

PROGRESS REPORT

OF THE

CHIEF ENGINEER OF BENGAL,

For 1879-80.

The total expenditure on public works in Bengal during 1879-80 amounted to Rs. 1,26,34,850, as shown below:—

				Rs.
Imperial	...	{ Guaranteed Railways	...	1,98,284
		{ Military and other services	...	4,80,033
		{ Irrigation	...	20,77,661
Provincial	...	{ Buildings and roads	...	33,27,231
		{ Irrigation	...	18,61,208
District road works	...		...	40,69,590
Local	...	{ Buildings and roads	...	3,52,965
		{ Irrigation	...	2,908
Total direct expenditure on works from Public Works Funds				1,23,69,880
Contributions	...		...	1,50,783
Tuccavee outlay	...		...	1,14,187
Total				2,64,970
Grand Total				1,26,34,850

The progress made on public works is reviewed under three separate heads, namely, "Roads, Buildings, and other Public Works," "Irrigation," and "Railways," as these classes of work are entrusted to three distinct branches of the Public Works Department. The present section treats of—

ROADS, BUILDINGS, AND OTHER PUBLIC WORKS.

The outlay on imperial works amounted to Rs. 4,80,033, of which Rs. 33,338 were expended on military works and Rs. 4,46,695 on services other than military.

The military works in progress were all of an unimportant character, and require no special mention. Of the sum of Rs. 33,338 expended, Rs. 10,175 were spent on original works and Rs. 23,163 on repairs.

Of Rs. 4,46,695 expended on services other than military, Rs. 3,28,093 were spent on original works and Rs. 1,18,602 on repairs. Besides the above amounts Rs. 11,254 were expended from contributions on the internal fittings of the museum, and Rs. 116 from the Durbar Fund. The works were, as a rule, of an ordinary character, but the following may be noticed.

A design and estimate were prepared for a new Surveyor-General's office to be erected in Calcutta, and materials were collected to admit of the work being pushed on in 1880-81.

The old lantern of the False Point light-house was removed and replaced by a first-class fixed dioptric light. The work was taken in hand on the 1st of November 1879, and the new light was exhibited on the 1st February 1880.

Rs. 39,39,872
What is the
original sum?
→ See above
Original sum
Rs. 1,26,34,850
or less -
→ Not refer
enced by P.W.D.

Milman memorial window. The memorial window in memory of the late Bishop Milman was received and erected during the year. The memorial brass tablets have still to be received.

Considerable changes were made in the executive charges in consequence of the reduction made by the Government of India in the Engineer establishment and in the number of Superintending Engineers. The Mozufferpore, Presidency, and Ganges and Darjeeling Road divisions were abolished, and were amalgamated with the Patna, Burdwan, and Bhagulpore divisions respectively. On the other hand, the Dinagepore division, which was found to be unworkably large, was divided into two separate charges, now known as the Julpigori division, composed of the districts of Julpigori, Rungpore, Dinagepore, and the Dooars; and the Rajshahye division, formed of the districts of Rajshahye, Bogra, and Pubna. In consequence of the expansion of the workshops on their removal from Hastings to Seebpore, it also became necessary to form them into a separate division. The Calcutta Canals and Nuddea Rivers divisions were transferred from the General to the Irrigation Branch, and the roads and buildings in the Moorshedabad, Midnapore, Sarun, and Chumparun districts were also placed under the engineers of the Irrigation Branch as a matter of convenience and economy; the general control of these works, however, still remaining with the General Branch.

The orders of the Government of India directing the reduction of the number of Superintending Engineers in Bengal from eight to six necessitated the circles in the General Branch being reduced from five to three. To render this reduction possible, certain divisions and works (as already mentioned) were transferred to the charge of the Irrigation Branch, and the remaining works were formed into the three circles shewn below:—

The Central Circle.—Comprising the 1st and 2nd Calcutta, the Burdwan, the Darjeeling, and the Workshop divisions.

The Eastern Circle.—Comprising the Dacca, the Chittagong, the Rajshahye, and the Julpigori divisions.

The Western Circle.—Comprising the Patna, the Hazaribagh, and the Bhagulpore divisions.

The duty of landing and despatching all consignments shipped to Calcutta by the Secretary of State for India was transferred from the Public Works Department to the Agent for Government Transports and Consignments in September 1879.

The outlay on provincial works amounted to Rs. 33,27,231. and was thus distributed over the main heads of expenditure:—

	Rs.
Civil buildings	19,59,125
Communications	12,94,883
Miscellaneous public improvements	73,223

In addition to the above sums the following amounts were expended from contributions received from various sources:—

	Rs.
Land revenue	242
Administration, including Rs. 116 from the Durbar Fund	468
Monuments and antiquities	4,014
Ecclesiastical	637
Educational	57,800
Medical	13,970
Communications	1,575
Miscellaneous public improvements	38,163
Establishment	335

Add—	Total	Rs.
Expenditure disbursed by the Irrigation Branch	22,325	
Contributions to the museum	11,254	
Total expenditure from contributions	1,50,783	

The expenditure incurred on civil buildings for each department of the provincial administration is shewn in the following table:—

	Original works.	Repairs.	Total.
	Rs.	Rs.	Rs.
Land revenue	80,567	49,470	1,30,037
Excise	172	1,596	1,768
Customs	8,266	2,632	10,898
Stamps and stationery	386	232	618
Residence for local Governments	77,743	26,576	1,04,319
Secretariat offices	2,45,815	7,693	2,53,513
Board of Revenue	2,430	267	2,697
Museums	5,899	40	5,939
Monuments and antiquities	159	286	445
High Courts	1,112	5,541	6,653
Small Cause Courts	425	284	709
District Courts	59,735	28,331	88,066
Bishop's Palace	270	7,615	7,885
Churches	7,931	17,773	25,704
Burial grounds	4,985	7,521	12,506
Central jails	64,700	8,038	72,738
District jails	3,02,095	30,153	3,32,248
Lock-up, &c.	5,653	4,109	9,762
Police	21,627	11,239	32,866
Registration	16,495	802	17,297
Colleges	84,076	2,096	86,172
Schools	73,023	25,711	98,734
Hospitals and dispensaries	241	46,273	46,514
Lock-hospitals	9,399	11,365	20,764
Medical colleges and schools	3,582	9,029	12,611
Lunatic asylums	10,004	3,493	13,497
Miscellaneous and general	6,03,044	8,562	6,11,606
Public works	16,38,763	3,20,362	19,59,125

It was mentioned in last year's report that, with the view of facilitating the transaction of public business, it had been decided to locate the whole of the Bengal Secretariat Offices, and the offices of the heads of all departments subordinate to this Government, in one range of buildings on the north side of Dalhousie Square, and that three large wings had been sanctioned and put in hand in rear of Writers' Buildings to provide a portion of the additional accommodation required for this purpose. These three new wings were completed during 1879-80, and were partly occupied; and designs were prepared for a new façade to Writers' Buildings, the construction of which will give some additional accommodation and admit of easy communication between the different departments. The new façade will, it is believed, be effective without being expensive, and will add greatly to the appearance of that portion of Calcutta.

The construction of new first-class jails at Gya and Motihari were sanctioned, materials were collected, and both works were commenced. New third-class jails were also commenced at Chyebassa, Ranchi, and Julpigori, and some progress was made with them. Materials were also collected for the construction of new third-class jails at Bogra and Pubna. The woollen factory at the Bhagulpore Central Jail was completed, certain extensions subsequently ordered were also nearly completed, and the mechanics' quarters were built. Of four new three-storied wards for the Burrisal Jail, one was taken in hand and the work was well advanced. A new three-storied ward was also under construction at Rungpore. Extensive additions, alterations, and improvements to the Mymensingh Jail (estimated to cost about Rs. 85,000) were sanctioned and taken in hand, and about one-fourth of the work was executed and a large quantity of material collected for pushing on the work. Extensive additions and alterations to the Mozufferpore Jail were also taken in hand. The conversion of the stud buildings at Buxar into a central jail was proceeded with, and the work is now nearly complete. Many minor works were also undertaken for the improvement of the jails in the province during the year.

The Madrassa at Dacca was almost completed, and the necessary out-offices were being built. The new east wing to the Patna College was also nearly completed, and the additions and improvements to the west wing were finished; the chemical laboratory for the same college was commenced and three-fourths built. The construction of a new high school at Rungpore was commenced, and the work carried up to plinth level. A new

chemical and physical science lecture hall was built at Kishnaghur, and a new school-house was commenced at Burrisal.

The site for the new obstetric ward for the Calcutta Medical College Hospital was levelled, and materials were collected for carrying on the work; a charitable dispensary was built near the Medical College from funds bequeathed by the late Chooni Lall Seal; and a constant supply of water was laid on to the small-pox ward of the Campbell Hospital, Sealdah.

A new floating landing-stage was constructed at Prinsep's Ghât, and on completion was made over to the Port Commissioners.

To improve the lighting of the roads on the Maidan, 209 additional gas-lamps were put up; and to improve its drainage, sluices were fixed on the drainage outlet near Prinsep's Ghât; groups of trees were also planted out under the superintendence of Dr. King, the Superintendent of the Botanical Gardens, to give the Maidan a park-like appearance.

The scheme for supplying Darjeeling with water from the springs on the western slopes of Senehal by gravitation through an iron main was successfully carried out to completion. The construction of certain additional works to increase the usefulness of the project was under consideration when the year closed.

The statue of Lord Northbrook by Boehm was erected on the site intended for it opposite the High Court, and was unveiled by Sir Stuart Bayley in September 1879.

A section was taken of the old Brahmaputra river, and the shoals were examined with the view of ascertaining the possibility of keeping the river open for laden traffic throughout the year by works similar to those employed on the Nuddea rivers. The enquiry left little doubt of the practicability of the scheme, and an attempt will be made to work the river next year. Soundings were also taken, and surveys made, of the lower reaches of the Atrai river with a view to deciding whether the river was not susceptible of improvement at a moderate cost: the result of the enquiry was not known when the year closed.

The new site for the Teesta suspension bridge was decided on, and the work put in hand; and the necessary field work for opening out a road from Sevoke to the Teesta bridge was completed.

The embankment of this road was completed to the Assam boundary (36½ miles) and opened for traffic, and the temporary bridging of the first 21 miles of the road was also finished. Twelve ferry-boats were provided and approaches made to the rivers that had not been bridged, and a staging bungalow was constructed at Kownea, the terminus of the Northern Bengal Railway. A combined steamer and Tonga service was established between Kownea and Dhubri for the convenience of passengers proceeding to Assam.

The line for a proposed tramway from opposite Kownea to the river Durlah was surveyed, the alignment was decided on, and the earthwork of the first three miles was in progress when the year closed.

The floods of 1879 were of unusual severity throughout the province. In August the river Ganges rose to an unprecedented height at Dinapore, inundating the station and submerging some miles of the Dinapore and Bankipore road. At the same time the station of Chuprah was partially flooded. The Nuddea rivers were gorged by the flood in the parent stream, and rose rapidly to an extraordinary height; and the embankments on the left bank of the Bhagiruthee gave way, and an immense volume of water was poured over the districts of Moorshedabad and Nuddea through a breach 600 feet in width. Exceptionally heavy rains fell in the Purneah district in the month of September, and it became necessary to cut through the Ganges and Darjeeling provincial road to pass off the water rapidly. In Orissa there were heavy freshets in all the rivers, but more especially in the Mahanuddi and Brahmini; they passed off, however, without doing much damage, except to district roads.

The district roads in Patna, Shahabad, Maldah, Monghyr, Bhagulpore, Nuddea, and Moorshedabad also suffered severely from floods.

The workshops manufactured nearly the whole of the ironwork required by the General Branch of the Public Works Department throughout the province; the divisions in Calcutta were also supplied from the same source with all the woodwork they required; and the mofussil divisions with all that they could not conveniently obtain locally.

The Acra Factory manufactured the bricks, soorkey, and tiles required for building operations in Calcutta as in previous years, and the engineering students went through their practical course of training in the manufacture of bricks and tiles as usual. Additional embankments and sluices were constructed to enable the exhausted brick-fields to be warped up and renewed with Hooghly silt. A series of careful experiments was in progress for testing the relative values of coral, Sylhet, Kutnee, and ghooting limes, but was not completed when the year closed. A quantity of limestone was brought down from Sylhet and burnt to ascertain the cost of manufacturing stone-lime locally. The result shewed that pure lime can be made in Calcutta for about the same cost as ordinary stone-lime can be purchased in the bazar.

The erection of a wrought-iron screw-pile jetty on the Kurnafuli river at Chittagong was completed and made over to the Port authorities there.

A project for draining the city of Moorshedabad, by the construction of open cuts to the Gobra nullah, was prepared and sanctioned, and materials were being manufactured and collected for carrying out the work. The neighbouring town of Berhampore was successfully drained into the same nullah a few years back.

The work on the Nizamut buildings at Moorshedabad was wholly confined to repairs and to minor improvements which need no special notice.

The bridge was kept open for traffic and maintained in a thoroughly efficient state, and the fitting of powerful winches and steel-wire hawsers on the moveable sections greatly facilitated the opening and closing of the bridge. An experiment was made by the Indian Electric Light Company to light the bridge with electric lights, but the attempt was not a success. The Oriental Gas Company have since erected special gas lamps over the boat openings and the bridge approaches, which have proved most useful. A new ferry steamer was completed and employed on the ferry traffic, and a new tug-steamer arrived from England in January and was set to work before the year closed. This vessel is not only handy as a tug, but is capable of being used as a dredger, and has also a powerful steam fire-engine. No sea-going vessel collided with the bridge during the year, but three inland steamers, four launches, and ninety-eight country and cargo-boats struck the bridge; no injury resulted to the bridge, but 15 boats were reported to have sunk: these accidents were not attended with any loss of life.

The total disbursements on account of district works amounted to Rs. 40,69,590, as shown below:—

	Rs.
Refunds	1,520
General management	2,20,770
Toll collection charges	4,625
Staging bungalows and serais	13,818
Miscellaneous	392
Public Works—	
Original works	12,10,048
Repairs	15,72,908
Establishment (including Rs. 1,200 contributions to public works)	5,39,569
Tools and plant	40,938
	33,63,463
Total expenditure	36,04,588
Supense account	4,65,002
Grand Total disbursements	40,69,590

Of the above amount, Rs. 8,227 only were expended by Public Works officers.

The total amount expended by each District Committee, and the outlay incurred on public works, are given in the accompanying table, and the same information is given for the whole of the districts comprised in each Commissioner's Division :—

Districts.	Total expenditure on public works.	Total outlay.
Rs.	Rs.	
Cess Districts—		
Burdwan	1,35,844	1,63,194
Bankoora	22,307	25,938
Beerbhoom	49,494	51,103
Midnapore	1,68,526	1,99,936
Hooghly and Howrah	1,25,667	1,45,661
24-Pergunnahs	1,24,112	1,34,261
Nuddea	92,280	1,06,365
Jessore	1,03,760	1,16,994
Moorshedabad	86,442	97,278
Dinapore	50,671	59,759
Rajshahye	1,49,295	1,80,515
Rungpore	1,22,137	1,37,313
Bogra	30,977	45,573
Pubna	59,473	69,132
Darjeeling	11,168	48,359
Julpigoree	34,881	48,516
Dacca	92,422	1,26,393
Furzedpore	74,078	90,713
Backergunge	1,36,853	1,52,943
Tipperah	81,727	89,297
Mymensingh	1,06,727	1,36,932
Chittagong	37,864	65,309
Noakholly	29,098	35,161
Patna	89,636	1,13,308
Gya	1,60,451	1,87,578
Shahabad	1,52,560	1,89,625
Mozufferpore	2,02,714	2,40,983
Durbhunga	1,23,366	1,50,084
Sarun	1,18,108	1,34,348
Chumparun	78,139	1,06,293
Monghyr	83,291	90,630
Bhagulpore	94,399	1,10,594
Purneah	89,564	1,14,917
Maldah	85,794	44,084
Cuttack	47,679	58,277
Pooree	17,761	23,966
Balasore	22,976	34,160
Hazaribagh	23,496	25,954
Lohardugga	29,404	44,635
Manbhoom	29,153	31,557
Total	33,23,284	40,27,691
Non-Cess Districts—		
Chittagong Hill Tracts	4,479	5,034
Sonthal Pergunnahs	23,478	25,170
Singbhoom	11,021	11,695
Total	38,978	41,899
GRAND TOTAL	33,62,262	40,69,590
Divisions—		
Burdwan Division	5,01,837	5,85,832
Presidency	4,06,594	4,54,898
Rajshahye and Cooch Behar Division	4,58,602	5,89,167
Dacca Division	4,91,808	5,96,332
Chittagong	71,431	1,05,504
Patna	9,24,974	11,22,218
Bhagulpore	3,25,526	3,85,394
Orissa	88,416	1,16,404
Chota Nagpore	93,074	1,13,841
GRAND TOTAL	33,62,262	40,69,590

The following is a brief account of the principal road-cess works which were in progress in the different districts of Bengal.

A raised metalled and bridged road was under construction from the town of Behar to the Bucktearpore railway station, a distance of 21 miles. The last 5½ miles at the Bucktearpore end of the road passes through a very deeply flooded

country, necessitating heavy bridging and the construction of a causeway across the Panchana river. This section of the work was first taken in hand, the earthwork was all but completed, the bridging was well in hand, and metal was under collection; but the causeway was not commenced. The road, when completed, will be an important railway feeder.

It was decided to metal the roads from Sasseram. *via* Tendon to the Arrah railway station (61 miles), and from Tendon to Doomraon (26 miles), and one-third of the former and two-thirds of the latter work were completed. The Buxar railway station was metalled.

The bridge over the Bya nuddee (5 openings of 35 feet) on the Mozufferpore and Hajeeepore road was completed, and this main line of communication between Patna and Mozufferpore is now bridged throughout from the Ganges to Mozufferpore. Several other large bridges and numerous culverts were constructed, where most required, on the various main lines of road in the district. The new feeder road from Otter to the Maniori station on the Tirhoot State Railway was completed and bridged throughout.

The principal work in this district was the construction of a raised metalled and bridged road from Rampore to Beaulah to the railway station at Nattore, a distance of 30 miles, towards which this Government gave a grant of 1½ lakhs of rupees. The earthwork and smaller bridges were nearly completed; some of the larger portions of the road, and the metal was laid down on the worst portions of the road.

The Bengal portion of the road from Dhubri to the river Teesta, opposite Kownea railway station, was made passable for tongas to facilitate passenger traffic with Assam. Several large bridges were also under construction in this district on different roads.

The feeder road between Bogra and the Sultanpore railway station (26 miles) was in hand, the embankment was raised, the temporary bridges were repaired, several culverts and small bridges were constructed and others were in progress, and the approaches to the large bridges were made.

The construction of the feeder road from Pubna to Sara railway station (14 miles) was in hand; one section was completed and the other was well advanced. An estimate for metalling the road from Belda to Contai (35½ miles) was sanctioned, and the metalling of 9½ miles was in progress. On the Ladashye and Parihatty road an iron girder bridge (3 openings of 30 feet) was constructed, and ten masonry bridges and some culverts were built. Causeways were also being made across the broad flat beds of some of the larger rivers.

The screw-pile girder bridge over the Tonghee river was completed, and the Nurpore to Dacca section (5½ miles) of the road from opposite Goalundo railway station to Dacca was well advanced, as was also the road from Musuydee to Dangah.

Considerable progress was made with the construction of the new embanked road from Alladipore to Furzedpore, a distance of 11 miles; 4½ miles of this road had to be re-aligned, owing to the encroachment of the Pudma.

The earthwork of the Gournadi road (22 miles) was completed, and the bridging was well in hand, and several minor new roads were under construction. Considerable attention was also given to the improvement of the khals and other water courses as channels of communication, as in this district a large part of the trade and passenger traffic is carried on by boats plying on the numerous water-courses.

The new road from Commillah, the head-quarters of the district, to Brahmunberiah (40 miles) was well in hand, and a good deal was done both in earthwork and in bridging.

Tipperah district.

The road from Madhupore to Tangail was severely breached, owing to insufficient waterway having been originally provided, and heavy expenditure was incurred in raising the road and providing the additional waterway required. A great deal was also done in this district in raising, widening, and improving the existing roads.

The bridging of the roads from Secundra to Akra (13 miles) and from Secundra to Luckhisera (15 miles) was completed, and a raised road was constructed between Sheikpoora and Luckhisera (13 miles).

Several timber bridges were constructed on the southern Assam emigration road, and on other important roads in the district.

A wrought-iron screw-pile girder bridge (3 spans of 30 feet) was constructed over the Seetarampore khal.

The works in the remaining districts were of an unimportant character, and consisted principally of repairs to roads and bridges, and the construction of minor works.

The necessity of expending a fair proportion of the road-cess raised in each district on the construction, repair, and improvement of village roads has been repeatedly pressed on the local authorities, and a very marked improvement is now reported in the condition of village communications in nearly all the districts. Nothing does more to bring home to the people the benefits they derive from the road-cess than attention to their village roads. In many instances the money allotted by the committees for village works has been supplemented by funds raised amongst the villagers themselves.

The desirability of planting out trees along the sides of the district roads throughout Bengal was recently urged on the several committees, and a commencement has been made in nearly all the districts. In Mozufferpore and Tipperah a great deal has been done.

The whole of the works in 41 out of the 43 districts in Bengal were carried out by the engineering staff under the District Committees, and in the remaining two districts nearly the whole was so executed, though a small sum was expended by Public Works officers. The inability of the Public Works Superintending Engineers to exercise any sufficient control over works costing annually a third of a crore of rupees, and scattered over the 43 districts of Bengal, in addition to supervising and controlling the expenditure on provincial and imperial works, was noticed in former years; and to remedy this it was stated that special officers would have to be appointed to exercise the requisite professional supervision. The experiment was tried in the Rajshahye and Cooch Behar Commissionership, and the result has been very satisfactory. The districts of the Bhagulpore and Dacca Commissionerships also each asked for a supervising officer with the powers of a Superintending Engineer, but it was not found possible to fill the appointments during the year under review.

MEMORANDUM.

No. 2543E.

FROM T. H. WICKES, Esq.,

Asst. Secy. to the Govt. of Bengal,
P. W. Dept.,To *The Secretary to the Govt. of Madras
in the P. W. D.*

Dated Fort William, the 30th December 1880.

P. W. DEPARTMENT.
(Establishments.)

One copy of the annual progress report of the Provincial Branch of the Public Works Department, Bengal, for the year 1879-80, *is* forwarded herewith for record in the office of *Secretary to the Govt. of Madras in the P. W. D.*

T. H. Wickes

Asst. Secy. to the Govt. of Bengal,
P. W. Dept.

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