, with the result that such works were of use in ordinary years, only to a very limited extent, the people being very averse to the extended use of the means of artificial irrigation for the ordinary crops grown at that season. This result is accounted for partly by the expense of manuring and preparing the fields for irrigation, and by the character and distribution of the rainfall, which, in ordinary seasons in most districts, renders artificial irrigation unnecessary, and, the people think, even injurious as respects the staple crop—jowâri. In fact, the experience of the past 25 years may be said to be that a permanent supply of water, affording the means of irrigation all the year round, so as to admit of the more valuable rabi and perennial crops, such as wheat, gram, ground-nut, sugarcane, and garden crops of all kinds, is essential to the success of the works. If the supply is not of this class, the works will not pay even their working expenses, and in ordinary seasons the supply, during the short period it is available, will in most cases run to waste, unutilized. In the earlier years of the existence of the department, money was plentiful, but as years went on, the Government were led more and more to insist on the necessity of regarding

2437
5

result of these reforms, as you have already seen, is an immediate saving of Rs. 2,24,000 per annum, and a prospective saving of Rs. 2,76,000.

It will be observed that the change as respects the system of audit of accounts was at that time still under consideration. It has since been sanctioned, but the subject and economies effected thereby do not pertain to the year now under report.

2. The actual cost of the establishments of all classes during 1888-89 was Rs. 18,79,949 as compared with Rs. 20,91,638 in 1886-87, and Rs. 19,39,361 in 1887-88. In the latter year the changes above referred to in the organisation of the Engineering establishments had, as already stated, been partially effected, and to arrive at the total saving, comparison must be made with the year 1886-87. This shows a total reduction of Rs. 2,11,689 as compared with Rs. 2,07,208, the estimate given in the foregoing extract from the address by His Excellency the Governor. The indication is that if the change in the system of audit proves as economical as is anticipated, the actual prospective saving will exceed the estimates.

3. The total outlay on works and repairs under all heads, including Irrigation, during the year amounted to Rs. 68,11,619, and the establishment charge thus amounted to 27.6 per cent. on the outlay. Omitting the Barrack Department outlay, which necessarily comprises a large share of establishment in proportion to expenditure on supplies, and also omitting Irrigation Establishment and outlay, which must be disregarded unless the revenue is also taken into account, the comparison stands as follows:—

Outlay on works and repairs	Rs.
Cost of establishment	48,66,615
Percentage...	12.44,676
	25.6

4. The department as now constituted is arranged and distributed as follows:—

and distributed as follows.—

Division.	Executive Charges.	Area in square miles.	OUTLAY ON WORKS AND REPAIRS, 1888-89.					Total.
			Provincial, including Contributions.	Imperial.				
				Local.	Military.	Civil Works.		
Chief Engineer, Northern Division.	Executive Engineer, Presidency Architectural, Executive Engineer and Surveyor.	...	5,41,041	222	1,999	44,130	5,87,964	
	Executive Engineer, Military Works, Bombay.	...	12,701	...	5,61,900	78	5,74,679	
	Do. Ahmedabad (including Bagh)	...	2,821	1,22,781	55,251	56,568	3,05,679	
	Do. Surat and Branch	...	3,115	82,460	1,10,821	1,782	2,49,979	
	Do. Kaira and Panch Mahals	...	3,251	58,224	1,25,976	7,708	3,16,685	
	Do. Thana	...	4,542	93,983	81,579	698	1,88,797	
	Total	...	14,339	9,26,140	3,95,754	4,39,608	65,330	
Superintending Engineer, Central Division.	Executive Engineer, Poona and Kichee	...	...	...	...	...	...	
	Do. Poona District	...	1,77,257	6,629	1,32,000	597	3,47,134	
	Do. Poona Irrigation	...	1,17,772	51,094	24,655	368	1,93,887	
	Do. Nizam	...	51	249	3,129	...	3,429	
	Do. Ahmednagar	...	5,919	63,974	46,025	...	1,15,918	
	Do. Khadash	...	6,060	94,069	50,918	...	1,51,047	
	Do. Khedesh	...	9,943	2,54,544	81,916	4,382	3,46,785	
Chief Engineer, Southern Division.	Do. Khedesh Irrigation	...	...	...	...	...	...	
	Do. Sholapur	...	4,321	57,750	50,000	...	1,09,071	
	Total	...	32,417	7,65,402	2,47,741	4,807	10,88,367	
	Executive Engineer, Satara	...	...	...	...	...	...	
	Do. Solapur	...	4,997	1,32,230	60,839	17,908	2,15,974	
	Do. Belgaum	...	6,757	82,642	34,978	...	1,24,377	
	Do. Dhule	...	4,656	2,54,077	32,694	45,032	3,36,459	
Superintending Engineer, Western Division.	Do. Belgaum and Dhule	...	4,534	1,59,621	55,202	500	2,20,857	
	Do. Khamgaon	...	...	...	...	...	...	
	Do. Ratnagiri and Kolaba	...	3,910	1,70,415	9,279	...	1,74,604	
	Do. ...	...	5,418	1,48,854	91,619	...	1,96,291	
	Total	...	39,362	9,21,331	3,05,209	87,715	13,11,130	
	Executive Engineer, Lower and Central Sind	...	...	...	...	...	...	
	Do. Eastern Nara	...	3,509	1,076	738	...	5,223	
Superintending Engineer, Eastern Division.	Do. Hyderabad Canals	...	3,297	1,076	9,645	25,551	1,39,569	
	Do. Karachi Canals	...	3,699	33,985	1,715	...	37,199	
	Do. Ghar Canals	...	3,861	1,39,270	13,969	58,246	1,95,346	
	Do. Dapri Canals	...	3,869	3,638	5,627	...	13,134	
	Do. Shikhar Canals	...	3,514	4,777	4,110	12,987	25,388	
	Do. ...	...	5,709	12,060	11,532	7,623	3,235	
	Total	...	39,329	2,00,450	42,871	90,623	14,888	
Secretariat.	Executive Engineer, Aden	...	...	...	...	...	...	
	Secretary to Government.	...	17,099	6,238	92,747	1,265	1,15,349	
	Under Secretary to Government	...	...	...	...	...	...	
	Add—Outlay incurred by officers in charge, temporary Defence Offices (excluding that on the Defences)	...	...	...	...	...	...	
	Add—Outlay by Civil Officers, and Superintending Engineer	...	...	...	...	...	...	
	Do. ...	...	807	1,02,740	1,000	...	1,04,547	
	Total	...	38,609	2,27,833	10,447	1,271	40,558	

Of the Executive charges, the Poona Irrigation, Nira Canal, Khadash Irrigation and Belgaum and Dhulew Irrigation charges in the Deccan are wholly or almost wholly irrigation charges; in the others, the Executive Engineers supervise the whole work of the department in the several districts, whether Imperial, Irrigation, Provincial or Local.

5. The operations of the year under the heads Imperial Military and Imperial Irrigation are dealt with in separate reports. The present report treats only of Civil Works other than Irrigation, but the foregoing remarks refer to the organization of the department generally.

In India.		Rs.	
Imperial...	...	1,48,824	Imperial and Provincial, Local Funds, Incorporated and Excluded, and Contributions, was Rs. 49,86,292 as per margin.
Provincial ...	...	36,77,266	In round figures the expenditure on New Works was 21 lakhs; on Repairs 18 lakhs; on Establishment 10½ lakhs; and on Tools and Plant ¾ lakhs.
Contributions ...	...	92,761	
Local Funds, Incorporated ...	...	9,54,054	
Local Funds, Excluded ...	...	1,12,497	
Grand Total ...	Rs. 49,86,292		

7. Considerable progress was made in meeting the more urgent requirements of the several districts as regards buildings and roads. A very marked feature of the year's operations was the commencement of a large extension of the Hospital accommodation in Bombay, the cost of which, with the exception of that of the much-needed European General Hospital, is wholly provided by private institutions. Details will be found under the several heads.

II.—CIVIL WORKS.

I.—CIVIL BUILDINGS.

I.—IMPERIAL SERVICES.

8. The expenditure under this head was Rs. 1,48,824, divided as under:—

	Rs.
Original Works	59,531
Repairs	61,965
Establishment	25,935
Tools and Plant	1,393

The works carried out were as follows:—

2.—CUSTOMS.

9. The only work under this head, during the year, was the removal of the old Custom Master's Office at Mahim, and the construction of a new one in its place, at a cost of Rs. 3,059.

3.—SALT.

10. The following buildings for the Salt Department have been completed during the year: A Sir Karkun's Kacheri at Omele; a Custom Kacheri at Maroli, and a Custom Chauki at Versova, all in the Thana Collectorate; the alterations to the covered salt shed at Khadashoda in the Ahmedabad Collectorate, have also been completed.

6.—POST OFFICES.

11. In consequence of the very defective condition of the drainage of the General Post Office, Bombay, the W. C. and soil pipes were removed from the centre of the building, and re-arranged so as to be cut off from the rest of the accommodation as far as possible, the soil pipes being placed outside. The work of constructing joint latrines for the Post and Telegraph Departments in Bombay, described in the last year's report, was completed.

A combined Post and Telegraph Office has also been constructed at Keamari, Karachi.

7.—TELEGRAPHS.

12. Two important buildings in connection with telegraphs were completed during the year, in Bombay, viz., the extension of the Central Telegraph Office, at a cost of Rs. 1,53,172; and the construction of a branch Telegraph Office at Mandvi, at a cost of Rs. 21,569. Both these buildings have been described in previous reports. Certain petty improvements and additions have also been made to the Central Office, Bombay, to the offices at Alahyar ka Tanda and Sukkur, in Sind, and to that at Ormara in the Persian Gulf.

II.—PROVINCIAL SERVICES.

13. The expenditure from Provincial Services and Local Funds and Contributions, under this head (and including the outlay on Forest and Customs buildings) was Rs. 19,26,499, divided as under:—

	Rs.
Original Works	11,19,048
Repairs	3,54,973
Establishment	4,29,195
Tools and Plant	23,283

12.—ADMINISTRATION.

14. Under this head, Mamlatdars' Kacheris, on the standard plan, were completed at Chikodi in the Belgaum, Sangamner and Akola in the Ahmednagar, Jannar and Sakri in the Khandesh, and Dhandhuka in the Ahmedabad Collectorate. Others were in progress at Shahada and Nawapur in Khandesh, and at Kapadvanj in Ahmedabad; and additions and alterations to Mamlatdars' Kacheris are in progress at Taloda in the Khandesh, and have been completed at Thana in the Thana Collectorate. The conversion into Kacheris of the old Treasury building at Dhárwár, and of the Pandall at Wadgaum in the Poona Collectorate, was also carried out.

15. The building for the State and Alienation records, at Poona, alluded to in former reports, has been pushed forward, and the greater part of the superstructure has been completed; besides this, record accommodation has been provided at Olpad in the Surat, and at Roha in the Kolaba Collectorate.

16. A Mahalkhari's Kacheri has been completed at Halol in the Kaira Collectorate.

17. In Sind, besides petty additions and improvements, the only work of importance was a Mukhtyarkari's Kacheri at Bago Tando, which was completed at a cost of Rs. 19,300. Additional record accommodation for the Collector's Kacheri at Karachi, was also in progress.

18. At Bijapur, in connection with the scheme for the adaptation of certain ancient buildings for the requirements of the head-quarter station, the new civil hospital, mentioned in the last report, was completed, and the whole scheme, with the exception of the conversion of the Gajan Mahál gateway into a church, which awaits some of the sanctioned articles of furniture, has been carried out.

19. The only work in connection with Government houses, was the fixing of a new cooking range at Ganesh Khind, and the attachment of the circulating boiler to the hot-water system of the house.

20. The new public offices in progress at Broach have been considerably advanced, and have now nearly attained roof level, and the detached buildings for the Mamlatdar's Treasury, &c., have been completed; the total expenditure to end of the year has been Rs. 37,400, against the estimate of Rs. 53,539.

21. A distillery at Dhulia, which is on a large scale, and which is intended to serve Central Khandesh, is in progress; the total estimated cost is Rs. 1,12,271. The building is being constructed by the liquor contractor, on his own plans, and is approaching completion. It will be connected with the Bombay-Agra road by an approach half a mile long, which is now in progress departmentally.

22. New distillery buildings were also commenced at Surat; the estimated cost is Rs. 77,173. The concreting of the foundations is in progress. The building when completed will contain the following accommodation:—One still shed, 157' x 30'; one fermenting shed, 114' x 12'; one mowra refuse shed, 128½' x 12'; four mowra store-rooms, two, each 55' x 20', and two, each 54' x 20'; an Inspector's office, and guard-room, and quarters for the Inspector and distiller. There is also a boiler-shed 32' x 50', with space for two boilers.

24. At Ahmedabad the alterations, and additions to the distillery, commenced last year, were completed, with the exception of a few minor items.

23. The new bungalow at Sédra for the Political Agent, Mahi Kántha, as described in last year's report, has been completed at a cost of Rs. 20,444; and the district bungalow at Bulsar in the Surat Collectorate is approaching completion.

14.—LAW AND JUSTICE.

25. During the year new Subordinate Judges' Court-houses, on the standard plan, were in progress at Shirpur in the Khandesh, and at Umroth in the Kaira Collectorate; and one at Nadiad, in the Kaira Collectorate, was completed. The old Mamlatdars' Kacheris, at Karjat and Rahuri, in the Ahmednagar Collectorate, were, besides, converted into Court-houses.

26. At Poona, an upper-storied building, containing the Cantonment Magistrate's office and rooms for the Committee and office staff, &c., has been completed. The cost was met from Cantonment funds.

27. The largest undertaking under this head, which has been brought to a state of completion, are the new buildings for the Police Magistrates' Courts at Bombay, fully described in previous reports, and which are now practically completed, at a total cost of Rs. 3,55,522.

15.—ECCLESIASTICAL.

28. St. Mary's Church, Poona, has been completely repaired, at a cost of Rs. 3,170 the new fittings affording accommodation for 718 people.

2437

29. A new building for the Trinity Church, in connection with the Indo-British Institute, is now being constructed from the designs of the Architectural Executive Engineer and Surveyor, in Bombay, the expenditure being met from contributions. It will afford accommodation for 200 seats, and consists of a nave 57' x 30', a chancel 23' x 26', a vestry 13' x 10', a baptistry 14' x 10', and a portico. The building was raised up to a level of about 8' in height, during the year; the expenditure during the year was Rs. 4,873, against the estimate of Rs. 30,719.

30. The Roman Catholic Chapel at Baroda was completed during the year, the total expenditure having been Rs. 15,684.

16.—JAILS.

31. The only work of any importance carried on during the year, was the construction of the Juvenile Reformatory at Yarrowda, near Poona, described in the report for 1884-85, which was practically completed at a cost of Rs. 76,894, which included the cost of an approach road with masonry road dams and drains; the earth work of the road was carried out by the Jail Department.

17.—POLICE.

32. Considerable progress was made with the construction of quarters for the District Police throughout the Presidency. In all, lines for 509 men were completed or in progress. Lines were completed during the year at Haliyal and Supa in the Kánara Collectorate; Chipiún and Guhagar in the Ratnagiri Collectorate; Gadag in the Dhárwár Collectorate; Khanapur in the Belgaum Collectorate; Rahuri in the Ahmednagar; Mahmud and Talwada in the Násik; Navapur in the Khandesh; Dákor and Mahudha in the Kaira Collectorate; and at Bago Tando, Mirpur Batoro and Johi in Sind; and are in progress at Hukeri in the Belgaum; Hungund in the Bijapur; Mukti, Sakri and Shahada in the Khandesh; Halol and Godhra in the Kaira; and Ranpur in the Ahmedabad Collectorate. Police lines for Treasury Guards at Shrigonda, Karjat and Akola in the Ahmednagar, and Niphad in the Násik Collectorate, have been completed; additions and alterations were carried out to the head-quarters of the Town Police at Jacobabad; and 5 pendalls have been constructed for the armed Police at Hyderabad, Sind, at a cost of Rs. 18,856.

33. Lines for the Rewa Kántha Police at Godhra, as well as the Police lines, treasure-room and cells at Pandu, were completed at a total cost of Rs. 11,586, as contribution works.

34. A portion of the Criminal Jail at Sholapur is being converted into Police lines and the work is in progress; Rs. 5,989 having been expended, against the estimate of Rs. 18,336.

35. A Police outpost at Kásegaon in the Sholapur Collectorate has been completed.

36. In Bombay, the only work under this head was the construction of a new Police chaulki on the Erskine Road; another chaulki is shortly to be erected at Byculla, and the site has been purchased for Rs. 6,500.

18.—EDUCATIONAL.

37. The following works in Bombay were carried out, or completed during the year —

The new building for the Elphinstone College and State Records was entirely completed, and wrought iron record shelves for that portion of it, occupied by the State Record office, were commenced.

The work on the east wing of the Cathedral High School, which was resumed last year, was completed; the total cost of the building amounting to Rs. 1,82,721.

The main block of the new Wilson College buildings was completed; as was also the work of filling in the tank in the compound of the David Sassoon Industrial Institution.

Besides the above, the additions to the Veterinary College at Parel, mentioned in last year's report, were completed.

38. The Municipal School at Bijapur, called the Victoria Jubilee School, mentioned in the last year's report, has been completed at a cost of Rs. 6,821. Certain additions and alterations to the subsidiary buildings at the Training College, Dhárwár, have also been completed at an outlay of Rs. 2,873.

39. A Lecture Theatre at the College of Science at Poona is in progress, and the superstructure has been finished. The accommodation of the building, when completed, will consist of a Lecture Hall 42' 9" x 35', a Chemical Laboratory 20' x 35', balance-room, office, and store accommodation. An Observatory for the College of Science, Poona, described in last year's report, was completed at the total expenditure of Rs. 6,565, against the estimated cost of Rs. 7,921. Certain additions and alterations to the work-shops were also carried out.

40. The following buildings for the Poona Convent School are in progress — St. Anne's School, consisting of a School-room 22' x 24', 2 class-rooms 15' x 24' and

12' x 24', and a Teacher's room; also auxiliary buildings consisting of a sick ward, 26' x 18', a dispensary and a linen room, with offices; there is also a small detached building containing bath and store rooms.

41. The residence and school buildings for the Sisters of St. Mary's Home, Poona, described in the report for 1897-88, were in progress. The foundation stone of this building was laid in August 1888, and up to the end of the year the foundations, plinth and superstructure of the ground-floor were completed; the superstructure of the oratory was carried to a height of 15 feet, and the framing for the superstructure, and the roof over the dormitories, erected.

42. The construction of a Gymnasium at Surat is in progress, but only the foundations and plinth have been completed; the building when finished will be 60' x 24', and will cost Rs. 5,268. A Lecture Hall and Laboratory, at a cost of Rs. 11,734, half of which is defrayed by the sons of the late Mr. Tapidas Varjdas, whose name it will bear, is in progress.

43. At Ahmedabad, considerable alterations and additions to the Premchand Roychand Training College, which were described in last year's report, have been completed.

44. Local Fund School Houses are in progress at Mintigaon, and have been completed at Pimpalwandi, Walki, Kanhar, Amdaier, Pimpalgaon (Malvi) Dongurkini, Chanda, Javala, Nighoja and Wagsunda in the Ahmednagar; at Pimpalgaon (Buswunt) in the Nasik; at Gawal in the Khandesh; and at Tarapur in the Thana Collectates.

45. In Sind, a Training College has been commenced at Hyderabad; the building, when complete, will contain accommodation for 35 students, and will be provided with a lecture hall, six class-rooms, dining-rooms, &c. The old Training College has been added to and altered, and the work is practically completed.

19.—MEDICAL.

46. Owing principally to munificent private donations, a considerable extension of the Hospital accommodation in Bombay was undertaken during the year. The following are the particulars of the several donations:—

(1). In January 1888, the Hon'ble Sir Dinshaw Maneckji Petit, Kt., placed at the disposal of Government the sum of Rs. 1,25,000, which, it was decided, with the donor's consent, in July 1888, should be applied to the erection of a Hospital for the treatment of the diseases of women and children, on a site adjoining the Jamsetji Jijibhoy Hospital.

(2). Bai Motlibai, the widow of the late Mr. Manekji Nowroji Wadia, similarly in April 1888, presented the sum of Rs. 1,50,000, together with an extensive and valuable site adjoining the Jamsetji Jijibhoy Hospital, which is to be devoted to the erection of an Obstetric Hospital.

(3). The Trustees of the estate of the late Mr. Bomanji Edulji Allbless placed at the disposal of Government the sum of Rs. 66,000, of which Rs. 60,000, bequeathed by that gentleman, is to be devoted to the erection of an Obstetric Hospital on a site adjoining the Cama Hospital, and Rs. 6,000 contributed by the Trustees themselves and the sons of the late Dadabhoj Edulji Allbless, is to be utilized to meet part of the cost of quarters for the Resident Lady Physicians of both Hospitals. This gift was subsequently further increased by Rs. 6,000, for furniture, and for providing a separate Mortuary for deceased Parsis.

(4). Rs. 30,000 were paid in to the credit of Government by the late Mr. Sorabji Cowasji Powwalla, for the construction, as a contribution work, on a site granted by Government, of a building for the Fort Gratuitous Dispensary.

(5). Mr. Dvarkadas Lalubhai gave a donation of Rs. 10,000 (with Rs. 1,000 in addition for fittings), originally intended for a cholera ward, but which, with the donor's consent, is to be applied to the erection of an out-door Dispensary for women and children, in connection with the Hospitals to be built from the gifts of Sir Dinshaw Maneckji Petit and Bai Motlibai.

(6). Finally, it may be mentioned here, though properly pertaining to the head Education, that at the close of the year, Mr. Framji Dinshaw Petit placed at the disposal of Government a sum of Rs. 75,000 for the purpose of erecting and fitting a Laboratory for scientific medical research in connection with the Grant Medical College, attached to the Jamsetji Jijibhoy Hospital.

The Department was engaged during the year with plans and estimates for each of these schemes, and though the commencement of some was delayed until after the close of the year, the facts are recorded as forming part of the year's operations.

47. These considerable private donations provide very fully for the immediate wants of the City of Bombay, as respects Hospital accommodation generally, but there remains what has been regarded for years as a most pressing requirement—suitable buildings for the European General Hospital. The accommodation at present available for the reception and treatment of the large number of sick Europeans from the Navy, the Shipping, and resident European population, and from a considerable portion of that community residing within reach of the Railway lines up-country, has been provided by adapting certain of the old Barracks in Fort

2437
7

George, and is insufficient and unsuitable. The construction of a new Hospital adapted to requirements has been under consideration for many years. In the year under report a general plan of the new Hospital was, after much discussion, approved, and designs and estimates for the more urgently necessary portions thereof were sanctioned. These include quarters for the Lady Superintendent, Sisters, Nurses and Probationers, and a new Male Hospital.

The foundation stone of the latter building was laid with some ceremony by His Excellency the Governor in February 1889; the nurses' quarters having previously been commenced.

The designs are plain and without attempt at any external embellishment, attention having been given to secure a maximum of accommodation, comfort and convenience, at a minimum of expense.

The new Hospital is situated in the ruins of the old Fort George, and is to be called henceforth, St. George's Hospital.

The Nurses' and Probationers' quarters are to consist of a ground and two upper floors. On the ground floor there will be a sitting-room, a dining-room and an office, and two bed-rooms with bath-rooms, &c. On the first and second floors there will be eight bed-rooms, with bath-rooms attached.

The Lady Superintendent's and Sisters' quarters consist of a ground and an upper floor. The ground floor will contain a sitting-room for the Lady Superintendent, a general sitting-room, a dining-room and an office. The upper floor is to contain a bed-room for the Lady Superintendent, with a bath and dressing-room, and five other bed-rooms with bath-rooms.

The male ward of the hospital is to be 318 ft. 9 in. long, and 118 ft. 9 in. wide. It is to consist of a ground and two upper floors. On the ground floor there are to be three general wards giving accommodation, in the aggregate, for 40 beds, and a special ward for one bed, two rooms for nurses and a dining and reading-room. On the first floor there are to be two wards, each containing 14 beds, and a special ward for one bed, two nurses' rooms, a chapel for religious services, a dining, operating and dark-room, and a general store-room. On the second floor there are to be two wards, each accommodating 14 beds, two smaller wards for special cases, of one bed each, a reading, a dining and a nurses' room. Over the porch there are two large rooms: that on the first floor is to be the Physician's private room, and that on the second floor the Physician's office. Attached to each floor there are bath-rooms, lavatories, &c. In the rear of the hospital there is to be a detached block connected with the main building by a passage, in which accommodation is to be provided for a dispensary and offices, and store-rooms for an apothecary, a steward and an overseer.

There is also to be a detached building, connected with the main building by a passage, in which there will be a cook-room, scullery and a store-room. The whole of the main building is surrounded by corridors, which extend to the blocks on the flanks, containing bath-rooms, &c.

The basement is vaulted, providing a free air space between the floors and the ground. The cook-house and office block are connected with the main hospital by covered passages. There is a main stair-case in the centre of the building, and two lifts are provided, one in the stair-case chamber, and the other at the end of the passage from the cook-house.

The accommodation provided in the wards gives from 120 to 125 square feet, and from 2,160 to 2,958 cubic feet per bed.

The accommodation is liberal but not extravagant; it fulfills sanitary requirements as to superficial area and cubic space, and the building is cheap and more economical than any of the previous projects.

The buildings have been designed by the Architectural Executive Engineer and Surveyor. The sanctioned estimate for the hospital for males amounts to Rs. 4,59,738. Those for the quarters above described, including servants' houses, stables, cook-rooms, water supply and drainage, amount in the aggregate to Rs. 1,09,929. The total expenditure on these works during the year has been Rs. 6,184.

The progress made to end of the year was confined to the Nurses' and Sisters' quarters, but preliminaries, with a view to the vigorous prosecution of the new male hospital in the ensuing year, have been arranged.

48. The foundation stone of the Bai Motlibai Hospital was laid by His Excellency the Governor on 9th March 1889. The site known as the Parsonage at Mazgaon, adjoins the Jamsetji Jijibhoy Hospital. The design for the building was prepared by the Architectural Executive Engineer and Surveyor, and the foundations are now in progress. The extreme length of the building is to be 162 ft. 6 in., and the extreme breadth 128 ft. 3 in. It is to consist of a ground and a first floor, and the central feature is to have an additional floor. The ground floor will contain an entrance hall, porch, and stair-case, two matrons' rooms, two wards for 8, and two for 2 beds each, an operating, microscope, office, linen, dispensary and store rooms. There will also be a detached building containing the necessary offices, &c. On the first floor accommodation for a similar number of beds is provided. The Hospital thus provides for a total of 40 beds; and on the second floor quarters are provided for an Assistant Surgeon. The sanctioned estimate for the main building amounts to Rs. 1,37,657.

49. The construction of a building for the Fort Gratuious Dispensary, funds for which have been furnished by Mr. Sorabji Cowasji Powvalla, was commenced during the year. The building designed by the Executive Engineer, Presidency, is to consist of a ground and first floors. On the ground floor there will be a dispensary and separate waiting rooms with staircases for males and females, and on the upper floor, a consulting room, two examination rooms, and store-rooms, &c. The total outlay on the work to end of the year has been Rs. 7,732, against an estimate of Rs. 31,509.

50. The foundation stone of the Bomanji Edulji Allbless Obstetric Hospital was laid by His Excellency the Governor in February 1889, and the work had made considerable progress by the end of the year. The site adjoins the Cama Hospital. The building has been designed by the Executive Engineer, Presidency, and will contain accommodation for 31 in-door patients, a waiting-room, labour ward, and matrons' quarters. The estimated cost is Rs. 60,176.

51. The need having been felt at the Cama Hospital, for quarters for a Resident Physician, it was resolved that a separate building should be erected on the open ground to the north-west of the Cama Hospital, for the use of the Resident Physicians of the Cama and Allbless Hospitals. The work has been commenced, and will contain accommodation for two Lady Doctors. The cost is to be met as follows:—

Allbless contribution	Rs. 6,000
Saving in Estimate for Female Students' Quarters, being part of sums contributed by Mr. P. H. Cama (Rs. 15,000) and the Bombay Branch of the Countess of Dufferin Fund (Rs. 10,119)	1,996
Balance of Mr. Cama's contribution for the construction of the Cama Hospital	4,803
Grant from the Bombay Branch, Lady Dufferin Fund	5,000
Interest on contribution	535
	<u>18,334</u>

52. Negotiations were in progress for the acquisition of a plot of ground in rear of the Jamsetji Jijibhoy Hospital and adjoining the old Parsonage (now the Modlibai Hospital site) for the erection of the Lady Sakarbai Petit Hospital, and Dvarkadas Lallubhai Dispensary. These have since been completed, but in the year under report no progress was made with the projects beyond preparing plans and estimates for the buildings.

53. The foundation stone of the Franji Dinshaw Petit Laboratory of Scientific Medical Research was laid after the close of the year. An account of the building, &c., will be given in the report for 1889-90.

54. The additions to the subsidiary buildings of the Lunatic Asylum at Ratnagiri, referred to in last year's report, were completed.

55. A ward for the detention of suspected lunatics has been added to the Sassoon Hospital at Poona. It affords accommodation for two male, and two female patients.

56. Dispensaries are in progress at Shirpur, Taloda, Amalner, Savda, Yaval and Dharangoon in the Khândesh, and Kalol in the Kaira Collectorate. They are all on the standard plan, expenditure being limited by the extent to which funds are available. In Sind, a dispensary at Dokri has been completed, and another commenced at Shabdâdpur.

20. MISCELLANEOUS.

57. Additions and alterations to the Hydraulic Press building in Bombay, now occupied by the Government Central Press, described in the last year's report, have been completed during the year, at a total cost of Rs. 50,124; and permanent latrines have been added for the employés of the Central Press.

58. Additions and alterations to the Executive Engineer's Office, Ahmedabad, which were in progress last year, have been completed.

59. The work of dismantling and rebuilding the granary at the Experimental Farm, Bhadgaon, is in progress. The old granary was badly founded, and when special repairs were called for, was found not worth repairing. A new granary of similar size, 73 x 39', was sanctioned instead, and is being built on a better site. The amount of the estimate is Rs. 4,000, and the expenditure during the year Rs. 1,180.

H.—COMMUNICATIONS.

60. The total outlay on communications was Rs. 26,39,675 divided as under:—

Original Works	Rs. 7,69,669
Repairs	13,22,484
Establishment	5,11,654
Tools and Plant	35,868

I.—ROADS.

61. A map in three sheets is attached, on which are shown the principal lines of roads in progress during the year.

62. The following new roads have been in progress:—

(1). Road from Nipani to Mahalingpur, crossing the West Deccan Railway at Chikodi Road Station, Belgaum Collectorate, 33 miles long.—The 1st section of this road was completed and opened for traffic, and many of the drains and bridges in the 2nd section have been completed also; and the road surface has been murumed, but not yet consolidated for want of rain. Earth-work in the 3rd and 4th sections is in hand. The total expenditure to end of the year has been Rs. 1,95,063, against the estimate of Rs. 3,58,257.

(2). Road from Hukeri to Gokak, Belgaum Collectorate, 18 miles.—This road has been murumed and consolidated, and a paved causeway was half completed; one bridge only being required to complete the road. The total outlay to end of the year has been Rs. 1,66,499 against the estimate of Rs. 2,22,718.

(3). Road from Gokak towards Navalgund, in the Dhârwâr Collectorate, 45 miles; on which satisfactory progress was made.

(4). Road from Salao to Korlai, in the Kolâba Collectorate, 2 miles.—A short local road, on which Rs. 3,249 have been spent during the year, against the estimate of Rs. 5,359.

(5). Road from Pusegaon to Vaduj, Sâtâra Collectorate.—A local road described in last year's report. It was in progress for a portion of the year, when work was suspended for a revision of the estimate.

(6). Road from Ghoda to Ambegaon, Poona Collectorate, 11 miles.—The estimated cost is Rs. 46,849 and the expenditure during the year Rs. 2,035. This road will connect Ghoda, the chief town in the Ambegaon Petha, with Ambegaon, 11 miles distant, and will be a second class murumed road; it traverses a district at present almost wholly devoid of communications; cross drainage will be provided by means of culverts, slab drains and road dams. This road, together with No. 9 (Jamgaon-Kotul road) and No. 11 of paragraph 64, are parts of a scheme for opening up the hilly tracts of country in the north-west of the Poona, and the west of the Ahmednagar districts, inhabited by Kolis and Râmosis, whose condition will, it is hoped, be thereby improved. The works in themselves are intended to afford employment to the people, and will gradually improve the value of their crops and of the Government forests. An annual assignment of Rs. 20,000 has been sanctioned from Provincial Funds, and the Local Boards of the two districts have agreed to contribute Rs. 4,000 in all, annually, for the purpose of carrying out the scheme. The matter has been carefully inquired into, and the project will be systematically carried into effect. The roads on completion will be maintained by the Local Boards.

(7). Feeder road from Khadke via Nevâsa to Belâpur Railway Station, Ahmednagar Collectorate, 24 miles.—The road was nearly completed last year, and some expenditure incurred on it in the year under report; but for want of funds it was not finally completed.

(8). Feeder road from Khosari to Vâmbori, Ahmednagar Collectorate, 6½ miles.—This road was commenced in 1883-84, and very little remains to complete it; the road is open for traffic.

(9). Jamgaon-Kotul road, Ahmednagar Collectorate, 12 miles.—This road was commenced during the year. It is one of the scheme of roads already referred to, for opening out the mountainous country lying between the Nâsik and Poona Collectorates. It connects the two important market towns of Râjur and Kotul, and reduces the distance from Kotul to the G. I. P. Railway, from 54 to 40 miles.

(10). Road between Thâgaon and Pâthardi, Ahmednagar Collectorate, 7½ miles.—A local road. It was in progress last year, but its completion has been delayed for want of funds. It is, however, practicable for carts. The expenditure to end of the year has been Rs. 22,577, against the estimate of Rs. 31,694.

(11). Goldari and Ozar (local) road, in the Peint Taluka of the Nâsik District.—This is simply a country track, and in extension of the Harsul, Thâna and Goldari road. It is being completed piece by piece, according to the grant sanctioned each year.

(12). The Hasteh and Barhe road.—This road is in the Peint Taluka of the Nâsik Collectorate, and is in extension of the line starting from the foot of the Nanashi Ghat, passing via Candole and Hasteh, and is intended to open the forest tract.

(13). Road from Yaval to the river Tâpti, Khândesh Collectorate, 9 miles.—This road is still in progress, and will be completed during the rains of 1889, if possible. It forms part of the road from Bhuseval to Yaval, total length of which is 11 miles. The part from Bhuseval to the Tâpti has been completed separately, and is bridged; the part from the

river to Yával has been finished and is in use for half the length, viz., $4\frac{1}{2}$ miles; most of the earth-work has been completed throughout; the whole length is, or is to be bridged, except at three nálas, where level-crossings are adopted instead. The amount of the estimate is Rs. 75,400, and the expenditure to end of the year, Rs. 53,910.

(14). *Road from Songir to Nandurbár, 4th section, from Ranáta to Nandurbár, Khándesh Collectorate.*—This is a local road, 12 miles in length. It is likely to be completed during the next monsoon, and is in use for half the length. It will complete the connection of Nandurbár with Dhulia, a total distance of 56 miles.

(15). *Dondaicha-Sháhada Road, Khándesh Collectorate.*—A local road, 17 miles long, which is being carried out as funds are available. The work during the year has been confined to making the road passable from Dondaicha to the river Tápti, 8 miles; half of this length is in use and the remaining portion will probably be finished during the next rains. Most of the earth-work beyond the Tápti has been finished.

(16). *Dhulia-Amalner Road, 1st section, Phagna to Chopdai, Khándesh Collectorate.*—A local road, 7 miles long, practically finished, with the exception of consolidation of the latter half, which was hindered for want of rain.

(17). *Dáhanu-Jachár road, in the Thána Collectorate, 26 miles.*—Three additional drains have been constructed on this line, which has been described in previous reports; and the road, with the exception of metal, is nearly completed, and is used for traffic. The work of metalling is in progress.

(18). *Road from Váda to Shirghat, in the Thána Collectorate, 31 miles.*—The earth-work, rock cutting, &c., has been completed for about 16 miles, and about 60 drains and culverts finished. There was a good deal of sickness among the work people in the beginning of the season. The total outlay to end of the year has been Rs. 39,251, against the estimate of Rs. 90,954.

(19). *Road from Chahad Khind to Manori, in the Thána Collectorate, 6 miles.*—The first two miles of this road were opened to traffic in November 1888, and the earthwork to Manori is nearly completed; 14 drains and culverts have been constructed.

(20). *Roads from Kulwa to Belápur, Dháyardar to Utan, Boridi to Gorai, and Malad to Merva.*—Local roads in the Salsette Taluka of the Thána Collectorate. Work was carried out on these roads as far as funds were available. The last two are chiefly over salt marshes, and an unusually high tide showed that the proposed formation of the roads required to be raised.

(21). *Road from Baad to Bibipara, in the Kaira Collectorate.*—This road is completed, with the exception of the bridge over the Vátrak River, which is in progress.

(22). *Road from Bibipara to Modása, via Dhansura.*—The road is a continuation of the Dakor and Baad line, and has been completed, with the exception of one bridge, the superstructure of which has been carried up to springing level. The road is now open for traffic.

(23). *Branch road from Kapadvanj to Sunda, Kaira Collectorate, $7\frac{1}{2}$ miles.*—This road was commenced before the close of the year, principally for the purpose of affording employment in case of distress arising from the previous season of drought in this portion of Gujarat. It is $7\frac{1}{2}$ miles in length, and forms the connecting link between the road running northwards to Modása via Baad, Bibipara and Dhansura, and that joining Kapadvanj with the Railway at Dakor. This link has been hitherto left untouched as it was uncertain whether the traffic would follow the direct route to the railway south of Sunda, or follow that via the town of Kapadvanj. The road is to be embanked, bridged and metalled, and is estimated to cost Rs. 34,726.

(24). *Road from Viramgaon to Hansalpur, Ahmedabad Collectorate.*—A local road, about 2 miles long, 20 feet wide. It was commenced last year; the earthwork has been completed.

(25). *Road from Ahmedabad to Bareja, Ahmedabad Collectorate, 11 miles.*—The object of this road is to connect Ahmedabad with the Kaira system of roads at Bareja. It begins at the Dholka road, at a point 1,300 feet from the Jamalpur Gate, and runs in a southerly direction; it is eleven miles long, with a branch from Chandola to Shahallum, nearly one mile long, connecting it with the Astodia Gate of Ahmedabad City. The road is to be 18' wide, with side slopes $1\frac{1}{2}$ to 1', and 24' wide (including side drains) in cutting, and is to be covered with river kunker 12' in width, on a layer of burnt bricks; the necessary waterways will also be provided. During the year a sum of Rs. 6,943 has been expended in making embankments for a length of $2\frac{1}{2}$ miles, with the necessary masonry works. The estimate for the project is Rs. 1,29,500.

63. The following roads have been completed during the year:—

(1). *Yest-Tadwala Road, in the Sholápur Collectorate.*—This road is 8 miles long and metalled throughout. Two culverts, each of 3 spans, 4 slab drains and 13 road drains have been constructed, and catch-water drains and kerbing provided. The road is open to traffic.

(2). *Causeway across the Krishna River, Sátára Collectorate.*—This work is in connection with the feeder road from the town of Karád to the Karád railway station, in the Sátára Collectorate.

(3). *Poona Aulas (local) road.*—The road dams on this road are for the improvement of the made road from Poona to Poad, and have been practically completed at an outlay of Rs. 9,566, against the estimate of Rs. 9,788. The section, Poad to Aulas, on the Ghat, is at present only a country tract.

(4). *South approach to the Godáveri River.*—This work is situated near Toka, in the Ahmednagar Collectorate, on the Toka road. It was commenced in October 1887 and comprises three slopes or stages forming a zigzag; the lower slope only, which gets the greatest scour, is paved; the two upper ones being metalled. It is completed and open for traffic. The approach on the opposite bank, which is of the same design, was begun in 1887 by His Highness the Nizám's Government, but is not completed.

(5). *Babulgaon-Takli (local) Road, Ahmednagar Collectorate.*—The length of this road is $3\frac{1}{2}$ miles, of which $1\frac{1}{2}$ was constructed last year.

(6). *Násik-Dindori and Kalvan Road, Násik Collectorate.*—This is a local line, 44 miles long, and is divided into four sections. The three sections up to the 32nd mile were already completed, with the exception of a few masonry works in sections 1 and 2. The 4th section has now been fully completed, and the road is passable from end to end.

(7). *Road from the Majoora Gate of the city of Surat to the Pársi Tower of Silence at Bhurthana.*—A short line of road on which the expenditure has been Rs. 3,904.

(8). *Road from Godhra to Shera, Panch Maháls.*—The bridges and drains on this road are practically completed, and those on the Godhra-Sunth road will be finished in June 1890.

64. Improvements have been carried out to the following roads:—

(1). *Road from Bagevadi to Bait-Hongal, Belgaum Collectorate, 15 miles.*—A local road, on which the expenditure to end of the year has been Rs. 62,630, against the estimate of Rs. 86,988.

(2). *Palla-Bádami Road, in the Dhárwár Collectorate, 21 miles.*—Improvements to two portions of this road, one between Miraj State (Junior) and Bankápur, $9\frac{1}{2}$ miles long, and the other between Betgiri and Kotmachgi, $11\frac{1}{2}$ miles, were carried out. On the former, three bridges and a culvert were nearly completed, and 2 miles have been metalled. On the latter two crossings have been completed, and 8 miles metalled and finished.

(3). *Road from Navalgund to Annigeri, Dhárwár Collectorate, 11 miles.*—Two drains were completed, and metal collected, spread and partially rolled on miles 7 and 8.

(4). *Second section of the Havanur-Samasgi road, Dhárwár Collectorate.*— $29\frac{1}{2}$ miles long. Satisfactory progress was made with the improvements.

(5). *Road from Hungund to Ilkal, in the Bijápur Collectorate, 8 miles.*—This is an extension of the feeder road from the Bágalkot Railway Station to Hungund, and when completed will benefit the town and trade of Ilkal.

(6). *Road from Sakharpe to Sangameshear, in the Ratnágiri Collectorate, 20 miles.*—The improvements to this road were described in previous years' reports, and have been completed during the year, at an outlay of Rs. 15,974, against the estimate of Rs. 15,984.

(7). *Varandha Ghát Dharmapuri Road, Sátára Collectorate, 46 miles.*—Progress in the improvements of this road was delayed, as the land required for them could not be taken up earlier. The outlay during the year was only Rs. 1,212, against the estimate of Rs. 3,558.

(8). *Road from Karabgaon to Talner, via Nagansur, in the Akalkot State, Sholápur Collectorate.*—A local road 8 miles long. The earthwork has been finished, and the masonry work of drains, &c., are in progress.

(9). *Road from Akalkot to Sholápur (Local).*—The earthwork has been finished and the masonry work is in progress.

(10). *Road from Akalkot to Sangni, Sholápur Collectorate.*—This is a section, 4 miles in length, of the road from Akalkot to Vagdari, 12 miles long. The earthwork on this section has been finished, and masonry work nearly completed.

(11). *Road from Váda to Bhorgiri, in the Poona Collectorate, $15\frac{1}{2}$ miles.*—This road is in the Khed Taluka, and lies in the upper part of the Bhima Valley, extending from Váda to Bhorgiri, at the foot of the Bhímashankar Ghát, a distance of $15\frac{1}{2}$ miles. The road is being re-constructed in order to open up the Forest and Ghát districts, forming the upper part of the valley, as explained under No. 9 of paragraph 51. The work consists in improving gradients and cross-drainage, providing masonry works (principally road dams to nála crossings), and re-forming and covering the road surface with murum. The work will be completed in May 1889.

(12). *Road from Saswad to Jejuri, Poona Collectorate.*—Some small improvements were carried out at a cost of Rs. 2,828.

(13). *Bund Road at Poona.*—The unfinished portion of this work, which was described in the previous year's report, has been completed during the year, the outlay having been Rs. 6,502.

(14). *Stone paving in the bed of the Kot River, near Puntamba, Ahmednagar Collectorate.*—This causeway will be 210 feet long. The walls up and down stream are almost completed, and a portion of the roadway is covered with concrete and stone pavement.

(15). *The Sati-ghat Road, Nasik Collectorate, 5 miles.*—The work of spreading metal, rolling and consolidation was carried out.

(16). *Godhra and Dohad Road, Panch Mahals, 43 miles.*—A special grant of Rs. 50,000 was sanctioned for the improvements of this road. Certain experiments have been made during the rains, on improving the surface, but owing to the scanty rainfall, these were not successful, and gave very little useful information as to the proper treatment of the line. In the case of one or two of the miles, however, it has been found that the treatment adopted has done good, and the road is improved. Other experiments will be made.

(17). *Road from Ahmedabad to Dholka, Ahmedabad Collectorate, 18 miles.*—This road is being raised and metalled. Rs. 30,194 have been spent up to end of the year, against the estimate of Rs. 1,37,913, the expenditure during the year having been Rs. 3,868, which has been spent in completing the line up to the end of mile No. 6, and in finishing the earthwork and collecting materials.

(18). *Road from Dhandhuka to Tagdi, Ahmedabad Collectorate, 6 miles.*—The improvements consist of providing dips and restoring portions of the embankments which were washed away.

65. Metalling has been completed or in progress on the following roads:—

(1). *Four miles of road in British territory, from Odgaon towards Miraj, Belgaum Collectorate.*

(2). *Road from the head of the Phonda Ghat to where it forks to Kolhapur, Belgaum Collectorate.*

(3). *Road from Byadgi to Molibennur, Dhavur Collectorate, 3 miles.*

(4). *Road from Hubli to Sholapur, between Dandur Station road and Hebsur, Dhavur Collectorate.*—The diversion of this road near the Hubli Station was also completed.

(5). *Road from Haligul to Hingannat, Kanara Collectorate, 9 miles in length, leading to the railway station at Alnavar on the South Deccan line.*

(6). *Portion of the Bombay-Agra Road beyond the river Tapi.*—This road enters the district of Khandesh at the Sahyadri range of hills near Chandor, and leaves it at the foot of the Satpadas, length 104½ miles; but for 1½ miles beyond, i.e., to the top of the Bhorgar Ghat, or crest of the Satpadas, in His Highness the Holkar's territory, the road is part of the district charge; total length 106 miles. The road is bridged throughout, except at the crossing of the river Tapi, where ferry boats are used when the river permits. The road is metalled from the Chandor hills to the River Girna, 18 miles, at which latter point it joins the metalled and completely bridged road from Manmad; the mileage onwards is reckoned from Manmad. From the town of Dhulia, the road is metalled as far as the river Tapi, at 80—81 miles; beyond the Tapi all is murrum, except in so far as the work under reference is finished. This work proceeds slowly owing to great scarcity of labourers. The length is 28 miles, of which 12 miles are finished, except that the consolidation of half the width for half the length is imperfect. Another 9 miles are finished, but for half the width only; and collection for all the remainder, except 4 miles, is in progress. This will probably be finished by the end of next rains, and the remaining portion in the following year.

(7). *Dhulia-Surat Road, from Dhulia to Sondwa nala, Khandesh Collectorate.*—3½ miles long, in the Khandesh Collectorate.

(8). *Dhulia-Chalisgaon Road, Khandesh Collectorate, 34 miles.*—The work of metalling was hindered by scarcity of labourers. The road was described in the previous year's reports. Probably 18 miles of full width, and one-half the width for the remainder, will be finished during the next rains, and the whole work in the following year.

(9). *Mhaswad-Dhulia Road, from Dhulia to Fagna, Khandesh Collectorate.*—A local road metalled for 14 miles.

(10). *Songir-Nandurbur Road, from Songir to Dondaicha, Khandesh Collectorate, 23 miles.*—The work of metalling has been practically completed at a total expenditure of Rs. 46,869 against the estimate of Rs. 51,980. Some improvements to road dams are contemplated from the savings on the estimate.

(11). *Road from Bhiwandi to Vada, in the Thana Collectorate, 25 miles.*—The metalling is in progress; and the ford of the Tansa River has been paved.

(12). *Road from Bulsar to Dharampor, in the Surat Collectorate.*—The last 94 miles are being murrumed.

(13). *Wasad and Borsad Road, Kaira Collectorate.*—Work of metalling was completed on miles 5, 6 and 7; the remaining miles will be metalled during the next monsoon.

(14). *Kaira and Sabarmati Road, Kaira Collectorate, 12 miles.*—Materials are being collected for spreading an extra layer of kunker over certain miles.

(15). *Roads within the limits of the Godhra Municipality.*

66. The lining of the Katraj tunnel on the Poona-Satara road has been completed at a cost of Rs. 17,899, against the estimate of Rs. 19,648.

67. An Inspection Bungalow, with out-houses and tools shed, at Amalner, in connection with the Dhulia-Amalner road, is in progress, the expenditure during the year having been Rs. 312, against the estimate of Rs. 3,910.

2.—BRIDGES.

68. In the Belgaum District the timber-topped bridge over the Pandheri River, at Londa, described in last year's report, has well advanced towards completion, the total outlay to the end of the year having been Rs. 13,665, against the estimate of 14,479.

69. In the Kanara Collectorate, the bridge on the Bidrali Nala, on the Sirsi-Shimoga Road, was in progress. The work has been finished to top of piers. The iron girders obtained from England could not, owing to late receipt, be fixed in position. The total outlay to the end of the year has amounted to Rs. 15,691, against the estimate of Rs. 20,559.

70. In the Sholapur District the following bridges have been completed: A bridge of 3 arches, of 15 feet span each, on the Todwell Nala, on the Barsi-Pandharpur local road, in mile No. 20. A bridge of 2 arches, of 20 feet span each, on the Babulgam Nala, on the Barsi Station, Pandharpur local road, in mile No. 24. The construction of both these bridges is of stone and lime masonry, and the foundations are excavated to hard bottom and filled with concrete. The outlay has been Rs. 3,790, and Rs. 4,926, against the estimates of Rs. 3,797, and Rs. 4,939, respectively. A culvert of 3 spans, 10 feet each, has also been constructed on the Ashti Nala of the Barsi Station Pandharpur road, in mile No. 19, the construction being the same as the bridges.

71. The work of improving the crossing across the Degaon Nala on the Sholapur-Pandharpur (local) road has been completed. The crossing is a road dam about 300 feet in length, consisting of two side walls, 2 feet wide; the width of the roadway between the walls is 12 feet, filled in with a layer of 12 inches murrum and 12 inches metal, well rammed, and consolidated. To prevent the water scouring behind the lower wall, an apron of loose boulders is provided in the bed of the nala, 5 feet broad, and 2 feet deep.

72. The bridge over the Indrayani river at Indori, described in the report for 1887-88, has been completed, and handed over to the District Local Board; it was opened for traffic in April 1888.

73. The bridge over the Watruk river, on the Baad-Bibi para road, was in progress. It consists of seven main spans, each 57' 6", and two end spans of 30 feet each. The piers are of brick, and the roadway is to be carried on Warren girders for the main, and rolled iron beams for the end openings. Up to the end of the year, foundations of the eight central piers had been excavated to the required depth, and the excavation of abutments was in hand, and four of the eight piers were filled in with cement. The estimate amounts to Rs. 1,08,254, and the total outlay to end of the year has been Rs. 60,121.

74. The Chinchni bridge of 5 openings of 20 feet each, in the Thana Collectorate, was completed at a cost of Rs. 8,881.

75. The iron bridge over the Dhadhar river, in the Broach Collectorate, described in last year's report, has made progress. Earthwork in approaches has been completed; the whole of the iron-work has been received from England, and the cylinders of abutments and piers have with some difficulty been conveyed to the site, 25 miles from the railway at Broach. A commencement was made with sinking the cylinders, those of the south abutment being put down nearly to full depth, and the first pier was taken in hand at the close of March. The work is progressing satisfactorily, and it is hoped that the bridge will be ready for traffic before the end of next season. Rs. 81,603 have been expended during the year, and the total expenditure to end of the year has amounted to Rs. 84,786, against the estimate of Rs. 1,50,841.

76. During the last monsoon the old groyne at Phedra, in the Dhandhuka Taluka of the Ahmedabad Collectorate, constructed in 1885, about 72 feet long and 6 feet wide, consisting of double teak piles with planking on both sides and earth filling in the interior, was seriously damaged by the action of floods. Special repairs were carried out by removing the damaged portion, and reconstructing the same on the pattern the new groyne.

77. In Sind the following bridges were completed :—

(1.) Road bridge over the Nurwah Canal, a branch of the Begári. This bridge is intended for the road from Jacobabad to Uch; it has a single span, 18 feet, and a roadway, 12 feet.

(2.) Road bridge over the Deharwah, on the road from Ubasra to Kumbrah. It consists of one segmental arch, 30 feet span, with abutments 9 feet high, and roadway 15 feet wide.

(3.) Bridge over the Garknowah, of one segmental arch, 25 feet span, with abutments 10 feet high, from the cleared bed to springing.

And the following is in progress :—

(1.) Road bridge over the Sunwah, a branch of the Begári Canal. This bridge is intended for the road from Udi to Dari; it has a single span of 22 feet, and a roadway of 12 feet.

78. The wood-work of the original wooden bridge over the Fuleli, built in 1856, having become unsound, the piers were replaced by masonry ones, and the girders and platform by iron ones. The former are 27 feet high, measured from the bed of the canal. The height of clear waterway is 9 feet, measured from highest water level to under side of girders, the spans are one of 30 feet, and 2 of 31.6 feet, and the width of roadway is 16 feet. The platform consists of buckled plates supported on 4 longitudinal iron girders. The work also included very heavy pitching to bed and sides of canal, for a distance of 64 feet; the work was commenced in 1887-88, and was completed during the year under review at a total cost of Rs. 11,322.

79. Numerous other small bridges and culverts over canals, which it is not necessary to particularize, were undertaken, and completed during the year.

5.—BOATS, BRIDGES AND FERRIES.

80. The construction of protective works for the Pargaon ferry, Taluka Bhimthadi, Poona Collectorate, has been undertaken. The revetment wall protecting the standards on the right bank having been undermined by floods, the slope of the river bank was cut back to a slope of 2 to 1, and pitched with headers abutting on concrete footings. The work has made fair progress during the year.

81. The Ghoti ferry in Akola Taluka, Ahmednagar Collectorate, which was practically finished last year, has been completed at a total expenditure of Rs. 4,072.

82. A second pontoon has been added to the ferry boat at Bellapur in the Ahmednagar Collectorate.

83. A moveable jetty on the south bank of the Narbada river, at Broach, commenced and described last year, was completed.

6.—ACCOMMODATION FOR TRAVELLERS.

84. A Travellers' Bungalow at Dhulia is in progress, the existing Travellers' Bungalow on the further side of the river Panjhra being badly situated for travellers. The accommodation which is sanctioned consists of a double set of dining and bed-rooms, with dressing and bath-rooms, godowns and the necessary out-houses.

85. In Sind additions and alterations were carried out and completed to the staging bungalow at Jacobabad, and a staging bungalow at Dekri has been commenced.

III.—MISCELLANEOUS PUBLIC IMPROVEMENTS

5.—WATER-SUPPLY.

86. The total outlay under this head was Rs. 2,71,294, divided as under :—

	Rs.
Original works	1,57,338
Repairs	54,706
Establishment	55,854
Tools and Plant	3,402

87. In the Dhárwar Collectorate, at Bhandiwad, improvements to a well estimated to cost Rs. 4,921, were put in hand, and the excavation of the old well shaft has been commenced.

88. Plans and estimates for water-supply projects have been completed for Dhulia and Sâsvad in the Khândesh, Gudgeri in the Belgaum, and Dhârwar in the Dhârwar Collectrates, and for the extension of the Kâs water supply to the Sâtâra camp and Sadar Bazar; and are in progress for Yeola in the Nâsik, and Hubli in the Dhârwar Collectrates, as also for a drainage scheme for the Poona Cantonment.

89. The following works were completed in the Surat Collectorate :—

Improving the tank at Tankaria, at a cost of Rs. 2,994, against the sanctioned estimate of Rs. 4,000, and constructing a weir across the Vanki river near Bulsar, to furnish a supply of water for railway purposes, for which funds were contributed by the B. B. & C. I. Railway Company.

90. Improvements to the Wâsad Tank, Kaira Collectorate, were in progress during the year; about two-thirds of the retaining wall on the west side of the village was completed, and the remaining one-third nearly completed.

91. The work of sinking 4 wells, 10 feet diameter each, in the Mota Talao at Dholera, commenced last year, was completed.

92. A project for water-supply for the city of Ahmedabad, estimated to cost about Rs. 6,00,000, has been prepared and approved by the Municipal Board. The works are to consist of two supply wells each 25 feet in diameter, in the bed of the Sâbarmati river, at about 90 feet from the right bank, at Dadeshwar, from which the water will be raised by steam pumps, and delivered into a high level reservoir close by; from this reservoir it will gravitate to the Dehli Gate of the city, by a 27" main, and from thence the water will be distributed by pipes throughout the city. The supply is calculated at the rate of 10 gallons per head of population, and the distribution service is designed to deliver this quantity in six hours. The average effective head in the pipes in the City will be between 20' x 30'. The head works were commenced on the 9th March 1889, and are now in progress, but the expenditure during the year was trifling.

6.—SEWAGE, INCLUDING DRAINAGE.

93. A sum of Rs. 3,493 was paid during the year to the Municipality of the city of Bombay, for putting up ventilating shafts in connection with the sewers on the new roads on the Esplanade.

94. The drainage channel round the town of Dholka having considerably silted up, an estimate for its thorough clearance was sanctioned by Government, and Rs. 1,000 was allotted as a grant-in-aid towards the work which has nearly been completed.

7.—HARBOURS.

95. The existing wharf at the Whittle Bandar near Dholera having been considerably damaged by the erosion of the bank, a project amounting to Rs. 4,441 for a new earth wharf 900' x 70', with a branch road 810 feet long and 18 feet wide, to connect it with the existing main road from Dholera to Whittle Bandar, was sanctioned by Government, from the Northern Group Port Funds, and the work has been carried out.

8.—LIGHT-HOUSES.

96. The new Light-house on the Vengurla Rocks, described in previous years' reports, has been nearly completed. The lantern ordered from England has yet to be put up, and a few other small items remain to be carried out. The total expenditure to the end of the year has amounted to Rs. 14,717, the estimated cost being Rs. 15,939.

MISCELLANEOUS.

97. The work of clearing and levelling ground in the Arkilla, and for the new Bazar, and in the vicinity of public buildings and residences at Bijapur, and of making certain roads, laying out the streets on the site of the new Bazar, planting trees along the sides of almost all the roads in Bijapur, and other items, as originally sanctioned, have been completed by the extra-mural convict gang located at Bijapur, for the purpose. A supplementary programme of works to be undertaken by the convict gang has been sanctioned, and under this scheme the following works were put in hand during the year, and considerable progress was made with them.

Road from the new Bazar to the Railway station.

Branch road from the above to join the Hippargi road at Khavas Khân's Mahâl.

Road from the Juma Masjid to the Hippargi road.

The total expenditure to the end of the year amounted to Rs. 1,86,251, against the estimate of Rs. 2,00,295.

98. The construction of a pier at Dâbhol, from Excluded Local Funds, was commenced during the year. The pier will be 47' x 15', projecting 40 feet from the wharf wall into the creek, so as to have 8 feet depth of water at low tide, at the furthest end.

99. The diversion of the river Khâri to protect the village of Bhowaldi has been carried out at a cost of Rs. 5,097. The work has been completely successful.

2437
12

No. 1215 A. of 1889.

PUBLIC WORKS DEPARTMENT.
Bombay Castle, 22nd August 1889.

To

THE

*The Secretary to the Government of Madras
Public Works Department
Madras*

SIR,

I have the honor to advise you of the despatch to your address of
4 copies of each of the Administration Reports of Military and Civil Works
of the Public Works Department, General Branch of the Bombay Presidency,
for the year 1888-89.

in library

I have the honor to be,

Sir,

Your most obedient servant,

W. A. S. S. S.

Secretary to Government.

77 25.1.89

878: 7980

(12)

1927.8.89

E.2

43.5.07

1927.8.89

B

Recorded.
Recorded

W.S. 89
Preston
29.8.89

(13)

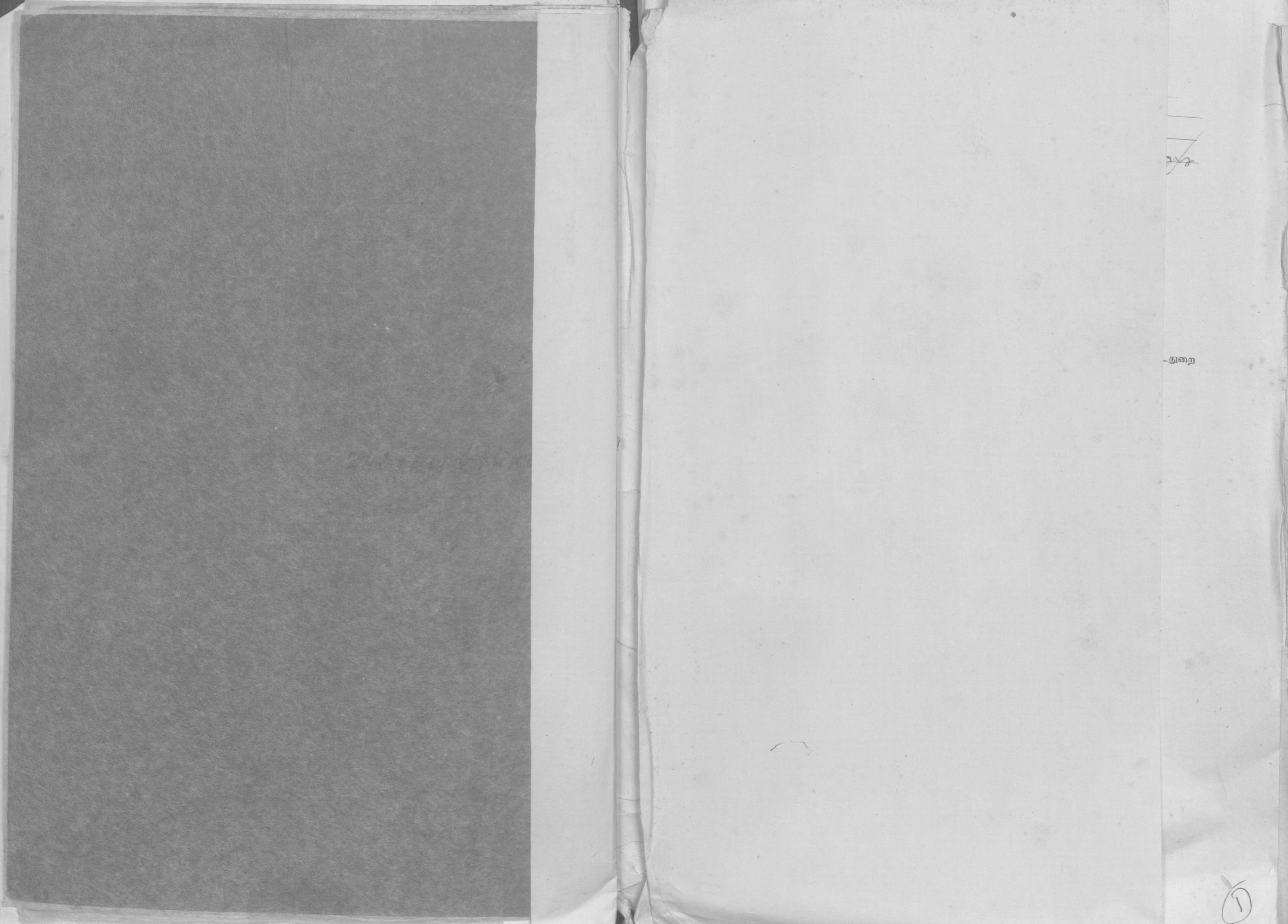
B

0-28-8-89

2437
13

12

11



Handwritten text in Tamil script, possibly a signature or date.

குறை

1