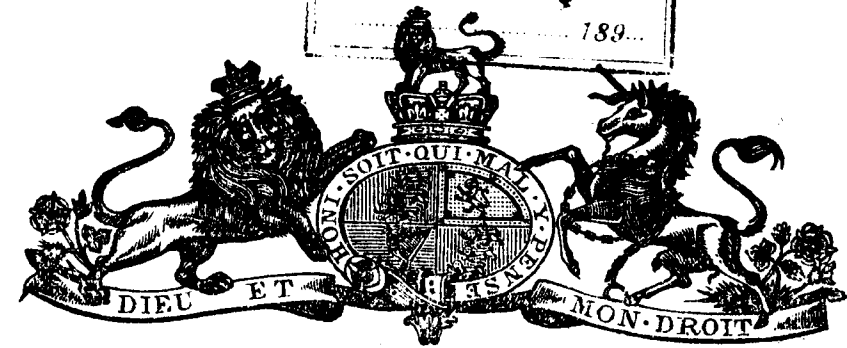
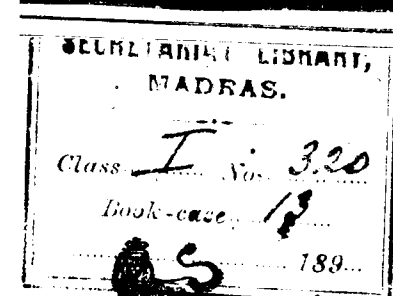




ADMINISTRATION REPORT

OF THE

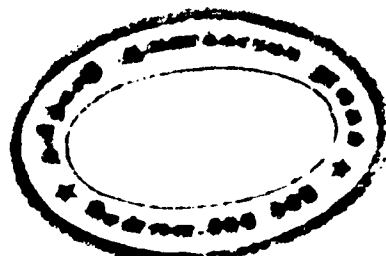
PUBLIC WORKS DEPARTMENT,

(GENERAL, BUILDINGS AND ROADS BRANCH,)

MADRAS PRESIDENCY,

FOR THE YEAR

1887-88.



R
DI-2117 MP7
M88

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT

1888.

810
2,214
42,590
2,15,766
87,293
1,74,542

37014

ADMINISTRATION REPORT

OF THE

PUBLIC WORKS DEPARTMENT, MADRAS,

(GENERAL, BUILDINGS AND ROADS BRANCH.)

FOR THE YEAR 1887-88.

I.—GENERAL REMARKS.

THE administration of the department continued in the hands of Colonel J. O. Hasted, R.E., during the year under review, and Colonel H. R. Mead, R.E., held the position of Chief Engineer for Irrigation and Joint Secretary to Government in the Irrigation Branch, which he assumed during the previous year.

2. *Departmental Establishment.*—In February 1887, the Government of India called on the Madras Government to frame a careful estimate of the engineer and upper subordinate establishment, with due regard to the work to be done. The estimate was supplied in detail, explaining what had already been done to reduce expenditure. The Government of India admitted that the administration of the Madras Presidency is mainly conducted on an economical system, and refrained from pressing their suggestion for reduction in the engineer grades. They, however, thought that the number of upper subordinates might be reduced by substituting lower subordinate agency in certain cases. The Chief Engineer was accordingly directed to keep the subject in view when the necessity arose for augmenting the temporary establishment, it being considered impracticable to place officers of the lower class in the large and responsible charges usually held by upper subordinates in the Madras Presidency. The possibility of reducing the staff of accountants and clerks employed in the Examiner's office was also referred for the consideration of Government. This matter is still engaging attention.

It was ruled by the Government of India that any civil engineer of the Public Works Department, who, on reaching the age of 50 years, had not attained the rank of Superintending Engineer, would be liable to be called on to retire, either immediately or within a specified period according to the length of his previous service, furlough admissible under the rules being, however, conceded prior to retirement.

3. *Grants and Expenditure.*—The following statement shows the grants and expenditure under the different service heads:—

	Original grant.	Revised estimate.	Expenditure.
	RS.	RS.	RS.
Imperial Military Works	5,50,000	5,73,500	5,28,310
Do. Civil Works	33,500	28,700	22,214
Provincial Civil Works	17,07,000	19,12,000	19,42,590
Local Incorporated Funds	2,68,000	2,12,000	2,15,766
Do. Excluded Funds	...	1,32,012	87,293
Estate Works	3,21,866	3,07,582	1,74,542

4. *Madras Harbour Works.*—Having carefully considered the effects on the Harbour Works of the cyclone, which passed near Madras at the end of 1887, and judging from previous experience of the action of the sea within harbour limits, Captain Taylor, the late Port Officer, came to the conclusion that the only way in which smooth water could be secured would be to close the eastern entrance. He suggested an opening at the north-east corner, protected by an extension of the outer sea-wall in a northerly direction. The smooth water thus obtained would, he considered, enable many beach improvements to be adopted, and would relieve the work of the port, which suffers seriously from the inconvenient height of the iron pier. The closing of the eastern entrance would also, he pointed out, enable a very much larger portion of the deep water space to be utilised,—a matter of great importance in the limited area of the Madras Harbour. The ingress and egress for steamers would also, he considered, be facilitated by a north-east passage. The Harbour Trust Board thereupon unanimously requested a reconsideration of the question of entrance, and recorded their opinion that a north-east entrance was absolutely essential to the success of the harbour. The Secretary of State, after some correspondence, decided that the question of the harbour entrance should be reconsidered, and referred to a committee in London, before which Captain Taylor was nominated to represent the Harbour Trust Board. The committee formed consisted of Admiral Nowell Salmon, C.B., V.C., Admiral Sir George Nares, K.C.B., and Sir John Coode, K.C.M.G. They were instructed to examine the question thoroughly and obtain such nautical and other evidence as they might think necessary. The report of this committee was received in December 1887. Having carefully considered all the evidence they had been able to collect, which comprised the views of all classes interested, or who have had opportunities of forming an opinion, the committee pronounced in favor of an entrance at the north-east corner with a covering arm, the entrance on the east face being closed up. The report was supplemented by observations by Mr. Parkes, Consulting Engineer in London, and designer of the works. When the year closed, the whole matter was under the consideration of the Harbour Trust Board.

The progress in the construction of the harbour works was retarded during the year owing to the unsettled condition of the question of the entrance. At the north pier 12 blocks were set in the superstructure, advancing the work by a length of only 6 feet, and making the termination of the pier 2,525 feet from the commencement of the block work; 575 blocks were also deposited in the wave-breaker of the north pier, making this work nearly complete to the full section except at the entrance end. There were also 905 tons of stone deposited in the base and foreshore of this pier. At the south pier, 684 blocks were set, and an advance of 417 feet in length was made; 443 blocks were dropped into the wave-breaker, and 12,267 tons of stone deposited in the base and foreshore of the work.

The general depth of water inside and without the harbour remained almost unchanged.

The total expenditure on the works was Rs. 3,92,718, made up as follows:—

	RS.
Works	3,63,695
Establishment	65,283
Tools and Plant	7,602
	4,36,580
Deduct suspense	43,862
	3,92,718

The total expenditure from the commencement of the works was Rs. 24,24,930 against the sanctioned estimate of Rs. 45,90,051.

During the year the post of Superintendent of the Harbour Works was joined to that of Engineer to the Harbour Trust Board, and a number of small works were carried out by Mr. Thorowgood, in connection with the landing and shipping of goods, and regulation of traffic on the iron pier and on the beach.

Amongst these, 2,520 feet of railway lines were laid on the foreshore to relieve traffic on the iron pier, and cranes were erected commanding these lines. A portion



of the shore was levelled, revetted and rammed down on the surface to serve as a "coal hard." Twenty-nine cranes were put into good order, repairs to the iron pier itself were commenced, and an embankment substituted for timber and iron work for a length of 230 feet. The estimate for the work to the iron pier amounted to Rs. 29,881:

5. *Gopálpur Pier*.—This work was virtually complete at the end of the year, and was handed over to the Marine Department at the beginning of April. An approach to connect the pier with the road will be made under local sanction. The revised estimate for the work amounted to Rs. 3,08,200, and the expenditure, when finally booked, will probably equal that sum. A scale of fees on all persons, carriages, merchandise, baggage and other articles shipped from, or landed at, the pier will be duly levied in accordance with the original intention, to meet the cost of establishment and interest on the sums advanced for the construction of the pier, and to provide a sinking fund for extinguishing the debt in about twenty years.

6. *Negapatam Harbour*.—There was considerable silting near the mouth of the river, and dredging was recommended by the resident merchants; the local Marine authorities who have charge of the dredging operations were accordingly directed to take the requisite measures. The boat basin, which had proved a failure, was ordered to be filled up and the main town drain to be diverted by the agency of the Public Works Department; but owing to rains and the necessity for the extension of the jetty wall above the face of the boat basin, these works could not be completed during the year. Rs. 2,036 out of an estimate of Rs. 2,900 were spent on diverting the drain, and Rs. 1,174 on the boat basin, the estimate for the latter work being Rs. 2,284.

An estimate, amounting to Rs. 17,900, for extending the jetty wall inland was sanctioned towards the close of the year.

7. *Negapatam Drainage and Water-supply*.—The investigation by the Executive Engineer of a scheme for the drainage and water-supply of the town of Negapatam was concluded during the year.

Drainage.—It was found that the town is capable of easy drainage so far as levels are concerned, being well above high tide level, but the streets are so narrow that there is not sufficient room for even moderate-sized surface main drains. It was therefore proposed to adopt the type ordinarily used for minor drains. The service drains are intended to be used for "domestic waste" only, and not to carry off rain or storm water. The drains are to be constructed with concrete and plastered with cement, and will be flushed by means of the Kothan kolum, which is conveniently situated for the purpose. The approximate cost of the scheme is Rs. 80,000.

Water-supply.—The supply is to be drawn from the Vettar at the site of the Devannadi dam, by means of pumps, and raised to a service reservoir capable of holding a week's supply of 15 gallons per head per day for a population of 54,000. The water will be taken by means of a masonry conduit to a second cistern near the town, raised to a level of 20 feet, and thence distributed by iron pipes. The approximate cost of the scheme is Rs. 5,30,000, with an annual charge for working expenses of Rs. 40,000.

The schemes have been remitted to the Municipal Council for consideration.

8. *Bangalore Water-supply*.—The proposals for improving the water-supply at Bangalore, referred to in the previous report as having been laid before the Government of India, were considered during the year. The scheme provided for supplying distilled water for drinking and cooking, while for other purposes, the Halsur tank supply was to be improved. The estimated cost of the works was Rs. 2,26,860, in addition to an annual charge of Rs. 84,600 for maintenance of the distilled water system, and Rs. 27,000 per annum for the Halsur tank supply. The Government of India remarked that, in view of serious objections to a dual system of water-supply, and the great annual expenditure involved, they were unwilling to accept the proposals as the only alternative open for providing a satisfactory water-supply, and they expressed the hope that further investigation might show that a satisfactory supply could be obtained, involving a smaller recurring expenditure. They accordingly requested that further examination of the country round Bangalore might be made.

The Government of India further remarked that, from the papers submitted, the Agram scheme seemed to offer a reasonable prospect of a satisfactory supply, especially if the four villages, the drainage of which the Agram tank receives, were removed; and they requested that the cost of this, as well as of reserving the whole drainage area of the tank, should be ascertained, as it might then be found that the difficulties and expense would not be prohibitive as had been supposed. It was also remarked that the annual expenditure connected with this scheme might possibly be reduced if a pipe were taken from the higher level tanks and the troops supplied by gravitation so long as this supply lasted. Finally, it was suggested that, if the Agram scheme proved to be not practicable, it might be worth while to ascertain the cost of pumping a full supply from the Cauvery.

The Superintending Engineer was thereupon directed to ascertain and report the cost of removing the four villages which drain into the Agram tank and of reserving the whole drainage area of the tank; also what reduction in the estimated annual expenditure connected with Captain Romiley's project A could be effected by taking a pipe from the higher level tanks. The Superintending Engineer was also requested to prepare, if possible, a rough estimate of the cost of pumping a full supply of water from the Cauvery.

The Government subsequently resolved to publish the results of all the investigations which had been made of late years into the question of the Bangalore water-supply and to invite the submission of a workable and economical scheme for the supply of pure drinking water for the troops. A reward of Rs. 1,000 was accordingly offered for the best essay on the subject. It was made a condition that the scheme taking the prize should be original, and not simply a modification of any of the proposals already laid before the Government, though any one or more of the suggestions contained on such proposals might be applied if necessary. A further sum of Rs. 1,000 was promised if the essay was adopted as the foundation of any scheme which the Government may resolve to carry out. The Chief Engineer was to decide whether any essay fulfilled the required conditions, and his decision was to be final. In compliance with this invitation several essays were submitted, but the question had not been decided when the year closed.

9. *Ootacamund Water-supply.*—The pipes for the northern water-supply scheme arrived early in May, and laying was commenced shortly afterwards. The pipes were, in the first instance, jointed with Portland cement, but the work did not turn out well; and it has since been found necessary to use lead. The failure of the cement joints has greatly delayed the work. It will, it is expected, be completed during the current year. The expenditure during the year was Rs. 31,927, and the total expenditure from the commencement Rs. 1,43,012 against the sanctioned estimate of Rs. 1,70,000.

10. *Artesian boring in the Kortulayar Valley.*—At the end of the previous year a depth of 200 feet had been reached. Further boring to a depth of 300 feet was sanctioned in June 1887, and the following strata were passed through:—

- At 207 feet bed of lime stone, greyish and moderately hard.
- At 208 feet fine grey clay indurated, same as that found above 200 feet.
- At 210 feet hard black clay indurated.
- At 216 feet bed of grey lime stone.
- At 222 feet grey sandy conglomerate containing nodules of carbonate of lime and shells, also prints of leaves and of other vegetable matter.
- At 233 feet grey coarse sand (quartzite) slightly cemented so as to form a conglomerate.
- At 249 feet the same, but containing shells, &c., and mica.
- At 263 feet mixture of sand grey clay traversed in places by thin layers of blue clay, very dark and containing iron pyrites. This continues down to 300 feet.

It was originally thought that the alluvium did not extend beyond a depth of 200 to 250 feet; and as it is desirable to penetrate this alluvium, below which water will probably be found, the boring was authorised to be continued to a depth of 420 feet unless gneiss is reached or water tapped at a less depth. At the end of the year the depth reached was 371 feet, still in alluvial soil. The total expenditure incurred on the work was Rs. 6,027 against the sanctioned estimate of Rs. 8,745.

11. *Wynaad communications.*—Reforming and metalling the Calicut-Vayitri road was in progress. The work was almost completed up to the 18th mile from Calicut, and the Tamarachery ghât was quite finished, leaving only metalling of the portion between the 18th mile and the foot of the ghât to be taken up during the south-west monsoon of 1888. Of the iron bridges, that at Kodangapoya, of two 50-feet spans, had the girders in position and was expected to be open for monsoon traffic. The Ingapoya bridge foundations were laid and the materials for the superstructure collected to a great extent. The foundations for the Vengari bridge were excavated and part of the materials collected at the site of the work. Two minor bridges of 20-feet and 15-feet spans were also constructed. Mile stones were fixed as far as the 26th mile and placed at site on the remaining portion as far as Vayitri.

The road was kept open for cart traffic during the year at a cost of Rs. 18,934. The total outlay on new work and repairs amounted to Rs. 1,56,023 against a grant of Rs. 1,55,000, and the outlay from the commencement amounted to Rs. 3,11,051 against the sanctioned estimate of Rs. 4,11,965.

On the Vayitri-Gûdalûr section, a sum of Rs. 7,772 was spent on the masonry and approaches of the Sholadi bridge against a grant of Rs. 7,584. The road has now been made over to the Nilgiri Division for completion.

12. *Potinghi Ghât and continuation above the Ghât.*—An expenditure of Rs. 14,401 was incurred during the year on bridge work for the Potinghi ghât. A cast iron girder bridge of one span of 76 feet was procured from England to be laid across the Sunki river, and building materials were collected at the site of this work as well as at the site of the Rallagedda bridge. Considerable difficulty was experienced in conveying the iron work from Bimlipatam, where it was landed in October, to foot of the ghât. The erection of the bridges will now, it is hoped, be actively proceeded with.

On the road from Potinghi to Koraput, an outlay of Rs. 71,949 was incurred. Two iron girder bridges absorbed Rs. 24,006, the remaining sum, Rs. 47,621, being spent on the formation of the road and the collection of materials. The distance between Potinghi and Koraput along the line selected for the road is 30 miles. At the Potinghi end, the earthwork was completed for a distance of 4 miles, of which about 2 miles were metalled and gravelled. At the Koraput end, the earthwork was completed for 7½ miles and was in progress for a further distance of 2¼ miles. Metal was spread on 2 miles of this section, and the requisite stone was collected at the road site for 6 miles. A large quantity of road metal was also collected along the line in other places where the earthwork had not been commenced. Nine small tunnels were either complete or in progress, and a large quantity of building material was collected at most of the bridge sites.

The progress on the work was necessarily slow owing to the difficulty of procuring labor in this remote, unhealthy and thinly-populated line of country. What local labor does offer is unskilled and unaccustomed to work of this character.

The survey for the construction of the road to Bustar in the Central Provinces was completed in 1886-87 to Amerkoti, a distance of 75 miles from Koraput. During 1887-88, a survey was made via Jeypore to Berigumna, a distance of 26 miles, and the original survey was continued from Amerkoti to within 15 miles of the frontier of the Central Provinces. The country to be traversed is covered with thick jungle and is most unhealthy. These conditions necessarily affected the progress of the work.

13. *Road from Kullar to Gûdalûr.*—This is a section of the main line of communication which, commencing at Mettupâlaiyam on the eastern side of the Nilgiris, traverses the hills and Wynaad and joins the road starting from Calicut on the Western Coast. The road which includes the Coonoor ghât on one side and the Gûdalûr ghât on the other was maintained in good order during the year under review at a cost of Rs. 41,807. It was necessary to correct the distances between Mettupâlaiyam and Ootacamund, and new mile and furlong stones were supplied throughout, the following distances being fixed:—

Ootacamund to Coonoor, 11 miles.

Do. to Mettupâlaiyam, 32 miles.

Do. to Gûdalûr, 31 miles.

Rs. 6,239 were spent on repairing the bridges, and an estimate of Rs. 1,380 was

sanctioned for constructing rough stone revetments in places between Coonoor and Kullar. Collection of material for remetalling was in progress at the close of the year.

14. *Road from Cumbum to the foot of the Gúdahir-Peermand Ghit.*—A sum of Rs. 46,739 had been spent on this work by the Local Board prior to its transfer to the Public Works Department in 1885-86, as noticed in the previous report, and a further sum of Rs. 6,382 had been laid out on materials-at-site. A balance of Rs. 43,768, out of an estimate of Rs. 90,507, was thus available for expenditure by the Public Works Department. The following works remained to be done:—

- (a) Repairing culverts and road dams.
- (b) Improving and regravelling completed portion of the road which had deteriorated.
- (c) Completing bridges over the Surungan and Kakanodai nullahs.
- (d) Constructing a bridge over the Kuruvanuthu river.

A sum of Rs. 20,085 was spent on the work during 1887-88, and this, added to the outlay of Rs. 55,578 up to the end of the previous year, made a total of Rs. 75,663.

Six out of the ten miles of road to be metalled have been gravelled, and metal has been collected for completing the remaining four miles, which, although incomplete, are practicable for traffic.

Work to the bridge over the Kuruvanuthu was pushed on during the last nine months of the year. One arch was finished, and the centering for the second was completed and the arch started. The wings were raised on an average 7 feet above the springing line of the arch, and the north approach was almost finished.

The bridges over the Kakanodai and Surungan nullahs were completed.

15. *Widening the Elephant Gate Bridge, Madras.*—This bridge spans the Buckingham canal near the Salt Cotaurs station of the Madras Railway. There is a railway level crossing to the west of the bridge, and the traffic at this point, at all times great, is frequently congested to an inconvenient extent by the shutting of the railway gates to allow of the passage of trains. The bridge is a narrow structure and has been found quite unequal to the accommodation of the foot and wheeled traffic thus concentrated. It was accordingly decided, after prolonged discussion with the Railway Company and the Municipality, that the bridge should be widened at the expense of Government, the Municipality being liable for future maintenance. The Public Works Department was accordingly entrusted with the work and spent Rs. 10,430 on it during the year, the sanctioned estimate being Rs. 20,200.

16. *Tirumal Naick's Palace, Madura.*—The total sanction for the restoration of this building and its adaptation for public offices now amounts to Rs. 3,35,109, and the expenditure up to the 31st March 1887 was Rs. 3,11,649.

The works in progress during the year were the following:—

- (a) Restoration.
- (b) Locating the Collector.
- (c) Providing record-racks to the district court.
- (d) Providing lightning conductors in dome G of the south-east turret.

Of these (b), (c) and (d) were almost completed.

The expenditure on (a) amounted during the year to Rs. 1,715 and the total expenditure from the commencement of the work to Rs. 1,01,217. The restoration of this important structure was commenced in 1870. The work has since been steadily prosecuted by regular annual allotments, and the primary object in view, of preserving from decay one of the finest historical monuments of ancient native power to be found in Southern India, has now been successfully accomplished, the building itself being adapted to the uses of the public service.

17. *New buildings for the Brecks' Memorial School, Ootacamund.*—Work on these buildings was continued during the year and completed before its close. The buildings form a handsome structure in a commanding and central position. They have since been opened as a school by His Excellency the Governor with fitting ceremonial. The work was completed for a sum of Rs. 47,026, the expenditure during the year having been Rs. 25,276.

The old school building will shortly be converted into a Sub-Judge's court.

18. *Madras High Court buildings.*—The question of providing new buildings for the High Court of Madras has engaged the attention of Government for many years past, but nothing definite could be settled, owing, principally, to the difficulty of securing a suitable site for the purpose.

In 1875 the High Court brought to the notice of the Government the insufficient and unsatisfactory nature of the accommodation afforded to the court and its establishment by the existing building, which was formerly occupied by the old Supreme Court; and after pointing out the various defects and referring to the circumstance that at Calcutta, Bombay and Allahabad the High Courts were about to be lodged in buildings specially constructed for the purpose, the Registrar added that "the Chief Justice and Judges trust that measures may be adopted by the Government to provide the High Court of Madras with a more suitable court-house." A reference was then made to the Consulting Architect to Government, who endorsed all that was said as to the unsuitableness of the present buildings and recommended their abandonment and the construction of an entirely new court-house on an open space of ground about two miles inland, known as the Pudupet maidan. The preparation of plans was ordered, but it was subsequently found that the Pudupet maidan was required for military purposes.

After some further correspondence the question remained in abeyance until 1884, when it was again brought by the High Court under the consideration of Government with the result that a committee was appointed, with the late Chief Justice as Chairman, to report as to the site in Madras best suited for the purpose. The High Court considered, and the Government agreed with them, that the site must not be remote from the offices of the attorneys and merchants, but that at the same time it should be at such a distance from the active operations of the port that business may not be interrupted by the noise attendant on those operations.

In October 1884, the committee reported their unanimous opinion that "of the open sites in the town, the site on the esplanade north and north-west of the light-house would be the most convenient for the public if there is no objection on the part of the military authorities." Objections from a military point of view were raised to this site, and other sites near Popham's Broadway, the Pudupet maidan, and the South Beach were considered, but declared unsuitable either on the score of expense or distance from business centres. It was at one time contemplated to retain the present site and to make extensive alterations and additions to the existing buildings, but this design was, for several reasons, subsequently abandoned. After full consideration the Government came to the conclusion that it would be decidedly the best and cheapest course to dispose of the present site and buildings and to build elsewhere, and the site near the light-house was found to be the only suitable one. This site was ultimately adopted with the concurrence of the Government of India, and plans and estimates are now under preparation for the erection of a new High Court in this position.

It is proposed to dispose of the present buildings by sale, and tenders for their purchase have been called for by public advertisement.

19. *Court-house for the Presidency Magistrates, Madras.*—The need for a new Court-house for the Presidency Magistrates in Black Town has long been admitted, but as no suitable site could be obtained, the matter has hitherto been held in abeyance. A site was, however, selected during this year on the beach to the south of the Telegraph office, and sanction was accorded to the erection there of a court-house, a police station, and fire-engine room combined, at a cost of Rs. 49,830. The work was commenced at the close of the year.

20. *Police Station, &c., Madras.*—The Central Police office of the C Division in Black Town has hitherto been very unsuitably accommodated, and the opportunity was taken of the erection of quarters for other public departments in this locality to design a building which would afford accommodation for them all, in an economical manner. A combined building for a police station, vaccination depôt, registration office, and fire-engine shed was accordingly sanctioned at an estimated cost of Rs. 12,000, the municipality contributing Rs. 3,618 for the space allotted to them. The work was commenced in February. It is situated at the junction of four roads

near Patchiappa's Hall, and has been designed in keeping with its situation. It will, it is expected, be an ornament to the locality.

21. *Ootacamund District Jail Buildings.*—The District Jail at Ootacamund having been abolished, the buildings became available for other purposes. It was decided to appropriate the accommodation set free so as to provide offices for the Inspector-General of Jails, the Deputy Tahsildar, and the Registrar of Assurances, and quarters for the Apothecary attached to Army Head Quarters. The estimated cost of altering the buildings was Rs. 2,950, against which an expenditure of Rs. 2,205 has been incurred.

22. *Additions to the Madras College of Engineering.*—This work was continued during the year, but was somewhat delayed by the late arrival of iron girders from England, and the failure of cast iron columns made for the ground floor. One of these having failed, it was considered desirable to have the others carefully tested. Some of the columns were, after proper examination, rejected, and others placed in positions to carry lighter loads. Stone columns were substituted where necessary. All the columns and girders were fixed in position and the terracing of the floor was completed. The expenditure during the year was Rs. 37,946, and the total expenditure Rs. 67,228 against the estimate of Rs. 90,066.

23. *Military Churches at Wellington.*—The Protestant Church at Wellington, the structure of which had been previously completed, was not furnished till the present year, when an estimate of Rs. 3,762 was sanctioned for the purpose. Furniture was provided on a scale as for 450 sittings.

The Roman Catholic Church at this station was completed during the year. It was designed to contain 200 sittings, and, including furniture, the cost to Government was Rs. 23,863. The Chaplain who carried out the work was at liberty to spend as much more on the edifice as he considered necessary. The church was opened for divine service in April last. The Chaplain desires to add a spire to the edifice from private funds, but the Public Works officers are of opinion that it would not at present be safe to allow this, and the work has therefore been deferred.

24. *Improvements to the Lawrence Asylum, Ootacamund.*—The need of separate and increased hospital accommodation in connection with the male branch of the Lawrence Asylum has frequently been brought forward by the Committee of the institution. The necessity for improving the present system of drainage and water-supply has also become very apparent, and the position of the latrines, at a distance from the main building, has been found to be inconvenient. Increased accommodation at the female branch is also desirable, should funds be available. The following estimates have been framed and submitted for the approval of Government:—

	RS.
(i) Altering the existing hospital wards	2,000
(ii) Constructing a separate cottage hospital for infectious cases	14,000
(iii) Constructing a latrine for the boys	3,000
(iv) Converting the present boys' latrine into a servants' latrine	1,200
(v) Constructing an open drain	500
(vi) Water-supply scheme	12,350

A plan has also been submitted showing how the girls' school may be enlarged to accommodate twenty-five more girls. The approximate cost is set down at Rs. 20,000.

On consideration of estimates submitted, the Government remarked with respect to (i) and (ii) that a single hospital, which had been estimated to cost Rs. 18,000, would be preferable to a cottage for infectious cases estimated at Rs. 14,000, plus an expenditure of Rs. 2,000 for repairs and alterations in the main building. They accordingly approved, with some modifications, the plan for a separate hospital, to be constructed from Asylum funds. Estimates (iii), (iv), (v) and (vi) were also approved and referred, together with the proposal for a separate hospital, for the consideration of the new Committee which had recently been appointed. The proposal to enlarge the girls' school was dropped, as it appears that the institute had no funds available for the work. If the water-supply scheme is finally approved, it is proposed to apply to the Government of India to allot funds as a special case for its execution from the Military Works grant.

25. *Presidency Public Works Workshops.*—Mr. A. Joyce, Executive Engineer, continued to hold this charge in addition to the Stores and other minor charges.

The following is a comparative statement of the work done in the shops for the year under review as compared with the previous year:—

	1887-88.			1886-87.			Less than 1886-87.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Works for the Public Works Department	83,116	2	5	97,995	4	8	14,879	2	3
Works for other departments	61,251	1	8	62,744	0	0	1,492	14	4
Works for private parties	3,587	2	3	8,578	0	7	4,990	14	4
Total	1,47,954	6	4	1,69,317	5	3	21,362	14	11

The value of machinery in the shops on the 31st March 1887 was Rs. 1,05,825-14-0. At the close of the present year the value stood at Rs. 1,07,945-6-5 after deducting the usual percentage on account of depreciation and adding the receipts during the year, valued at Rs. 4,955-2-1. The balance of materials on hand was duly verified by the Superintendent and was found to be Rs. 25,025-9-10, being Rs. 4,023 less than the value on the 31st March 1887. It was found necessary to raise the reserve limit of the stock of materials from Rs. 5,000 to Rs. 20,000, so as to include the requisite supply of timber kept in stock. The statement of work shows that much has been done for various Government departments, more particularly the Public Works Department, which could not have been executed so satisfactorily or economically, if at all, by the private agency available in this Presidency.

26. *Presidency Public Works Stores.*—Mr. A. Joyce, Executive Engineer, continued to hold charge of the Stores. Stock-taking was carried out by him during the year, and the stock found to agree with the ledgers.

The opening balance of stock at the beginning of the year, after all adjustments had been made, stood at Rs. 2,07,438-13-6. The receipts during the year were—

	RS.	A.	P.
From London	17,743	15	5
„ Public Works divisions	1,091	2	9
„ Presidency Public Works Workshops	1,401	11	9
Total	20,236	13	11

and the following were the issues:—

	RS.	A.	P.
To Public Works divisions	4,922	12	4
„ Presidency Workshops	27,509	4	2
„ Military Department	67	1	11
„ Guaranteed Railways	19	8	7
„ State Railways	14,029	12	1
„ Local Fund Boards	339	14	0
„ Private sales	1,561	0	7
„ Dowlaisheram Workshops	3,212	5	5
„ Madras Harbour Works	284	8	6
„ Native States	50	13	0
Difference by sale of surplus stores at reduced rates	184	1	3
Total	52,181	1	10

The year thus closed with a balance of Rs. 1,75,494-9-7, being Rs. 31,944 less than the opening balance.

There were 52 consignments of stores received from England, 1 from Rangoon, 2 from Cocanada, and there were 34 shipments by steamer, viz.:—

9 to Cocanada,	2 to Rangoon, and
8 to Masulipatam,	7 to Vizagapatam.
8 to Gopálpur,	

27. *Port Storekeeper's Department.*—Fifty-two consignments of Railway stores were received during the year for the Madras State Railways, of which 31 were from England, 9 from Rangoon and 12 from Calcutta.

All stores for the Cuddapah-Nellore line were sent to Rénigunta after the depôt at Tippagoontapolliem on the Buckingham Canal had been closed, and those for the Bellary-Kistna Railway were sent by rail to Nandyál and by the Buckingham Canal to Seetanagaram after the depôt at Chebrole had been abandoned. Locomotive engines and rolling stock received by rail were removed by the Store Department from the Madras Salt Cotaurs station to the Canal basin, and despatched by boat to Seetanagaram with the iron bridges and plant received from England and other plant for the Bellary-Kistna line.

Considerable difficulty was experienced in loading the locomotive engines in boats at the Canal basin owing to there being no suitable appliances available. A tanton crane was sanctioned, but there was delay in setting it up, occasioned by want of funds. With the assistance, however, of a State Railway Locomotive Foreman, whose services were placed at the disposal of the Storekeeper, and by judicious supervision, all the rolling stock, girders and other stores were loaded without injury to the articles or to the persons engaged in loading them.

28. *Storekeeper of Machinery.*—The machinery in custody of the storekeeper was checked by him during the year and was found to correspond with the ledgers.

The office of Storekeeper of Machinery, which was opened in February 1865, was abolished from the 1st March 1888, and the machinery was removed by the departments concerned, the stamping machines by the Superintendent of Stamps, some machines and plant by the Gun Carriage Factory, and the machinery belonging to the Ordnance Department to St. Thomas' Mount under orders of the Inspector-General.

The services of the clerk, fitter and lascars of this branch of the Stores Department were dispensed with on the 28th February 1888.

29. *Government Brick and Tile Factory, Madras.*—Operations were continued under the supervision of the Consulting Architect. During the year certain proposals were submitted by private firms for taking over these operations, but the terms offered were not such as could, with due regard to Government interests, be entertained.

Eight lakhs twenty-six thousand seven hundred and forty bricks, 15,900 flooring and 11,116 roofing tiles were supplied for Government works, and 1,068,051 bricks, 84,060 flooring and 79,773 roofing tiles for other than Government works, chiefly the Madras Municipality, Town Hall and Mysore Government. An advance of 24½ per cent. on Government rates was charged to other than Government departments. The gross profits of the year were Rs. 5,005.

A sum of Rs. 500 was sanctioned for making experiments for producing decorative porcelain. The experiments made were on the whole successful. A specimen panel was exhibited at the Fine Arts Exhibition held at Madras and was much admired. A quantity of this material is being prepared for the exterior of the new Presidency Magistrates' Court now under construction.

30. *Government Lithographic Press.*—The value of work turned out during the year by this Press was Rs. 15,172-12-6 as against Rs. 15,529 in the previous year; the working expenses being Rs. 11,749-2-1, of which Rs. 11,482-8-5 represent the cost of the permanent establishment. The bulk of the work was for the Irrigation Branch of the Public Works Department, though the Press was utilised by many other departments of the Government. No private work was undertaken.

31. *Inspection of Lighthouses.*—In accordance with the general instructions of the Government of India, the following lighthouses of this Presidency were inspected during the year by superior officers of the Public Works Department, their condition noted and requirements ordered to be supplied:—

Calingapatam.	Tuticorin—Hare Island.
Santapilly.	Muttum.
Vakalapudi.	Cochin.
Hope Island.	Calicut.
Madras.	Tellicherry.
Seven Pagodas.	Cannanore.
Negapatam.	Mangalore.
Pámban.	

32. *Divisional Changes.*—The Ramnad division, which at the end of the previous year had been amalgamated with the Madura division, was again constituted a separate temporary division, and arrangements were being made to reform the Rushikulya division, which had been combined with the Ganjam division. The first Periyár Project division was opened for work on the hills, and the four Tank divisions, which had been closed at the end of the previous year, were reformed on a reduced scale under the designation of Tank Restoration Parties. A fifth party also was opened in the North Arcot division.

33. *Service Books.*—The orders with respect to the due and correct maintenance of the service books of public servants appear to have been generally attended to by officers of the Public Works Department.

II.—PROGRESS OF WORKS.

I.—IMPERIAL—MILITARY WORKS.

34. *Ganjam.*—The expenditure on repairs amounted to Rs. 997 against an allotment of Rs. 950.

35. *Vizagapatam.*—The expenditure on repairs amounted to Rs. 3,275 against a grant of Rs. 3,200.

36. *Godavari (East).*—Repairs to the military buildings at Sámalkót were carried out at an outlay of Rs. 512.

37. *Bellary.*—The apothecaries' quarters (double) at Bellary were finally completed and handed over for occupation. The outlay amounted to Rs. 7,954 against a revised estimate of Rs. 7,856.

38. The collar-makers and wheelers' shop at Bellary was finally completed during the year; estimate Rs. 5,663, outlay Rs. 5,663.

39. The foundations of a new gun-shed for the Royal Artillery were partly excavated and materials collected; estimate Rs. 11,560, outlay Rs. 3,975.

40. The foundations of the workshops for the arsenal at Bellary were excavated and concrete to a depth of 1½ feet laid throughout. Materials were collected, and work was in good progress. The expenditure amounted to Rs. 6,888 against an allotment of Rs. 6,858. The estimate was under revision on account of certain alterations desired by the Military authorities.

41. The under-mentioned minor new works were completed:

	Outlay. RS.
(1) Fitting up new gate and raising compound wall of lock hospital ...	600
(2) Store-room for the forge S/1st Royal Artillery	147
(3) Cistern to receive drainage of European Infantry barracks ...	164
(4) Urinary for canteen G/2nd Royal Artillery	110
(5) Teakwood gratings for wash-house of the European Infantry barracks	110

42. The total outlay under Repairs, Military, was Rs. 31,615. This sum was expended in the maintenance and repairs of the military buildings and roads, including the Barrackmaster's expenditure on petty repairs and compensation for inferior and hired quarters.

43. *Nilgiris.*—The following works were completed or in progress:

- (1) The bakery at Wellington was almost completed at a cost of Rs. 35,146 against an estimate of Rs. 35,850. The final completion was delayed owing to defects and omissions in the machinery sent out from England.
- (2) Quarters for a barrack sergeant at Wellington were completed at an outlay of Rs. 7,099; estimate Rs. 7,348. A supplemental estimate of Rs. 346 was sanctioned and executed.

- (3) A new magazine at Wellington was constructed; estimate Rs. 5,225, expenditure Rs. 4,867.

- (4) Minor works; expenditure Rs. 3,978, allotment Rs. 3,758:

The principal works were—

Laying pipes from drinking-water cistern to station hospital; outlay Rs. 686.

Providing stands for 250 ammunition-boxes; outlay Rs. 435.

Making a flag-staff for General Officer Commanding, Southern District; outlay Rs. 268.

Alterations to Wellington barracks; outlay Rs. 909.

Constructing a masonry drain from barracks square to Engineer's office, Wellington, Rs. 475.

- (5) Repairs were executed to the Lawrence Asylum and the military buildings at a cost of Rs. 6,143 and Rs. 22,273, respectively.

44. **Coimbatore.**—The farrier sergeant's house at the Remount Depot, Matigiri, was purchased for Rs. 1,514.

45. The following minor original works were completed during the year:

- (1) Adding a linen room and verandah to the hospital at the Remount Depot; estimate Rs. 216, outlay Rs. 162.

- (2) Improvements to the hay-shed attached to the farm-stables at the Remount Depot; estimate Rs. 1,260, outlay Rs. 997.

- (3) Improvements to Mr. Maddock's quarters and out-houses at Matigiri; estimate Rs. 550, outlay Rs. 513.

- (4) Constructing six water-troughs in the Remount Depot; estimate Rs. 432, outlay Rs. 417.

- (5) Rebuilding partition walls between the stall of horse-stables at the Remount Depot; estimate Rs. 890, outlay Rs. 866.

- (6) Constructing two tent lascars' huts at the Mettupálaiyam rest-house; estimate Rs. 335, outlay Rs. 332.

46. Repairs to military buildings at the Remount Depot and to the rest-houses at Pódanúr and Mettupálaiyam were carried out at an outlay of Rs. 5,331.

47. **West Coast.**—During the year supplemental estimates, amounting to Rs. 46,340, in connection with the project for accommodating troops at Malapuram, were sanctioned for (1) a new third block of barracks with wash-house and latrine, (2) improvements to the canteen, and (3) constructing drains.

The walls of the barracks were raised 10 feet and arch-work commenced; the walls of the wash-house were raised 7 feet, and the latrine was being roofed. The main walls of the canteen were raised to full height, and roofing of verandah was in progress. Fifty feet of open drains and three covered drains were finished. The total grant of Rs. 17,000 for the year was utilised.

48. The following incomplete works of the previous years were completed:

- (1) Improvements to the elephant shed at Malapuram; estimate Rs. 2,060, outlay Rs. 1,916.

- (2) A store-room for the Madras Infantry regiment at Quilon; estimate Rs. 9,334, outlay Rs. 7,299.

49. Eighteen minor works were carried out during the year at a cost of Rs. 8,411, the principal ones being—

- (1) constructing markers' and stop-butts of the European Infantry at West Hill, Calicut; estimate Rs. 320, outlay Rs. 273;

- (2) deepening a well in the camping ground, Malapuram; estimate Rs. 410, outlay Rs. 308;

- (3) improving the well below married quarters, West Hill, Calicut; estimate Rs. 376, outlay Rs. 362;

- (4) improving the park sergeant's quarters, Cannanore; estimate Rs. 806, outlay Rs. 731.

- (5) alterations and additions to the recreation-room and canteen block of British Infantry at Cannanore; estimate Rs. 1,183, outlay Rs. 1,185;

- (6) reconstructing a well in the Madras Infantry lines, Mangalore; estimate Rs. 467, outlay Rs. 225.

50. The expenditure under Repairs, Military, amounted to Rs. 23,939 against an allotment of Rs. 28,369. The apparent short outlay was mainly due to the expenditure incurred on the cantonment roads at Quilon by the Chief Engineer, Travancore, viz., Rs. 3,937, not having been brought into account. There were also trifling savings on completed works.

51. **Presidency.**—Work on the conversion of the racket court in Fort St. George into a covered gymnasium was continued and nearly completed at a cost of Rs. 9,754.

52. The conversion of A. block family quarters, Fort St. George, into single men's barracks, &c., was also continued, and the work completed at a cost of Rs. 15,325 on an estimate of Rs. 15,877. The outlay during the year was Rs. 9,631.

53. The conversion of the sergeants' mess and adjacent godowns into a latrine and lavatory for the above barrack was in progress on an estimate of Rs. 3,820.

54. Improvements to the water-supply of Fort St. George, which had been nearly completed in 1886-87, were carried out to completion.

55. The conversion of staff sergeants' quarters into a school-house for the Native Infantry, Perambúr, was in progress, and Rs. 1,265 were spent in the year.

56. Alterations and improvements to the drains at the Body Guard lines, Madras, were carried out at a cost of Rs. 1,286.

57. A verandah was constructed to the officers' mess, Fort St. George, at a cost of Rs. 362, and servants' quarters were built to each of the Commissariat sub-conductors' quarters at the Ordnance lines, Madras, at an outlay of Rs. 1,048.

58. The additions to the wash-houses at the parade barracks, Bangalore, were continued, and the work was completed at an outlay of Rs. 11,737 on an estimate of Rs. 12,500. The year's expenditure was Rs. 1,017.

59. The construction of public buildings for a regiment of Native Infantry at the Arab lines was completed. The outlay was Rs. 21,903 on an estimate of Rs. 21,636. The year's expenditure was Rs. 6,715.

60. The construction of station butchers' quarters was in progress on an estimate of Rs. 3,860. The work was almost completed at an outlay of Rs. 2,120.

61. Twenty-five minor new works at the Presidency and twenty-three at Bangalore were completed at a cost of Rs. 12,173.

62. One hundred and thirty-six repair works at the Presidency and 185 at Bangalore were carried out during the year. Payments were made to the Madras municipality of Rs. 15,287 on account of house, water and lighting taxes on Government military buildings outside Fort St. George, and of Rs. 6,000 on account of maintenance repairs of the esplanade and fort beach roads.

63. At Bangalore Rs. 1,200 and Rs. 6,300 were paid to the municipality of the civil and military station for conservancy of the main sewer and maintenance repairs to military roads.

64. The total outlay under Repairs, including barrackmaster's expenditure on petty repairs, compensation for quarters and payments made to the municipalities on account of taxes and maintenance grants was Rs. 94,521 at the Presidency and Rs. 66,545 at Bangalore.

65. The most important of the repair works undertaken during the year were—

- (1) repairing the walls and floors of the military prison, Fort St. George; estimate Rs. 2,875, expenditure Rs. 2,665;

- (2) general repairs to the Perambúr Native Infantry lines; estimate Rs. 5,570, expenditure Rs. 5,656;

- (3) thorough repairs to the officers' mess-house, Fort St. George; estimate Rs. 4,945, expenditure Rs. 2,157;

- (4) repairing ceilings of the armoury, Grand Arsenal, Fort St. George; estimate Rs. 3,100, expenditure Rs. 1,649;
- (5) making thorough repairs to the Government granary of the Commissariat Department; estimate Rs. 8,800, expenditure Rs. 1,105;
- (6) plastering with cement the exterior face of the enceinte of Fort St. George from north to St. George's gate; estimate Rs. 2,970, expenditure Rs. 2,679;
- (7) painting doors and windows of the parade barracks, Bangalore; estimate Rs. 7,280, expenditure Rs. 5,871;
- (8) whitewashing the buildings in parade barracks; estimate Rs. 2,990, expenditure Rs. 2,830;
- (9) whitewashing and wood-oiling all buildings at the Agaram cavalry barracks; estimate Rs. 5,090, expenditure Rs. 4,541.
- (10) substituting Basel Mission tile-roof for ordinary tiled-roof to one single and one double row of stalls at the Agaram cavalry barracks; estimate Rs. 3,675, expenditure Rs. 4,371.
- (11) whitewashing and wood-oiling the Agaram Royal Artillery barracks; estimate Rs. 3,710, expenditure Rs. 3,087.
66. **Chingleput.**—A coffee shop, with kitchen, for the upper story barracks at St. Thomas' Mount, commenced in 1886-87, was completed at an outlay of Rs. 6,870 on an estimate of Rs. 6,690.
67. Eleven cook-houses attached to the family quarters of the P/1st and Q/1st Royal Artillery, Mount, were taken down and rebuilt on an estimate of Rs. 2,970, and the work was completed at an outlay of Rs. 2,986.
68. Alterations and improvements to the barrel racks at the reserve powder magazine, Mount, were commenced, and an expenditure of Rs. 882 was incurred. The work had to be deferred pending removal of the powder by the Military Department.
69. Seven minor new works were completed at a cost of Rs. 1,601.
70. Repairs to 15 buildings and several minor repairs, costing less than Rs. 500 each, were carried out at a total expenditure of Rs. 17,206, and the roads in the cantonments of Mount, Pallavaram, and Poonamallee were maintained at an outlay of Rs. 3,814. The total expenditure under Repairs, including Barrackmaster's petty repairs, compensation for quarters, &c., was Rs. 28,316.
71. The more important of the repairs were—
- (1) repairing the roof of 11 barracks at Pallavaram; estimate Rs. 1,025, expenditure Rs. 979;
 - (2) repairing station hospital and its out-houses, Poonamallee; estimate Rs. 910, expenditure Rs. 818;
 - (3) repairing the sun-shades in the family quarters, Nos. 20 and 27, of Q/1st Royal Artillery, Mount; estimate Rs. 915, expenditure Rs. 873;
 - (4) repairing the sick lines stables at Mount; estimate Rs. 1,340, expenditure Rs. 1,257;
 - (5) repairing white and colour-washing west barracks and out-houses of 2nd Brigade, Royal Artillery, Mount; estimate Rs. 3,880, expenditure Rs. 2,279;
 - (6) repairing white and colour-washing, No. 66, female hospital, Mount; estimate Rs. 1,135, expenditure Rs. 754.
72. **North Arcot.**—A sum of Rs. 2,438 was spent under Repairs, including the usual annual contribution of Rs. 1,000 to the municipality on account of maintenance of Vellore cantonment roads.
73. **Trichinopoly.**—Construction of public buildings for a regiment of Native Infantry. The magazine and cells, which were incomplete at the close of the preceding year, were completed at an outlay of Rs. 2,495 against a grant of Rs. 2,340. The whole work was completed at a cost of Rs. 20,310 against an estimate of Rs. 20,155.
74. Rupees 149 were spent in providing ammunition-boxes and Rs. 3,827 in maintaining cantonment roads and repairing military buildings.

II.—IMPERIAL—CIVIL WORKS.

75. **Vizagapatam.**—The post-office at Salúr was completed and handed over to the Postal Department. The total cost was Rs. 2,057 against an estimate of Rs. 2,000. The expenditure in the year was Rs. 1,746.

76. Repairs were executed to the post-offices at Vizagapatam and Narsapatam and to the telegraph office at Vizagapatam.

77. **Godavari (East).**—The telegraph office at Cocanada was repaired at a cost of Rs. 979 and the telegraph office at Rajahmundry at a cost of Rs. 219. A sum of Rs. 165 was spent on the post-office at Tuni.

78. **Kistna (East).**—A well in the compound of the post-office at Bezvada was completed during the year at a cost of Rs. 105.

79. The telegraph offices at Bezvada and Masulipatam were maintained in good order.

80. **Kistna (West).**—Iron-bars were fixed to the windows of the Duggirala post-office at a cost of Rs. 12.

81. **Nellore.**—The Sub-Postmaster's quarters, &c., at Gúdúr were completed, and the post-office at the same place was improved.

82. The post-offices at Kistnapatam and Gudur were repaired during the year.

83. **Bellary.**—The post-office at Anantapur was completed and handed over to the Postal Department. The expenditure amounted to Rs. 4,414 against an estimate of Rs. 4,051.

84. A compound wall was built to the post-office at Adóni at a cost of Rs. 113.

85. **Coimbatore.**—The late Munsif's court-house at Dharmapuri was converted into a post-office and Postmaster's quarters at an outlay of Rs. 636; estimate Rs. 652.

86. Repairs to three post-offices were carried out during the year at a cost of Rs. 102.

87. **Nilgiris.**—Improvements to the post-office at Kótagiri were carried out at a cost of Rs. 790.

88. Rupees 590 were spent on repairs, postal, and Rs. 117 on repairs, telegraph, buildings.

89. **West Coast.**—Certain vacant buildings in the fort at Tellicherry (late district jail) were converted into a post-office and Postmaster's quarters at an outlay of Rs. 2,613 against an estimate of Rs. 2,335.

90. The windows and doors of the post-office at Vayitri were iron-barred at a cost of Rs. 172.

91. Rupees 527 were spent in repairs to seven postal buildings.

92. **Presidency.**—A few small works were undertaken, viz.:

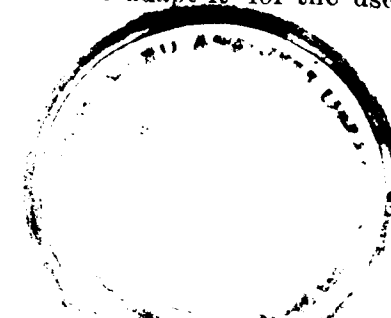
- (1) Adding a room to the Imperial post-office at Hunsur; outlay Rs. 172.
- (2) Improvements to the Mysore post-office; outlay Rs. 914.

93. The following repairs were carried out:

- (1) Whitewashing and repairing the telegraph office, Bangalore; expenditure Rs. 492.
- (2) General repairs to the telegraph stores, Black Town, Madras; expenditure Rs. 639.
- (3) Whitewashing the general post-office, Bangalore; expenditure Rs. 244.

94. **North Arcot.**—The post-office at Chittoor was enlarged at a cost of Rs. 353.

95. A sum of Rs. 291 was spent on repairs to the Postmaster's quarters in the Vellore fort and on repairs, &c., to the Stipend pay office to adapt it for the use of the combined post and telegraph office.



96. **South Arcot.**—Quarters for the Deputy Postmaster at Tindivanam were completed at an outlay of Rs. 579.

97. Rupees 167 were spent on repairs to the office of the Superintendent of Post-office, Cuddalore Division.

98. **Trichinopoly.**—Improvements to the combined post-office at Trichinopoly fort and to the post-office at Musiri were carried out at an outlay of Rs. 343.

99. **Tanjore.**—The addition of a bath-room and verandah to the post-office at Tanjore was completed at a cost of Rs. 260, and the extension of the post-office at Kumbakonam for the accommodation of the telegraph office was completed at a cost of Rs. 1,028, of which Rs. 874 were spent during the preceding year. The post-office at Tanjore was also repaired at an outlay of Rs. 110.

100. **Negapatam.**—Repairs to the post-offices at Patukóta and Mimmesh were completed at a cost of Rs. 555.

101. **Madura.**—Rupees 634 were spent in completing the new post-office at Butlagundu, on which Rs. 939 were laid out in the preceding year against an estimate of Rs. 1,340. A police station-house at Vendasandúr was converted into a post-office at an outlay of Rs. 75. The British post-office at Peermade and Postmaster's quarters at Periyakulam were repaired at a cost of Rs. 83.

102. **Tinnevely.**—The telegraph office at Tuticorin was repaired at a cost of Rs. 468, and the post-offices at Tenkarai, Satúr, Nagarcovil, Vasudevanallúr, and Srivaikuntham were repaired at an outlay of Rs. 826.

III.—PROVINCIAL—CIVIL BUILDINGS.

103. **Ganjam.**—A building at Russellkonda was purchased for Rs. 1,000 as an office for the Deputy Collector.

104. Repairs to the following works were executed during the year :

- (1) Collector's house at Chatrapur.
- (2) Police magazine at Chatrapur.
- (3) Subdivisional office at Russellkonda.
- (4) Out-houses of Collector's bungalow at Chatrapur.
- (5) Improvements to the treasury room at Chatrapur.

The total cost of repairs was Rs. 2,620.

105. **Vizagapatam.**—The bungalow and out-houses for the Assistant Superintendent of Police, Jeypore, were completed at a cost of Rs. 15,378 against a revised estimate of Rs. 15,350. The outlay during the year was Rs. 310. The building was finally handed over to the Police Department on 31st March 1888.

106. The following works were in progress :

- (1) Additional accommodation to the Huzur treasury at Vizagapatam ; estimate Rs. 9,360, including a supplementary estimate of Rs. 490, outlay Rs. 9,196 ; a second supplementary estimate of Rs. 530 was subsequently sanctioned.
- (2) The police station at Koraput, an incomplete work of the previous year, was completed with the exception of the asphalt flooring to the two cells and some other trifling work. The total expenditure was Rs. 4,523 against an estimate of Rs. 3,895 ; the outlay for the year being Rs. 2,444 against an allotment of Rs. 2,100.
- (3) Additions and alterations to the Deputy Tahsildar's office at Pálkonda and constructing a second-class police station-house in the compound. The work was completed, but accounts were not fully closed. The estimated cost of the work was Rs. 4,920, previous outlay Rs. 1,876. Outlay during the year under review Rs. 2,769.
- (4) Constructing an hospital at Gunupuram ; revised estimate Rs. 4,020, expenditure Rs. 2,040. This was expended on the wood-work. Work was not commenced, as the site was not settled until the end of the year.

(5) Constructing 34 reserve police huts at Koraput ; estimate Rs. 14,800, expenditure Rs. 1,166.

(6) Completing the Sub-Magistrate's cutcherry with sub-jail at Pottinghi. An iron roof was purchased for Rs. 3,316 against an allotment of Rs. 3,400.

(7) Second-class police station-house at Komarada ; estimate Rs. 1,520. The work was completed at a cost of Rs. 1,506. Rs. 1,080 was expended during the year.

(8) Additions to the Deputy Tahsildar's office at Bimlipatam were completed at a cost of Rs. 1,125 against an estimate of Rs. 1,040.

(9) An iron safe for the treasury at Pottinghi was made at a cost of Rs. 274.

(10) Alterations were carried out to the kitchens and latrines of the lunatic asylum at Waltair at a cost of Rs. 176 against an estimate of Rs. 192.

107. The lunatic asylum at Waltair was repaired at a cost of Rs. 1,525 and six minor works at a cost of Rs. 714.

108. **Godavari (East).**—Additions to Collector's cutcherry, Cocanada. This work was practically finished during the preceding year. The old buildings near the Collector's cutcherry were dismantled and the sale-proceeds, which amounted to Rs. 1,272, were credited to the work. The total cost of the new buildings was Rs. 36,861 against an estimate of Rs. 31,870.

109. New court-house, Rajahmundry. Some furniture was purchased at a cost of Rs. 1,077. The total outlay on the main building and subsidiary works amounted to Rs. 41,938 against an estimate of Rs. 42,200.

110. The Sub-Magistrate's cutcherry, Pithápuram, was completed during the year, and formally handed over in December 1887. The total cost of the building was Rs. 10,656 against an estimate of Rs. 8,983.

111. The Sub-Magistrate's cutcherry at Tuni was completed and handed over to the Sub-Magistrate in December 1887. The cost of the building was Rs. 9,692 against an estimate of Rs. 9,436. Rupees 2,436 were expended during the year.

112. The outlay on the church at Cocanada to end of the year, against the Government grant-in-aid of Rs. 6,000, was Rs. 5,199.

113. Water-supply and improvements to the existing drainage of the central jail, Rajahmundry. The improvements were finished, with the exception of roof over the well which was in progress in the Dowlaishweram workshops. The expenditure to end of the year was Rs. 31,391 against an estimate of Rs. 33,030.

114. A bath-room for the Principal of the Provincial College, Rajahmundry, was completed at a cost of Rs. 427.

115. The main building of the dispensary at Bhadráhallam was completed, and the out-houses were almost finished. A well was dug to a depth of 33 feet. The outlay during the year was Rs. 2,470 against an estimate of Rs. 4,246.

116. Quarters for the hospital assistant, Public Works Department, at Dowlaishweram, were completed at a cost of Rs. 610.

117. A Registrar's office, Cocanada, was completed during the year and handed over to the District Registrar. The cost of the building was Rs. 4,802 against Rs. 4,700.

118. The main building of the Executive Engineer's quarters, Dowlaishweram, was completed. The total expenditure amounted to Rs. 14,929 against an estimate of Rs. 12,500.

119. A well for the Superintending and Executive Engineer's houses was completed at a cost of Rs. 564 against the estimate of Rs. 500.

120. Lieutenant-Colonel Drake-Brockman's house and land at Dowlaishweram were purchased for Rs. 2,530.

121. A portion of the roof of Trinity church at Rajahmundry was repaired, and minor repairs were carried out to other buildings.

122. **Godavari (Central).**—The Sub-Registrar's office at Razole was completed at a cost of Rs. 2,768 against an estimate of Rs. 2,750, and handed over. Rs. 563 were expended during the year.

123. The subdivision office at Gunnaram was repaired.

124. **Godavari (West).**—The following works were completed or in progress during the year:—

	Estimate. RS.	Outlay. RS.
(1) Sub-Registrar's office at Pentapad	2,710	2,694
(2) Cook-house to Executive Engineer's bungalow at Chettipet completed	500	536
(3) Constructing 1st-class taluk cutcherry at Tanuku, nearly completed. Revised estimate submitted	21,420	24,648
(4) Constructing 1st-class taluk cutcherry at Bhimavaram, nearly completed	22,650	24,434
(5) Constructing 1st-class taluk cutcherry at Narsapur; materials were collected and foundations dug, but the work was stopped pending sanction to a revised estimate	22,900	14,076
(6) Sub-Registrar's office at Tanuku, nearly completed	3,090	3,044
(7) Do. do. at Ellore; materials were collected and the wood-work was under preparation	2,540	1,930

125. **Kistna (East).**—Repairs to the Collector's residence at Masulipatam were in progress; estimate Rs. 14,305, expenditure Rs. 6,391. Out of an allotment of Rs. 7,000, only Rs. 4,482 were expended for wood-work, which, however, did not reach Masulipatam in time to be put up during the year. Work was also retarded owing to non-receipt of Portland cement which the Madras company could not supply till May 1888.

126. Two head constables' and ten constables' huts at Bezvada were commenced, and all masonry work was completed; tiles and bamboos were procured, and the roofs of two huts put on; estimate Rs. 4,538. The expenditure during the year was Rs. 2,003 against a grant of Rs. 2,000.

127. A treasury office in front of treasury room in the compound of the Gudivada taluk cutcherry was completed; Rs. 1,149 were spent against an estimate of Rs. 1,300.

128. The following buildings were repaired during the year:—

- (1) Kistna Eastern Division office.
- (2) Superintending Engineer's residence and office.
- (3) Northern subdivision office.
- (4) Bungalow on Colonel Orr's Hill at Bezvada.
- (5) Dutch graves, tomb-stone of Dutch chief and French cemetery.

129. **Kistna (West).**—Rs. 1,000 were spent in collecting materials for the Sub-Registrar's office at Bapatla.

130. Materials to the extent of Rs. 406 were collected during the year for the Karampudi District Munsif's court-house. The allotment was given late in the year.

131. **Nellore.**—The following works were completed during the year:—

- (1) Improvements to the Sub-Collector's bungalow, Ongole.
- (2) Horse-stable with coach-house at the Division office.

132. The district jail at Nellore was in progress; the grant of Rs. 2,948 was exceeded by Rs. 2,080 owing to trusses having been ordered in the workshops in anticipation of sanction to additional funds, which were, however, not made available.

133. Repairs to the following buildings were attended to:—

- (1) Police station-house at Nayudupet;
- (2) Assistant Superintendent's bungalow at Ongole;
- (3) Hill bungalow at Ongole;
- (4) Sub-Collector's bungalow at Ongole;
- (5) Taluk cutcherry and subsidiary jail at Kandukur;
- (6) Collector's bungalow at Nellore;
- (7) Bungalow at Kodavalur;
- (8) Christ church, Nellore;
- (9) Assistant Superintendent's office at Ongole.

134. **Bellary.**—The Collector's office at Anantapur was completed and handed over to the Revenue Department in January 1888. The accounts were not closed as some chicks required by the Collector had to be supplied. The expenditure on the work amounted to Rs. 63,427 against an estimate of Rs. 64,290.

135. Improvements to the Collector's office at Bellary were in progress. The walls of the upper story in both wings were raised to full height and door-frames fixed. The work was much delayed on account of contractor's timber being detained at Guntakal junction railway station.

136. The superstructure of the Collector's residence at Anantapur was raised to about 6 feet above basement, and door and window-frames were fixed. The expenditure amounted to Rs. 23,758 against an estimate of Rs. 28,190.

137. The police huts at Vanavole were brought up to basement level and materials collected. The expenditure amounted to Rs. 600 against an estimate of Rs. 2,928. The work was for some time at a standstill owing to sickness amongst work-people who deserted the work.

138. The under-mentioned minor new works were carried out:—

- (1) Additional out houses for the Head Assistant Collector's bungalow; estimate Rs. 640, outlay Rs. 114.
- (2) Re-roofing a portion of the store-shed at the Engineer's yard; estimate Rs. 1,500, outlay Rs. 1,710.
- (3) Horbury's patent privy for the combined Executive Engineer's and Superintending Engineer's office in the fort; estimate Rs. 185, outlay Rs. 179.

139. The Munsif's court at Penukonda, the Roman-Catholic chapel, the Roman-Catholic cemetery, the garrison church, the military cemetery, the fort church, the taluk cutcherry at Penukonda and several other civil buildings were repaired during the year at a total cost of Rs. 6,960.

140. Eradication of vegetation and minor repairs to the temples at Hampi, Neelagunda and Heraihadgally were attended to; outlay Rs. 120.

141. **Cuddapah.**—Of the sanctioned additions and alterations to the district jail at Cuddapah, three male wards were completed. The fourth was also completed except flooring and pointing; walls built and gratings and iron-doors put up to the fifth. The expenditure amounted to Rs. 23,903 against a revised estimate of Rs. 31,900.

142. The Collector's office at Cuddapah was in progress. Interior arches were built and verandah arches commenced. All walls were built 14 feet high and girders were being raised. The expenditure amounted to Rs. 81,960 against an estimate of Rs. 1,43,741.

143. The walls of the Registrar's office at Cuddapah were built and beams and joists put up for the roof. Roofing was commenced and doors and windows were ready. Estimate Rs. 5,192, outlay Rs. 3,899.

144. Roofing to the taluk office at Vayalpad was completed, except the sub-jail. Wooden tower, fixing of doors and windows, painting and wood-oiling remained to complete. The expenditure amounted to Rs. 19,915 against an estimate of Rs. 25,700.

145. Materials were being collected for the taluk office at Rajampet. The original allotment of Rs. 10,000 for this work had to be reduced to Rs. 2,700, owing to the prevalence of cholera, which prevented the commencement of the work.

146. The taluk office at Pulivendla was completed. The expenditure amounted to Rs. 23,610 against an estimate of Rs. 23,443.

147. The under-mentioned minor new works were carried out during the year:—

	Estimate. RS.	Outlay. RS.
(1) Sub-Registrar's office, Vayalpad	2,435	48
(2) Do. do. at Chitvel	2,040	259
(3) Improvements to Nandalur Munsif's court	992	726

148. **Kurnool.**—Work on the taluk office at Nandyal was in progress. The expenditure amounted to Rs. 24,637 against an estimate of Rs. 34,676.

149. Nine constables' huts at Pattikonda were in progress. The outlay during the year amounted to Rs. 1,298 against an estimate of Rs. 2,903.

150. **Nilgiris.**—Rupees 14,077 were spent on additions and improvements to Government House at Ootacamund; the principal items of expenditure being—

	RS.
Furniture	4,671
General horticultural improvements	970
Providing lightning conductors	1,130
Additions to coach-house	4,217
Erecting screen walls to servants' quarters	1,081
Piping water-supply	1,785

151. Good progress was made during the year on the repairs to the Mountstuart property, and an outlay of Rs. 9,139 was incurred. The total outlay was Rs. 16,646 against an estimate of Rs. 19,945.

152. The combined Bench Magistrate's court at Kōtagiri was completed during the year at a cost of Rs. 8,620 against an estimate of Rs. 8,060. Expenditure during the year Rs. 3,179.

153. The new building for the Brecks' Memorial School, for which a revised estimate had to be submitted, was also completed and opened in March. Outlay for the year Rs. 25,276.

154. A new police-station was built at Naduvattam. The expenditure during the year was Rs. 3,076 and the total outlay Rs. 4,031 against an estimate of Rs. 4,110.

155. The Roman-Catholic church at Wellington was completed for the amount of the Government grant. The expenditure during the year was Rs. 16,863 and the total outlay was Rs. 23,863 against an estimate of Rs. 33,576.

156. Other important works were—

- (1) improving police-station and huts at Masingudi; estimate Rs. 3,020, outlay Rs. 2,833;
- (2) repairing Curator's house in Government gardens, Ootacamund; estimate Rs. 2,805, outlay Rs. 2,823;
- (3) alterations and improvements to the district jail at Ootacamund for the accommodation of public offices and for the apothecary attached to Army head-quarters; estimate Rs. 2,950, outlay Rs. 2,205;
- (4) rupees 3,000 were spent in collecting materials for the conversion of the old Brecks' Memorial School into a Sub-Judge's court;
- (5) the outlay on minor works during the year was Rs. 15,140.

157. The following are the principal works :—

	RS.
(1) Providing lightning conductors to—	
St. Stephen's church, Ootacamund	720
Mountstuart buildings, Ootacamund	680
Government Office, Stonehouse	801
Council Chamber, Ootacamund	365
St. Thomas' church, Ootacamund	537
(2) Enclosing Wellington cemetery with a wire fence	660
(3) Extending and improving police huts at Pykara	1,593
(4) Do. do. at Kalhatti	1,300
(5) Improving the roof of St. Stephen's church, Ootacamund	1,318
(6) Supplying partitions and record-racks to offices on Mountstuart	1,117
(7) Widening and raising the clock-turret on Stonehouse Hill	1,011
(8) Renewing roof of Clerks' offices on Stonehouse Hill	1,456

158. A sum of Rs. 23,841 was spent on repairs, the chief items being—

(1) repairs to police lines at Ootacamund	3,161
(2) repairs to Government House	10,991

159. **Coimbatore.**—The following works were completed :

- (1) Constructing a District Forest office at Coimbatore; estimate Rs. 10,110, outlay Rs. 9,450.

(2) Constructing close prison at Coimbatore; estimate Rs. 19,582, expenditure Rs. 12,054, outlay during the year Rs. 337. The apparent saving was due to convict labor supplied by the Jail Department free of cost, estimated at Rs. 6,461 and to purchase of locks in England by the Inspector-General of Jails, Rs. 912.

(3) Additions and alterations to the quarters of the Superintendent of the Central Jail at Salem; estimate Rs. 3,600, expenditure Rs. 3,727, outlay during the year Rs. 1,123.

(4) Constructing quarters for the Deputy Jailor attached to the central jail at Salem; estimate Rs. 3,660, expenditure Rs. 3,691, outlay during the year Rs. 839.

(5) Improvements to the central jail at Coimbatore; estimate Rs. 5,745, expenditure Rs. 5,148, outlay during the year Rs. 674 exclusive of convict labor estimated at Rs. 740.

(6) Rebuilding a portion of the District Munsif's court-house at Námakal; estimate Rs. 3,595, expenditure Rs. 3,734 outlay during the year Rs. 1,220.

(7) Purchase of and improvements to a building at Tirupatūr for a residence for the Assistant Superintendent of Police; estimate Rs. 4,768, expenditure Rs. 4,768.

(8) Constructing a Sub-Registrar's office at Hosūr; estimate Rs. 2,970, expenditure Rs. 2,871, outlay during the year Rs. 275.

160. A Sub-Registrar's office at Kollegal was in progress; estimate Rs. 2,630, outlay Rs. 900.

161. Fifteen minor new works, on which a sum of Rs. 5,538 was spent, were in progress, of which ten were completed, viz.:

	RS.
(1) Supplying and fitting iron-safes to Coimbatore taluk treasury	410
(2) Do. do. Palladam do. do.	870
(3) Do. do. Kollegal do. do.	438
(4) Do. do. Bhávani do. do.	435
(5) Do. do. Karúr do. do.	869
(6) Do. do. Sathyamangalam taluk treasury	881
(7) Do. do. Uttankarai do. do.	243
(8) Do. do. Yercaud do. do.	226
(9) Improvements to the new treasury room at Salem	90
(10) Constructing a Sub-Registrar's office and compound wall at Tiruchengód; estimate Rs. 2,265, expenditure Rs. 2,288, outlay during the year Rs. 626.	

162. A sum of Rs. 5,966 was spent on repairs, the chief items being—

- (1) Repairing the women's ward of the central jail, Coimbatore, outlay Rs. 719
- (2) Repairing the hospital and out-houses attached to the central jail, Coimbatore, outlay Rs. 2,543.
- (3) Repairing the out-houses attached to the Collector's bungalow at Salem, outlay Rs. 1,027.
- (4) Repairs to the taluk cutcherry at Tripatūr, Rs. 267.
- (5) Repairs to the Sub-Collector's bungalow at Erode, outlay Rs. 300.

163. **West Coast.**—During the year supplemental estimates, amounting to Rs. 13,494, were sanctioned for completing the Law Courts at Calicut, bringing the total of the revised estimate to Rs. 1,20,200. The only items of work taken up were strengthening the vakils' chambers, constructing surplus drains and collecting materials for sun-shades. The aggregate expenditure up to date was Rs. 1,07,107.

164. The new public offices at Pónani were completed, except the latrine, of which the superstructure to the level of 2 feet above the crown of arches was finished. Outlay during the year Rs. 14,599.

165. The main buildings were made over to the respective departments.

166. The residence for the Assistant Superintendent of Police at Malapuram begun in the previous year was completed with the exception of punkhas and mats and deepening the well. The year's outlay was Rs. 5,378, bringing the total expenditure to Rs. 12,600 against an estimate of Rs. 13,660.

167. The following works were completed :

- (1) Improving the Government church, Cochin ; estimate Rupees 20,680, outlay Rs. 20,177.
- (2) Sub-Registrar's office at Chevayur ; estimate Rupees 3,020, outlay Rs. 2,923.
- (3) Sub-Registrar's office, Puthur ; estimate Rs. 3,120, outlay Rs. 3,097.
- (4) Sub-Registrar's office, Udipi ; estimate Rs. 3,370, outlay Rs. 3,514.
- (5) Sub-Registrar's office, Mannarghat ; estimate Rupees 2,450, outlay Rs. 2,338.
- (6) Additions to the old jail buildings in the fort at Tellicherry to fit them for use as Sub-Collector's cutcherry ; estimate Rs. 2,710, outlay Rs. 2,518.
- (7) Improvements to the Munsif's court at Perpanangadi ; estimate Rs. 1,534, outlay Rs. 1,417.
- (8) Supplemental work to the conversion of sweepers' quarters into patients' wards at the Lunatic Asylum, Calicut ; outlay Rs. 4,135.
- (9) Providing lightning conductors to the turret of the District Munsif's court, Tellicherry ; estimate Rs. 360, outlay Rs. 341.
- (10) Improving the clerks' room, District Munsif's court, Tellicherry ; estimate Rs. 495, outlay Rs. 544.
- (11) Improvements to Pálghat treasury room ; estimate Rs. 247, outlay Rs. 245.

168. The following works were in progress :

- (1) Sub-Registrar's office at Koduvayur ; estimate Rs. 2,940, outlay Rs. 1,471.
- (2) A new Sea Customs-house at Cochin ; estimate Rs. 17,940, outlay Rs. 5,491.
- (3) Additions and improvements to the office of Superintendent of Police at Mangalore ; estimate Rs. 10,383, outlay (including previous year's expenditure) Rs. 8,849.

169. Furniture was designed by the Executive Engineer for the Malapuram church towards the close of the year, and a few items of it ordered from Madras, the rest being made at the Mission carpentry establishment locally. Rs. 383 were expended against an estimate of Rs. 600.

170. A sum of Rs. 8,025 was spent on repairs, the following being the principal works :

	RS.
(1) Division office, Calicut	510
(2) Lunatic asylum, Calicut	1,429
(3) Protestant church, West Hill barracks, Calicut	102
(4) Repairs to roof of the new Sea Customs-house, Calicut	400
(5) Repairs to the roof of St. John's church at Cannanore	1,617
(6) Rebuilding the turret of the District Munsif's court at Tellicherry.	308

171. **Presidency.**—A racket court and swimming bath were constructed at Government House at a cost of Rs. 2,434 and Rs. 3,875, respectively.

172. An upper story was built and improvements were carried out to the Aide-de-Camp's quarters at Government House, Madras, at a cost of Rs. 11,988.

173. The construction of City reserve police lines at Pudupet, commenced in the previous year, was completed. The outlay during the year was Rs. 21,500. The total outlay was Rs. 26,961 against an estimate of Rs. 27,785.

174. The construction of an upper story to the office of the Deputy Commissioner of Police was completed. The total expenditure was Rs. 9,859 against an estimate of Rs. 10,290.

175. At the Medical College, Madras, the construction of a lecture theatre hall, estimate Rs. 7,175, and of a dissecting shed, estimate Rs. 6,005, were completed during the year. The expenditure was Rs. 7,620 and Rs. 6,459, respectively.

176. At the Madras Penitentiary new roofs to the close prison cells, estimate Rs. 11,200 ; a new work-shed, estimate Rs. 3,200 ; and quarters for two hospital assistants, estimate Rs. 5,774, were completed during the year at a total outlay of Rs. 9,177, Rs. 2,892, and Rs. 5,501, respectively.

177. The new gate to the St. Mary's cemetery, Madras, commenced in the previous year, was completed at a total cost of Rs. 5,611 on an estimate of Rs. 6,285. The year's expenditure was Rs. 2,309.

178. Rupees 409 were spent in providing new seats for St. Matthias' church at Vepery.

179. The ornamental ceilings of St. George's cathedral were completed at an outlay of Rs. 2,486 on an estimate of Rs. 2,711.

180. A sum of Rs. 5,020 was spent on furniture for Government Houses at Madras, Guindy, and Ootacamund.

181. Thirty-two minor new works were carried out at a cost of Rs. 7,975.

182. Rupees 936 were paid on account of compensation for sittings provided for Roman-Catholic British soldiers in the cathedral at Madras during 1885-86 and Rs. 333 on account of compensation for sittings provided for British soldiers and their families in the Wesleyan chapel at Bangalore during 1886-87.

183. One hundred and twenty-seven repair works at Madras and fifteen at Bangalore were carried out.

184. The following were the principal repair works carried out at Madras :

- (1) Repairs to Banqueting Hall and Marine Villa with out-houses ; estimate Rs. 5,700, outlay Rs. 5,710.
- (2) Plastering with cement the outside of the Government Secretariat office, Fort St. George ; estimate Rs. 11,070, outlay Rs. 7,362.
- (3) Repairing tombs in St. Mary's cemetery ; estimate Rs. 2,685, outlay Rs. 2,352.
- (4) General repairs to the Civil Orphan Asylum buildings ; estimate Rs. 16,540, outlay Rs. 7,215.
- (5) General repairs to the Public Works Workshops and Stores ; estimate Rs. 9,392, outlay Rs. 4,499.
- (6) General repairs to the General Hospital, Madras ; estimate Rs. 3,025, outlay Rs. 2,886.

185. **Chingleput.**—A lightning conductor to the Agricultural College at Saidápet was fixed at a cost of Rs. 2,240. The whole expenditure on the college, the upper story of which (except tower) had been completed at the end of 1886-87, was Rs. 18,336.

186. The construction of waiting and tiffin-rooms for the students of the Agricultural College was in progress on an estimate of Rs. 3,500, and Rs. 2,556 were spent during the year.

187. Six minor new works were completed at a total cost of Rs. 2,988.

188. The buildings at Government House, Guindy Park, and other buildings, churches, &c., were repaired at a total outlay of Rs. 15,586.

189. **North Arcot.**—The Sub-Magistrate's cutcherry, with out-houses, at Arkónam, commenced in 1886-87, was completed. The expenditure was Rs. 14,733 on an estimate of Rs. 14,245. The year's outlay was Rs. 6,547.

190. Improvements to the Sub-Magistrate's office at Punganúr, also commenced in 1886-87, were completed. The expenditure was Rs. 3,849 on an estimate of Rs. 4,480 ; the saving was due to an existing sub-jail being utilised instead of building a new sub-jail provided for in the estimate.

191. Four minor new works were in progress, of which three were completed. The expenditure was Rs. 2,671.

192. Seven repair works were carried out at a cost of Rs. 1,916.

193. **South Arcot.**—The Sub-Registrar's office at Villupuram, commenced in 1886-87, was completed at a cost of Rs. 2,760 on an estimate of Rs. 3,274.

194. **Consulting Architect.**—The provision of an intermediate floor in the library of the Presidency College was commenced on an estimate of Rs. 7,651, and Rs. 827 were expended. The foundations for the columns to support the floor were laid and the columns were indented for through the India Office.

195. Alterations and additions to the Ameer Mahal were carried out at a cost of Rs. 3,760.

196. Rupees 5,196 were spent on twenty-nine minor works, the most important of which consisted in renewing the ornamental parapet on the north side of the Revenue Board Office with stone, providing a second boat made of wood for the floating latrine, and constructing a shed at the School of Arts.

197. Rupees 15,150 were spent on annual and general repairs to buildings.

198. **Trichinopoly.**—The construction of the district jail at Trichinopoly made satisfactory progress: block No. 3 A (36 cells) superstructure, arches and concrete to spandrels were completed; No. 3 B (22 cells) superstructure raised to an average of 3 feet; entrance gate superstructure raised to 3 feet; iron railings fixed; two gates fixed in position; and cut stone work on the side of gate in progress. The expenditure during the year was Rs. 18,938, and the total outlay Rs. 70,405 against a revised estimate of Rs. 85,244.

199. Quarters for the European chief constable, central jail, Trichinopoly, were nearly completed; estimate Rs. 1,860, expenditure Rs. 1,695.

200. A compound wall for the District Munsif's court at Kulitalai was completed at a cost of Rs. 1,455 against an estimate of Rs. 1,450.

201. A compound wall and latrine for District Munsif's court at Ariyalur were commenced; estimate Rs. 1,230, expenditure Rs. 388.

202. Rupees 465 were spent in completing certain repairs to the central jail, on which Rs. 2,745 were laid out in the preceding year.

203. **Tanjore.**—The combined court-house for the District Munsifs of Kumbakonam and Valangiman was in progress. The lower story was completed, with the exception of plastering inside work, and the upper story was in rapid progress; estimate Rs. 34,342, expenditure Rs. 24,470.

204. Improvements to the taluk cutcherry at Májavaram were in progress, but the work was delayed from various causes; the expenditure was Rs. 4,907 from a grant of Rs. 7,000; estimate Rs. 11,680.

205. The police station-house at Kumbakonam was extended at a cost of Rs. 2,748 against an estimate of Rs. 2,700.

206. A building for the police office at Tanjore was purchased at a cost of Rs. 5,750.

207. The construction of a latrine with five seats of Horbury's pattern, and of a compound wall to the police station-house at Tanjore was nearly completed; estimate Rs. 700, expenditure Rs. 552.

208. Fixing iron gratings and doors, &c., to the office of the Superintendent, District Jail, Tanjore, was completed at a cost of Rs. 411.

209. Rupees 3,862 were spent on repairs to the district court-house, taluk cutcherry at Shiyáli and sub-jail and latrine at Nannilam.

210. **Negapatam.**—Alterations to the St. Joseph's College buildings at Negapatam. The buildings were purchased in the preceding year for Rs. 30,000, and estimates, amounting to Rs. 22,490, were sanctioned during the year under review for alterations to adapt them for the accommodation of public offices. The following work was completed:

- (1) Improvements to the rooms allotted for the District Munsif.
- (2) Do. do. for office of Assistant Superintendent of Police.
- (3) Do. to the Executive Engineer's office.
- (4) Do. to the Sub-Judge's court.
- (5) Do. to the Sub-Magistrate's office.
- (6) Do. to the Sub-Registrar's office.
- (7) Do. to peons' sheds.

211. The following alterations were in progress:

- (1) Office for Assistant Commissioner, Salt and Abkari Revenue.
- (2) Police station.
- (3) Office for Head Assistant Collector.
- (4) Gate and compound wall.
- (5) General improvements to main building.

212. The expenditure during the year was Rs. 7,938 against a grant of Rs. 8,000, and the total expenditure was Rs. 37,970 against an estimate of Rs. 52,490.

213. Rupees 4,061 were spent on the collection of materials for the District Munsif's court at Tiruvalúr.

214. Improvements to the District Munsif's court at Mannárgudi were in progress; estimate Rs. 5,010, expenditure Rs. 3,959.

215. The Government cemetery at Negapatam was extended at a cost of Rs. 1,317 against an estimate of Rs. 1,200.

216. The conversion of the Executive Engineer's office at Kadambady into a dwelling house was completed, with the exception of fencing the compound; estimate Rs. 1,950, expenditure Rs. 1,741.

217. **Madura.**—The following works were completed during the year:

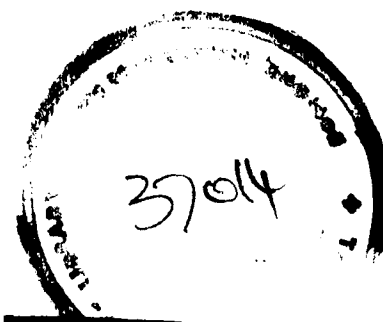
- (1) Sub-Magistrate's cutcherry at Madura; estimate Rs. 17,889, expenditure Rs. 4,492 in addition to Rs. 14,889 spent to the end of the preceding year.
- (2) A second-class police station-house and one head and five constables' huts at Sáptúr; estimate Rs. 4,850, expenditure Rs. 2,691 in addition to Rs. 2,086 to the end of 1886-87.
- (3) A second-class station-house and one head and five constables' huts at Ammyanáyakanúr; estimate Rs. 3,850, expenditure Rs. 3,630.
- (4) Improving Deputy Tahsildar's office at Tirushuli; estimate Rs. 4,240, expenditure Rs. 4,136.
- (5) Repairs to the taluk cutcherry at Dindigul; estimate Rs. 3,200, expenditure Rs. 3,319.
- (6) Improving the district jail at Madura; estimate Rs. 2,820, expenditure Rs. 2,801.

218. The following buildings were in progress:

- (1) Sub-Registrar's office at Tirumangalam; estimate Rs. 2,864, expenditure Rs. 2,407. Work completed with the exception of a small quantity of pointing, wood-oiling and flooring.
- (2) A third-class police station-house and one head and five constables' huts at Veerapandy; estimate Rs. 2,930, expenditure Rs. 2,055. The huts were completed and materials for the station collected.
- (3) A third-class station-house and one head and five constables' huts at Samayanallúr; estimate Rs. 2,690, expenditure Rs. 2,041. Walls of the station-house and huts nearly finished.
- (4) District jail at Madura. Providing wire-netting to the roof ventilators of blocks and removing and renewing the existing palisades; estimate Rs. 4,482; expenditure Rs. 357.
- (5) Subdivision officer's bungalow at Uthamapoliam was almost completed; estimate Rs. 1,500, expenditure Rs. 1,466.

219. Rupees 1,059 were spent in maintaining the garden and improving the earth connection of the lightning conductor in Tirumal Naick's palace at Madura; in repairing Public Works office building and Sub-Collector's bungalow at Dindigul, store-shed at Periyakulam, taluk cutcherry at Meylur, Deputy Tahsildar's cutcherry and Sub-Registrar's office at Uthamapoliam; and in paying municipal tax for the Government buildings at Dindigul.

220. **Tinnevely.**—A new record-room and improvements to the district court-house at Kokarakulam were completed according to the original estimate; expenditure Rs. 16,893, including Rs. 12,183 spent up to 1886-87; revised estimate Rs. 21,030.



The following minor works were completed during the year :

- (1) Additions and alterations to the huzur treasury at Kokarakulam; expenditure Rs. 2,017.
- (2) Sub-Registrar's office at Radapuram; expenditure Rs. 2,202, including Rs. 100 spent in the preceding year.
- (3) Improving the Sub-Magistrate's office at Tuticorin; expenditure Rs. 1,536.
- (4) Strong room for Tinnevely taluk cutcherry; expenditure Rs. 290.
- (5) Compound wall to the police station-house at Singikulam—expenditure Rs. 260.

221. A sum of Rs. 1,612 was spent in repairing the Executive Engineer's office at Palamcottah, in reconstructing strong room of the huzur treasury at Kokarakulam, and in repair of two other buildings.

IV.—PROVINCIAL—COMMUNICATIONS.

222. **Godavari (East).**—The navigation works at Damagudem were maintained at a cost of Rs. 8,041 during the year. The refixing of the tail lock lower gate was in progress. The trade is rapidly decreasing and only 445 boats passed through the canal against 650 in the previous year. The canal was closed from 15th March 1887 to 13th June 1887. Since the scouring sluices were ruined in 1886, the head of the channel that leads from above the anicut to the head lock and scouring sluice has been seriously eroded and in time may endanger the anicut; an attempt was being made at the end of the year to lessen this danger by throwing a stone bund across the fallen scouring sluices and to protect the margin of the channel on the anicut side with stone.

223. **Bellary.**—The following roads were retransferred to the charge of the Public Works Department :

- (1) Road from Ramandrug to Sandur frontier on the Hospet side, 8 miles.
- (2) Road from Ramandrug to the junction with the Sandur-Yettinhatti road, 13 miles.

A sum of Rs. 1,370 was spent on repairs to these roads against an estimate of Rs. 9,653.

224. **Nilgiris.**—The following works were completed :

- (1) Overseer's rest-house at Cherambadi; total cost Rs. 6,387, outlay during the year Rs. 3,387.
- (2) Constructing a wooden bridge at Burlyar on the Ootacamund-Mettupalayam road; total cost Rs. 6,226; outlay during the year Rs. 1,999.
- (3) Constructing a new road on Mountstuart; total cost Rs. 10,025 against an estimate of Rs. 10,855, outlay during the year Rs. 1,398.
- (4) Constructing eight cart-stands on the Ootacamund-Kullar road; total cost Rs. 4,721, outlay during the year Rs. 3,579.

225. Two toll-houses on the Kullar-Gudalur road were completed and a third nearly so at a cost of Rs. 1,235. The mile-stones between Ootacamund and Mettupalayam were renewed; the outlay for the year having been Rs. 1,094 against an estimate of Rs. 1,520.

226. **Presidency.**—A sum of Rs. 9,058 was paid to the Madras municipality for the maintenance of the roads leading from the Fort to the Mount and Poonamallee; and Rs. 3,381 and Rs. 1,062 for repairing the bridges over the Kuam and the Buckingham Canal.

227. **South Arcot.**—The piers of arches of the bridge over the Shatiatepe anicut were raised to the anicut crest level. The manufacture of bricks was put in hand.

V.—PROVINCIAL—MISCELLANEOUS PUBLIC IMPROVEMENTS.

228. **Buckingham Canal.**—An estimate of Rs. 17,496 for training the banks of the Adyar river was sanctioned, and the expenditure amounted to Rs. 1,929 against

an allotment of Rs. 2,000. Some groynes were constructed and a diversion channel was cut. Both answered their purpose very well.

229. **Kistna (East).**—Repairs to the sea-dyke at Masulipatam were carried out.

230. **Nilgiris.**—The fencing of the Ootacamund lake, with the exception of the portion round the "Cedars," was completed; outlay Rs. 2,996.

231. Rs. 31,927 were spent on improving the water-supply of Ootacamund lying north of the lake.

232. Rs. 1,444 were expended on completing the Adam memorial fountain.

233. A raised foot-path from Charing Cross to the market at Ootacamund was completed at a cost of Rs. 1,107.

234. Under repairs a sum of Rs. 582 was spent on repairing the bund of Marli-mund reservoir. The Ootacamund lake was kept clear of weeds at a cost of Rs. 384.

235. **West Coast.**—The revetment for the protection of the town of Ponani undertaken in the previous year was completed with an expenditure of Rs. 3,963 against an estimate of Rs. 4,280.

236. The sea terminations of the groynes, five in number, near the light-house at Cochin were raised to a uniform level of 6 feet above the high tide level for the protection of the light-house and its neighbourhood; estimate Rs. 4,610, outlay Rs. 4,022.

237. **Presidency.**—Rupees 834 were spent on the conservancy of the river Kuam and Rs. 601 in closing the Kuam bar.

238. **South Arcot.**—The embankment of the Gadilam river for the protection of the town of Tirupapuliyur from floods, which was nearly finished in 1886-87, was completed, and the drainage sluice in it was almost finished. The outlay was Rs. 6,812 on an estimate of Rs. 8,550.

239. **Madura.**—An expenditure of Rs. 787 was incurred on surveying and estimating the proposed system of roads, &c., at Kodaikanal.

VI.—LOCAL—INCORPORATED.

240. **Ganjam.**—The Aska and Surada road was maintained at a cost of Rs. 413.

241. **Godavari (East).**—The earth-work of the Kovur-Manjair junction canal was finished at a cost of Rs. 55,057 against an estimate of Rs. 52,345. The outlay during the year was Rs. 2,300.

242. Five cattle-crossings on the canal were finished at a cost of Rs. 558.

243. The cut-stone coping for the aqueduct over the Tooliabhaga drain and iron railings and stanchions were finished. The cost of the aqueduct was Rs. 46,216 against an estimate of Rs. 40,000. The excess was principally due to alterations in the original design.

244. The Tooliabhaga new cut was completed; total outlay Rs. 8,923 against an estimate of Rs. 9,200.

245. The total expenditure up to end of the year on the Kovur-Manjair junction canal works amounted to Rs. 1,43,323 against an estimate of Rs. 1,45,525. The outlay during the year was Rs. 3,818.

246. **Kistna (East).**—Rs. 4,344 were spent against a grant of Rs. 3,391 on the landing stage at Bezvada. The excess was due to the collection of more material than was necessary. This will be transferred to other works in due course. The work was completed, except the return wall, which was in progress.

247. The ferry road at Bezvada was repaired and the Local Fund quarries made safe at a cost of Rs. 210.

248. **Kistna (West).**—The construction of a culvert under the good water channel at Nizampatam, estimate Rs. 900, was nearly completed. The expenditure during the year amounted to Rs. 508.

249 The river and canal banks used as roads were maintained in proper order at a cost of Rs. 881.

250. **Nellore.**—The Pennér anicut roadway was gravelled and materials to the extent of Rs. 122 were collected for the next year's repairs. The total expenditure was Rs. 567 against a grant of Rs. 600.

251. **South Arcot.**—The roads along the Coleroon bank, Veeranam tank-bank, and Perumaul tank-bank were kept in repair at an outlay of Rs. 1,599, 1,283 and 290.

252. Sand was collected for the road along Khan Sahib's canal-bank at a cost of Rs. 349.

253. The earth-work was executed to give the full top width of 8 feet to the road passing over the Perumukal tank-bund at an outlay of Rs. 274.

254. **Madura.**—At the commencement of the official year, the foundations of six of the 14 piers of the Vaigai bridge had been completed and the next four partially executed. Work progressed steadily during the ensuing months, and piers and both abutments were finished, with the exception of the 10th and 11th piers in the deep bed of the river. The cut-stone piers were commenced in June and were nearly completed to springing level throughout. Arch-work was commenced in January; the first arch was completed by the 3rd March, and second keyed on the last day of the official year. Considerable difficulty was experienced in obtaining satisfactory bricks for arch-work. Rupees 1,20,759 were spent during the year against a grant of Rs. 1,20,000; Rs. 75,246 were expended up to the end of the preceding year, making the total outlay Rs. 1,96,005, the estimate being Rs. 3,21,460.

255. Ten miles of the road from Cumbum to the foot of the Gudalur-Peermade ghât were repaired at an outlay of Rs. 1,623.

256. The construction of a rough stone retaining wall to the lake at Kodaikanal was completed at a cost of Rs. 470, of which Rs. 406 were spent in the preceding year.

257. **Tanjore.**—A new road around Elathoor, in lieu of the eroded portion of road No. 70, was completed at a cost of Rs. 1,690 against an estimate of Rs. 1,760, and 121 miles of roads on river-banks were maintained at a cost of Rs. 6,758.

258. **Negapatam.**—Forty-five and a-half miles of roads on river-banks were maintained during the year at a cost of Rs. 2,939.

259. **Trichinopoly.**—Twenty miles of road No. 20 from Sangamur to lower anicut were kept in order at an outlay of Rs. 98.

VII.—LOCAL—EXCLUDED.

260. **Godavari (East).**—A new fourth order dioptric light at the Hope Island light-house was set up at a cost of Rs. 1,097 against an estimate of Rs. 954.

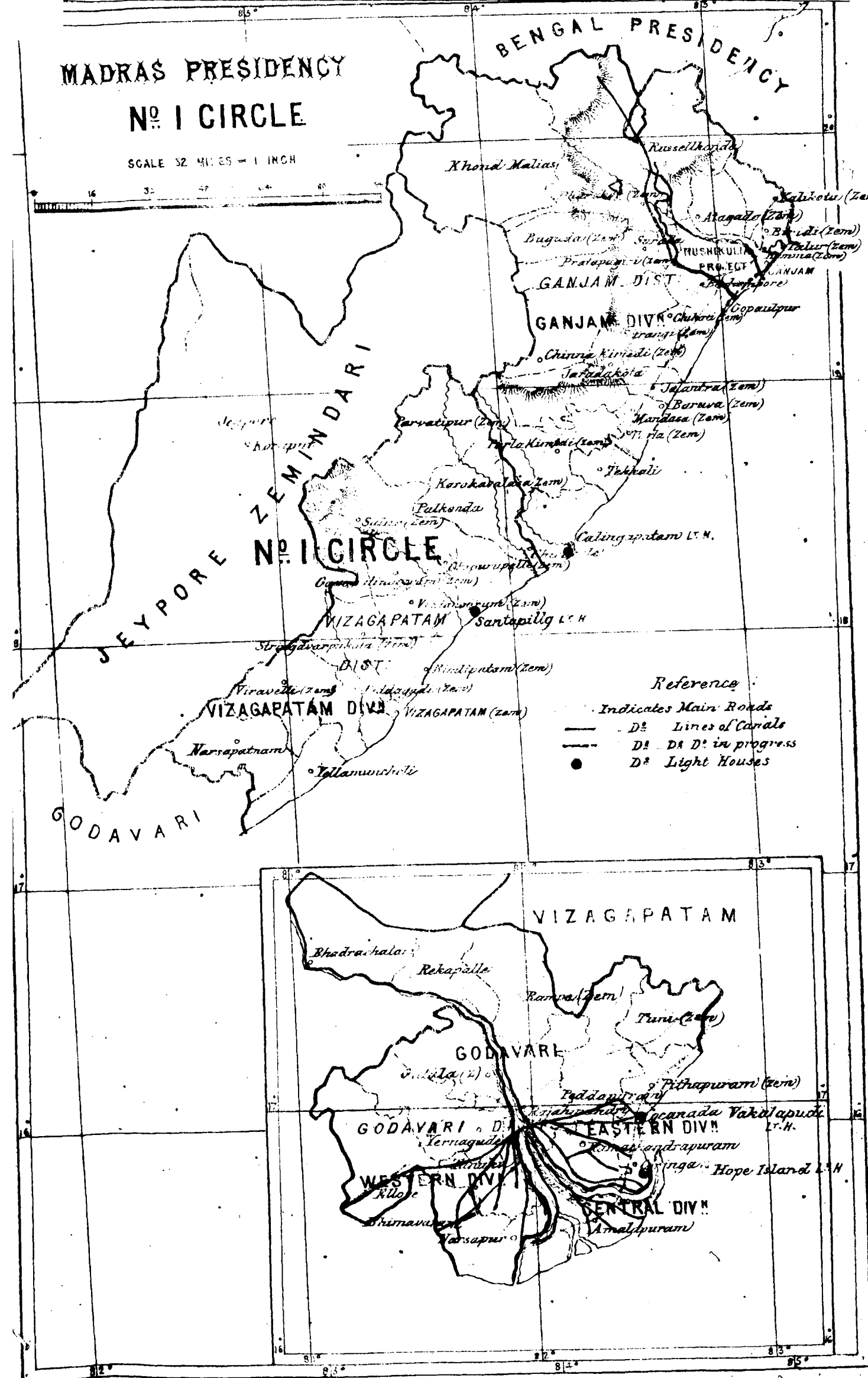
261. Repairs to Vakalapudi and Hope Island light-houses were in progress at end of the year.

262. **Kistna (East).**—The salt creek from below the tidal lock at Masulipatam to the village of Gilakaladindi was cleared of silt at a cost of Rs. 1,736.

263. **Buckingham Canal.**—The construction of lines for lascars attached to the Armeghon light-house was completed at a cost of Rs. 1,889 against an estimate of Rs. 1,890. A new lightning conductor was fixed to the Armeghon light-house at a cost of Rs. 190.

264. The following repairs were carried out :

	RS.
(1) Repairs to Superintendent's quarters and out-houses of Armeghon light-house	91
(2) Repairing damages to Armeghon light-house column	71
(3) Repairs to the Armeghon light-house	83
(4) Repairing thatched store-shed of the Armeghon light-house	30
(5) Repairs to Pulicat light-house	236
(6) Do. to Superintendent's quarters of Pulicat light-house	239

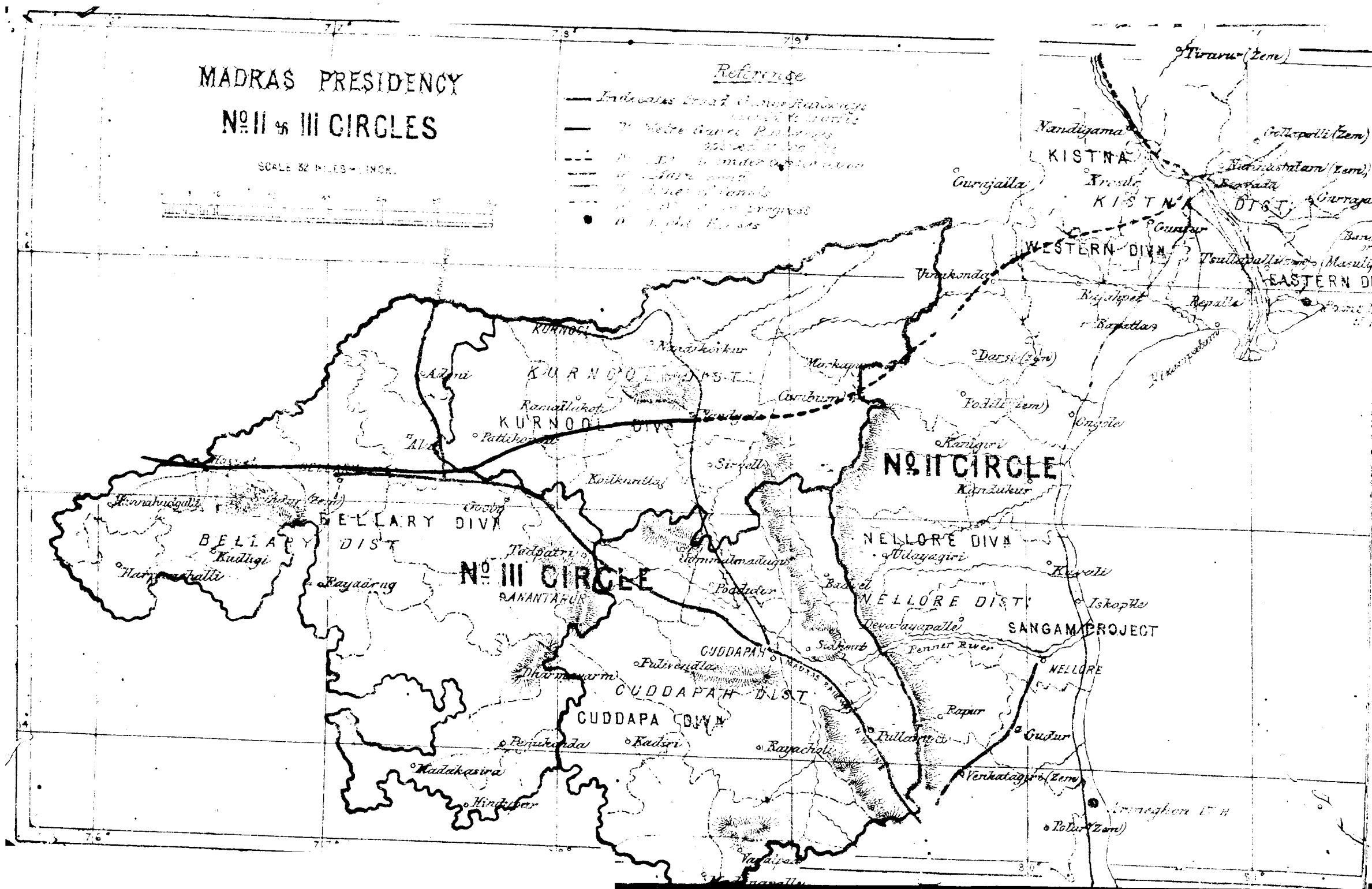


SCALE 32 PILES = INCH.

SCALE 32 MILES = 1 INCH.

Indicates Good Inner Runways

— N. Netre Curve Runways
--- D. D. Under Runways
- - - W. Ware Road
- - - T. Turner Road
- - - R. R. Road Progress
• A. A. Road



[illegible]

MADRAS PRESIDENCY

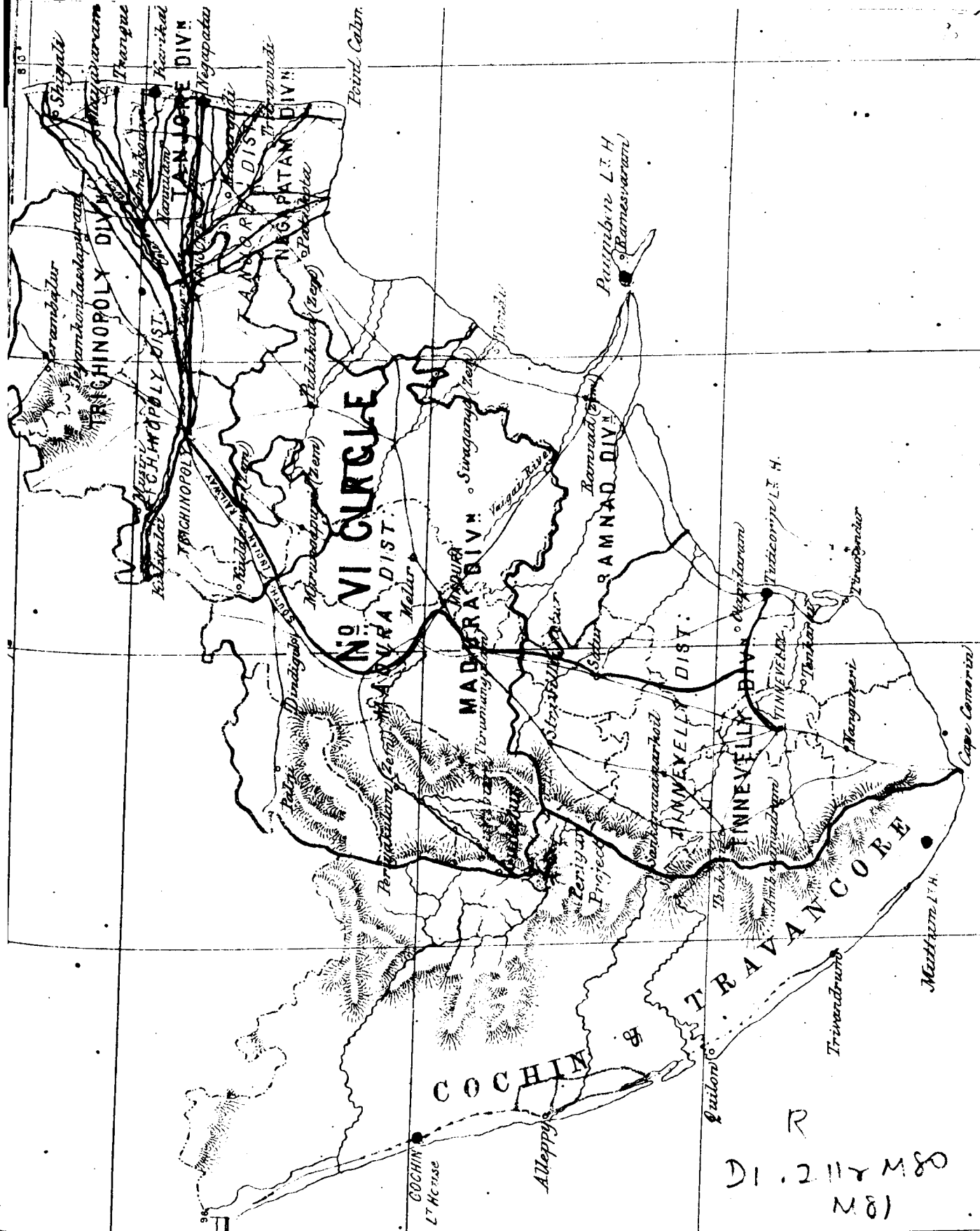
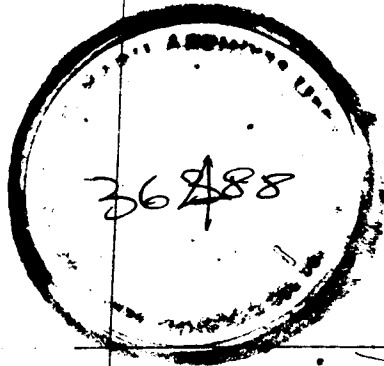
N^o VI CIRCLE

SCALE 32 MILES = 1 INCH.



Reference

- Indicates Metre Gauge Railways
- D^o — Main Roads
- D^o — Lines of Canals
- D^o — D^o D^o in progress
- D^o — Light Houses



265. **West Coast.**—The light-houses at Calicut and Cannanore were provided with lightning conductors at a cost of Rs. 599 and of Rs. 218, respectively, and they, as well as those at Tellicherry and Mangalore, were repaired and painted at an aggregate cost of Rs. 935.

266. Materials for a wire-fencing round the light-house at Calicut were ordered, and the thatched roof of the watchman's shed improved with tiles at a cost of Rs. 319.

267. Rs. 52 were spent in repairing the cranes at Vypeen and Cochin.

268. **Presidency.**—An estimate of Rs. 1,020 was sanctioned for repairs to the light-house, Madras; but the grant was made too late in the year to admit of any work being done.

269. **Chingleput.**—The light-house at the Seven Pagodas was in progress on an estimate of Rs. 8,165; the work consists of—

- (1) Constructing a stone platform for a fourth order light;
- (2) Construction of Superintendent's quarters;
- (3) Do. of lascars' lines;
- (4) Do. of two sentry boxes;

the expenditure to the end of the year was Rs. 6,253, and the work was nearly completed.

270. **Tinnevely.**—A new earth-plate to the lightning conductor attached to the light-house at Hare Island was completed at a cost of Rs. 70, and an outlay of Rs. 29 was also incurred in testing the lightning conductor.

VIII.—ESTATE WORKS.

271. **Gundamanaikanur Zemindari.**—Estimates, amounting to Rs. 9,734, were sanctioned and funds allotted, and the works were put in hand in July, but several of them were stopped at the request of the Collector. The total expenditure during the year was Rs. 4,566.

272. **Ramnad Zemindari—Civil Buildings.**—The original grants were Rs. 11,000 under ain (revenue proper), 23,000 under devastanam (temple endowment funds), and 6,000 under chuttram (charitable endowment funds); the revised grants were Rs. 14,154, 21,346 and 14,260, respectively; while the expenditure was Rs. 7,418, 9,941 and 9,722, respectively; showing a total short outlay of Rs. 22,679 with reference to the total revised grant.

273. The construction of an office for the Superintendent of devastanam was in progress; the total expenditure was Rs. 3,847 against an estimate of Rs. 5,920. The work was not completed owing to some misunderstanding with contractors and to difficulty in carting materials to site.

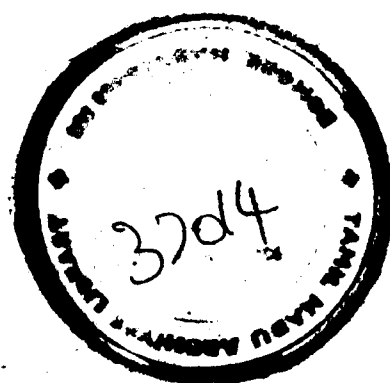
274. An outlay of Rs. 429 was incurred in constructing a granary at Rajasingamangalam, the estimate being Rs. 3,070. The work was started in January 1888, but could not be proceeded with vigorously owing to scarcity of labor.

275. The following minor works were completed:

- (1) Constructing a hall in front of the residence building of the fourth widow's quarters in the palace at Ramnad; estimate Rs. 1,370, expenditure Rs. 1,367.
- (2) Constructing a granary at Yenathy; estimate Rs. 1,230, outlay Rs. 1,204.
- (3) Improving estate building at Kamuthy; estimate Rs. 600, outlay Rs. 400.
- (4) Constructing an enclosure wall with gate to the west block of Mallanjivar's chuttram at Tirushuli; estimate Rs. 223, expenditure Rs. 206.
- (5) Reconstructing the Pilliarcovil at Kamuthy; estimate Rs. 297, outlay Rs. 272.

276. The following works were in progress:

- (1) Constructing a granary at Maranthai; estimate Rs. 1,815.
- (2) Constructing divisional eutcherri at Sayalgudy; estimate Rs. 440.



- (3) Constructing jamabandi cutcherry or granary at Kamuthy; estimate Rs. 1,725.
- (4) Improving the taluk cutcherry, Salagramam; estimate Rs. 900.
- (5) Constructing stable and cook-room near travellers' bungalow at Kamuthy; estimate Rs. 47.
- (6) Reconstructing elephant shed at Tirupallani; estimate Rs. 265.

277. Out of 58 works in progress under different heads under Repairs, 28 were fully completed.

278. *Agricultural Works*.—The original grants were Rs. 79,000 under ain, 17,000 under devastanam, and 4,000 under chuttram. The revised grants were Rs. 59,366, 9,712 and 1,427, while the expenditure amounted to Rs. 43,626, 4,874 and 1,142, respectively, showing a total short outlay of Rs. 20,863 with reference to the total revised grant.

279. The following works were in progress :

- (1) Improvements to Ramnad large tank; estimate Rs. 20,040, total expenditure Rs. 13,956.
- (2) Improvements to Rajasingamangalam tank; estimate Rs. 18,650, total expenditure Rs. 12,668.
- (3) Improvements to the Kalari tank; estimate Rs. 17,610, total expenditure Rs. 5,321.
- (4) Improvements to the Anaikulam tank; estimate Rs. 14,085, total expenditure Rs. 6,367.
- (5) Raising and extending the Gundar dam; estimate Rs. 13,600, expenditure Rs. 775. The work was commenced late in the official year.

280. Most of the requisitions of the estate authorities under the head Minor Works were complied with. Out of 131 works in progress, 44 were completed.

