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ADMINISTRATION REPORT

OF THE

PUBLIC WORKS DEPARTMENT,

GENERAL AND BUILDINGS AND ROADS BRANCH.

IN THE

MADRAS PRESIDENCY.

FOR THE YEAR

1879-80.



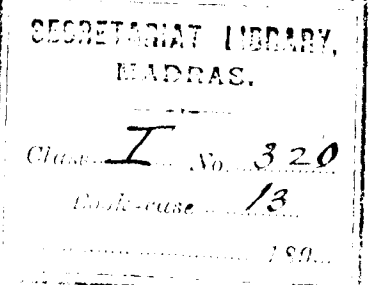
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PRINTED BY E. KEYS, AT THE GOVERNMENT PRESS.

1880

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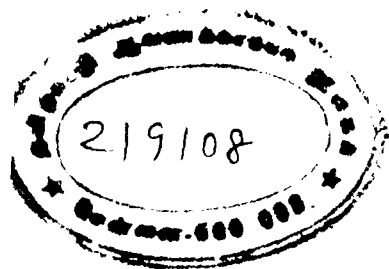
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CONTENTS.

ORIGINAL AND FINAL GRANTS WITH EXPENDITURE—	{PAGE
Imperial	1 & 2
Provincial	3 & 4
 WORKS IN PROGRESS—	
<i>Imperial, Military.</i>	
Presidency	4
Chingleput	4
Nilgiris	4
 <i>Imperial, Other Services.</i>	
Godávari	4
Kistna	4
Presidency	4
Tanjore	5
Nilgiris	5
 <i>Provincial, Productive Public Works.</i>	
Madras Harbour Works	5
 <i>Provincial, Civil Buildings.</i>	
Vizagapatam	5
Godávari	6
Kistna	6
Nellore	6
Cuddapah	6
Kurnool	6
Bellary	6
Presidency	7
North Arcot	7
South Arcot	7
Salem	7
Bangalore	7
Tanjore	7
Nilgiris	7
Malabar	7
Madura	7
Tinnevely	7
 <i>Provincial, Communications.</i>	
Ganjam	7
Vizagapatam	8
Godávari	8
Nellore, Chingleput, Buckingham Canal	8 & 9
Tanjore	9
Coimbatore	9
Nilgiris	9
Provincial, Miscellaneous Public Improvement	9



Special, Civil Buildings.

	PAGE
Vizagapatam	9
Godavari	9
Nellore	9
Chingleput	9
Salem	10
Coimbatore	10
Malabar	10
Canara	10

Special, Communications.

Godavari	10
Tanjore	10

Special, Miscellaneous Public Improvements.

Godavari	10
Kistna	10
Madura	10
Godavari Quarries	10

Workshops.

Dowlaiswaram	10
Bezvada	10
Presidency	10 & 11
Plans and Publications	11 & 12
Tidal Gaugings	12 & 13
Cement Experiment, Kistna	13
Dynamite Experiments, Nilgiris	13
Godavari Coal	13 & 14
Scheme for the Drainage of Black Town, Madras	14
Godavari, Orissa Canal	14
Ports and Harbours of the Madras Presidency	14 & 15
Works suitable for Famine labor	15
Improvements in the Departmental Administration	15 & 16
Alteration in the status of the Examiner, Public Works Accounts	16
History of the Services of Departmental Officers	16
Changes in the strength of the Departmental Establishment and re-arrangement of charges	16—18

APPENDICES.

APPENDIX A	19—21
APPENDIX B	21—25
APPENDIX C	26—30
APPENDIX D	30—33
APPENDIX E	34 & 35

ADMINISTRATION REPORT

OF THE

PUBLIC WORKS DEPARTMENT,

GENERAL AND BUILDINGS AND ROADS BRANCH.

THE general results of the year's working may be gathered from the following tables supplied by the Examiner, Public Works Accounts, showing the original and final grants under the different main heads of service with the outlay as actually incurred against each :—

IMPERIAL.

No. I.

Statement showing Expenditure against Grants for 1879-80.

Heads of Service.	Original Budget Grant.	As modified after issue of Budget Orders.	Expenditure.	EXPENDITURE COMPARED WITH MODIFICATIONS.	
				More.	Less.
Original Works	RS. 4,70,163	RS. 1,17,837	RS. 55,372	RS. ..	RS. 62,465
Repairs	2,89,050	2,76,048	1,94,990	..	81,058
Establishment	1,89,805	1,82,908	1,97,266	14,358	..
Tools and Plant	18,982	16,942	18,980	2,038	..
Profit and Loss	..	..	..	..	..
	9,68,000	5,93,735	4,66,608	16,396	1,43,523
Add outlay on Harbour Works debited to Other Services agreeably to the letter from Accountant-General, Public Works Department, No. 345 G., dated 22nd May 1880	..	1,90,000	5,28,737	3,38,737	..
	9,68,000	7,83,735	9,95,345	3,55,133	1,43,523
<i>Suspense Balance.</i>					
Stock	..	..	..	..	..
Stock purchases and sales	..	..	..	..	..
Miscellaneous advances	..	..	..	..	..
London Invoices	..	..	— 1,792	..	1,792
London Stores	..	..	— 6,676	..	6,676
	9,68,000	7,83,735	9,86,877	3,55,133	1,51,991
Less Expenditure in England	..	..	11,458	..	..
	9,68,000	7,83,735	9,75,419	3,55,133	1,51,991
Net Excess	..	..	..	2,03,142	..

NOTE.—The remaining outlay on the Madras Harbour Works, amounting to Rs. 8,50,000, has been charged to Imperial Capital Productive Public Works against a corresponding amount of grant under that head.

IMPERIAL.

No. II.

Classified Expenditure under the different Budget Heads for 1879-80.

Class.	Original Works.	Repairs.	Total.
	RS.	RS.	RS.
Military	21,227	1,90,125	2,11,352
Civil Buildings	34,123	4,449	38,572
Communications	...	...	...
Miscellaneous Public Improvements	22	416	438
Total ...	55,372	1,94,990	2,50,362
	Establishment	...	1,97,266
	Tools and Plant	...	18,980
	Profit and Loss	...	...
			4,66,608
Add outlay on Harbour Works			5,28,737
Deduct credits to—			9,95,345
London Invoices		1,792	
London Stores		6,676	
Less Expenditure in England			8,468
			11,458
Grand Total ...			9,75,419

IMPERIAL.

No. III.

Statement showing Expenditure against Grant.

Heads.	Sub-heads.	Original Budget Grant.	Modified Grant.	Outlay.	OUTLAY COMPARED WITH MODIFIED GRANT.	
					More.	Less.
Original Works.	Military	RS. 2,71,440	RS. 72,184	RS. 21,227	RS. ..	RS. 50,957
	Civil Buildings	1,79,380	43,980	34,123	..	9,857
	Communications	..	..	..	..	..
	Miscellaneous Public Improvements	19,343	1,673	22	..	1,651
	Total ..	4,70,163	1,17,837	55,372	..	62,465
Repairs ..	Military	2,75,000	2,61,868	1,90,125	..	71,743
	Civil Buildings	12,050	12,050	4,449	..	7,601
	Communications	..	..	..	..	..
	Miscellaneous Public Improvements	2,000	2,130	416	..	1,714
	Total ..	2,89,050	2,76,048	1,94,990	..	81,058
	Establishment	1,89,805	1,82,908	1,97,266	14,358	..
	Tools and Plant	18,982	16,942	18,980	2,038	..
	Profit and Loss	..	..	..	..	..
	Decrease of Suspense Balances.	..	..	8,468	..	8,468
	Add outlay on Harbour Works.	9,68,000	5,93,735	4,58,140	16,396	1,51,991
		..	1,90,000	5,28,737	3,38,737	..
	Less expenditure in England ..	9,68,000	7,83,735	9,86,877	3,55,133	1,51,991
		..	..	11,458	..	..
		9,68,000	7,83,735	9,75,419	3,55,133	1,51,991
	Net Excess ..	..	..	..	2,03,142	..

PROVINCIAL SERVICES.

No. I.

Statement showing Expenditure against Grant for 1879-80.

Heads of Service.	Original Budget Grant.	As modified after issue of Budget orders.	Expenditure.	EXPENDITURE COMPARED WITH MODIFICATIONS.	
				More.	Less.
	RS.	RS.	RS.	RS.	RS.
Original Works (a)	10,26,845	7,63,677	4,01,815	..	3,61,862
Repairs (b)	3,45,514	3,01,684	1,76,371	..	1,25,313
Establishment (c)	6,64,718	6,92,584	6,33,199	..	59,385
Tools and Plant	13,160	8,549	-2,65,118	..	2,73,667
Profit and Loss	..	..	2,053	2,053	..
Total ..	20,50,237	17,66,494	9,48,320	2,053	8,20,227
Suspense Balances.					
Stock	49,763	54,763	46,343	..	8,420
Stock Purchases and Sales	..	..	-3,221	..	3,221
Miscellaneous Advances	..	..	1,54,022	1,54,022	..
London Stores	..	..	6,017	6,017	..
London Invoices	..	..	-271	..	271
Grand Total ..	21,00,000	18,21,257	11,51,210	1,62,092	8,32,139
Net Saving ..	..	..	..	..	6,70,047

(a) Includes Rs. 50,000 grant-in-aid to Local.

(b) Do. Rs. 50,000 do. do.

(c) Do. Rs. 25,000 do. do.

No. II.

Classified Expenditure under the different Budget Heads for 1879-80.

Class.	Original.	Repairs.	Total.
	RS.	RS.	RS.
Civil Buildings	2,57,946	1,32,964	3,90,910
Communications	43,759	36,327	80,086
Miscellaneous Public Improvements... ..	1,00,110	7,080	1,07,190
	4,01,815	1,76,371	5,78,186
		Establishment ...	6,33,199
		Tools and Plant ...	-2,65,118
		Profit and Loss ...	2,053
			9,48,320
Add increase in balance of Stock	46,343		
Do. do. of Miscellaneous Advances	1,54,022		
Do. do. of London Stores	6,017		
		2,06,382	
Deduct decrease in balance of Stock Purchases and Sales	3,221		
Do. do. London Invoices	271		
		3,492	
			2,02,890
Grand Total ...			11,51,210

ADMINISTRATION REPORT OF THE PUBLIC WORKS DEPARTMENT,

No. III.

Statement showing Expenditure against Grant.

Heads.	Sub-heads.	Original Budget Grant.	Modified Grant.	Outlay.	OUTLAY COMPARED WITH MODIFIED GRANT.	
					More.	Less.
Original Works.	Civil Buildings	RS. 7,86,914	RS. 4,19,436	RS. 2,57,946	..	RS. 1,61,490
	Communications (a)	1,39,931	2,34,990	43,759	..	1,91,231
	Miscellaneous Public Improvements	1,00,000	1,09,251	1,00,110	..	9,141
	Total	10,26,845	7,63,677	4,01,815	..	3,61,862
Repairs ..	Civil Buildings	1,89,410	1,61,057	1,32,964	..	28,093
	Communications (b)	1,54,104	1,32,286	36,327	..	95,959
	Miscellaneous Public Improvements	2,000	8,341	7,080	..	1,261
	Total	3,45,514	3,01,684	1,76,371	..	1,25,313
Establishment (c)		6,64,718	6,92,584	6,33,199	..	59,385
Tools and Plant		13,160	8,549	-2,65,118	..	2,73,667
Profit and Loss		..	..	2,053	2,053	..
Add net increase of suspense balances		49,763	54,763	2,02,890	1,48,127	..
Grand Total		21,00,000	18,21,257	11,51,210	..	6,70,047
Net Saving		..	..	..	..	6,70,047

(a) (b) (c)—*Vide foot-note on page 3.*

IMPERIAL—MILITARY.—The Military Works in progress in the First Circle were not of sufficient importance to call for remarks.

PRESIDENCY.—Improvements to the press-house at the Gunpowder Factory were set in hand in October and completed within the year.

A small outlay was incurred on the Napier, Light-house, and Clive Batteries. The site for the platform for the last mentioned not having been determined, the work was still incomplete.

In Bangalore, which now forms a sub-division of the Presidency Division, racks were provided in the Ordnance Gunpowder Magazine, the drainage of the Native Infantry Lines was proceeding, and several minor new works were completed.

CHINGLEPUT.—The demolition of the east and west wings of the old barracks at Poonamallee was commenced. Work on the new double-storied barracks was suspended with reference to the restrictive orders of the Government of India after an outlay of Rs. 8,000 had been incurred.

NILGIRIS.—The water-supply of the Lawrence Asylum, Ootacamund, was increased, and the service improved with good results. The arrangement of the distribution pipes was found to be defective and the area of the filter beds so small that the steam pump had to be worked daily. The filter area was therefore nearly doubled, and the size of the pipes on the plateau increased so as to remove all difficulties.

IMPERIAL, OTHER SERVICES—GODAVARI.—Quarters for the Postmaster and Runners attached to the Post Office at Dumagudem were constructed, and some alterations to the Telegraph Office at Cocanada carried out.

KISTNA.—The Post Office at Bezvada was stone-floored and the Telegraph Offices at Masulipatam and Bezvada were repaired.

PRESIDENCY.—An outlay of Rs. 7,500 was incurred on the new combined Post and Telegraph Offices, the work of the southern block being brought up to ground

level, but the funds that had been allotted for the work had to be withdrawn under the orders of the Government of India on the general restriction of expenditure.

TANJORE.—A Post Office at Kumbakonam begun in the previous year was completed, and Constables' huts were built at Adirampatnam.

NILGIRIS.—A Post Office on the standard plan was in progress at Cherambadi, South-East Wynaad.

PROVINCIAL, PRODUCTIVE PUBLIC WORKS—MADRAS HARBOUR WORKS.—Between 1st April 1879 and 31st March 1880, the progress made on the Harbour Works was as follows :—

Delay was caused in April and May by the want of diving dresses which were despatched from England much later than they ought to have been and were then overcarried to Calcutta, when they should have been landed at Madras. During the year 2,084 concrete blocks were set in the North Pier, advancing the work by a length of 1,219 lineal feet and making the total length of blockwork on 31st March 2,745 feet. The last 445 feet of the work is built on a curve of 568 feet radius. The forming of the rubble foundation on which the blocks are set was carried on energetically during the year, and 156,511 tons of stone (chiefly laterite) were deposited by the two steam hoppers and by cargo boats.

In the month of July the greatest amount of progress was made when 344 blocks were set, advancing the pier by a length of 207 lineal feet.

The progress at the South Pier was not equal to that at the North, chiefly owing to the want of blocks from a failure in the local supply of cement, and also from a breakdown in the machinery of the Titan Crane. During the year 1,772 blocks were set in the work, advancing the pier by a length of 1,037 lineal feet, and making the total length of blockwork 2,146 feet.

In the rubble base 117,049 tons of stone were deposited by the two steamers and by the cargo boats. This stone was principally quarried at the Pallavaram Hills.

The number of concrete blocks made in the yards was 3,797, (mostly of 27 tons each), and this number would have been greatly increased, if it had not been for the failure in the local cement-supply mentioned above. Were it not for this failure, which could not have been foreseen, each pier would have been advanced between two and three hundred feet further seaward during the year under review.

The total amount of stone quarried and sent down to the works during the year was 350,833 tons.

The total quantity deposited in the rubble bases was 273,560 tons, and the total number of concrete blocks set in the piers was 3,856.

The Harbour piers in November were to some extent tried by a heavy sea for three days, but no injury was sustained beyond the washing away of 700 feet of Railway lines.

In addition to the construction of the Harbour piers the Superintendent, Mr. Thorowgood, carried on heavy protective works to the north to prevent erosion of the coast, and for this purpose 12,885 tons of stone were used.

The protective works will, it is hoped, suffice to prevent further erosive action, which in the year under review was mainly due to a heavy storm in November.

An intercepting sewer was likewise constructed by the Harbour Works staff to keep the new Harbour clear of drainage from the town. It was completed for a length of 4,020 lineal feet in the year. It is built of brick-in-cement based on cement concrete.

The amount expended on the works during the year was Rs. 12,15,582, and the management of the work has been most creditable to the Superintendent, Mr. Thorowgood, and his staff.

PROVINCIAL, CIVIL BUILDINGS—VIZAGAPATAM.—One of the blocks of the District Jail at Vizagapatam was finished and good progress made with another. Further alterations were suggested by the Inspector-General of Jails on his inspection of the building in February 1880, and pending sanction of a revised estimate work was

stopped. At the end of the year a little more than Rs. 10,000 on the estimate of Rs. 23,300 had been expended.

GODAVARI.—Additions to the Collector's Cutcherry at Cocanada were in progress on an estimate of Rs. 31,870. At the close of the year the total outlay amounted to Rs. 12,657.

The Police Station-houses at Chódavaram and Kota were roofed with corrugated iron at a cost of Rs. 4,444 against the estimate of Rs. 3,600, the excess being understood to be represented in part by the value of surplus materials at site.

The District Engineer's office at Dowlaiswaram was completed.

KISTNA.—The guard-room in the Masulipatam Fort was converted into six Police huts at a cost of Rs. 730.

The Subsidiary Jail at Répallé was completed on a revised estimate of Rs. 8,562.

Owing to the want of materials, the alterations and improvements to the Taluk Cutcherry at Gudiváda could not be completed.

The work on the Guntúr District Jail was in progress, but the small outlay Rs. 1,362 against an assignment of Rs. 9,000 is most unsatisfactory.

NELLORE.—The timber and other materials at site having deteriorated, a second revised estimate, amounting to Rs. 34,222, for the Cutcherry at Kanigiri was found necessary. Owing to the want of a competent Overseer the progress made on this work during the year was unsatisfactory.

Additions and improvements to the Nellore Police Office were in progress.

CUDDAPAH.—The main building of the Madanapalle Taluk Cutcherry was finished, and the walls of the cook-room and public latrine were raised to their full height.

Excepting the ryot's shed, the concrete under-foundations for which had been laid, and the Jail latrine, the materials for which had been collected, the Kadiri Cutcherry, estimated to cost Rs. 33,070, was complete at the end of the year.

No progress was made with the Sub-Collector's Cutcherry at Madanapalle, the allotment for which had to be withdrawn under the orders restricting outlay.

KURNOOL.—The Taluk Cutcherry at Koilkuntla was completed and handed over to the Revenue authorities, the outlay from first to last having been Rs. 68,921.

BELLARY.—The Taluk Cutcherry at Anantapur was reroofed at the cost of Rs. 7,700.

PRESIDENCY.—Alterations to the gateway and roads at the Marine Villa (a residence attached to Government House) were executed at a cost of Rs. 2,621.

Good progress was made in constructing contagious disease wards in the General Hospital, all the masonry and nearly the whole of the roofing being completed.

Nurses' quarters, for which an estimate of Rs. 5,170 was sanctioned in October, were also finished.

At the end of the year 1878-79 almost all the work provided for in the revised estimate for converting the old Government Workshops at Chepauk into quarters for the Secretariat and other Public Works Offices, had been completed. What little remained was executed during the year under review.

A machinery store-room in the old Mint buildings was demolished and rebuilt at a cost of Rs. 3,093.

A boundary wall on the west side of Chepauk Park was sanctioned for execution in February 1880; one half of the brick wall was built, and the stone wall and gate pillars were also partly executed at the end of the year.

The superstructure of all four blocks of wards in the new Lying-in Hospital was completed, and that of the central block was raised to the lower story level. Two of the five blocks were roofed in and the fifth block was nearly completed. Outlay on this, as on so many other works, had to be suspended early in the official year owing to the restrictive orders received from the Government of India.

NORTH ARCOT.—A police station-house at Temeri and police huts at the same place were in progress, but could not be completed in consequence of the late receipt of the sanction and the numerous changes in the Public Works establishment.

SOUTH ARCOT.—Some unimportant works, including a police station-house at Kalianore and police huts at Panalur, were in progress, the first of which was completed.

SALEM.—Improvements to the Cutcherry at Tiruchengód were executed.

BANGALORE.—Portions of St. Patrick's Church at Bangalore were reconstructed, but the progress of the work was slow and unsatisfactory.

Twenty-five minor provincial works were completed during the year at the Presidency and in Bangalore.

TANJORE.—A second-class police station-house at Minpessel begun in the previous year was completed.

NILGIRIS.—The Government House at Norwood, Ootacamund, was in progress, but outlay had to be restricted to the immediately necessary work.

A flag-staff, 64 feet in height, was erected at the side of the Council Chamber at Stonehouse.

MALABAR.—A wrought-iron strong room for the Calicut Treasury was completed and handed over to the Civil authorities.

A wall was built round the new Cemetery at Calicut and the ground levelled.

Colonel Lavie's house at Malapuram was being converted into a residence for the Special Assistant Collector.

The Jail Superintendent's quarters at Cannanore were improved, and additions made to them.

The police station-house at Terriut was near completion.

MADURA.—The Taluk Cutcherry at Palni was completed at a slight excess over the estimate of Rs. 25,160.

The Taluk Cutcherry at Periyakulam was rapidly progressing.

The Government building occupied by the Master Attendant, which was under repair, was completed.

Eight police huts at Tirupatúr were constructed at a cost of Rs. 2,336.

The work of underpinning the north-eastern hall of the Madura palace was completed. The total expenditure up to the end of July, when the work was stopped under the orders restricting non-urgent outlay, amounted to Rs. 97,877, of which Rs. 15,055 were expended in the year under review.

TINNEVELLY.—The main wall of the new Jail at Palamcottah and the buildings at the entrance gate were completed.

The construction of the wards was deferred until the revised estimate for the work was sanctioned.

Two Police station-houses, one at Saidaparpanallur and one at Saidunganallur, were completed, and the Travellers' Bungalow at Koilpati was purchased for Rs. 827 for the use of the Sátor Divisional Office.

PROVINCIAL COMMUNICATIONS—GANJAM.—The fourth section of the canal from the Chilka lake to the port of Ganjam has been under execution during the year, and the whole is now complete and opened for traffic. It is navigable for the largest boats in use for six months at all stages of the tide, and for nine months with the tide favoring, while small boats can ply on it throughout the year. The traffic on the canal is fair, but cannot be fully developed till the line has been opened as far as Gopálpur, 12 miles south of the present terminus, Ganjam, when there is every prospect of its taking the great bulk of the traffic, which owing to the want of proper arrangements at Ganjam, and of a communication between that place and the trunk road, has now to be landed and transhipped at Romba on the Chilka lake.

VIZAGAPATAM.—The new Potinghy Ghat was widened to full width for $3\frac{1}{2}$ miles from the foot towards Rodavalsa and other work executed, but on the whole the

progress was slow and unsatisfactory, owing to changes in the department and other causes. As this is the first road suitable for cart traffic which has been undertaken between the coast and the hill tracts of Jeypore and Bustar, its importance can scarcely be overrated; and arrangements for its completion in two or three years have now been decided on.

GODAVARI.—The navigation works at Dumagudem were maintained to the extent of the funds available. The outlay during the year was Rs. 5,994.

NELLORE—CHINGLEPUT—Buckingham Canal.—The net Provincial grant for the Buckingham Canal was Rs. 1,15,892, and the outlay during the year amounted to Rs. 1,03,846. The work carried out in the different sections of the canal was as follows:—

- (1.) *Extension from Vellár or Porto Novo to Paravanar.*—No grant was made in 1879-80 for this section of $6\frac{1}{2}$ miles in length, of which $3\frac{1}{2}$ miles were excavated to within 4 feet, 3 inches of mean sea level in the previous year.
- (2.) *Extension from the Pálár to Merkanum.*—Including backwaters this section slightly exceeds 20 miles and 3 furlongs. Progress on it was somewhat delayed by the floods in November, which filled up the pits. At the end of March 1880, 5 furlongs, 202 yards, were fully completed to 4.50 feet below mean sea level; 3 furlongs completed all but turfing and sectioning; 2 furlongs, 132 yards, excavated to a depth of 1 yard; 3 miles, 7 furlongs, 138 yards, to depths of from 1 to 2 yards; 1 mile and 1 furlong to depths of from 2 to 3 yards; and 6 furlongs to depths of from 3 to 4 yards. Some large sand drifts were also removed.
- (3.) *Deepening the southern canal from the Pálár to the Adyar.*—Nothing was done during the year to this section of $40\frac{1}{2}$ miles in length, 35 miles of which were in 1878-79 deepened to $4\frac{1}{2}$ feet below mean sea level, and made 20 feet wide at the bottom.
- (4.) *Junction Canal from the Adyar to the Kuam river.*—A revised estimate for this section, amounting to Rs. 6,95,791, was sanctioned in April 1880, immediately after the year's close. The outlay during 1879-80, which amounted to Rs. 28,401, was for the adjustment of land compensation, the work in the section adverted to having been finished.
- (5.) *Canal from Pulicat (Coramandel) to Cusbah.*—The excavation of this section was completed, and the canal opened for navigation in 1878; but as the ends of the lake-cuts are constantly silting up, it will be necessary to alter the direction of the channel in this part, and to carry it in the margin instead of within the water-spread of the Pulicat lake.
- (6.) *Improving old Canal from Cusbah to Krishnapatam.*—This section of canal was silted up very much and was for some time during the dry season of 1877 impassable. Work on it was completed before the year under review, as were also.
- (7.) *Canal from Krishnapatam to the Pennér.*
- (8.) *From the Pennér to the Kistna frontier, end of Commamur Canal.*—Various parts of the canal were much injured by the cyclones in May and November. At the beginning of the year the canal was navigable throughout at low tide except at Krishnapatam backwater, Nellatur, Koratur drainages, Pennér island-cut, Ramatheerthum backwater, and Thondaru creek. These places were further damaged by the May cyclone, which breached the banks in Kanuparti, Manur, and Pákala sections, washed the banks of the Ramatheerthum backwater section into the canal, obstructing navigation considerably, and silting up the Pálár and Mannair north approaches. The cyclone of November was accompanied by a storm wave from the sea and a land flood of great severity over much of the canal, chiefly throughout 100 miles to the

north. Great damages were occasioned, the banks being in many places washed away and large portions of the canal filled with silt to such a depth that in many places boats could hardly pass in the highest tides, and at one or two points not at all.

In January, after much of the silt brought in during the November storm had been removed, the Governor of Madras and suite, with a large fleet of boats, proceeded up the canal from Madras to Bezvada on the Kistna river and returned in the following month. The boats employed on this occasion, being all of much less draught than that of the ordinary large cargo boats, no serious interruption was experienced in the journey.

Notwithstanding the drawbacks due to an exceptionally severe season with two cyclones, and others inseparable from an unfinished work, the canal is rapidly growing in popularity with the natives as a means of transport for both passengers and goods, and promises eventually to be a great success.

Revised rules for regulating navigation were introduced in October. During the six months from October to March the tonnage registered amounted to 9,457, the license fees collected to Rs. 9,640, the tolls to Rs. 26,023, or in all Rs. 35,663. For the corresponding period of the past year the receipts had totalled Rs. 12,621, or Rs. 23,042 less. It must be added that the state of the canal and country after the cyclone was not calculated to bring in high traffic receipts, and the foregoing figures are no test of the probable future results, though sufficient to show the favor in which the work is beginning to be held.

The canal was carefully inspected and reported on by the Superintending Engineer (Major Vibart, R.E.) after the cyclone of May, as also again by the Chief Engineer, the northern portion in January, and the southern in March 1880.

TANJORE.—A sum of Rs. 3,232 was expended in clearing and maintaining the Vedarniem Canal.

COIMBATORE.—The improvements carried out on the road from Mettupálaiyam to Kullar during the famine were undertaken with a view to adapt it eventually, if necessary, for a railway, as well as for the better accommodation of the present wheeled traffic. Rs. 13,280 were spent on the road during the year under review in completing culverts and in generally meeting the above objects.

It was finally transferred to the Local Fund Board in January 1880, as with their reduced strength the Public Works Department could no longer attend to its upkeep.

NILGIRI.—A sum of Rs. 2,500 was expended in straightening, widening, and draining the road which runs from Devasholah to Kartairy, and is thence connected with the railway terminus at Mettupálaiyam by the Coonoor Ghât.

PROVINCIAL, MISCELLANEOUS PUBLIC IMPROVEMENT.—No works requiring notice were in progress during the year.

SPECIAL, CIVIL BUILDINGS—VIZAGAPATAM.—Pending the revision of the estimate, with reference to alterations proposed by the Inspector-General of Jails, work on the Hill Jail at Párvatipur was stopped. The outlay at the date of suspension amounted to Rs. 4,240.

GODAVARI.—A new Taluk School-house at Víravásaram was under construction; Rs. 1,380 were spent during the year.

NELLORE.—The Anglo-Vernacular School at Ongole was completed with the exception of flooring and plastering.

CHINGLEPUT.—The Agricultural College at Saidápet, together with a Veterinary Hospital and stables for cattle attacked by contagious diseases, were commenced. The foundation of the latter had to be excavated to a much greater depth than had been estimated for, owing to the badness of the soil for foundations.

SALEM.—A Taluk School-house at Krishnagiri was under construction. The wall were raised all round to their full height.

COIMBATORE.—The improvements which were being carried out to the Udamalpet Taluk School-house were completed at a total cost of Rs. 1,454.

MALABAR.—A school-house for the Anglo-Vernacular School at Chowghat was in progress, and near completion.

CANARA.—The outer wall of the District Jail at Mangalore was under reconstruction.

SPECIAL COMMUNICATIONS—GODAVARI.—An outlay of Rs. 3,464 was debited against the Kovur-Munjair Junction Canal for arrears due, but no work was executed.

TANJORE.—Owing to difficulty experienced in obtaining labor unsatisfactory progress was made in the straight cut in the Calimodu reach of the Vedarniem Canal. At the close of the year only one-fourth of the work was completed.

SPECIAL, MISCELLANEOUS PUBLIC IMPROVEMENTS—GODAVARI.—The quarters for the Superintendent of the Light-house at Vakalapudi were finished at a cost of Rs. 3,804.

KISTNA.—Pending sanction of the original estimate, which was stopped at instance of the Port Officer, no progress was made on the quay wall in the salt creek below the Masulipatam tidal lock.

MADURA.—The dredging works at Pámban were handed over to the Marine Department in the autumn of 1879.

GODAVARI QUARRIES.—The quantity of stone despatched from the Godavari quarries during 1879-80 and the two previous years was as follows:—

Years.	Quantity in Cubic Yards.	
1877-78	21,060	Including building, dressed,
1878-79	27,220	cyclopean, groyne, and
1879-80	20,904	concrete.

DOWLAISHWERAM WORKSHOPS.—The total outlay during the year amounted to Rs. 92,645-9-7, composed of Rs. 43,025-9-0 for new works; Rs. 30,384-6-11 for repairs; Rs. 3,653-7-10, the value of work done for private parties; and Rs. 15,582-1-10 spent on Workshop stores and sundries. The charge for establishment, being 17 per cent. on the value of work turned out, not including stores and purchases, was Rs. 13,680-12-0. The recoveries by bills during the year totalled Rs. 1,00,681-14-8.

BEZVADA WORKSHOPS.—The work turned out consisted chiefly of lock gates, boats, and screw gearing shutters for the head sluices and other works. Repairs to machinery and floating plant were also executed.

PRESIDENCY PUBLIC WORKS STORES AND WORKSHOPS.—The year opened with a balance of stock in the stores valued at Rs. 2,47,914. The receipts obtained during the year amounted to Rs. 2,00,652, making a total of Rs. 4,48,566. The balance on the 31st March 1880 was Rs. 4,00,315, or Rs. 1,52,401 in excess of the opening balance. This increase in stock was caused by divisional officers returning for deposit a large quantity of serviceable stores. The closing balance did not include the value of a number of unserviceable instruments, which it is the practice of the shops to account for numerically until repaired, when they are brought on the stock accounts at their full value.

The receipts were obtained from the following sources:—

	RS.	A.	P.
From London	24,032	13	5
„ Civil Departments	1,376	12	11
„ Military Department	376	6	10
„ Public Works Divisions	1,60,487	11	5
„ Presidency and Public Works Workshops	3,392	5	0
„ Railways	264	4	0
„ Local Market	5,819	14	0
„ Bombay and Calcutta	5,105	0	0

while the issues were as shown below:—

	RS.	A.	P.
To Public Works Divisions	31,440	14	6
„ Presidency and Public Works Workshop	7,634	15	11
„ Dowlaishweram Workshop	3,365	11	3
„ Civil Departments	961	1	9
„ Military Department	496	1	3
„ Native States	2,213	2	6
„ Railways	652	0	0
„ Municipalities	182	0	0
„ Local Fund Boards	322	0	0
„ Private parties	682	14	5

It will thus be seen that the operations of the Store Department are not restricted to the Public Works Department; when articles are required they are obtained from any source available, Government depôts being given the preference. Issues from Stores are made to every department of the State when the articles are in hand. In dealing with Native States, Railways, &c., certain percentages are charged both for Customs and to cover the expenses connected with the receipt, custody, and issue of the stores, and the total sum during the year on this account amounted to Rs. 1,100.

In the Workshops the saw mill and steam hammer were both in working order, and were used with profit, the former almost continuously. In May the Government lime-kilns, attached previously to the Presidency Division, were transferred to the charge of the Superintendent of the Workshops. It is the wish of Government to restrict the manufacture of lime in these kilns to the immediate requirements of departmental work, and the outturn was therefore much less than in previous years, when large quantities of lime not directly required by the works were sold to the public,—a practice which being deemed objectionable has now been prohibited. Efforts were made to reduce the stock of the shops.

The amount received from the State for the operations of the shops reached Rs. 1,68,670, adding to which the value of stores received from various Government Departments the total debit was Rs. 2,03,910. Against this amount there were credits to Government by cash of Rs. 63,366, and by book adjustments of Rs. 1,93,928; consequently the advances from Government were more than repaid by Rs. 53,000. The management of the Presidency Workshops during the past year has been creditable to the Superintendent, Lieutenant Baddeley, R.E.; but here, owing to previous over-manufacture of stock, and in the Stores from the unnecessary accumulations of past years in both plant and raw materials, there is room for effecting great clearances, as the interest now chargeable for surplus stock weights every bill for work done in the shops, and makes them objectionably expensive, while much of the plant now on hand is little better than useless lumber.

Serious efforts are, however, being made to put matters here and in the other departmental Workshops on a better footing.

PLANS AND PUBLICATIONS.—The following is a brief summary of the work turned out by the Lithographic Branch of the Chief Engineer's Office:—

	RS.	A.	P.
General Branch, Public Works Department	3,915	2	6
Irrigation Branch, do.	7,054	9	1
Examiner, Public Works Accounts	168	11	1
Civil Engineering College	605	12	0
Consulting Engineer for Railways	451	12	0
Public Department through Gazette Press	2,795	2	0
Military Department	2,127	6	10
Moochies Work	341	11	2
Clerical work with Accountants	360	0	0

Grand Total value of work turned out ... 17,820 2 8
Deduct Working Expenses ... 10,403 2 0

Balance in favor of the Government Lithographic Department ... 7,417 0 8

Immediately connected with the work of this branch has been also the execution of plans and sections of the ancient monolithic raths at Mavalipuram (commonly known

as the Seven Pagodas) south of Madras, undertaken at the instance of His Grace the Governor.

Mr. Pope, a Draughtsman of the Lithographic Branch, was engaged for six months under the immediate supervision of Mr. Merriman, Assistant Superintendent, Madras Survey, in making the original drawings for this work.

These plans 41 in number are as follow and are now being lithographed.

Mahavellipur.

1. No.	2—Plan and Sections of Pidariamman Ratha (unfinished).
2. " 3	do. of do. do. (do.)
3. " 4	do. of Valaiyankttai do. (do.)
4. " 6	do. of Alaivaykkovil or shore Temple.
5. " 7	do. of Mahishasura Rock and Chamber.
6. " 12	do. { of Dolatsava Mandapum, Sthalasayanawami (Vishnu). Temple and Emberuman Temple in two sheets.
7. " 13	
8. " 14	
9. " 15	do. of Krishna Mandapum.
10. " 16	do. of an unfinished Cave.
11. " 19	do. of Isvara Temple.
12. " 20	do. of Gopis' Churu and Cave.
13. " 21	
14. " 24	do. of Genasa Temple.
15. " 25	do. of a Cave.
16. " 27	do. of Rayalagopuram (unfinished).
17. " 28	do. of Dharmarajas' Throne and Stone Couches.
18. " 31	
19. " 49	
20. " 29	do. of Draupudis' Bath.
21. " 30	do. of an unfinished Cave.
22. " 32	do. of Mahishamardini Mandapum.
23. " 33	—Plan and Elevation of an unfinished Ratha.
24. " 34	—Plan and Sections of Isvara Temple.
25. " 35	do. of Varahaswami (Vishnu) Temple (in 2 sheets).
26. " 37	do. of Draupudis' Ratha.
27. " 39	do. of Arjunas' do.
28. " 41	do. of Nakula and Sahadevas' Ratha.
29. " 42	do. of Bhimas' do.
30. " 43	do. of Dharmarajah's do.
31. " 44	do. of a Cave.
32. " 46	do. of an unfinished Cave.
33. " 47	do. of a ruined Stone Choultry.
34. " 48	do. of Ramanujayyar Mandapum.
35. " 50	do. of Kotikal do.
36. " 51	do. of an unfinished Cave.
37. " 52	do. of a cave.
38. " 53	do. of Gangunda Mandapum.

Salavankuppum.

39. " 1	do. of Idayan Padal Mandapum.
40. " 2	do. of do. do.
41. " 3	do. of Ativanachanda Pallava Mandapum.

Photographs were also, under His Grace's instructions, taken of the sculptured remains of Amaravati on the Kistna river, 19 miles above Bezvada, generally believed to be the most perfect specimens of Buddhist art hitherto discovered in India.

Major Morant, R.E., in the course of the year framed a set of useful hypsometrical tables, which were issued for the use of the department, and for which he received the thanks of Government.

Among other matters of general interest which engaged the attention of the department during the year under review the following may be briefly noticed:—

TIDAL GAUGINGS.—The arrangements for working the self-registering tide gauge at Madras, having failed, attempts were made to work it by means of a long syphon,

but after a careful and thorough trial this scheme had also to be abandoned. Eventually a plan was submitted for working the apparatus by means of a vertical pipe, 7 inches in diameter, fixed under the middle of the pier. This design was, with certain modifications, adopted, and has proved quite successful. Tide gaugings of a less scientific character have been carried on, inside the mouths of all open estuaries along the course of the Buckingham canal, 40 miles south and 198 miles north of Madras, to determine as nearly as possible the precise value of the tidal action on this work, but the registration must go on for some time longer before sufficiently accurate results can be looked for.

On the West Coast it was proposed to establish tide gauging stations at various places in addition to the one at Beypore where a complete set of instruments consisting of the following is at work under the supervision of the Officer of the Survey Department in charge of Tidal and Levelling Operations:—

- 1 Self-registering tide gauge.
- 1 Do. anemometer.
- 1 Do. aneroid barometer.
- 1 Mercurial barometer.
- 1 Rain gauge.

The intention was however ultimately abandoned, it having been pointed out by Captain Baird that the funds available did not admit of more being done in this respect than is already in hand. It was suggested however that the instruments at Paumben and Vizagapatam might with advantage be removed after three or four years to other places, and then Mangalore and perhaps Negapatam might be selected as places of observation. The reduced strength of the Public Works Department, however, does not allow of their undertaking any independent observations of a useful character at present.

CEMENT EXPERIMENTS, KISTNA.—A shed and mill were put up at Bezvada, and experiments with cement were carried out.

DYNAMITE EXPERIMENTS, NILGIRI.—Interesting experiments with dynamite were conducted, proving incontestably the economy of employing this explosive instead of gunpowder in nearly all blasting operations, particularly in "getting" material for road metal in all work connected with the formation of ghât roads, in procuring rough stone for Harbour Works, groynes, &c. The economy in time was, moreover, proved to be no less marked than the saving in cost.

In the first experiments at Ootacamund the rock operated on was the hardest description of hornblende gneiss. The cost was about 1 rupee per cubic yard of rock removed, the rate of gunpowder on the Nilgiri varying from 1½ to 2 rupees per cubic yard.

The experiments had chiefly in view to ascertain—

- (1) the proportion which the mass of rock moved bore to the cube of L.L.R.;
- (2) the proportion of the weight of the rock loosened to the weight of the explosive;
- (3) the proportion of the cube of the L.L.R. to the weight of dynamite employed.

The experiments also included the breaking up of detached rocks both with and without bore-holes, and showing the effects—

- (1) as merely shattering the rock sufficiently for removal;
- (2) as breaking it up for ready conversion into road metal.

The details of these experiments, which were carried on with great care and ability by Major Morant, R.E., form subject of a report now in the press.

GODAVARI COAL.—Experiments made by the Locomotive Superintendent, Madras Railway Company, went to show that the coal from the Singareni field in His Highness the Nizam's Dominions is a good serviceable fuel, the only objection to it being the large quantity of ash which accumulates in the fire-boxes. The consumption per mile run was 33.48 lb. as compared with 24.56 lb. of patent fuel hitherto considered to be the most economical. At the present price of the patent fuel the equivalent

value of Godávri coal as delivered at Madras is estimated at Rs. 15½. The actual cost of a ton of coal as sent from Singareni along about 80 miles of ordinary village roads to Bezvada and thence to Madras by canal boat was Rs. 29½; but it is estimated that by means of a tramway over the first portion the cost may be reduced to Rs. 20 and even less. His Highness the Nizam's Government have been addressed on the subject suggesting that a tramway may be laid and other measures taken to reduce the cost of delivery.

2. Consideration was also at the same time given to raising coal from a field of small area situated on the left or British bank of the Godávri river at a point below Bhadrachalam, which, if successful, would give the fuel the advantage of water-carriage from within a mile of the pit's mouth to either Cocanada or Madras by river and canal. The operations commenced with this object have not as yet sufficiently advanced to afford data for a statement of definite results, but the coal so far as tested does not promise so well as that raised in Singareni field nor again at Lingala, which is some 12 miles above Dumagudem on the Nizam's bank of the Godávri river. For some hitherto-unexplained reason this latter has not as yet been worked by that Government.

SCHEME FOR THE DRAINAGE OF BLACK TOWN, MADRAS.—This scheme worked out by the Municipal Engineer, Mr. Jones, which has as its main object the employment to the utmost extent possible of surface drains, only resorting to closed underground sewers along the three main lines of outfall where open drains would be quite inapplicable, was ordered to have its merits tested by direct application to one or two independent areas. Although insufficiently advanced during the year under review to allow of any definite opinion being expressed as to the soundness of the principle advocated, both as regards efficiency and economy, there is every reason to think that a fair measure of success will be obtained and that a long standing reproach to the town of Madras will be removed by the completion of the scheme.

THE GODAVARI-ORISSA CANAL.—Attention was called to this question by a reference from His Honor the Lieutenant-Governor of Bengal as to the probability of extending a navigable canal from the termination of the projected southern link in Orissa with the view of establishing eventually a complete inland line of communication by canal from Calcutta along the East Coast to Madras. At present when the Mahanaddy is in flood boats can pass from Calcutta to Cuttack, and the Chilka lake from the south end of which a canal 9 miles in length (finished during the late famine) leads as far as Ganjam. The communication between Calcutta and Ganjam may thus be said to be continuous at certain periods and only needs supplementing by one or two links, which are understood to be quite feasible in order to make it so throughout in all seasons of the year. From Madras since the opening of the Buckingham Canal there has been through communication for boats to Cocanada, between which (or rather Samalkót) and Gopálpur, a distance of about 230 miles, no canal at present exists.

No line of tidal canal can be carried round the bluffs which run out to sea immediately south of Vizagapatam, and a high level channel would here therefore have in all probability to be adopted; north again of that place the cutting along the Coast line would be heavy. Again a somewhat heavy cutting would be needed immediately south of Gopálpur. All the rest presents no serious difficulty, but taken as a whole the inquiries instituted went to show that, owing to the extreme improbability of there being either money to devote to so large an undertaking or establishment available for the proper investigation of the project, there would be no immediate necessity for considering seriously any part of the scheme excepting the small link now required, of about 12 miles in length, to join Ganjam with Gopálpur. In all probability this short but important canal will ere long be undertaken.

PORTS AND HARBOURS OF THE MADRAS PRESIDENCY.—In the course of the year the Government of India drew attention to the necessity of devoting most serious consideration and scrutiny of all schemes of land reclamation and the alienation of foreshore lands, so as to prevent as far as possible the growth of impediments to the development of the ports and harbours at any future time when money might be available for such works.

While taking the requisite action in regard to this important subject, it may be observed that generally the growth of the coasting trade by steamers points rather to the need for improving by inexpensive measures the communication by boats between the steamers and the shore at many of the present ports of call (which however are little but open roadsteads), rather than to the construction of any large or expensive harbour works. In fact it would seem that with the construction of the harbour at Madras the necessity for any other similar class of work on the East Coast would be extremely doubtful, and that so far as the coasting trade is concerned steamers and the navigable canals are likely to meet all the requirements of the future.

WORKS SUITABLE FOR FAMINE LABOR.—The importance of this subject is perhaps paramount to any other with which this department has to deal, and it is therefore a subject of the utmost regret that nothing in any practical way could be done throughout the year for framing projects with this object.

To those who are in the least acquainted with irrigation or navigation works, and know the need for devoting almost years of study to the accumulation of sufficiently accurate data on which to base any reliable project of this class, it is needless to say that it is quite out of the question to think of improving schemes when famine has declared itself, or to point in proof of this statement to the failure which has almost without exception attended all such attempts in the past. No position can moreover be more hazardous than for Government to find itself in possession of a number of undigested schemes, as, failing those of a reliable character, they are impelled by necessity to accept such as are ready to hand and available, however certain the inference that works so entered upon must turn out financial failures. There are a number of such undigested projects now on the files of the Chief Engineer's Office, but, particularly since the reduction of the departmental staff, no machinery has been available for thoroughly undertaking the investigation indispensable for their proper completion, and were famine to recur tomorrow it would be difficult to find any thoroughly worked out or reliable projects for execution.

It is necessary that this should be stated plainly, as under the recommendations of the Famine Commission this department is to be held responsible for keeping in reserve a large number of suitable projects ready for execution, and their recommendations will be clearly and absolutely abortive unless the means be found for the framing of such. No amount of professional aid, which might be thrown into the Presidency from other Provinces at the commencement of a famine, would in the least avail to prepare any reliable projects suitable for execution. All such officers can do is to execute those which have been thoroughly worked out previously.

IMPROVEMENT IN THE DEPARTMENTAL ADMINISTRATION.—Owing to the organic changes which had to be introduced in the departmental staff as a consequence of the restriction of expenditure ordered by the Supreme Government, to which matter allusion will be presently made, the circumstances of the last year were in many respects unfavorable to the introduction of improvements in administration; still it is believed that a foundation has been laid for such, and that the changes made in the duties assigned to this department in relief from most of the Local Fund work, as also from the petty repairs of Civil buildings, &c., have in many respects been very beneficial.

In regard to the first of these points it may be observed that a commencement was made with the publication of a new Departmental Code, to be followed up by standard forms of account, specifications, and designs, for all ordinary classes of buildings, &c. The Code Committee, presided over by the Hon. Mr. Hudleston, commenced their labors early in the year, and by August the first three chapters had been issued to the department. The work has since then been steadily followed up and may be said now to be complete. The end of Chapter XIII, forming with its index the first and most important volume, leaving in fact the chapter on irrigation as the only one of much practical importance to complete.

In the compilation of this work the principle kept steadily in view has been to adhere rigidly to the arrangement and text of the last edition of the Code of the Government of India, except where local peculiarities called for modification. Much additional matter, bringing the work up to the latest orders of Government, has,

however, at the same time been introduced, so as to make the work as complete, as circumstances admitted.

The chief advantage of this work, as with all such, is bringing together in a handy form for reference all the hitherto-authorized rulings on specific points of duty regarding much of which the previous editions of the Presidential Code were silent; but hardly of less moment is the independence within certain well-defined limits which the promulgation of the rules confers on the various responsible agents in all grades of the department. Chiefly is this observable in regard to the Superintending Engineers, who from acting previously as little better than post-offices are now constituted, under the provisions of the Code, minor Chief Engineers. In fact for all practical purposes they are the Chief Engineers of their several circles, a position which may be considered as quite indispensable with the great area and the widely-scattered nature of much of the work in this Presidency.

Measures have been taken for securing a complete knowledge of the Code by members of the department, and no clerk will in future be appointed to a post of 50 rupees and upwards per mensem who has not proved his knowledge by passing a specific examination.

Progress has been made in the preparation of a complete set of departmental forms (now nearly ready for issue), standard specifications, &c., but these call for no particular notice further than to remark that with their thorough introduction and use a very sensible abridgement of labor both in rendering accounts and in the preparation of estimates should ere long be observable.

ALTERATION IN THE STATUS OF THE EXAMINER, PUBLIC WORKS ACCOUNTS.—During the year under review it was deemed desirable to place the Examiner, Public Works Accounts, in a position more in harmony with that recognized in the other provinces under the Government of India, and with this view he has been given a footing precisely analogous to that held by the Deputy Chief Engineers of the General and Irrigation Branches. His position as the recognized professional adviser of Government and of the Chief Engineer in all financial matters may, it is hoped, materially aid in securing smoothness and efficiency in the administration of the department, while at the same time leaving untouched his functions as Auditor on the part of the Government of India.

HISTORY OF THE SERVICES OF DEPARTMENTAL OFFICERS.—The compilation of this appendix to the classified list of officers had a good deal of labor bestowed upon it and was successfully completed by Major Conway-Gordon, R.E., aided by Mr. E. T. Anthony, 1st-grade Accountant, for which they received the thanks of Government.

Changes in the strength of the Departmental Establishment and re-arrangement of charges on the orders restricting expenditure by the Government of India.—In September 1878 the District Engineer system had been replaced by a Superintending Engineer system, the Presidency being divided for purposes of supervision into five circles, and the number of executive divisions being reduced from 76 to 39. The Government of India having, in consequence of the late financial pressure, reduced the Provincial grant of the Presidency for the year under review by eight lakhs, considerable reductions in the executive staff of the department were rendered necessary, and in the autumn of 1879 the executive divisions were reduced by ten. It being found that with the increased areas thus given to each division the departmental staff would be no longer equal to the task of supervising the greater part of the Public Works expenditure of the various Local Fund circles which had hitherto been executed under their agency, the Local Funds Boards were offered the option of making their own arrangements for the execution of their public works; and the large consequent reduction in the contribution of local funds to the Public Works Establishment, amounting to about 5½ lakhs of rupees, combined with the extensive reduction in the amount of the grants for Imperial and Other Services for 1880-81, necessitated a yet further reduction in the strength of the Public Works Establishment. It was therefore resolved to form three circles of superintendence in lieu of the five that had previously existed. The Rajahmundry, Guntūr, Bellary, Anantapur, Madura, and Dindigul Divisions were abandoned; the Ganjam and Vizagapatam Divisions were amalgamated into the Vizagapatam Division; the Ongole

and Nellore into the Nellore; the Kurnool, Cuddapah, and Madanapalle into the Cuddapah; the Presidency and Bangalore into the Presidency; the Vellore and Chittoor into the North Arcot; the Tindivanam and Cuddalore into the South Arcot; the Salem and Hosūr into the Salem; the Coimbatore and Erode into the Coimbatore; the Nilgiri, Wynaad, Calicut, and Canara into the West Coast; and the Tinnevely and Sātūr into the Tinnevely. The two Godāvāri Delta Divisions and the two Kistna Delta Divisions were placed under Superintendents of Works, as also the Buckingham Canal and the Presidency Division. The districts contained in the revised circles are shown below:—

First Circle.	Second Circle.	Third Circle.
Vizagapatam.	Chingleput.	Nagapatam.
Nellore.	North Arcot.	Tanjore.
Cuddapah.	Salem.	Trichinopoly.
	Coimbatore.	Tinnevely.
	West Coast.	South Arcot.

Sixteen officers of the Engineer Establishment and 79 Upper Subordinates were specially retired with reference to Government of India Financial Resolution of the 31st July 1879, No. 2,079. Three officers of Royal Engineers were granted two years' special furlough, and the services of three officers placed at the disposal of the Military Department. The officers of Engineers, viz., two Field officers and seven Subalterns, whose services had before the commencement of the year been temporarily transferred to the Military Department for service in the field, remained absent throughout the whole period under review. The Government of India having called upon the Madras Government to restrict Public Works expenditure to the utmost possible extent, instructions were issued on the 7th of May that no work was to proceed on 24 items of the Imperial budget, nor on 50 items of the Provincial budget. The net amounts surrendered or withdrawn with reference to these restrictive orders under the various heads of service are shown below:—

	RS.
Imperial, Military, Original Works	1,99,256
Do. Other Services, do.	71,352
Do. Military, Repairs	70,344
Do. Other Services, Repairs	3,540
Provincial, Original Works	4,22,415
Do. Repairs	70,767

Of these sums three lakhs under Imperial and two lakhs under Provincial were surrendered to the Government of India.

It is needless to observe that many most desirable works for the health and comfort of the troops had to be abandoned; and in addition to this the surrender under Repairs was so considerable that it may be questioned whether the limit of safe and wise economy was not passed in the anxiety of this Government to meet the pressing requirements of the Government of India.

The effect on Provincial works, both Civil Buildings and Communications, has also been equally serious, as has above been noted, in the small progress with several important undertakings.

Most seriously however has the change told on the Minor Irrigation works included within the several areas over which the departmental supervision has had to be withdrawn. No agency further than that which can be afforded by the Civil officers with grants-in-aid has been provided for any but certain of the largest class of tanks, which are for the future to be designated and treated as Imperial, the care of all minor tanks devolving upon the cultivators and those directly interested in their maintenance.

This is not the place to describe fully the nature of the changes thus involved or the results likely to follow, but it may be questioned whether a still further deterioration of most of the works which have thus been removed from departmental supervision may not be expected, and considering how closely the measure has followed on the track of the late grievous famine, the necessity thus imposed by the general financial needs of the Empire is greatly to be deplored.

So far as concerns Local Funds work, which till the late reduction was all executed by departmental agency, it remains still to be shown whether the measure of handing it over to such agency as the Local Fund Boards could themselves provide has been advantageous or not.

Act IV of 1871 was clearly framed with a view to foster a proper sense of responsibility in regard to all local interests, and, so long as the Public Works Department executed all the work, it is evident that the several bodies constituting the local boards could not have enjoyed that complete freedom of action and independence which seems to have been the express object of its framers.

Viewed simply therefore as a means of giving a reality to the provisions of the Act, the change which has occurred in reference to the agency to be employed in future for the execution of the needful work, may be considered as having a wholesome effect. The Boards will henceforward be the responsible bodies which they were originally intended to be. The Public Works Department also gains materially in having no further connection with works, a large portion of which were small and scattered, and not in many cases well suited to be supervised by a highly-paid professional agency.

It would be premature to offer any opinion as to the total gains or losses involved by the change, but that there are some of both may be readily inferred from the foregoing remarks.

As a further result of the reductions of establishment, it was decided to transfer the execution of all petty repairs to Civil Buildings and minor work of a non-professional character costing under Rs. 1,000, to the officers of the several Civil Departments, who were in immediate charge or occupation of such. While affording a very distinct relief to the Engineers of work mostly of a trifling character, and non-professional, the change, which has long since been carried out in other Provinces, will, it is thought, give the several occupants a more direct interest than has hitherto existed in the preservation and maintenance of the buildings in question, and otherwise prove to be beneficial. The department will, however, exercise a general inspection regarding all buildings of this character, and will continue to repair others not coming within the above classification. This change, initiated during the year under review, has been fully carried out in that now current.

APPENDICES.

APPENDIX A.

STATEMENT of Outlay as compared with the Final Grants during the Year 1879-80.

	Final Grant.	Outlay.
IRRIGATION.		
	RS.	RS.
IMPERIAL PRODUCTIVE PUBLIC WORKS.		
<i>Capital.</i>		
Works	1,85,970	1,30,820
Establishment	80,593	1,53,276
Tools and Plant	32,176	19,019
Fluctuations in suspense balances	...	-86
Less receipts on Capital Account	...	-1,00,063
Less refunds from Provincial Grants	-1,00,000	...
Total ...	1,98,739	2,02,966
Less expenditure in England	...	31
Net Outlay ...	1,98,739	2,02,935
<i>* Subsidiary Capital Outlay on Productive Public Works.</i>		
Works	...	-54,972
Establishment	...	-22,013
Tools and Plant	...	-1,709
Fluctuations in suspense balances	...	...
Less receipts on Capital Account	...	...
Total ...	...	-78,694
IMPERIAL PRODUCTIVE PUBLIC WORKS.		
<i>"Revenue Account."</i>		
Extensions and Improvements	22,846	17,264
Maintenance and Repairs	4,81,570	3,81,167
Establishment	2,20,436	2,25,962
Tools and Plant	74,523	64,030
Total ...	7,49,375	6,88,423
IRRIGATION AND NAVIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.		
<i>(a) Capital.</i>		
Works	1,60,613	1,43,779
Establishment	12,767	49,176
Tools and Plant	10,237	13,692
Fluctuations in suspense balances	...	...
State outlay on Guaranteed Irrigation Works	7,376	4,720
Less receipts on Capital Account	...	...
Total ...	1,90,993	2,11,367
<i>(b) Revenue.</i>		
Extensions and Improvements	6,000	4,300
Maintenance and Repairs	38,897	32,992
Establishment	18,189	16,436
Tools and Plant	1,271	1,160
Total ...	64,357	54,888

* The grants assigned to this head have been transferred to Productive Public Works, Capital.

APPENDIX A—cont.

STATEMENT of Outlay as compared with the Final Grants during the Year 1879-80—cont.

	Final Grant.	Outlay.
PROVINCIAL.	RS.	RS.
<i>(a) Capital.</i>		
Works	...	1,01,266
Establishment	...	21,182
Tools and Plant	...	2,300
Suspense Accounts	...	...
Less, Receipts on Capital Account	...	...
Total ...	...	1,24,748
<i>(b) Revenue.</i>		
Extensions and Improvements	...	3,901
Maintenance and Repairs	...	64,741
Establishment	...	21,595
Tools and Plant	...	1,716
Total ...	...	91,953
<i>Ordinary Irrigation and Navigation Works for which Capital and Revenue Accounts are not kept and Agricultural.</i>		
Original Works	3,06,899	2,02,555
Repairs	8,79,884	7,21,471
Establishment	5,80,049	5,17,323
Tools and Plant	34,339	29,885
Profit and Loss	...	...
Fluctuations in suspense balances	...	...
Total ...	18,01,171	14,71,234
Total, Irrigation ...	30,04,635	27,66,854
IMPERIAL ORDINARY.		
<i>Military.</i>		
Original Works	72,184	21,227
Repairs	2,61,868	1,90,125
Establishment	1,36,610	1,58,709
Tools and Plant	13,662	16,023
Profit and Loss	...	...
Fluctuations in suspense balances	...	...
Total ...	4,84,324	3,86,084
<i>Other Services.</i>		
Original Works	45,653	34,145
Repairs	14,180	4,865
Establishment	46,298	38,557
Tools and Plant	3,280	2,957
Fluctuations in suspense balances	...	-8,468
Total ...	1,09,411	60,598
Less expenditure in England	...	11,458
Add Outlay on Harbour Works debited to Other Services ...	1,90,000	5,28,737
Total, Imperial Ordinary ...	7,83,735	9,75,419

* In the Finance Accounts the regular estimate of the year was shown in the corresponding column of grant.

APPENDIX A—cont.

STATEMENT of Outlay as compared with the Final Grants during the Year 1879-80—cont.

	Final Grant.	Outlay.
Provincial Ordinary.	RS.	RS.
Original Works	6,63,677	4,01,815
Repairs	3,01,684	1,76,371
Establishment	6,92,584	6,33,199
Tools and Plant	8,549	-2,65,118
Profit and Loss	...	2,053
Fluctuations in suspense balances	54,763	2,02,896
Refund to Imperial Productive Grant	1,00,000	1,00,000
Total, Provincial Ordinary ...	18,21,257	11,51,210
Local and Special.		
Original Works	10,17,180	4,09,653
Repairs	21,96,756	17,52,196
Establishment	7,22,816	4,71,623
Tools and Plant	1,05,711	45,133
Profit and Loss	...	...
Total ...	40,42,463	26,78,605
Grand Total for the Presidency ...	94,62,090	68,64,290

GENERAL AND BUILDINGS AND ROADS BRANCH.

APPENDIX B.

COMPARATIVE STATEMENT of Grants and Outlay for 1878-79 and 1879-80 arranged by Funds and Classes.

Heads of Service.	1878-79.		1879-80.	
	Grant.	Outlay.	Grant.	Outlay.
IMPERIAL ORDINARY.	RS.	RS.	RS.	RS.
<i>Military.</i>				
Original Works	2,94,152	2,17,110	72,184	21,227
Repairs	2,51,484	2,00,779	2,61,868	1,90,125
Establishment	1,47,342	1,69,998	1,36,610	1,58,709
Tools and Plant	13,734	15,731	13,662	16,023
Profit and Loss	...	...	...	...
Total ...	7,06,712	6,03,618	4,84,324	3,86,084
<i>Fluctuations and Suspense Balances.</i>				
Stock purchases and sales	...	...	...	...
Stock	...	...	...	...
Miscellaneous advances	...	...	...	...
London Invoices	...	...	...	...
Do. Stores	...	...	...	...
Total ...	7,06,712	6,03,618	4,84,324	3,86,084
Expenditure in England ...	...	...	...	...
Total, Military ...	7,06,712	6,03,618	4,84,324	3,86,084

APPENDIX B—cont.

Comparative Statement of Grants and Outlay for 1878-79 and 1879-80, &c.—cont.

Heads of Service.	1878-79.		1879-80.	
	Grant.	Outlay.	Grant.	Outlay.
<i>Other Services.</i>	RS.	RS.	RS.	RS.
Original Works	1,01,859	23,237	45,653	34,145
Repairs	28,300	12,900	14,180	4,865
Establishment	76,315	45,062	46,298	38,557
Tools and Plant	3,332	1,335	3,280	2,957
Profit and Loss	...	...	...	...
Total ...	2,09,806	82,534	1,09,411	80,524
Add outlay on Harbour Works debited to Other Services	...	...	1,90,000	5,28,737
<i>Fluctuations in Suspense Balances.</i>				
Stock purchases and sales	...	...	...	...
Stock	2,482	...	...	...
Miscellaneous advances	...	...	...	...
London Invoices... ..	...	-1,363	...	-1,792
Do. Stores	...	9,897	...	-6,676
Total ...	2,12,288	91,048	2,99,411	6,00,793
Less expenditure in England	...	7,791	...	11,458
Total Other Services ...	2,12,288	83,257	2,99,411	5,89,335
Total, Military and Other Services ...	9,19,000	6,86,875	7,83,735	9,75,419
Reduction of grant to meet expenditure in England	...	...	...	...
Net grant and net outlay in India for Military and Other Services	9,19,000	6,86,875	7,83,735	9,75,419
<i>IRRIGATION.</i>				
<i>Imperial Productive.</i>				
Works	1,61,882	1,07,858	1,85,970	1,30,820
Establishment	45,360	1,21,210	80,593	1,53,276
Tools and Plant	8,569	11,355	32,176	19,019
Fluctuations in suspense balances	...	83	...	- 86
Total ...	2,15,811	2,40,506	2,98,739	3,03,029
Less receipts on Capital Account	38	50,038	...	1,00,063
Net ...	2,15,773	1,90,468	2,98,739	2,02,966
Less refund from Provincial grant	50,000	...	1,00,000	...
Less reduction of grant to meet expenditure in England	...	83	...	31
Less deficit	...	...	...	...
Total, Imperial Productive ...	1,65,773	1,90,385	1,98,739	2,02,935

APPENDIX B—cont.

Comparative Statement of Grants and Outlay for 1878-79 and 1879-80, &c.—cont.

Heads of Service.	1878-79.		1879-80.	
	Grant.	Outlay.	Grant.	Outlay.
<i>IMPERIAL ORDINARY.</i>	RS.	RS.	RS.	RS.
<i>Subsidiary Capital Outlay on Productive Public Works.</i>				
Works	...	...	...	-54,972
Establishment	...	...	...	-22,013
Tools and Plant	...	...	...	- 1,709
Fluctuations in suspense balances	...	...	...	...
Less receipts on Capital Accounts	...	...	...	...
Total ...	...	...	...	-78,694
<i>Capital.</i>				
Works	2,87,344	45,640	1,60,613	1,43,779
Establishment	1,12,006	21,084	12,767	49,176
Tools and Plant	9,569	1,153	10,237	13,692
Profit and Loss	...	...	...	...
Fluctuations in suspense balances	-2,860	-2,860	...	...
State outlay on Guaranteed Irrigation Works.	5,900	5,860	7,376	4,720
Total ...	4,11,959	70,877	1,90,993	2,11,367
Less receipts on Capital Account	15	15	...	...
Net ...	4,11,944	70,862	1,90,993	2,11,367
Less reduction of grant to meet expenditure in England	...	...	...	...
Less expenditure in England	...	414	...	...
Total, Imperial Ordinary ...	4,11,944	70,448	1,90,993	2,11,367
Total Imperial Productive and Imperial Ordinary	5,77,717	2,60,833	3,89,732	3,35,608
<i>Revenue (including Productive Public Works).</i>				
Extensions and Improvements	22,856	22,454	28,846	21,564
Maintenance and Repairs	4,29,948	4,39,991	4,70,467	4,14,159
Establishment	2,21,695	2,17,825	2,38,625	2,42,398
Tools and Plant	51,795	33,279	75,794	65,190
Profit and Loss	...	...	...	...
Total ...	7,26,294	7,13,549	8,13,732	7,43,311
Less reduction of grant for expenditure in England	...	...	...	...
Less expenditure in England	...	...	...	...
Total, Revenue ...	7,26,294	7,13,549	8,13,732	7,43,311

APPENDIX B—cont.

Comparative Statement of Grants and Outlay for 1878-79 and 1879-80, &c.—cont.

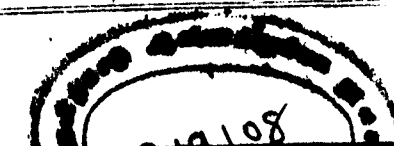
Heads of Service.	1878-79.		1879-80.	
	Grant.	Outlay.	Grant.	Outlay.
<i>Ordinary Irrigation and Navigation and Agricultural.</i>	RS.	RS.	RS.	RS.
Original Works	4,81,877	6,39,406	3,06,899	2,02,555
Repairs	8,09,977	7,69,136	8,79,884	7,21,471
Establishment	4,38,598	5,31,024	5,80,049	5,17,323
Tools and Plant	44,759	46,492	34,339	29,885
Profit and Loss	...	...	...	...
Fluctuations in suspense balances	...	...	...	...
Total ...	17,75,211	19,86,058	18,01,171	14,71,234
Less reduction of grant for expenditure in England	...	...	...	...
Less expenditure in England	...	9,867	...	...
Total, Ordinary Agricultural ...	17,75,211	19,76,191	18,01,171	14,71,234
Total, Imperial Ordinary ...	29,13,449	27,60,188	28,05,896	23,47,218
Total, Imperial Productive and Imperial Ordinary	30,79,222	29,50,573	30,04,635	25,50,153
<i>IRRIGATION AND NAVIGATION PROVINCIAL.</i>				
<i>Works for which Capital and Revenue Accounts are kept, Capital.</i>				
Works	...	...	...	1,01,266
Establishment	...	...	...	21,182
Tools and Plant	...	...	...	2,300
Suspense Accounts	...	...	...	...
Less receipts on Capital Accounts	...	...	...	...
Total ...	...	...	...	1,24,748
<i>Revenue.</i>				
Extensions and Improvements	...	...	...	3,901
Maintenance and Repairs	...	...	...	64,741
Establishment	...	...	...	21,595
Tools and Plant	...	...	...	1,716
Total ...	...	...	...	91,953
<i>PROVINCIAL ORDINARY.</i>				
<i>Original Works.</i>				
Civil Buildings	2,97,808	2,79,513	4,19,436	2,57,946
Communications	1,06,366	6,51,510	2,34,990	43,759
Miscellaneous Public Improvements	33,118	44,389	9,251	110
Refund to Imperial Productive Grant	50,000	50,000	1,00,000	1,00,000
Total, Original Works ...	4,87,292	10,25,412	7,63,677	4,01,815

APPENDIX B—cont.

Comparative Statement of Grants and Outlay for 1878-79 and 1879-80, &c.—cont.

Heads of Service.	1878-79.		1879-80.	
	Grant.	Outlay.	Grant.	Outlay.
<i>PROVINCIAL ORDINARY.</i>	RS.	RS.	RS.	RS.
<i>Repairs.</i>				
Civil Buildings	1,61,145	1,07,586	1,61,057	1,32,964
Communications	1,41,172	4,33,614	1,32,286	36,327
Miscellaneous Public Improvements	8,750	26,244	8,341	7,080
Total, Repairs ...	3,11,067	5,67,444	3,01,684	1,76,371
Establishment	5,52,765	11,27,000	6,92,584	6,33,199
Tools and Plant	54,247	35,782	8,549	2,65,118
Profit and Loss	...	22,634	...	2,053
Total ...	14,05,371	27,78,272	17,66,494	9,48,320
Fluctuations in suspense balances—				
Stock purchases and sales	...	25,411	...	3,221
Stock	31,609	96,907	54,763	46,343
Miscellaneous advances	...	1,73,462	...	1,54,022
London Invoices	...	1,619	...	271
London Stores	...	8,958	...	6,017
Total ...	14,36,980	25,25,975	18,21,257	11,51,210
Less expenditure in England	...	...	...	...
Total, Provincial Ordinary ...	14,36,980	25,25,975	18,21,257	11,51,210
<i>LOCAL AND SPECIAL.</i>				
<i>Original Works.</i>				
Civil Buildings	2,54,638	1,01,197	2,54,029	84,902
Irrigation	...	...	...	...
Communications	7,46,378	3,85,839	7,09,861	3,08,560
Miscellaneous Public Improvements	74,872	37,935	53,290	16,191
Total, Original Works ...	10,75,888	5,24,971	10,17,180	4,09,653
<i>Repairs.</i>				
Civil Buildings	47,631	24,088	73,060	40,693
Irrigation	...	...	...	...
Communications	19,35,355	15,05,426	19,99,778	16,33,024
Miscellaneous Public Improvements	1,07,698	63,681	1,23,918	78,479
Total, Repairs ...	20,90,684	15,93,195	21,96,756	17,52,196
Establishment	7,10,159	5,73,341	7,22,816	4,71,623
Tools and Plant	48,965	55,543	1,05,711	45,133
Profit and Loss	...	...	...	...
Total, Local ...	39,25,696	27,47,050	40,42,463	26,78,605
Grand Total, Imperial, Irrigation, Provincial and Local ...	93,60,898	89,10,473	94,62,090	68,64,290

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GENERAL AND BUILDINGS AND ROADS BRANCH.

APPENDIX C.

STATEMENT showing the Expenditure on Public Works in 1879-80 from Imperial Funds as compared with the Allotment for that Year.

Districts.	ALLOTMENT.			EXPENDITURE, 1879-80.		
	Imperial.	Irrigation.	Total.	Imperial.	Irrigation.	Total.
	RS.	RS.	RS.	RS.	RS.	RS.
Bangalore ...	64,942	...	64,942	58,283	...	58,283
Bellary ...	30,514	49,134	79,648	29,614	44,426	74,040
Buckingham Canal ...	12,760	...	12,760	12,323	...	12,323
Cuddapah ...	199	45,740	45,939	174	32,406	32,580
Chingleput ...	29,726	1,65,331	1,95,057	27,176	58,984	86,160
Coimbatore ...	195	84,799	84,994	192	73,746	73,938
Ganjam ...	1,592	30,165	31,757	1,340	27,783	29,123
Godavari ...	1,975	4,39,558	4,41,533	1,690	3,40,668	3,42,358
Kurnool ...	618	32,475	33,093	616	31,247	31,863
Kistna ...	3,342	3,03,926	3,07,268	551	2,30,520	2,31,071
Madura ...	3,114	64,539	67,653	2,684	64,251	66,935
Malabar ...	24,379	1,508	25,887	17,049	2,253	19,302
Nellore ...	1,223	1,06,349	1,07,572	812	1,10,686	1,11,498
Nilgiri ...	13,417	...	13,417	15,685	...	15,685
North Arcot ...	5,807	90,129	95,936	4,549	81,012	85,561
Presidency (including Consulting Architect)	1,06,808	1,241	1,08,049	56,706	488	57,194
Salem ...	7,185	74,163	81,348	4,483	52,210	56,693
South Arcot ...	...	86,718	86,718	...	70,768	70,768
South Canara ...	...	...	...	...	...	...
Tanjore ...	7,699	1,64,755	1,72,454	6,714	1,29,373	1,36,087
Tinnevely ...	2,213	1,81,188	1,83,401	1,766	1,51,703	1,53,469
Trichinopoly ...	4,917	58,605	63,522	4,395	36,981	41,376
Vizagapatam ...	3,508	18,759	22,267	3,469	15,372	18,841
Total Grants and Expenditure by Public Works Department ..	3,26,133	19,99,082	23,25,215	2,50,271	15,54,877	18,05,148
Total Outlay by Civil Officers ...	...	...	...	91	25,225	25,316
Total Grants and Expenditure ...	3,26,133	19,99,082	23,25,215	2,50,362	15,80,102	18,30,464
Total Private Contribution ...	...	...	...	...	17,539	...
Grand Total ...	...	...	...	...	15,97,641	...

STATEMENT showing the Expenditure on Original Works in each District from Imperial Funds under the Budget Heads.

Districts.	Military.	Other Services.	IRRIGATION.		Total.
			Imperial Ordinary.	Imperial Productive.	
	RS.	RS.	RS.	RS.	RS.
Bangalore ...	4,810	...	...	...	4,810
Bellary ...	2,169	...	3,538	...	5,707
Buckingham Canal ...	...	12,323	...	...	12,323
Cuddapah ...	...	174	9,432	...	9,606
Chingleput ...	9,892	...	11,752	...	21,644
Coimbatore ...	...	...	17,052	...	17,052

APPENDIX C—cont.

Statement showing the Expenditure on Original Works in each District from Imperial Funds under the Budget Heads—cont.

Districts.	Military.	Other Services.	IRRIGATION.		Total.
			Imperial Ordinary.	Imperial Productive.	
	RS.	RS.	RS.	RS.	RS.
Ganjam ...	...	1,020	2,405	...	3,425
Godavari ...	724	612	44,862	82,987	1,29,185
Kurnool ...	...	...	11,895	...	11,895
Kistna ...	...	219	89,295	14,552	1,04,066
Madura ...	...	1,415	4,926	...	6,341
Malabar ...	2,984	806	...	...	3,790
Nellore ...	...	645	14,171	3,125	17,941
Nilgiri ...	3,253	1,402	...	...	4,655
North Arcot ...	692	476	27,552	...	28,720
Presidency (including Consulting Architect)	-5,167	7,501	...	...	2,334
Salem ...	629	220	21,120	...	21,969
South Arcot ...	...	...	7,057	...	7,057
South Canara ...	...	...	...	...	...
Tanjore ...	...	6,459	5,902	15,700	28,061
Tinnevely ...	...	873	23,414	14,456	38,743
Trichinopoly ...	1,212	...	3,444	...	4,656
Vizagapatam ...	29	...	383	...	412
Total, expenditure by Public Works Department ...	21,227	34,145	2,98,200	1,30,820	4,84,392
Expenditure by Civil Officers ...	...	...	15,452	...	15,452
Total ...	21,227	34,145	3,13,652	1,30,820	4,99,844

STATEMENT showing the Expenditure on Repairs in each District from Imperial Funds under the Budget Heads.

Districts.	Military.	Other Services.	Irrigation.	Total.
	RS.	RS.	RS.	RS.
Bangalore ...	53,473	...	...	53,473
Bellary ...	27,378	67	40,888	68,333
Buckingham Canal ...	...	...	...	...
Cuddapah ...	...	...	22,974	22,974
Chingleput ...	17,284	...	47,232	64,516
Coimbatore ...	192	...	56,694	56,886
Ganjam ...	349	-29	25,378	25,698
Godavari ...	...	354	2,12,819	2,13,173
Kurnool ...	...	616	19,352	19,968
Kistna ...	...	332	1,26,673	1,27,005
Madura ...	...	1,269	59,325	60,594
Malabar ...	13,066	193	2,253	15,512
Nellore ...	...	167	93,390	93,557
Nilgiri ...	11,005	25	...	11,030
North Arcot ...	3,211	170	53,460	56,841
Presidency (including Consulting Architect) ...	54,233	139	488	54,860
Salem ...	3,395	239	31,090	34,724
South Arcot ...	...	...	63,711	63,711
South Canara ...	...	...	...	...
Tanjore ...	...	255	1,07,771	1,08,026

APPENDIX C—cont.

Statement showing the Expenditure on Repairs in each District from Imperial Funds under the Budget Heads—cont.

Districts.	Military.	Other Services.	Irrigation.	Total.
	RS.	RS.	RS.	RS.
Tinnevely	68	825	1,13,833	1,14,726
Trichinopoly	3,183	...	33,537	36,720
Vizagapatam	3,288	152	14,989	18,429
Total, Expenditure by Public Works Department.	1,90,125	4,774	11,25,857	13,20,756
Expenditure by Civil Officers	...	91	9,773	9,864
Grand Total ...	1,90,125	4,865	11,35,630	13,30,620

STATEMENT showing the Expenditure on Public Works in 1879-80 from Provincial Funds as compared with the Allotment for that Year.

Districts.	Allotment for 1879-80 including Private Contribution.	Expenditure, 1879-80.
	RS.	RS.
Bangalore	8,596	6,982
Bellary	20,845	21,294
Buckingham Canal	1,82,346	(a) 1,71,800
Cuddapah	14,685	10,859
Chingleput	21,791	11,202
Coimbatore	24,466	15,519
Ganjam	13,275	9,295
Godavari	32,257	19,524
Kurnool	6,984	4,128
Kistna	43,077	3,278
Madura	41,410	17,647
Malabar	32,040	22,285
Nellore	12,891	11,148
Nilgiri	71,253	54,835
North Arcot	57,413	2,819
Presidency (including Architect)	1,94,106	1,66,745
Salem	15,620	6,198
South Arcot	16,735	9,394
South Canara	...	...
Tanjore	20,608	14,670
Tinnevely	39,859	25,665
Trichinopoly	6,014	5,377
Vizagapatam	48,539	13,258
Grant-in-aid to Local	...	...
Total ...	9,24,810	(a) 6,23,917
Expenditure by Civil Officers	...	24,177
Refund from Provincial to Imperial Productive	1,00,000	1,00,000
Total, Private Contributions ...	...	...
Grand Total ...	10,24,810	(a) 7,48,094

(a) Includes Rs. 1,69,908 incurred under Irrigation and Navigation Works Provincial, for which Capital and Revenue Accounts are kept.

APPENDIX C—cont.

STATEMENT showing the Expenditure on Original Works in each District from Provincial Funds under the Budget Heads.

Districts.	Civil Buildings.	Communi-cations.	Miscellaneous Public Improvements.	Total.
	RS.	RS.	RS.	RS.
Bangalore	5,335	...	...	5,335
Bellary	12,894	...	...	12,894
Buckingham Canal	...	1,345	...	(a) 1,345
Cuddapah	5,531	...	...	5,531
Chingleput	2,765	3,869	...	6,634
Coimbatore	453	13,781	8	14,242
Ganjam	4,367	930	...	5,297
Godavari	13,732	...	...	13,732
Kurnool	2,384	...	...	2,384
Kistna	2,234	...	...	2,234
Madura	7,502	...	...	7,502
Malabar	10,868	7,109	...	17,977
Nellore	7,669	1,250	...	8,919
Nilgiri	33,468	5,146	...	38,614
North Arcot	1,381	...	...	1,381
Presidency	1,01,247	4,275	...	1,05,522
Salem	747	...	...	747
South Arcot	1,806	...	...	1,806
South Canara	...	...	...	...
Tanjore	5,128	...	56	5,184
Tinnevely	20,023	...	46	20,069
Trichinopoly	2,973	...	...	2,973
Vizagapatam	4,854	5,999	...	10,853
Total, Expenditure by Public Works Department.	2,47,361	43,704	110	(a) 2,91,175
Expenditure by Civil Officers	10,585	55	...	10,640
Add Grant-in-aid to Local	...	...	...	...
Refund from Provincial to Imperial Productive.	...	...	1,00,000	1,00,000
Grand Total ...	2,57,946	43,759	1,00,110	(a) 4,01,815

(a) Excludes Rs. 1,05,167 incurred under Irrigation and Navigation Works, Provincial, for which Capital and Revenue Accounts are kept.

STATEMENT showing the Expenditure on Repairs in each District from Provincial Funds under the Budget Heads.

Districts.	Civil Buildings.	Communi-cations.	Miscellaneous Public Improvements.	Total.
	RS.	RS.	RS.	RS.
Bangalore	1,647	...	...	1,647
Bellary	4,610	3,790	...	8,400
Buckingham Canal	...	...	547	(a) 547
Cuddapah	5,328	...	...	5,328
Chingleput	4,568	...	...	4,568
Coimbatore	1,277	...	...	1,277
Ganjam	3,405	593	...	3,998
Godavari	1,789	4,003	...	5,792
Kurnool	1,744	...	...	1,744
Kistna	649	...	395	1,044
Madura	9,130	968	47	10,145

(a) Excludes Rs. 64,741 incurred under "Irrigation and Navigation Works" Provincial for which Capital and Revenue Accounts are kept.

APPENDIX C—cont.

Statement showing the Expenditure on Repairs in each District from Provincial Funds under the Budget Heads—cont.

Districts.	Civil Buildings.	Communi- cations.	Miscellaneous Public Improvements.	Total.
	RS.	RS.	RS.	RS.
Malabar ...	4,308	...	...	4,308
Nellore ...	2,229	...	...	2,229
Nilgiri ...	4,349	11,872	...	16,221
North Arcot ...	1,438	...	...	1,438
Presidency ...	43,236	11,349	6,638	61,223
Salem ...	5,451	...	...	5,451
South Arcot ...	7,588	...	...	7,588
South Canara ...	...	...	...	...
Tanjore ...	6,254	3,232	...	9,486
Tinnevely ...	5,596	...	...	5,596
Trichinopoly ...	2,404	...	...	2,404
Vizagapatam ...	2,400	...	...	2,400
Total, Expenditure by Public Works Department.	1,19,400	36,354	7,080	(a)1,62,834
Expenditure by Civil Officers ...	13,564	—27	...	13,537
Add grant-in-aid to Local ...	...	...	...	...
Grand Total ...	1,32,964	36,327	7,080	(a)1,76,371

(a) Excludes Rs. 64,741 incurred under "Irrigation and Navigation Works" Provincial for which Capital and Revenue Accounts are kept.

APPENDIX D.

STATEMENT of Local and Special Funds Expenditure incurred by the Public Works Department during the year 1879-80.

Districts.	ORIGINAL WORKS.				Total.
	Civil Buildings.	Irrigation.	Communi- cations.	Miscellaneous Public Improvements.	
1	2	3	4	5	6
	RS.	RS.	RS.	RS.	RS.
Bellary ...	2,124	...	5,562	...	7,686
Cuddapah ...	1,379	...	1,874	...	3,253
Chingleput ...	402	...	1,604	...	2,006
Coimbatore ...	9,680	...	23,549	...	32,229
Civil Officers ...	...	...	594	...	594
Coimbatore ...	3,883	...	924	...	4,807
Civil Officers ...	1,789	...	...	148	1,937
Ganjam ...	913	...	9,239	2,042	12,194
Civil Officers ...	...	...	55	...	55
Godavari ...	7,068	...	58,829	1,736	67,633
Civil Officers ...	2,746	...	13,228	26	16,000
Kurnool ...	2,519	...	...	...	2,519
Civil Officers ...	...	...	...	...	...
Kistna ...	2,479	...	57,537	—982	59,034
Civil Officers ...	88	...	889	...	777
Madura ...	356	...	22,464	...	22,820
Civil Officers ...	12	...	5,345	...	5,357
Malabar ...	6,518	...	35,328	869	42,715
Civil Officers ...	185	...	3,216	738	4,139

APPENDIX D—cont.

STATEMENT of Local and Special Funds Expenditure incurred by the Public Works Department during the Year 1879-80—cont.

Districts.	ORIGINAL WORKS.				
	Civil Buildings.	Irrigation.	Communi- cations.	Miscellaneous Public Improvements.	Total.
1	2	3	4	5	6
	RS.	RS.	RS.	RS.	RS.
Nellore ...	2,498	...	4,490	15	7,003
Civil Officers ...	...	...	439	...	439
Nilgiri ...	...	...	369	...	369
Buckingham Canal ...	...	...	201	...	201
North Arcot ...	1,121	...	52	...	1,173
Civil Officers ...	...	...	...	2,334	2,334
Presidency ...	13,360	...	...	50	13,410
Civil Officers ...	7,600	...	...	...	7,600
Salem ...	2,077	...	63	...	2,140
Civil Officers ...	50	...	604	...	654
South Arcot ...	632	...	538	112	1,282
Civil Officers ...	729	...	3,400	350	4,479
South Canara ...	...	...	...	...	...
Civil Officers ...	...	...	...	...	...
Tanjore ...	845	...	19,958	...	20,803
Civil Officers ...	4,650	...	7,784	6,168	18,602
Tinnevely ...	73	...	4,682	...	4,755
Civil Officers ...	663	...	1,226	1,606	3,495
Trichinopoly ...	1,391	...	669	...	2,060
Civil Officers ...	1,860	...	5,794	...	7,654
Vizagapatam ...	5,196	...	11,234	695	17,125
Civil Officers ...	16	...	7,020	284	7,320
Public Works Department ...	64,112	...	2,57,562	4,537	3,26,211
Civil Officers ...	20,790	...	50,998	11,654	83,442
Total ...	84,902	...	3,08,560	16,191	4,09,653
Less Grants-in-aid from Provin- cial to Local ...	...	...	...	...	...
Grand Total ...	84,902	...	3,08,560	16,191	4,09,653

STATEMENT of Local and Special Funds Expenditure incurred by the Public Works Department during the Year 1879-80.

Districts.	REPAIRS.				
	Civil Buildings.	Irrigation.	Communi- cations.	Miscellaneous Public Improvements.	Total.
1	2	3	4	5	6
	RS.	RS.	RS.	RS.	RS.
Bellary ...	419	...	62,968	2,390	65,777
Civil Officers ...	10	...	1,172	1,552	2,734
Cuddapah ...	349	...	53,601	...	53,950
Civil Officers ...	327	...	19,223	2,848	22,398
Chingleput ...	10	...	70,023	...	70,033
Civil Officers ...	...	...	697	2,216	2,913
Coimbatore ...	1,425	...	77,398	...	78,823
Civil Officers ...	1,760	...	30,306	959	33,025

APPENDIX—cont.

STATEMENT of Local and Special Funds Expenditure incurred by the Public Works Department during the Year 1879-80—cont.

Districts.	REPAIRS.				Total.
	Civil Buildings.	Irrigation.	Communi- cations.	Miscellaneous Public Improvements.	
1	2	3	4	5	6
	RS.	RS.	RS.	RS.	RS.
Ganjam ...	770	...	59,687	1,251	61,708
Civil Officers ...	...	...	1,444	...	1,444
Godavari ...	107	...	66,576	15,095	81,778
Civil Officers ...	1,201	...	5,907	3,240	10,348
Kurnool ...	440	...	42,824	...	43,264
Civil Officers ...	...	...	1,022	995	2,017
Kistna ...	472	...	24,894	2,563	27,929
Civil Officers ...	...	...	1,689	24	1,713
Madura ...	707	...	91,244	300	92,251
Civil Officers ...	31	...	13,821	4,582	18,434
Malabar ...	2,913	...	1,95,687	3,507	2,02,107
Civil Officers ...	4,216	...	19,191	221	23,628
Nellore ...	154	...	1,00,428	3,662	1,04,244
Civil Officers ...	578	...	11,127	1,462	13,167
Nilgiri ...	30	...	46,220	...	46,250
Civil Officers ...	...	...	250	...	250
North Arcot ...	...	...	69,857	...	69,857
Civil Officers ...	251	...	14,950	7,646	22,847
Presidency... ..	362	...	...	2,292	2,654
Salem ...	1,149	...	51,619	...	52,768
Civil Officers ...	4,510	...	57,706	5,440	67,656
South Arcot ...	1,398	...	66,457	572	68,427
Civil Officers ...	444	...	28,897	1,984	31,325
South Canara ...	...	...	...	...	...
Civil Officers ...	...	...	...	...	...
Buckingham Canal ...	...	...	—2,040	...	—2,040
Tanjore ...	431	...	66,573	1,350	68,354
Civil Officers ...	13,858	...	22,132	6,500	42,490
Tinnevely... ..	181	...	89,756	...	89,937
Civil Officers ...	534	...	18,718	4,262	23,514
Trichinopoly ...	381	...	66,490	...	66,871
Civil Officers ...	...	...	782	1,379	2,161
Vizagapatam ...	1,247	...	68,813	187	70,247
Civil Officers ...	28	...	14,915	...	14,943
Public Works Department ...	12,945	...	13,69,075	33,169	14,15,189
Civil Officers ...	27,748	...	2,63,949	45,310	3,37,007
Total ...	40,693	...	16,33,024	78,479	17,52,196
Less Grants-in-aid from Provin- cial to Local ...	...	...	...	...	...

STATEMENT of Local and Special Funds Expenditure incurred by the Public Works Department during the Year 1879-80.

Districts	Establishment.	Tools and Plant.	Grand Total.
	RS.	RS.	RS.
Bangalore ...	...	...	...
Bellary ...	18,366	1,836	20,202
Civil Officers ...	212	...	212

APPENDIX D—cont.

STATEMENT of Local and Special Funds Expenditure incurred by the Public Works Department during the Year 1879-80—cont.

Districts.			Establishment.	Tools and Plant.	Grand Total.
			RS.	RS.	RS.
Cuddapah ...	...	...	14,301	1,453	15,754
Civil Officers ...	...	...	2,700	102	2,802
Chingleput ...	...	...	25,866	2,564	28,430
Civil Officers ...	...	...	2,335	...	2,335
Coimbatore ...	...	...	20,907	2,091	22,998
Civil Officers ...	...	...	2,382	...	2,382
Ganjam ...	...	...	18,475	1,847	20,322
Civil Officers ...	...	...	3,284	...	3,284
Godavari ...	...	...	37,353	3,741	41,094
Civil Officers ...	...	...	2,978	14	2,992
Kurnool ...	...	...	11,446	1,146	12,592
Civil Officers ...	...	...	...	...	...
Kistna ...	...	...	31,353	3,135	34,488
Civil Officers ...	...	...	1,599	...	1,599
Madura ...	...	...	28,769	2,877	31,646
Civil Officers ...	...	...	2,817	8	2,820
Malabar ...	...	...	39,925	3,984	43,909
Civil Officers ...	...	...	1,722	...	1,722
Nellore ...	...	...	18,200	1,820	20,020
Civil Officers ...	...	...	2,261	30	2,291
Nilgiri ...	...	...	11,655	1,167	12,822
Civil Officers ...	...	...	18	...	18
North Arcot ...	...	...	17,757	1,776	19,533
Civil Officers ...	...	...	691	144	835
Presidency ...	...	...	3,506	350	3,856
Civil Officers ...	...	...	...	...	...
Salem ...	...	...	13,727	1,373	15,100
Civil Officers ...	...	...	8,477	...	8,477
South Arcot ...	...	...	17,427	1,743	19,170
Civil Officers ...	...	...	4,900	1,195	6,095
South Canara ...	...	...	21,280	2,128	23,408
Civil Officers ...	...	...	...	...	...
Tanjore ...	...	...	20,759	2,229	22,988
Civil Officers ...	...	...	726	...	726
Tinnevely ...	...	...	23,672	2,367	26,039
Civil Officers ...	...	...	235	110	345
Trichinopoly ...	...	...	17,233	1,731	18,964
Civil Officers ...	...	...	...	...	...
Vizagapatam ...	...	...	21,843	2,177	24,020
Civil Officers ...	...	...	466	...	466
Buckingham Canal ...	...	...	...	...	...
Public Works Department ...	...	...	4,33,820	43,535	4,77,355
Civil Officers ...	...	...	37,803	1,598	39,401
Total ...	...	...	4,71,623	45,133	5,16,756
Less grants-in-aid from Provincial to Local ...	...	...	...	...	...
	...	...	4,71,623	45,133	5,16,756

APPENDIX E.

STATEMENT of Works referred to in the Administration Report for 1879-80.

IMPERIAL.

District.	Work.	Main Head.	Estimate.	Expend- iture to end of March 1879.	Appropri- ation for 1879-80.	Expend- iture during 1879-80.
			RS.	RS.	RS.	RS.
Presidency ..	Improvements to the Press-house at the Gun Powder Factory.	Military ..	2,580	..	2,580	3,050
	Napier Battery	Do. ..	16,610	16,881	542	542
	Light-house Battery	Do. ..	17,910	18,127	752	752
	Clive's Battery	Do. ..	920	6,042	2,978	830
Bangalore ..	Drainage of Native Infantry Lines ..	Do. ..	14,400	11,158	800	768
	Proving racks in the Ordnance Gun Powder Magazine.	Do. ..	2,560	2,562	198	200
Chingleput ..	New double-storied Barracks at Poona-mallee.	Do. ..	1,66,886	6,628	50,000	7,976
	New quarters for 30 Families with out-houses.	Do. ..	82,300	..	2,400	1,988
Nilgiris ..	Enlarging pure water cistern and re-arranging supply-pipes, Lawrence Asylum.	Do. ..	2,400	..	2,400	1,988
Godavari ..	Quarters for Sub-Postmaster, Dumagudem.	Other Services.	203	..	203	201
	Alterations to Telegraph Office, Cocanada.	Do. ..	1,860	1,134	228	141
Kistna ..	Stone flooring, Bezvada Post Office ..	Do. ..	225	..	255	196
Presidency ..	New combined Post and Telegraph Offices, Madras.	Do. ..	5,02,202	15,469	..	7,500
Tanjore ..	Post Office at Kumbakonam ..	Do. ..	4,370	867	..	..
	Constables' huts at Adirampatnam for Salt Police.	Do. ..	7,960	6,847	..	..
Tinnevely ..	Post Office at Tenkasi ..	Do. ..	2,180	..	1,240	878
Nilgiris ..	Do. at Cherambadi ..	Do. ..	1,900	1,402	..	..

PROVINCIAL.

Presidency ..	Madras Harbour Works	Productive ..	68,50,790	26,12,822	..	12,15,582
Vizagapatam ..	Alterations to District Jail	Civil Build- ings.	23,300	7,239	10,000	2,983
	Additions to Collector's Cutcherry, Cocanada.	Do. ..	31,570	4,348	7,852	8,309
Godavari ..	Roofing Police Station-houses, Choda-varam and Kota.	Do. ..	3,600	..	3,600	4,444
	District Engineer's Office, Dowlais- waram.	Do. ..	8,700	8,700	850	346
	Conversion of Guard-room, Masulipa- tam Fort, into Police huts.	Do. ..	710	..	710	730
Kistna ..	Subsidiary Jail, Repalle ..	Do. ..	8,562	7,506	848	831
	Alterations to Taluk Cutcherry, Gud- vada.	Do. ..	1,160	..	1,160	580
	Improvements to District Jail, Guntur.	Do. ..	37,313	23,251	9,000	1,862
Nellore ..	Taluk Cutcherry, Kanigiri ..	Do. ..	34,222	32,179	2,044	422
	Additions to Nellore Police Office ..	Do. ..	3,300	..	3,000	1,477
	Taluk Cutcherry, Madanapalle ..	Do. ..	29,888	28,772	1,116	878
	Do. Kadiri ..	Do. ..	33,070	30,381	2,689	2,488
Cuddapah ..	Sub-Collector's Cutcherry, Madana- palle.	Do. ..	14,895	..	8,000	80
Kurnool ..	Taluk Cutcherry, Kolluntla ..	Do. ..	68,752	68,120	801	801
Bellary ..	Re-roofing Taluk Cutcherry, Ananta- pur.	Do. ..	7,795	..	7,700	7,699
	Gate-way, Marine Villa ..	Do. ..	2,815	..	2,815	2,621
	Contagious Disease Wards, General Hospital.	Do. ..	20,100	..	20,100	16,202
Presidency ..	Nurses' quarters, General Hospital ..	Do. ..	5,170	..	4,630	4,821
	Public Works Offices, Chepauk ..	Do. ..	1,26,200	1,10,228	17,172	15,675
	Machinery Store Room, old Mint build- ing.	Do. ..	3,100	..	3,100	3,098
	Boundary wall, Chepauk Park ..	Do. ..	7,681	..	7,681	2,906
Bangalore ..	Lying-in Hospital ..	Do. ..	1,75,957	79,934	..	26,997
	St. Patrick's Church ..	Do. ..	7,760	..	9,000	413
North Arcot ..	Police Station-house, Themer ..	Do. ..	840	..	840	432
	Police huts, do. ..	Do. ..	850	..	850	190
South Arcot ..	Police Station-house, Kalianore ..	Do. ..	1,067	467	601	439
	Police huts at Panalur ..	Do. ..	1,560	743	698	533
Salem ..	Improvements to Taluk Cutcherry, Tiruchengod.	Do. ..	..	..	825	832
Nilgiris ..	Government House, Norwood ..	Do. ..	2,66,660	2,31,362	30,000	31,007
	Flagstaff, Stonehouse ..	Do. ..	850	..	850	1,268

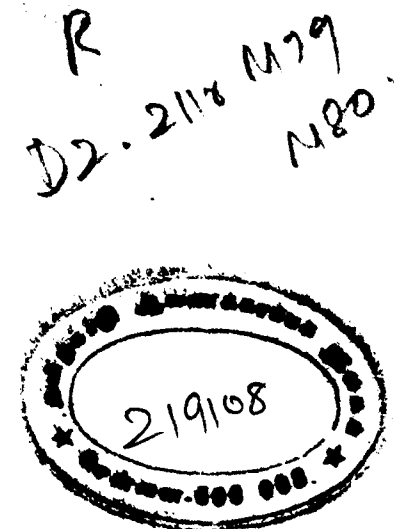
STATEMENT of Works referred to in the Administration Report, &c.—cont.

PROVINCIAL—cont.

District.	Work.	Main Head.	Estimate.	Expend- iture to end of March 1879.	Appropri- ation for 1879-80.	Expend- iture during 1879-80.
			RS.	RS.	RS.	RS.
Malabar ..	Strong room, Calicut Treasury ..	Civil Build- ings.	3,600	..	3,600	2,988
	Special Assistant Collector's residence, Malapuram.	Do. ..	3,433	..	3,433	1,802
	New cemetery, Calicut ..	Do. ..	1,640	..	1,640	1,240
	Jail Superintendent's quarters, Cann- nore.	Do. ..	3,100	2,010	1,090	1,023
Tanjore ..	Police Station-house, Terriut ..	Do. ..	1,760	..	935	246
	Do. Minpessel ..	Do. ..	2,353	..	274	580
	Master Attendant's residence, Paumben.	Do. ..	1,500	1,226	..	248
	Police huts at Tirupatūr ..	Do. ..	2,400	144	2,256	2,192
Madura ..	Taluk Cutcherry, Palni ..	Do. ..	25,160	23,375	1,786	1,921
	Do. Periyakulam ..	Do. ..	33,476	28,834	2,500	1,222
	Tirumal Naick's Palace ..	Do. ..	1,36,910	82,822	..	15,055
	Palamcottah Jail ..	Do. ..	1,60,000	81,052	30,000	16,380
Tinnevely ..	Police Station-house, Sidarpanallur ..	Do. ..	1,240	205	1,035	999
	Do. Saidanganullur ..	Do. ..	850	529	322	315
Ganjam ..	Canal from Chilka Lake ..	Communica- tions.	1,41,370	1,39,980	1,390	930
Vizagapatam ..	New Pottinghy Ghat ..	Do. ..	1,30,400	65,852	16,000	5,999
Godavari ..	Navigation works, Dumagudem ..	Do. ..	8,000	..	8,000	5,994
Nellore and Chingleput.	Buckingham Canal ..	Do. ..	..	32,22,066	1,15,892	1,03,846
Coimbatore ..	Mettupalaiyam-Kullar Road ..	Do. ..	1,19,500	5,616	17,514	13,281
Nilgiris ..	Devashola-Kartari Road ..	Do. ..	2,417	..	2,417	2,417
Tanjore ..	Vedarniam Canal ..	Do. ..	..	..	3,320	3,232

SPECIAL.

Vizagapatam ..	Hill Jail at Parvatipur ..	Civil Build- ings.	12,270	1,541	8,000	4,240
Godavari ..	School-house, Viravásaram ..	Do. ..	4,055	987	1,055	1,380
Nellore ..	Anglo-Vernacular School, Ongole ..	Do. ..	9,200	7,369	1,830	1,845
Chingleput ..	Agricultural College, Saidapet ..	Do. ..	28,300	..	28,300	8,000
Do. ..	Veterinary Hospital, do. ..	Do. ..	1,140	..	1,140	175
Do. ..	Stables, do. ..	Do. ..	1,460	..	1,460	871
Salem ..	School-house, Krishnagiri ..	Do. ..	4,940	..	3,514	2,076
Coimbatore ..	Udamalpet Taluk School-house ..	Do. ..	1,435	..	1,097	1,116
Malabar ..	Anglo-Vernacular School, Chowghat ..	Do. ..	3,110	..	3,966	2,486
Canara ..	Wall of District Jail, Mangalore ..	Do. ..	4,400	..	4,400	1,638
Godavari ..	Kovur-Munjair Junction Canal ..	Communica- tions.	1,89,450	1,582	3,462	3,464
Tanjore ..	Straight cut in the Calimodu Reach of the Vedarniam Canal.	Do. ..	6,780	1,978	501	288
Godavari ..	Quarters for Superintendent, Vakala- pudi Light-house.	Miscellaneous Public Im- provements.	3,735	1,582	2,154	2,222
Kistna ..	Quay wall in the Salt Creek below the Masulipatam Tidal Lock.	Do. ..	8,200	2,492	..	969



தமிழ்நாடு ஆவணக்காப்பக நூலகம்,
எழும்புடி, சென்னை-600 008.

புவனைத்தாள்.

சே எண் :

ப. எண் :

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