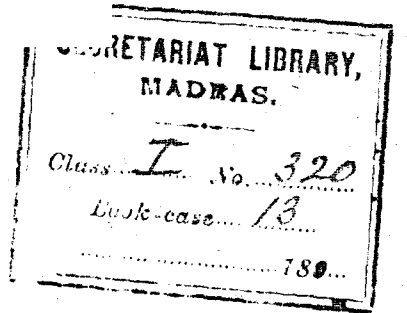
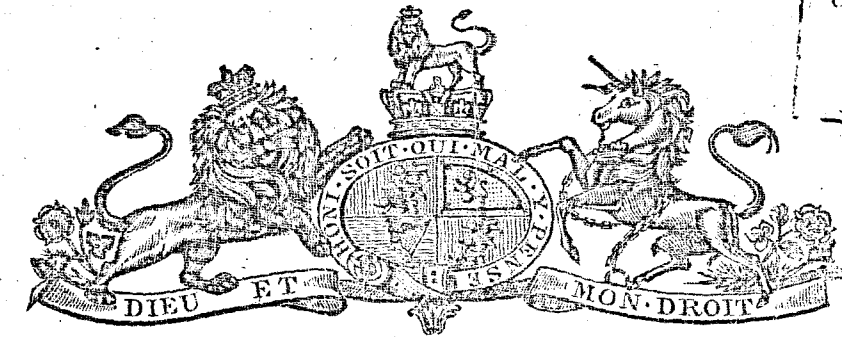


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ADMINISTRATION REPORT
OF THE PUBLIC WORKS DEPARTMENT

1917
1918
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ADMINISTRATION REPORT

OF THE

PUBLIC WORKS DEPARTMENT,

(GENERAL, BUILDINGS AND ROADS BRANCH,)

MADRAS PRESIDENCY,

FOR THE YEAR

1885-86.

MADRAS:
PRINTED BY R. HILL, AT THE GOVERNMENT PRESS.
1886.

I.—GENERAL REMARKS.

In compliance with an urgent call made by the Government of India for reduction of expenditure, the following surrenders were made from the original grants assigned to the department :—

						RS.
<i>Imperial, Military</i>	...	...	...	...	...	2,77,006
<i>Imperial, Civil Works</i>	...	...	...	...	...	11,200
<i>Provincial</i>	...	...	...	...	...	2,91,053

In the early part of the year, repeated attempts were made to recover some of these old blocks by means of a floating apparatus made for the purpose. It was found, however, that the persistent swell in the neighbourhood of the piers rendered the working of any floating plant highly dangerous at all times, and often impossible. A large amount of plant and machinery was received from England during the year, the most important items being two new Titan cranes for constructing the new piers, and one very heavy overhanging crane for depositing "wave-breaker" blocks, to protect the outer walls of each pier. These three machines came out in pieces, and were put together on the works. The construction of them occupied nearly four months. They were all brought into work during the year under review, but at the south pier, the Titan was only employed in depositing wave-breaker blocks of 30 tons each to protect the standing portion of the pier.

At the north pier, during the year, 80,426 tons of rubble were deposited, in the base and in foreshore; and 432 concrete blocks were dropped over the outer face of the pier to form a "wave-breaker." These blocks may be taken at an average weight of 28 tons each. They were deposited partly by the Titan crane, with its overhanging portion turned to the north, and partly by the special crane built for the purpose.

In March, the north pier Titan was turned round through 180°, bringing its "overhang" to the south, and in this position it commenced to build the abutment of the north pier. Up to 31st March there were 35 blocks set in this work, giving a length of 24½ feet.

At the south pier 43,745½ tons of rubble stone were deposited in the base and foreshore, and 87 blocks were dropped over the outer face to form the wave-breaker.

In the blockmaking yard, work could not be carried on at full speed owing to the necessity of altering the blockmaking platforms themselves, and to the fact of the ground being nearly filled up with blocks made for the old designs. There were 1,058 blocks made during the year, representing 31,000 tons of concrete.

The quarries at Pallavaram were opened up extensively, and the railway lines and sidings lengthened and multiplied. During the year under review, 139,569 tons of material were despatched from the quarry to the harbour works. From June 1885 the rate charged by the Railway Company for haulage was doubled. From June 1877 to June 1885 the rate had been 6 pies per ton per mile, but from June 1885 the rate for the same work is 1 anna per ton per mile. This will add about 3 lakhs of rupees to the cost of the whole work.

Up to the end of the year, Mr. Parkes' estimate for the reconstruction and completion of the harbour had not been sanctioned; it is therefore not possible to quote official figures showing comparison of cost and estimate. The grant for the year 1885-86 was Rs. 8,99,640, and the expenditure was Rs. 6,64,246. This includes the cost of the heavier items of plant from England.

The three most important branches of the work, so far as labor is concerned, were advertised for tenders by contract.

These consisted in (1) quarrying stone at Pallavaram, (2) making concrete blocks, and (3) depositing stone in the sea. In every case the result was satisfactory.

The works sustained a severe loss by the death, on 2nd June 1885, of Mr. N. St. B. Beardmore, who had ably filled the post of Assistant Superintendent from the commencement of the works. His place was filled, on 20th August 1885, by Mr. A. Lee Pogson, who had, in 1882-83, officiated in the same capacity for more than a year.

On 4th March 1886, the works were visited and inspected by their Excellencies the Viceroy and the Governor of Madras, who spent some time on the works and witnessed the blowing up of blocks under water and the dropping of 30-ton blocks by the wave-breaker crane into the sea.

The Act to provide Trustees for the Harbour of Madras received the assent of the Viceroy and Governor-General on the 20th February 1886, and at the end of the year arrangements were being made to bring the Act into operation.

3. *Gopálpur Pier.*—During the year, arrangements were concluded with Messrs. Massey and Company for the construction, by contract, of a screw pile pier at Gopálpur 900 feet long by 20 feet wide, at an estimated cost of Rs. 2,30,903. An allotment of Rs. 1,00,000 was provided in 1885-86 for commencing the work, and before the end of the year all the iron-work had been landed by the contractors, and examined, weighed, and passed by the Executive Engineer. The full amount of the year's grant was expended in payments to the contractors.

4. *Cruz Milagre Dam.*—Early in 1885, it was reported that, while the Cruz Milagre dam was considered then perfectly safe, the latest cross sections taken showed a tendency towards deepening of the river in front of the dam, and that some erosion was apparent at the toe of the revetment on the backwater side. To prevent this slipping, it was recommended that about two cubic yards of stone per running yard should be dropped in along the toe of the revetment. It was at the same time reported that the lagoon was apparently being gradually filled up by silt brought in through the escape by river floods, and also by drift sand from the beach. The work recommended was

approved, and an estimate, amounting to Rs. 2,190, was subsequently submitted and sanctioned.

It was also suggested that the planting of cocoanut trees on the lagoon side of the sandbank that lies between the Cruz Milagre dam and the sea, would tend to strengthen the bank and protect the dam; and the Cochin Government having expressed their assent to the measure, on the condition that the land should be parcelled out, for planting, to either natives or permanent residents of the State who would expend capital on the land, and that arrangements should be made for the collection of rent for the same, the Superintending Engineer was directed to proceed accordingly.

5. *Mangalore Harbour.*—After the futile attempts made in 1883-84 and previous years to open a new mouth for the river at this port opposite the custom house, and to close the old Gurpur mouth, it was resolved to defer all attempts at harbour improvements at this place, and to watch the course of natural events, until a favorable opportunity offered to effect improvements advantageously.

In August 1885, the Gurpur river opened a new mouth for itself a little to the north of the existing one; and there were thus three mouths to the harbour, the old Gurpur mouth remaining open, as also the new one opened to the south by the Netrávati river in 1883.

In February 1886, the new Gurpur mouth closed, the other two mouths remaining open.

In March 1886, the Superintending Engineer submitted suggestions for cutting off the connection between the two rivers, by means of strong bunds thrown across the backwater, each bund to contain a lock for the passage of country vessels. The proposals, the cost of which was roughly estimated at Rs. 1,50,000, were under consideration by the Master Attendant at the close of the year.

6. *Negapatam Harbour.*—The boat basin which had been excavated at this port having proved a failure, it was resolved to abandon it, and to utilise the materials in repairing or reconstructing the river wall to the east of the basin. The latter proposal has, however, been in abeyance owing to the refusal of the South Indian Railway Company to carry out a portion of the work which it was considered properly devolved on the Railway.

Here, as at Mangalore, it is considered that the best course is to have the action of the two rivers which form the harbour carefully watched for a few years, and all changes accurately recorded, before incurring further outlay in any direction.

The question of preventing the contamination of the foreshore by drainage from the town, a rather serious nuisance, was under consideration by the municipality.

7. *Bangalore Water Supply.*—In March 1884, Colonel J. Mullins, R.E., who had been placed on special duty in connection with the question, submitted his report on the improvement of the water supply of Bangalore. The subject was exhaustively treated in his report, and the duty of elaborating the scheme, and of preparing the requisite plans and estimates, was intrusted to the late Captain Romilly, R.E.

Captain Romilly's report was submitted in January 1885, and was accompanied by three alternative estimates. The first, A, provided for the supply of water to the barracks from the Agram tank, and amounted to Rs. 2,90,000; the annual cost of maintenance being Rs. 44,385. The second, B, provided for drawing the supply from the Halsur tank, and distilling the water by means of condensing engines, and amounted to Rs. 1,67,000; the annual cost of maintenance being Rs. 84,600. The third, C, provided for certain improvements to the existing source of supply, and the augmentation of the supply by taking up a new gathering ground. The cost was estimated at Rs. 1,33,000; the annual cost of maintenance being Rs. 27,000.

The Sanitary Commissioner preferred project B, as the only means of insuring a supply of pure water for the troops; and His Excellency the Commander-in-Chief also expressed his preference for project B, on the condition that so much of project C as provided for the conservation of the Halsur tank and the increase of its catchment area, be taken in hand at the same time. The cost of the improvements thus contemplated was estimated at about Rs. 2,26,000. The Municipal Commissioners of

Bangalore, who were consulted, raised no objection to the scheme, on an assurance being given that the rain drainage from the cantonment bazaar, which enters the tank from the west, shall not be cut off until the success of the new gathering ground to the east shall have been fully established. They declined, however, to share any portion of the cost, on the ground that considerable expenditure had already been incurred by them in improvements to the Halsur tank, and also that they did not feel justified in making such a marked change so long as the existing water supply is acceptable to the civil population, and not unhealthy in its effects.

At the close of the year the scheme was before the Mysore Government, whose consent had been sought to the alienation of the land required as a new gathering ground.

8. *Artesian Well boring at Madras.*—In December 1884, the Government accepted an offer from Mons. Cornet, a French Engineer, to make the experiment of sinking an Artesian well at Madras. The maximum depth named for the experiment was 129 metres, or 393 feet, and the approximate cost was set down at Rs. 15,475.

The People's Park having been suggested by Dr. King, of the Geological Survey of India, as a locality likely to prove favorable for such an experiment, a site was selected therein, and work was commenced in March 1885. For a depth of 58 feet the boring was through soil consisting of clay, marl, sand, &c., below which a granitic formation was met with, into which boring proceeded slowly, the rock being of excessive hardness.

In order to ascertain whether the rock which had been encountered was a detached boulder, or an extensive underlying bed, a trial boring of small diameter was made at a distance of some 50 yards south of the first site; and in this second boring, granite of precisely the same character was reached at the same depth, a result which showed that the bed was apparently continuous. From a further examination of samples of the strata through which had passed three other borings that had been attempted in the vicinity of Madras, the conclusion was arrived at that, from Fort St. George to a distance of six or seven miles north, and a mile or two inland, the underlying strata were everywhere identical, and consequently unlikely to yield an Artesian supply of water. The Government thereupon directed the discontinuance of the experiment in the People's Park, and asked Dr. King to favor them with his opinion as to the locality in which a second boring might be tried in the immediate neighbourhood of Madras, with the greatest possibility of success. Dr. King's reply, however, seemed to place beyond doubt the improbability of obtaining a supply of water from an Artesian source near Madras, and at the close of the year the question of making further experiments in the alluvial valley of the Kortalayár was under consideration.

The total cost of the experiment in the People's Park was Rs. 17,857, or Rs. 2,382 in excess of the approximate estimate; but as the apparatus, valued at about Rs. 11,000, remained in the hands of the Government, further experiments can be carried out at a comparatively small cost.

9. *Wynaad Communications.*—The work in connection with both the improvements and repairs to the road between Vayitri and Calicut *via* Pudavellum and the Tāmra-chéri ghât, for which the estimate amounts to Rs. 3,19,788, was commenced during the year under review. The progress made by the contractors was not very satisfactory, owing to bad management and insufficient supply of labor; but more efficient arrangements having since been made by the contractors, better results may be expected. The expenditure amounted to Rs. 24,454, against a grant of Rs. 25,000.

For improvements to the road from Vayitri to Gúdalur, estimates, amounting to Rs. 4,10,000, were sanctioned; but the only work done was in connection with the reconstruction of the Soladi bridge, on which Rs. 2,431 were spent against an allotment of Rs. 3,000. The short expenditure was due to funds having been allotted late in the year, and to the uncertainty as to which site would be adopted for the bridge. The earthwork of the diversion and catch drains were nearly completed, and materials, such as Portland cement for concrete foundations, teakwood for bridge flooring, and shell for lime, were collected. Sheds for workpeople were also erected.

For the next section, from Vayitri to the Mysore frontier *via* Sultan's battery, the survey and sections (longitudinal and cross) were completed and plotted, and the

gradients marked. The work was then stopped, as it was considered unnecessary to frame detailed estimates until the sanctioned improvements to the main line were approaching completion.

A sum of Rs. 1,200 was spent on converting into a bridle path a portion of the new trace on the Vayitri-Gúdalur road.

10. *Potinghi-Koraput Road.*—During the year, detailed estimates, amounting to Rs. 2,72,700, for a new road from Potinghi to Koraput were sanctioned. This road will form the second link in the line of communication between the plains of Vizagapatam and the interior of the Jeypore plateau. The line follows for the greater part a pack bullock track already opened out by the Agency authorities, and which it is proposed to convert into a first-class road, 18 feet wide, metalled and bridged throughout. A sum of Rs. 30,000 was entered in the Provincial budget of 1886-87 for commencing the work.

For the completion of the Potinghi ghât it is proposed to construct iron girder bridges at a cost of Rs. 31,190 over two streams, which at present are crossed by means of roughstone causeways. Funds for the construction of the bridges in 1886-87 were provided in the budget for that year.

An estimate of Rs. 1,500 for surveying and levelling the road from Koraput to Jagdalpur was sanctioned, and the work was begun during the year.

11. *Sanitary Improvements at Ootacamund.*—For the further sanitary improvements of the town, and for the completion of the scheme of drainage for the north side of the lake, an iron pipe sewer was laid to convey clear of the lake the liquid sewage from the Ootacamund bazaar above the Willow bund, as well as that from Mutucheri; and to deposit it in the bed of the Kandal stream at about 1,400 feet below the surplus sluice of the lake. This work was completed during the year under review at a cost of Rs. 66,179, with highly satisfactory results.

To complete the protection of the lake from contamination, steps were being taken to acquire on behalf of Government all the private land between its margin and the carriage road, and an estimate for fencing the land with barbed wire was called for. Complaints having been made of the smell from the upper portion of the lake above the Willow bund, a permanent regulating weir was constructed, with the double object of keeping the water in the upper portion at its normal level and of assisting the silting process in that portion.

The properties known as "Blackwood" and "West" cottages, situated on the margin of the lake, were purchased by Government as part of the protection scheme, and converted into sub-divisional officer's quarters and office and stores.

12. *Improvements to the South Beach, Madras.*—The promenade was extended from the Ice-house road to Elliot's road, a distance of 2,500 feet, and opened to the public. The ride was also extended to nearly the same distance. The expenditure on the work during the year was Rs. 16,739. The sloping and planting of the foreshore was continued, and added greatly to the improvement of the Marina. The site of the unsightly fishing village to the south of the Presidency College was acquired at a cost of about Rs. 17,000, and at the close of the year the work of removing the village to a site on the west of the canal was in active progress. A further expenditure of about Rs. 19,000 was incurred in payment of compensation to the fishermen for the removal of their huts, and in raising with sand the site allotted for the new village.

Arrangements were further being made to close the sewage farms and the Hindu burning ground to the north of the old ice-house; and when this has been effected, the whole of the land to the east of the Buckingham canal, between Pycroft's road and the Ice-house road, will be laid out as an ornamental park; care being taken not to interfere in any way with existing masonry structures in the old burning ground.

13. *Ophthalmic Hospital, Madras.*—An estimate, amounting to Rs. 97,663, for a new ophthalmic hospital, on a design by Mr. Chisholm, late Consulting Architect, was sanctioned in March 1884. The work was commenced in 1884-85, and completed in the year under review. During the progress of the work, three supplemental estimates were sanctioned, bringing the total estimated cost to Rs. 1,04,954. The work was completed in February 1886, at an actual outlay of Rs. 1,00,502; and the

building was occupied before the close of the year. The Government eye infirmary had for many years previously been located on the Poonamallee road, in a hired building which was in many respects unsuitable for the purpose. The new building on the Pudupet plain contains accommodation for between sixty and seventy in-patients, with a commodious out-patients' ward.

14. *Tirumal Naick's Palace, Madura.*—In the Administration Report for 1884-85, it was stated that the following estimates, submitted by Mr. Chisholm, had been sanctioned :—

	Rs.
(a) Completing the Judge's Court	7,261
(b) Completing all necessary restoration works	1,01,500

and that the total sanction for work at the palace, inclusive of those estimates, amounted to Rs. 2,74,847. In April 1885, Mr. Chisholm submitted a third estimate, amounting to Rs. 82,320, for completing all work requisite for accommodating the Revenue offices in the palace, including the necessary subsidiary buildings. It was found, however, that while this last estimate provided for work not contemplated by the committee appointed in 1883, it did not include other items which the committee considered necessary, nor did it provide for certain items of expenditure already incurred. After personal inspection of the building by the Chief Engineer, it was decided to adhere to the measures recommended by the committee, and the Superintending Engineer was directed to submit revised estimates. These were received and sanctioned late in the official year, and were as follows :—

	Rs.
(a) Revised estimate for locating Judge's Court	13,390
(b) Locating the Collector's offices	50,449

The increased expenditure contemplated in estimate (a) was due to provision having been made for restoring the east aisle of what is known as the old Muhammadan school, a measure recommended by the Committee of 1883. The total sanction for the palace works thus became Rs. 3,31,655.

The works in progress were on the undermentioned estimates :—

	Rs.
(1) Restoration proper	1,01,500
(2) Locating the Judge's Court	13,390
(3) Locating the Collectorate	50,449

Of these, the first was worked out to the extent of Rs. 90,203, leaving a balance of Rs. 11,297 to be completed in 1886-87.

Work on the second estimate of Rs. 13,390 was commenced in July 1885, and the expenditure to the end of the year amounted to Rs. 7,915.

The third estimate, though nominally a fresh one, was in reality for an incomplete work of previous years, since it included expenditure to the extent of Rs. 23,086 already incurred. The unexpended balance of the estimate to be worked out in 1886-87 was Rs. 27,363.

The following is a brief statement of the work executed during the year :—

(1) *Restoration Work.*—The restoration of the whole of the east portion of the north and south colonnades inside the courtyard, the whole of the inside of dome G on the south side, inside of dome A as far as bottom cornice, and plastering portions of north and east terrace of the lower story, were completed.

(2) *Locating the Judge's Court.*—The room for bar library in the south upper gallery of the Judge's court, the property room, and the Judge's private room, with the exception of flooring, as well as a new verandah for the record room, and a portion of plastering inside of the same, were finished.

The original budget grant for the work for 1885-86 was Rs. 30,000, but this was afterwards reduced to Rs. 19,376, owing to the work having been in abeyance for some time pending sanction to the revised estimate. The reduced allotment was fully spent before the end of the year. The total outlay on the project to 31st March 1886 amounted to Rs. 2,82,836.

15. *London Colonial and Indian Exhibition of 1886.*—The undermentioned exhibits were forwarded by the Public Works Department :—

Models of Irrigation Works.

General models of the Kistna anicuts, showing the head works and portions of the anicut across the river on the eastern and western banks.

Cross section of the Kistna anicut, showing the wells on which the body walls are built, and the approximate position of the stone apron.

Model of the Bezvada head-sluice, eastern delta, $2\frac{1}{2}$ vents, showing shutters and gearing.

Model of the Bezvada under-sluice, $2\frac{1}{2}$ vents, showing shutters and gearing.

Model of the Godavari Central delta head-sluice, one vent, showing shutters and gearing.

General model of the Grand anicut, and the Cauvery and Vennar regulators, Tanjore.

Model of Vennar regulators, one vent, showing shutters and gearing.

General model of Lower Coleroon anicut, and a portion of the intervening island.

Lower Coleroon anicut, one sluice of two vents, showing shutters and gearing, with the two adjacent arches.

Model of staff boat used by Government officers when travelling by canal.

Buildings and Roads.

A card-board model of the post and telegraph offices at Madras, with a carved rosewood stand.

A model in marble of the Dharmaraj Rath, Seven Pagodas, on a carved granite pedestal.

A model illustrating the method of well sinking adopted in India for securing foundations.

A stand with frames containing photographs of important public buildings in the presidency.

Specimens of bricks, tiles, terracotta, plaster, &c., manufactured by the Public Works Department, Madras.

A map of the presidency on spring rollers, showing the several descriptions of roads.

16. *Public Works Stores, Madras.*—Mr. W. B. deWinton, Executive Engineer, General Superintendent, Public Works Stores and Workshops, having been transferred to other duty, made over charge of the office to Captain L. Langley, R.E., on the 13th June 1885, who in turn handed over charge, on the 23rd idem, to Mr. O'Connell, who was appointed General Superintendent. The whole of the stock was subsequently verified by Mr. O'Connell.

Tools and plant, which had previously been included in the suspense account "Stock," was during the year ordered to be charged off to the final head of service in the store accounts. This adjustment reduced the stock suspense account by Rs. 1,60,075.

The opening balance of serviceable stock in store on 1st April 1885 was Rs. 3,03,638, or Rs. 81 less than the amount entered in the Administration Report for 1884-85. The receipts from all sources during the year amounted to Rs. 1,83,757, which, with the opening balance, made a total of Rs. 4,87,395. The issues during the year amounted to Rs. 2,83,337, and the balance on the 31st March 1886 was Rs. 2,04,058, or Rs. 99,580 less than the opening balance of the year.

During the year, 13,007 tons of railway stores and materials were received from England, 6,829 tons of wooden sleepers from Rangoon, and sundry miscellaneous stores from Calcutta, for the Bellary-Kistna and Cuddapah-Nellore State Railways; the total quantity received from all sources having been 24,941 tons. There were 23 consignments from London, 25 from Rangoon, and 9 from Calcutta, making in all 57 consignments of railway stores landed and despatched.

Up to the end of the year 1885, a commission of 5 per cent. on outlay incurred by the Public Works Stores Department in landing and despatching railway stores was charged to cover the cost of the extra establishment employed for the purpose; but this system having been found inconvenient, the Government of India agreed to

pay a fixed contribution of Rs. 300 per mensem from 1st January 1886, to cover the cost of such establishment.

17. *Public Works Workshops, Madras.*—The amount received from Government for the operations of the workshops was Rs. 1,07,000 in cash, and Rs. 62,479 in stores, making a total of Rs. 1,69,479; against which credits were afforded by cash Rs. 6,619, and by book adjustment Rs. 1,52,580, or a total of Rs. 1,59,199.

After careful review of the report of the committee appointed in February 1884 to investigate the results of the orders restricting the operations of the Presidency Public Works Workshops, the Government, in July 1884, practically came to the conclusion that, in the interests of the public service, it would be necessary to restore the workshops to their old position. In consideration, however, of the private and local interests concerned, it was decided to give the restrictive orders a further trial, and the experiment was continued to near the close of the year 1885-86. The question of the status of the workshops was then revived. It was found that, although the restrictive orders had been in force for over three years, and although all possible publicity had been given to the intentions of the Government, the result was disappointing in the extreme. The contemplated sale of the buildings and plant completely fell through, not one reasonable offer having been received in reply to advertisements published throughout India. The expectation that healthy private competition in the open market would be realised. Private enterprise was, as at first, represented by only two firms, whose rates were high, one for the execution of iron work and one for the execution of repairs to mathematical instruments. The Gun Carriage Factory declared itself unable to undertake any work for the Public Works Department, and the Government were not prepared to hand over their workshop business to what would virtually become a monopoly. It was consequently resolved to reconstitute the workshops on their former footing, and orders were issued accordingly, throwing them open again to all departments of the Government and to the general public.

During the year, a large quantity of machinery was received from England and set up in the workshops.

At the instance of the Government of India, it was resolved at the close of the year to introduce, from the beginning of 1886-87, a modified set of accounts and forms, under which the operations of the workshops would come under the budget system.

18. *Government Lithographic Press.*—The value of work turned out during the year by the Government Lithographic Press was Rs. 17,124, while the working expenses amounted to Rs. 11,478.

19. *Decauville's Portable Railway.*—In May 1885, the Government accepted an offer made by the Bombay Agent for Decauville's Patent Portable Railways to forward for trial in this presidency one mile of line with rolling stock complete. It was represented that these railways could be used with great economy for the conveyance of material both on small and large works. The plant was received in October 1885, and half of it was used in the Consulting Architect's division for the conveyance of sand for raising the site of the new fishing village near the Presidency College, Madras; the other half being forwarded to Bezvada for trial. The reports subsequently received went to show that the rolling stock was too heavy for sand or earthwork, and not sufficiently strong for carrying stone. It was believed, however, that the railway would prove useful in the case of large works for which much stone work was not required; and the trial mile of plant was therefore purchased, and transferred to the Rushikulya Project Works.

20. *Instruction of Officers of the Public Works Department in the Process of Testing Lightning Conductors.*—The Telegraph Department having reported that the demands made on it for assistance in the matter of testing lightning conductors were very heavy, and that the work could not be carried out without undue strain on its staff, the Government of India decided to relieve that department of the duty, as it was considered that the work might be performed by officers of the Public Works Department after they had received the requisite training in the use of the testing apparatus. With that view, three officers and one subordinate of the Public Works Department

were instructed during the year at the central telegraph office at Madras. In order, however, to make the knowledge more general, all the Superintending Engineers were directed to place themselves in communication with the Chief Superintendents of the several Telegraph divisions in the presidency, so that selected officers of the Public Works Department in each district might be trained in the use of the testing apparatus. Such officers are, as opportunities offer, to impart instruction to other officers and subordinates of the Public Works Department.

21. *Transfer of Bridges at Madras to the Municipality.*—The care and maintenance of the bridges within the municipal limits of Madras had devolved on the Public Works Department since the year 1857, but in the year under review the question of their transfer to the municipality came under consideration. As the municipality now possess the services of a competent Engineer, it was decided that there is no longer any reason why the bridges should be exempted from the provisions of the City of Madras Municipal Act; and as the charge was properly one which should fall on municipal funds, it was resolved that the transfer should be effected.

At the close of the year, the details of the transfer were under consideration in the Financial Department.

22. *Sál Timber for Building Purposes.*—In connection with an estimate for renewing the roof of certain buildings at the lunatic asylum at Waltair, it was stated by the local Public Works officers that the necessity for the repairs might be attributed to the previous use of sálwood, which, even if thoroughly seasoned and protected, did not appear to withstand the atmospheric conditions on the coast, being very liable to dry rot; it was further stated that the timber speedily succumbed to the ravages of white-ants. This sweeping condemnation of sálwood was at variance with what had previously been accepted as the result of experience of the timber, and, as the matter was one of much importance, especially to the northern districts of the presidency, it was considered desirable to make further inquiries into the subject. Expressions of opinion were accordingly invited from the Chief Engineers, Bengal and Central Provinces, the Conservator of Forests, Northern Circle, and officers serving in the I Circle of the Public Works Department; and their replies led to the conclusion that, if sál timber used for building purposes was well seasoned and free from sap wood, there would be no cause to complain of it as a building material.

23. *Inspection of Light-houses by the Chief Engineer, Public Works Department.*—In 1884, the Secretary of State forwarded a note by Lieutenant-General A. Fraser, R.E., advocating a much more frequent and systematic inspection of light-houses on the Indian coasts than that which he understood was carried out; and this Government thereupon directed that the Chief Engineer, or a competent officer of the Public Works Department, should periodically visit the light-houses in the Madras Presidency in the company of the Master Attendant, and report upon their condition, each light-house being inspected once at least every year.

The Chief Engineer accordingly inspected the following light-houses in February 1885:—

Pulicat.	Vakallapudi.
Armeghon.	Santopilly.
Hope Island.	Gopálpur.

In February 1886 the undermentioned light-houses were visited:—

Negapatam.
Pámban.
Tuticorin.

It was also proposed on the latter occasion to visit the light at Muttum and other lights on the West Coast, but owing to the small steamer in which the inspection was made meeting with an accident, the Chief Engineer was obliged to return to Madras from Tuticorin. The inspection of the light-houses on the West Coast was therefore delegated to the Superintending Engineers.

24. *Divisional Changes.*—In April 1885, orders were issued for the amalgamation of the Ganjam and Rushikulya divisions; but beyond placing both divisions under the charge of one officer for a time, the amalgamation was not fully carried out. In

February 1886, it was found necessary to reconstitute them again as two separate divisions, with a rearrangement of territorial limits.

In April 1885, the Kurnool division was formed into a sub-division of the Kurnool Canal division, which was then designated the Kurnool division.

In the same month, the Barur Project division was formed into a sub-division of the Coimbatore division.

The separate temporary division, which had been constituted in connection with the restoration of the Red Hills tank, was closed at the end of January 1886, and the works were handed back to the Chingleput division.

A third Tank division, to work in the Kurnool district, was formed at the commencement of the official year; and at the close of the year the Government of India sanctioned the formation, in 1886-87, of a fourth Tank division whose base of operations was to be the Coimbatore district.

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

26. *Casualties, Engineer Establishment.*—On the 8th January 1886, the department sustained a severe loss by the death of Lieutenant-Colonel P. Montgomerie, Superintending Engineer of the I Circle.

Mr. R. F. Chisholm, F.R.I.B.A., who had been Consulting Architect to the Government of Madras from 1st April 1869, retired from the service on pension on the 21st February 1886. The following order of Government was passed on the occasion:—

“The Government cannot allow Mr. Chisholm to resign the post of Consulting Architect without placing on record their appreciation of the architectural improvements which have been introduced into the presidency during the period of his official connection with it.

“Mr. Chisholm came to Madras in 1865, and the buildings which, during the last twenty-one years, have been erected from his designs in the town and presidency of Madras bear honorable testimony to his skill and talent.

“The Government understand that Mr. Chisholm, while severing his connection with their service, intends to prosecute his work in the field of Indian architecture, and they wish him all success in his future career.”

II.—PROGRESS OF WORKS.

I.—IMPERIAL—MILITARY WORKS.

27. **Ganjam.**—The following minor original works were completed:—

(1) Sinking and constructing a well in the cholera camp ground for Native infantry at Berhampore; estimate Rs. 500.

(2) Alterations to lightning conductors in the military powder magazine at Berhampore; estimate Rs. 435.

28. **Vizagapatam.**—A sum of Rs. 2,279 was expended on the maintenance and repair of all military buildings and roads in the cantonment of Vizianagrum.

29. **Godavari (East).**—Repairs to the military buildings at Sámalkót were carried out at an outlay of Rs. 1,377.

30. **Bellary.**—During the year, final payment was made to the contractor for the Commissariat slaughter-house at Bellary. The revised estimate amounted to Rs. 10,066, and the total expenditure to Rs. 10,068.

31. The following works were completed:—

(1) Re-roofing the European infantry regiment's plunge-bath at a cost of Rs. 750.

(2) Improving the drainage system of the European infantry barracks. Two cisterns were built and a length of 150 feet of drains completed. Pumps for lifting sewage water from the cisterns were purchased. The expenditure amounted to Rs. 7,558.

32. **Coimbatore.**—The purchase of Honorary Surgeon Wells' bungalow at the Remount dépôt, for Rs. 2,500, was completed during the year.

33. **Nilgiris.**—The bakery at Wellington was the only work of importance continued during the year. It was nearly completed. What remained to be done was the dam, the mill-race, and the approach road.

34. The work of re-roofing the Lawrence Asylum, male branch, was commenced, and a good portion of the work completed.

35. **West Coast.**—Block No. 2 of Malapuram barracks with out-houses was all but completed.

Day and mess room was fully completed.

Slaughter-house and hanging-shed completed.

Ward for contagious diseases half completed.

Converting the old library into kitchen and drying-room completed.

Converting the wood godown into bakery in progress.

36. The allotment for the several works in connection with the barracks was Rs. 31,448, which was fully worked out, bringing the total expenditure at the end of the year to Rs. 1,14,981, against the estimate of Rs. 1,35,094.

37. The old Cannanore fort was converted into a defensible post at a cost of Rs. 3,923. The original estimate amounted to Rs. 2,958, but, on the motion of the General Officer Commanding the Western District, certain additions and alterations were carried out and a revised estimate of Rs. 4,300 was submitted. Work completed.

38. The old cells in the Cannanore fort were converted into a double station magazine and treasure room, and lightning conductor fixed; estimate Rs. 2,420; outlay Rs. 2,419. The original estimate, however, not having provided for racks or stands for powder barrels, and it being found that there was not sufficient ventilation or light in the building, a supplemental estimate of Rs. 1,170 was submitted.

39. The expenditure under Repairs, Military, amounted to Rs. 21,749.

40. **Presidency and Bangalore.**—Improvements to the Gun-powder factory buildings at Madras were continued. The construction of a traverse wall round the pebble-cutting house was completed; outlay Rs. 3,637; estimate Rs. 3,920.

41. Re-roofing and re-flooring the barrel machine shop at the Gun-carriage factory was completed; estimate Rs. 4,030; outlay Rs. 2,074.

42. The second block of three quarters in the Ordnance lines for the warrant and non-commissioned officers of the Commissariat Department was completed and handed over to the Military authorities; estimate Rs. 26,740; outlay Rs. 27,302, including the amount expended on the first block.

43. At the request of the Commissary-General, the fourth quarter of the second block was built at Pudupet; also at the same place were built mule stables, latrine, gram-shed, workshops, and stores for the Commissariat Department; estimate Rs. 11,920; outlay Rs. 13,975.

44. The alterations, &c., to the beer godowns at the Commissary-General's office were completed; the expenditure amounted to Rs. 3,956.

45. Rifle ranges at Veysarpady for two Native infantry regiments were completed, part of the work being done by regimental labor; estimate Rs. 4,170; outlay Rs. 4,149.

46. A sum of Rs. 6,219 was spent on planting casuarina along the beach to screen the coast batteries, and on increasing with sand the front face of the batteries.

47. Out of an estimate amounting to Rs. 42,035, a sum of Rs. 37,435 was expended on improvements to the armament of Fort St. George.

48. Three rifle ranges at Agram, Bangalore, were completed; estimate Rs. 3,680; outlay Rs. 3,614.

49. Additional works to the fortified post at Agram, Bangalore, were completed; estimate Rs. 3,410; outlay Rs. 2,933.

50. A sum of Rs. 2,040 was expended on the conversion of the racket court in Fort St. George into a covered gymnasium, against an estimate of Rs. 11,890. The work was put in hand and materials collected, when orders were issued to stop it, the grant having been withdrawn. The work was still in abeyance at the end of the year.

51. Thirteen minor new works were completed at the presidency at a cost of Rs. 6,631, and 371 repair works carried out during the year.

52. Payments to the extent of Rs. 16,317, 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, were made to the Madras Municipality.

53. Rs. 1,200 and Rs. 6,300 were paid to the Cantonment Municipality at Bangalore for the conservancy of the main sewer and maintenance of military roads.

54. A sum of Rs. 84,897 was expended under repairs, including Barrackmaster's expenditure on petty repairs, compensation for quarters, and payments made to municipalities on account of taxes and maintenance grants.

55. The following were the principal repair works:—

- (1) Repairing roof of Superintendent's quarters at Gun-carriage factory; estimate Rs. 1,300 outlay; Rs. 1,191.
- (2) Re-building wall and roof of the drying-room of the foundry at Gun-carriage factory; estimate Rs. 950; outlay Rs. 830.
- (3) Repairing two ovens at the north end of Government bakery, Teynampet; estimate Rs. 1,300; outlay Rs. 1,042.
- (4) Raising and lengthening north groyne of Napier battery; estimate Rs. 1,100; outlay Rs. 1,060.
- (5) Levelling and sectioning sea-face glacis, Fort St. George; estimate Rs. 1,580; outlay Rs. 684.
- (6) General repairs to west hutting lines occupied by the 12th Regiment, Madras Native Infantry, at Bangalore; estimate Rs. 3,242; outlay Rs. 3,133.

56. **Chingleput.**—The following works in connection with the new Royal Artillery barracks at the Mount were completed:—

- (a) Barrack, east block.
- (b) Barrack, west block.
- (c) Three wash-houses.
- (d) Three kitchens.
- (e) Wheeler shop.
- (f) Store-room.
- (g) Latrine.

57. The construction of a recreation room at the barracks of the artillery at the Mount was put in hand and the main and verandah walls were raised to 12½ feet and the verandah all round terraced, when the work was stopped for want of funds. The estimate for the entire work is Rs. 1,35,050 and the expenditure amounted to Rs. 1,19,660.

58. Three of the six blocks of stables for the Royal Artillery barracks at the Mount were completed. The outlay amounted to Rs. 21,344, including the three blocks that were completed in 1884-85, against an estimate of Rs. 22,344.

59. The expenditure on minor new works and repairs was Rs. 9,987; and the total expenditure under repairs, including Barrackmaster's petty repairs, compensation for quarters, &c., was Rs. 15,353.

60. **Trichinopoly.**—The construction of public buildings for the 30th Regiment, Madras Infantry, was continued; a combined store-room was completed at a cost of Rs. 3,323; the allotment was Rs. 3,370.

II.—IMPERIAL—CIVIL WORKS.

61. **Ganjam.**—Out of an allotment of Rs. 11,618, the unexpended balance amounted to Rs. 1,392 at the end of the current official year.

The chief items on which short outlay was incurred were:—

- (1) Purchase of a building for post office at Russellkonda; and
- (2) Improvements to the post office building at Bhadrachalam—the grant in both cases having been sanctioned too late in the year.

62. **Godavari (East).**—A sum of Rs. 306 was spent on improvements to the post office building at Bhadrachalam, against an estimate of Rs. 830. A short outlay of Rs. 524 was incurred as the allotment was sanctioned very late in the year.

63. The construction of quarters for signallers of the Telegraph Department at Cocanada was completed, leaving only a portion of tiling, flooring, and plastering to be finished. Rs. 32,311 were expended against an estimate of Rs. 34,135.

64. Improvements to the telegraph office at Cocanada were carried out at a cost of Rs. 4,070, against an estimate of Rs. 4,000.

65. **Vizagapatam.**—The post office at Koraput was completed at a cost of Rs. 2,415, against an estimate of Rs. 2,560, and the building handed over to the Postal Department.

66. **Kistna.**—Of the allotments of Rs. 900 for the Duggirala post office, in the Kistna Western division, and Rs. 1,260 for the quarters for the postmaster at Gúdúr, only small portions were utilised in consequence of the funds having been allotted in March 1886.

67. **Coimbatore.**—Verandahs were constructed to the post offices at Salem and Mettupálaiyūm at a cost of Rs. 584 and 202, respectively.

68. **West Coast.**—Under this head the only expenditure incurred was in connection with the annual repairs to ten postal buildings, which amounted to Rs. 760.

69. **Presidency and Bangalore.**—The work that remained to be done to complete the combined post and telegraph offices was the conversion of the Commissariat mule stables on the foreshore into stables for the Postal Department, and the construction of quarters for the overseer in charge of the mails. This work was completed and the building occupied. Some alterations were made to the latrine, and two exhaust ventilators provided for the municipal drain on the west side of the building. A trial ventilator fitted with perforated trays containing charcoal was also constructed over the harbour intercepting sewer, and it was reported that a decided improvement had taken place in the state of the atmosphere about the building. The total expenditure on the combined offices amounted to Rs. 6,80,850, and the estimate to Rs. 6,92,094.

70. The new telegraph office at Bangalore was completed; estimate Rs. 19,320; outlay Rs. 19,481.

71. **Madura.**—The construction of a post office at Butlagundu, for which the sanctioned estimate amounted to Rs. 1,340, was the only original work in progress during the year. It was sanctioned in March 1886, and funds granted to the extent of Rs. 1,340; but the allotment was made too late in the year to be fully utilised and the expenditure amounted to Rs. 144 only.

72. **Negapatam.**—The telegraph office at Negapatam was repaired at a cost of Rs. 1,644.

73. **Ramnad.**—The estimate for additions to the post office building at Ramnad was sanctioned only in March 1886; and orders to execute the work were received too late to utilise any portion of the grant before the end of the official year.

74. **Trichinopoly.**—The post office at Musiri was completed at a cost of Rs. 2,502. The outlay during the year was Rs. 1,028, against a grant of Rs. 1,022.

75. The improvements to the Teppakulam post office were completed at a cost of Rs. 465; the grant was Rs. 465.

III.—PROVINCIAL—CIVIL BUILDINGS.

76. **Vizagapatam.**—Rs. 8,205 against an estimate of Rs. 9,310 were expended on the construction of a second-class taluk office at Anakapalle, and the building handed over to the Collector.

77. The construction of a residence for the Assistant Superintendent of Police at Jeypore was completed; estimate Rs. 14,250; outlay Rs. 14,496.

78. An expenditure of Rs. 6,572 was incurred in connection with the provision of additional accommodation to the Huzur treasury at Vizagapatam, against an estimate of Rs. 8,870. The work was completed except a portion of the roof of one of the rooms.

79. The following works were completed and handed over to the departments concerned:—

- (1) Alterations to the lunatic asylum at Waltair; estimate Rs. 4,955; outlay Rs. 4,911.
- (2) Sub-registrar's office at Palkonda; estimate Rs. 1,820; outlay Rs. 1,860.
- (3) Constructing a treasury-room with taluk office at Vizianagaram; estimate Rs. 1,620; outlay Rs. 1,532.
- (4) Constructing a second-class police station-house at Kurupam; estimate Rs. 1,520; outlay Rs. 1,503.
- (5) Constructing a school-room and place-of-arms for the reserve police at Párvatipur; estimate Rs. 1,495; outlay Rs. 1,374.

80. **Godavari (Eastern).**—The following works were completed or in progress:—

- (1) Alterations to the Collector's office at Cocanada; estimate Rs. 31,870; outlay Rs. 36,135.
- (2) Constructing a court-house at Rajahmundry; estimate Rs. 38,992; outlay Rs. 39,052.
- (3) District munsif's court-house at Peddápúram; estimate Rs. 10,300; outlay Rs. 10,232.
- (4) Sub-magistrate's office at Pithápúram excepting the roof work which was in progress; estimate Rs. 8,983; outlay Rs. 6,405.
- (5) Water-supply and improvements to the existing drainage of the central jail at Rajahmundry; estimate Rs. 33,030; outlay Rs. 24,220.
- (6) Constructing sub-registrar's office at Cocanada; estimate Rs. 4,839; outlay Rs. 3,904.
- (7) Constructing sub-magistrate's office at Tuni; estimate Rs. 9,436; outlay Rs. 4,824. The walls above basement were in progress.
- (8) The roof of the church at Cocanada was completed with the exception of the verandahs, also plastering the cornice work of the main building with Portland cement; estimate Rs. 18,380; expenditure Rs. 13,130.

(9) Constructing an office at Dowlaishweram for the Head-works sub-division officer; estimate Rs. 5,727; outlay Rs. 5,547.

(10) Materials for the construction of a dispensary at Bhadráchalam were being collected; estimate Rs. 4,246; outlay Rs. 210.

(11) Constructing a residence at Dowlaishweram for the Superintending Engineer; estimate Rs. 17,300; outlay Rs. 18,514.

(12) Constructing a residence for the Executive Engineer at Dowlaishweram; estimate Rs. 12,500; outlay Rs. 10,547.

(13) Improvements to the sea-customs building at Cocanada; estimate Rs. 4,310; outlay Rs. 4,820.

81. **Godavari (Western).**—A sub-magistrate's office at Pentapad was completed; estimate Rs. 7,200; outlay Rs. 6,848.

82. The following works were completed:—

- (1) Sub-registrar's office at Pentapad; estimate Rs. 2,710; outlay Rs. 2,588.
- (2) Taluk office at Tanuku; estimate Rs. 21,420; outlay Rs. 12,331.
- (3) A taluk office at Bhimavaram; estimate Rs. 22,650; outlay Rs. 15,772.

83. **Godavari (Central).**—The construction of a sub-registrar's office at Razole was put in hand; estimate Rs. 2,750; outlay Rs. 218.

84. **Ganjam.**—A sum of Rs. 7,024 was expended on the construction of a Senior Assistant Collector's office at Berhampore against an estimate of Rs. 6,900.

85. A school-house at Tekkali-Raghunáthapuram was completed and handed over to the Educational Department; estimate Rs. 3,530; outlay Rs. 3,416.

86. The following four incomplete works of the preceding year were completed:—

- | | |
|--|---------|
| (1) Police station-house at Kota-Bomally; estimate ... | Rs. 835 |
| (2) Do. do. at Indupally „ „ | 835 |
| (3) Do. do. at Kukudakandra „ „ | 910 |
| (4) Additions and improvements to St. Stephen's church, Berhampore; estimate ... | 930 |

87. **Kistna, East.**—Alterations and additions to the Collector's office at Masulipatam were carried out.

88. The following works were completed:—

- (1) Constructing a residence and office for the Superintending Engineer, II Circle, at Bezvada.
- (2) Constructing a store building at Bezvada.
- (3) Constructing a sub-registrar's office at Gunnava.

89. **Kistna, West.**—The following works were completed:—

- (1) Sub-registrar's office at Narsaraopet.
- (2) Sub-registrar's office at Tevali.
- (3) Sub-registrar's office at Répalle.

90. Out of an allotment of Rs. 150 for maintaining the plantation in the compound of the Western division office at Duggirala, Rs. 13-8-0 were spent. The number of trees planted or maintained during the year amounted to 420. A small experimental garden for the growth of Nankin cotton was also maintained.

91. **Gudivada.**—The treasury room in the compound of the Gudivada taluk office was completed and handed over to the Revenue Department.

92. **Nellore.**—The following works were completed:—

- (1) Police hospital at Ongole.
- (2) Improvements to the District Judge's court at Nellore.

- (3) Two godowns for the storage of tools at Nellore.
- (4) Improvements to the taluk office at Nellore.

93. **Bellary.**—The taluk office at Adóni was completed and handed over during the year. The expenditure amounted to Rs. 31,546, against an estimate of Rs. 31,680.

94. The taluk office at Harpanahalli was completed and occupied. The estimate was Rs. 26,715 and the outlay Rs. 27,200.

95. The Deputy Collector's office at Adóni was completed and handed over. The expenditure amounted to Rs. 6,410 and the estimate Rs. 6,460.

96. The Head Assistant Collector's office at Hospet was completed at a cost of Rs. 4,283, against an estimate of Rs. 4,309.

97. The subsidiary jail at Alúr was completed and handed over; outlay Rs. 9,074; estimate Rs. 10,770.

98. The work on the second-class taluk office at Siruguppa was nearly completed. The expenditure was Rs. 12,771 and the estimate Rs. 12,680.

99. Rs. 1,503 were expended on the construction of a compound-wall round the Collector's office at Bellary. The work is included in the estimate of Rs. 47,540 sanctioned for improvements to the office.

100. A verandah was constructed to the taluk office at Ráyadrug, but the accounts were not closed. The outlay was Rs. 2,612 and the estimate Rs. 3,490.

101. The combined offices for the Superintending and Executive Engineers were completed and occupied during the year. The expenditure amounted to Rs. 19,099, against the estimate of Rs. 18,494. The excess was due to increased depth of foundation and to items of masonry being more elaborate than was originally allowed for.

102. The sub-registrar's office at Kampli was completed at a cost of Rs. 2,322, against the estimate of Rs. 2,660.

103. The work on the Collector's residence at Anantapur was stopped, and modified designs were sent to the Collector, who returned the approved design only towards the close of the year. Revised estimates were under preparation. The outlay incurred during the year amounted to Rs. 15,778 and was for materials. The estimate is Rs. 30,875.

104. The lower story of the Collector's office at Anantapur was almost finished, and the strong-room was fitted with iron barred gratings. The walls of the upper story of the main building were raised about $6\frac{1}{2}$ feet, and a quantity of building materials collected at site. It is probable that the work will be finished within contract time. The expenditure amounted to Rs. 33,649, against an estimate of Rs. 55,000.

105. The Head Assistant Collector's office at Penukonda was about three-quarters completed. The items not finished were some roofing, flooring, and plaster; the woodwork had not been painted, and doors and windows had to be fixed. The out-offices were nearly completed. The expenditure amounted to Rs. 14,236, against an estimate of Rs. 16,681.

106. The second-class taluk office at Bukkapatnam was two-thirds completed. The flooring and some terracing were only partially finished and the woodwork had not been painted. The cook-room and the latrine were roofed, but there were items of work remaining to be done. The ryots' shed was made ready for roofing and the well was almost completed. The outlay amounted to Rs. 9,367, against the estimate of Rs. 12,200.

107. The Police Superintendent's residence at Anantapur was completed with out-houses. The well presented a difficulty from being in solid rock. The labor of sinking was considerable, and though a little water was reached, it will be tedious work ensuring a proper supply.

108. The undermentioned buildings were completed and made over to the Revenue and Police authorities :—

- (1) Sub-divisional officer's residence at Anantapur; estimate Rs. 4,772; expenditure Rs. 4,706.
- (2) Police inspector's residence at Anantapur; estimate Rs. 4,772; expenditure Rs. 4,823.
- (3) Apothecary's quarters at Anantapur; estimate Rs. 4,772; expenditure Rs. 4,817.
- (4) Police station-house at Anantapur; estimate Rs. 2,510; expenditure Rs. 2,597.

109. The following minor new works were carried out during the year :—

- (1) A police hospital at Anantapur.
- (2) Improvements to the Collector's printing office at Bellary.
- (3) A strong-room for the taluk office at Kúdligi.
- (4) Sky-lights for the Collector's office at Anantapur.
- (5) Sub-registrar's office at Hadagally.
- (6) Screens to the garrison church at Bellary.
- (7) Sub-registrar's office at Hospet.
- (8) Additional store and office rooms for the district munsif's court-house at Narraindaverkerra.
- (9) A store-shed and enclosure wall for famine tools at Anantapur; expenditure Rs. 5,108.

110. **Cuddapah.**—The taluk office at Pulivendla was completed, with the exception of the wooden turret roof. Two attempts were made to dig a well, but without success. The expenditure amounted to Rs. 22,603, against the estimate of Rs. 22,150.

111. The Sub-Collector's office at Madanapalle was completed. The estimate was exceeded owing to a rise in the price of teakwood supplied by the Public Works workshops. The expenditure amounted to Rs. 15,756, against the estimate of Rs. 14,895.

112. Of the sanctioned additions and alterations to the district jail at Cuddapah, the terraced roof of the jailor's quarters was completed; estimate Rs. 31,900; expenditure Rs. 2,218.

113. The additions and alterations to the court-house at Cuddapah were completed during the year. Expenditure amounted to Rs. 8,044, against the estimate of Rs. 7,780.

114. Eleven minor works in the Cuddapah district and one in the Kurnool district were carried out at a cost of Rs. 1,837 and Rs. 1,290, respectively.

115. **Kurnool.**—The foundations and basement of the taluk office at Nandyál were completed, and the superstructure commenced. Two of the out-houses were completed, and the third nearly so. The expenditure amounted to Rs. 11,625, against the estimate of Rs. 34,676.

116. The sub-magistrate's office at Owk was completed and handed over to the Revenue Department. The expenditure amounted to Rs. 13,919, against the estimate of Rs. 14,308.

117. The sub-magistrate's office at Pyápali was completed during the year. The expenditure amounted to Rs. 12,261, against the estimate of Rs. 12,840.

118. The materials for completing the roof of the sub-divisional officer's quarters at Cumbum were prepared. The revised estimate was awaited. The expenditure amounted to Rs. 3,993, against the estimate of Rs. 3,000.

119. **Coimbatore.**—Residence for the Head Assistant Collector at Polláchi was completed and handed over during the year at a total cost of Rs. 13,960.

120. The railway bungalow at Tirupatūr was purchased for Rs. 4,000 for a residence for the Assistant Superintendent of Police.

121. Work to the extent of Rs. 13,960 was carried out by the Jail Department in constructing a close prison at Coimbatore.

122. A commencement was made on the following works, but on receipt of orders of Government restricting expenditure they were stopped, viz.:—

- (1) Additions and alterations to the quarters of the Superintendent, Central Jail, Salem; outlay Rs. 14; estimate Rs. 3,600.
- (2) Constructing quarters for the deputy jailor attached to the central jail, Salem; outlay Rs. 140; estimate Rs. 3,660.
- (3) Constructing sub-registrar's office at Hosūr; outlay Rs. 560; estimate Rs. 2,970.

123. Of the thirteen minor works undertaken, nine were completed, the total expenditure being Rs. 422.

124. Twenty-six repair works were carried out during the year at a cost of Rs. 3,086.

125. **Nilgiris.**—The following work was done during the year in connection with the complete estimate for Government House, Ootacamund:—A school-house was built for the children of native servants; additional servants' quarters were constructed, and stone steps for terraces completed.

126. The Protestant church at Wellington was nearly completed when work was stopped pending sanction to a revised estimate submitted in February 1886, and which has since been forwarded for the approval of the Government of India.

127. Quarters with out-houses for the police inspector at Gúdalūr were completed.

128. The following works were also in progress during the year:—

- New road of approach to Government offices, Stonehouse.
- Police huts at Gúdalūr.
- Police huts at Cherambádi.
- Improvements to Cinchona villa.
- Conversion of Pearl bungalow at Nellakóta into a police station and huts.
- Conversion of police inspector's house.

129. **West Coast.**—The allotment of Rs. 20,420 for the year, for constructing law courts at Calicut, was fully worked out; bringing the total expenditure up to end of March 1885 to Rs. 79,495, against the sanctioned estimate of Rs. 95,240. The following works were completed:—

- (1) The District and Sub-Judge's Court.
- (2) Judge's record, nazir's and clerks' rooms.
- (3) Vakils' and tiffin rooms.
- (4) Waiting sheds.
- (5) Coach-house.
- (6) Stables.

130. The munsif's court was commenced and materials to the value of Rs. 1,432 collected.

131. The public offices at Ponáni progressed satisfactorily. The year's allotment, Rs. 24,789, was fully expended; the total expenditure up to the end of the year amounting to Rs. 30,788, against the estimate, Rs. 74,521. Masonry of the lower story approached completion, and all the door and window frames erected.

132. The improvements to the district munsif's court-house at Ottapalam, which were commenced in 1884-85, were completed at a cost of Rs. 2,684, with a saving of Rs. 306 on an estimate of Rs. 2,990; the year's outlay being Rs. 1,323 and allotment Rs. 1,334.

133. The construction of a sea custom house at Tanur was completed; expenditure Rs. 2,984; estimate Rs. 2,960.

134. Rs. 326 were spent in connection with the sub-registrar's office at Cherpaleri, which was completed and handed over to the Registration Department.

135. The incomplete work of constructing a sub-registrar's office at Payóli was completed, the total expenditure being Rs. 2,950, against an estimate of Rs. 2,833.

136. The Local Fund school-house at Taliparamba, which was purchased in 1884-85 for Rs. 1,280, was adapted for a sub-registrar's office at an outlay of Rs. 1,387.

137. The incomplete work of district munsif's court at Coondapoor was completed and handed over for occupation, the year's outlay being Rs. 911; total expenditure Rs. 12,673; estimate Rs. 12,380.

138. Rs. 863 were expended in completing the district munsif's court at Puttur. The total cost was Rs. 17,091, against an estimate of Rs. 17,140.

139. The sea custom house at Malpi, which was nearly finished in the previous year, was fully completed at an outlay of Rs. 6,729, against an estimate of Rs. 6,560; the year's expenditure amounting to Rs. 485.

140. The improvements to the taluk office at Puttur, which were commenced in February 1885, were completed at a total outlay of Rs. 4,995, against an estimate of Rs. 4,880; the expenditure for the year being Rs. 3,495; allotment Rs. 3,487.

141. The Head Assistant Collector's residence at Coondapoor, on which Rs. 1,760 were spent in the previous year in the collection of materials, was in progress, the allotment of Rs. 6,000 being fully worked out. Foundation and basement and superstructure to 10 feet high were completed, all door and window frames fixed, and wood and a large quantity of other materials collected.

142. Improvements to the Collector's office at Mangalore, for which a supplemental estimate of Rs. 2,500 was sanctioned, were completed, the expenditure incurred being Rs. 1,923.

143. Under minor new works, Rs. 500 were spent in collecting materials for additions and alterations to the district munsif's court at Pynaad, for which an estimate of Rs. 1,250 had been sanctioned.

144. The late munsif's court-house at Bantvál was converted into a sub-registrar's office at a cost of Rs. 595.

145. A sum of Rs. 4,501 was expended on repairs, the principal items being—

- (1) Repairing the roof of St. Mary's church, Calicut; outlay Rs. 972.
- (2) Repairing the Government church at Cochin; Rs. 1,667.
- (3) Repairing the protective works of Sub-Collector's bungalow at Tellicherry; Rs. 310.

146. **Presidency and Bangalore.**—Improvements to the grounds and maintenance of trees and plants were carried out in the Chopák Park; most of the footpaths were bordered with chlorodendron hedges, and several clumps of large trees and ornamental shrubs were planted out. The ground about the boat-house was also planted, and all previous planting maintained; outlay Rs. 27,324; estimate Rs. 27,338.

147. A new road was constructed from the west main entrance of the Chopák Park through the date palm groves of Government House to join the road along the Coom river; outlay Rs. 16,860; estimate Rs. 16,893.

148. An expenditure of Rs. 2,954 was incurred on materials for the alterations to the roof of the north and south wings of the Public Works offices at Chopák. The sanctioned estimate is Rs. 5,035.

149. Rs. 550 were expended in commencing the construction of a latrine on the banks of the canal near the Senate House. The estimate for the work is Rs. 6,600, a moiety of which is to be paid by the Madras University; the latrine being intended for the use of candidates appearing for examinations held at the Senate House.

150. Additions and improvements to the Stamp and Stationery office at Madras were completed. An expenditure of Rs. 23,830 was incurred against an estimate of Rs. 24,240.

151. A sum of Rs. 3,964 was spent on furniture for Government House.

152. The ceilings of the nave and aisles of St. George's Cathedral was completed at a cost of Rs. 3,452.

153. A sum of Rs. 3,207 was spent in rebuilding, with a tiled roof, the dissecting-shed at the Medical College, which was burnt down.

154. A sum of Rs. 3,460 was spent on the construction of a masonry bed for the machinery at the Guindy water-works.

155. Rs. 1,874 were spent on six minor new works.

156. One hundred and eighteen repair works at Madras and thirteen at Bangalore were in progress. None of the works at Bangalore were of much importance, and the principal at Madras were:—

- (1) Plastering with cement outside walls of Stamp and Stationery office; estimate Rs. 1,620; outlay Rs. 1,573.
- (2) Whitewashing and repairing Banqueting Hall and Marine Villa Government House; estimate Rs. 1,345; outlay Rs. 1,187.
- (3) Repairing St. George's Cathedral; estimate Rs. 1,682; outlay Rs. 1,673.
- (4) Rebuilding out-houses of Garrison chaplain's quarters; estimate Rs. 1,310; outlay Rs. 1,158.
- (5) Thorough repairs to the Police Commissioner's office, Egmore; estimate Rs. 4,140; outlay Rs. 3,752.
- (6) General repairs to the Chief Presidency Magistrate's Court, Egmore; estimate Rs. 4,500; outlay Rs. 4,159.
- (7) Repairs to the lock hospital, Black Town; estimate Rs. 5,397; outlay Rs. 1,845.
- (8) Repairing and winding Government clocks at the presidency; estimate Rs. 1,398; outlay Rs. 1,398.
- (9) Repairing roof, &c., of the machinery store-shed at the Public Works workshops; estimate Rs. 2,178; outlay Rs. 2,175.

157. An expenditure of Rs. 8,154 was incurred on the construction of a petroleum-shed on the beach, but the Collector has since proposed some alterations.

158. **Chingleput.**—A sum of Rs. 4,063 was expended, against an estimate of Rs. 3,975, in remodelling the lightning conductor at Government House, Guindy, and constructing a concrete drain round the main building.

159. The expenditure on minor new works was Rs. 1,078.

160. **North Arcot.**—The residence for the Superintendent of the Central Jail, Vellore, was completed at a total outlay of Rs. 31,333, on an estimate of Rs. 31,500, and handed over to the Jail Department.

161. The cellular prison at Vellore was completed and a postern gate built; total outlay Rs. 35,873; estimate Rs. 40,970.

162. The high school at Chittoor was completed. The outlay was Rs. 44,730 on an estimate of Rs. 45,130.

163. An expenditure of Rs. 10,104 was incurred on repairing and improving Murray's bungalow at Ranipet which was purchased by Government as a residence for the ex-king of Burmah; but for which other use was subsequently found.

164. The expenditure on minor new works was Rs. 3,916.

165. **South Arcot.**—A sum of Rs. 8,491 was spent on additions to the Collector's office at Manjakuppam, against an estimate of Rs. 8,528.

166. The following minor new works were completed at an outlay of Rs. 2,069:—

- (1) Police station-house at Oothangalmungalam.
- (2) Do. do. at Chinna Salem.
- (3) Do. do. at Tittagudi.
- (4) Sub-registrar's office at Vriddhachalam.
- (7) Well in the compound of the sub-divisional officer's residence at Vriddhachalam.

167. **Trichinopoly.**—The work of constructing the district jail was in progress. The expenditure was Rs. 24,986, against a grant of Rs. 25,000.

168. The following repairs were carried out during the year:—

- (1) Putting up a trussed roof for record-room of the Collector's office; estimate Rs. 3,355; expenditure Rs. 1,408; completed.
- (2) Re-roofing block No. 1, central jail; estimate Rs. 3,470; bricks and tiles were collected to the extent of the allotment available; the expenditure was Rs. 158.

169. **Tinnevely.**—Work on the district court-house at Kokarakulam was continued. The south and west verandahs were raised to full height, and the rafters for the terrace were supplied. Only the terracing remains to be done to complete the two verandahs; expenditure Rs. 1,944; the estimate is Rs. 17,875.

170. The Head Assistant Collector's office at Shermadevi was completed at a cost of Rs. 9,876, against the estimate of Rs. 10,275.

171. The foundations of the registrar's office at Kokarakulam were completed. The expenditure in 1885-86 was Rs. 600, against the estimate of Rs. 4,380.

172. Materials for a sub-registrar's office at Srivilliputur were collected, but the work was postponed for want of funds. The expenditure was Rs. 364 and the estimate Rs. 2,705.

173. A third-class police station-house at Gangikondan was completed. The outlay amounted to Rs. 1,168, against an estimate of Rs. 1,235.

174. An expenditure of Rs. 3,032 was incurred on repairs to civil buildings.

175. **Tanjore.**—Good progress was made on the district jail at Tanjore during the year. The following buildings were completed and handed over to the jail department:—Compound-wall, entrance gate, office blocks, cells, store-room, quarantine cell, tanks, wells, lavatory, filters, circular cook-room, quarters for under-trial males, debtors' quarters, contagious hospitals, latrine, hospital for males, cells for insanes, store and cook room, dead-house, hospital for females, bath-room, female wards, dresser's quarters, jailor's quarters. The outlay during the year under review was Rs. 44,205, out of an allotment of Rs. 46,876. The total outlay amounted to Rs. 1,98,588, against the estimate of Rs. 2,11,100.

176. A first-class division office at Tanjore was completed at a cost of Rs. 11,878; estimate Rs. 11,920.

177. A sub-registrar's office at Valangaman was completed and handed over; estimate Rs. 2,682; expenditure Rs. 2,628.

178. Improvements to the Tiruvadamardur palace were completed, with the exception of some whitewashing and repairs to the tank, which were not done owing to the Rajah's death. The outlay was Rs. 1,811, against an estimate of Rs. 2,095.

179. The foundations of the extension to the police station-house at Kumbakonam were put in, but the work had to be stopped. Rs. 440 only were expended, the estimate being 2,700.

180. The foundations of a police station-house at Tanjore were laid, but the work was stopped; outlay Rs. 1,189; estimate Rs. 6,740.

181. The work of constructing a combined court-house for the district munsifs of Kumbakonam and Valangaman was held in abeyance. A sum of Rs. 1,318 was

expended in compensation to the contractor and compensation for land taken up. The estimate is Rs. 33,640.

182. A masonry wall for the protection of Kumbakonam town on the south side of the Cauvery was nearly completed at a cost of Rs. 2,013, against an estimate of Rs. 2,330.

183. Improvements to the Patukota Assistant Collector's office at Tanjore were completed at an outlay of Rs. 1,658.

184. A sub-registrar's office at Vallam was completed; outlay Rs. 2,320; estimate Rs. 2,240.

185. An expenditure of Rs. 800 was incurred in alterations to the portion of the old taluk office for the accommodation of the sub-registrar's office at Trivior; estimate Rs. 1,120.

186. Improvements to the district munsif's court-house at Mayavaram were completed for Rs. 3,288; estimate Rs. 3,345.

187. Improvements and repairs to the Kumbakonam Sub-Judge's court were completed at a cost of Rs. 2,104, the estimate being Rs. 2,180.

188. The repairs to the palace at Tanjore were completed at a cost of Rs. 91,038, against an estimate of Rs. 92,920.

189. **Madura.**—The work of constructing a sub-magistrate's office at Madura though sanctioned in March 1885 was started only in the latter part of December last, when an allotment of Rs. 5,000 was granted for the same. The allotment was fully expended. The estimate is Rs. 17,889.

190. The construction of a deputy tahsildar's office at Vedaandur was completed with the exception of a few small items. The total outlay was Rs. 11,497, against an estimate of Rs. 11,828.

191. The deputy tahsildar's office at Nellakota was completed, with the exception of some petty items to the extent of about Rs. 60. The outlay during the year amounted to Rs. 7,993, against the estimate of Rs. 11,828.

192. The deputy tahsildar's office at Uthamapoli was completed; all but some slight work, amounting to Rs. 100. The outlay amounted to Rs. 7,503, and the estimate Rs. 11,993.

193. A sub-registrar's office at Usilampatti was completed and handed over to the Registration Department. The grant for the year was fully utilised. The estimate amounted to Rs. 2,580.

194. The following minor original works were completed during the year and handed over to departments concerned for occupation:—

- (1) A sub-registrar's office at Melur; outlay Rs. 2,134; estimate Rs. 2,070.
- (2) A sub-registrar's office at Tirupatūr; outlay Rs. 2,193; estimate Rs. 2,425.
- (3) A sub-registrar's office at Dindigul; outlay Rs. 2,078; estimate Rs. 2,125.
- (4) A sub-registrar's office at Sivaganga; outlay Rs. 2,306; estimate Rs. 2,278.

195. Sub-registrars' offices at Ootampaliam and Tirushuli were completed, and arrangements made for handing them over to the Registration Department. The expenditure on the former amounted to Rs. 2,191 and on the latter Rs. 2,182, against estimates of Rs. 2,095 and 2,125, respectively.

196. Repairs to the buildings below mentioned were completed:—

- (1) Sub-court at Madura; outlay Rs. 2,123; estimate Rs. 2,170.
- (2) District jail at Madura; outlay Rs. 2,556, estimate Rs. 2,642.

197. **Negapatam.**—The work of improving the taluk office at Negapatam was completed. The estimate was Rs. 6,700.

198. **Ramnad.**—The expenditure during the year on the work of converting the police hospital at Ramnad into a residence for the Assistant Superintendent of Police was Rs. 1,101, against the grant of Rs. 2,000.

199. A sub-registrar's office at Ramnad was completed in August and made over to the Registration Department; estimate Rs. 2,225; outlay Rs. 2,150.

IV.—PROVINCIAL—COMMUNICATIONS.

200. **Vizagapatam.**—The following works were completed in connection with the new Pottinghi ghāt road:—

- (1) Permanent lines at Roddavalva and Rallagedda.
- (2) Bungalow at Pottinghi with out-houses, and additional works, such as stone revetments in front and rear with ornamental balustrading.
- (3) Some rocky noses, which were a source of obstruction to traffic, were removed.
- (4) Several bandy-stands on the line levelled, and other petty works finished to the required extent.

Estimate Rs. 4,56,581; outlay Rs. 4,28,622.

201. The expenditure on the maintenance of the new Pottinghi ghāt road amounted to Rs. 10,526, out of a grant of Rs. 10,500.

202. **Godavari (East).**—The navigation works at Dumagudiem were maintained at a cost of Rs. 15,605. During the year, 698 boats and 873 rafts passed through the canal.

203. **Nilgiris.**—Under this head the following works were completed:—

- (1) Improving the main road within the municipal limits of Ootacamund.
- (2) Improving the road from Ootacamund to Gudalur.
- (3) Improving roads within the Coonoor municipal limits.
- (4) Rest-house with out-houses on the ghāt at the 9th mile below Coonoor (work commenced, but not completed).
- (5) Widening certain portions of the Kullar-Gudalur road below Craigmere toll-bar.
- (6) Repairing the bridge at the 4th mile below Coonoor.

204. An expenditure of Rs. 1,391 was incurred in maintaining the road from Mettupalaiyam to Kullar up to September 1885, when the road was handed over to the Local Fund Department.

205. **Presidency.**—A sum of Rs. 9,142 was expended on repairs to bridges and roadways over bridges; and Rs. 9,058 paid to the Madras Municipality for the maintenance of the roads leading from the Fort to the Mount and Poonamallee.

206. **Madura.**—The road from Cumbum to the foot of the Gudalur-Peermade ghāt was under execution by the Local Fund Department from funds supplied by the Public Works Department. The original allotment was Rs. 26,293, but it was finally reduced to Rs. 4,083 owing to want of sufficient establishment for supervising and carrying out the work. The outlay of the year was only Rs. 2,232, being Rs. 1,850 less than the reduced appropriation. In January 1886 the work was ordered to be retransferred to the Public Works Department for execution.

V.—PROVINCIAL—MISCELLANEOUS PUBLIC IMPROVEMENTS.

207. **Nilgiris.**—The following works were completed during the year:—

- (1) Elkhill cutting.
- (2) Dodabetta reservoir.
- (3) Regulating weir at the lake.

208. Expenditure to the extent of Rs. 57,380 was incurred on the bazaar drainage scheme; certain improvements were effected round the lake and at Charing

Cross; and groynes were provided for the upper end of the lake. The east escape of Ootacamund lake was partially repaired, as was also the surplus escape of the St. Lawrence lake.

209. **Presidency.**—A sum of Rs. 720 was spent on the conservancy of the Kuam river, and in opening and closing the bar. The iron girder bridge over the Kuam river was maintained and repaired at a cost of Rs. 309.

210. **South Arcot.**—The embankment for the protection of the town of Tirupapuliyur from the floods of the Gadilam river was completed to a length of 2,057 feet at an outlay of Rs. 2,013. The work was in progress at the close of the year.

VI.—LOCAL—INCORPORATED.

211. **Godavari (East).**—The total expenditure up to the end of the year on the Cover-Munjair junction canal amounted to Rs. 1,29,228, against an estimate of Rs. 1,45,525.

212. A sum of Rs. 5,215 was spent on the construction of an iron lattice girder bridge at Vencatakrisnapuram lock of the Samalkot canal, against an estimate of Rs. 5,550.

213. The construction of a landing place for passenger boats near Ramapadalu, Dowlaisheram, was completed; estimate Rs. 5,000; outlay Rs. 4,924.

214. **Kistna East.**—The only work in progress was the landing stage at Bezvada. A sum of Rs. 8,375 only was spent, against a grant of Rs. 11,000, owing to the late closure of canals and delay on the part of the contractors.

215. **South Arcot.**—Five roads along the banks of the Coleroon and Vadavar rivers, Khan Sahib's canal, and the Veeranam and Perumal tanks, were maintained at a cost of Rs. 3,641; and Rs. 998 were spent on sanding the road on the Veeranam tank bund.

216. **Tanjore.**—A village road from Haridnaramangalam to Muneyoor, along the Vennar embankment, was completed at a cost of Rs. 8,306, against an estimate of Rs. 8,423.

VII.—LOCAL—EXCLUDED.

217. **Godavari (East).**—Improvements to the Marine Villa at Cocanada were completed; estimate Rs. 7,700; outlay Rs. 9,251.

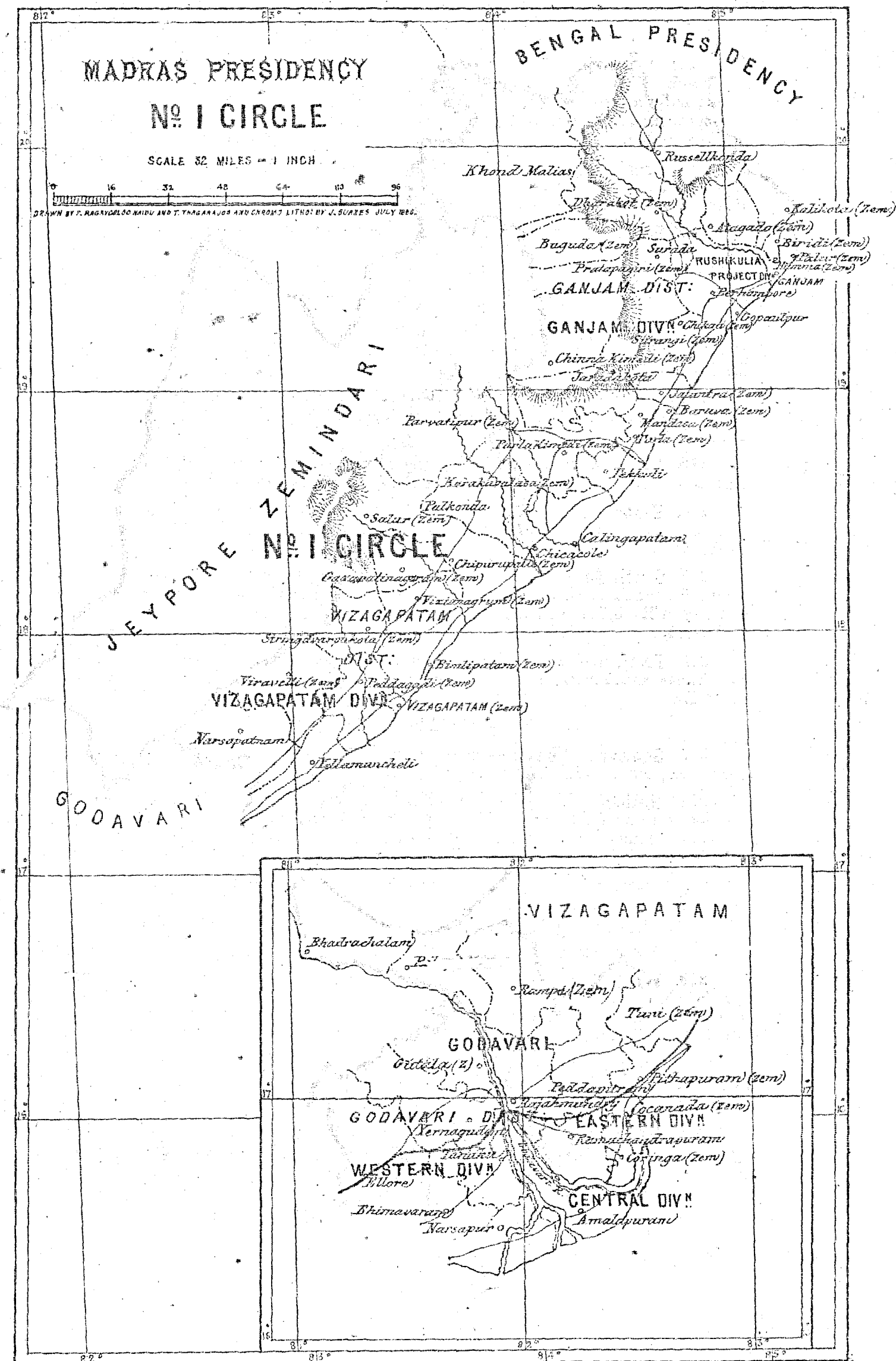
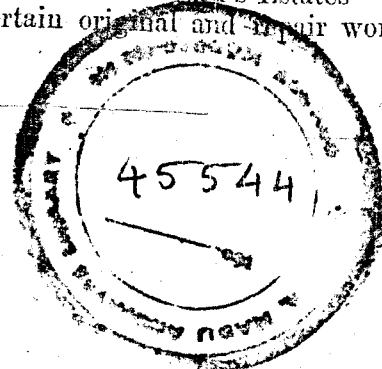
218. **Nellore.**—The grant and outlay under this head in the Buckingham Canal division were Rs. 3,281 and Rs. 699, respectively. Improvements to superintendent's quarters at Armeghon lighthouse, commenced during the previous year, were completed, and the following works were in progress:—

- (1) Further alterations and improvements to superintendent's quarters at Armeghon lighthouse.
- (2) Constructing lines for the lascars attached to the above-named lighthouse.
- (3) Constructing lines for the lascars attached to the lighthouse at Pulicat.

219. **West Coast.**—The construction of groynes and rebuilding of revetment for the protection of the Ponani town, for which materials to the value of Rs. 486 were collected in the previous year, were completed; outlay Rs. 3,563; estimate Rs. 4,175. This work was transferred from Excluded Local to Provincial.

220. The boat jetty at Cannanore, for which materials to the value of Rs. 1,916 were collected in the previous year, was completed and handed over to the Marine Department; estimate Rs. 12,130; expenditure Rs. 12,130.

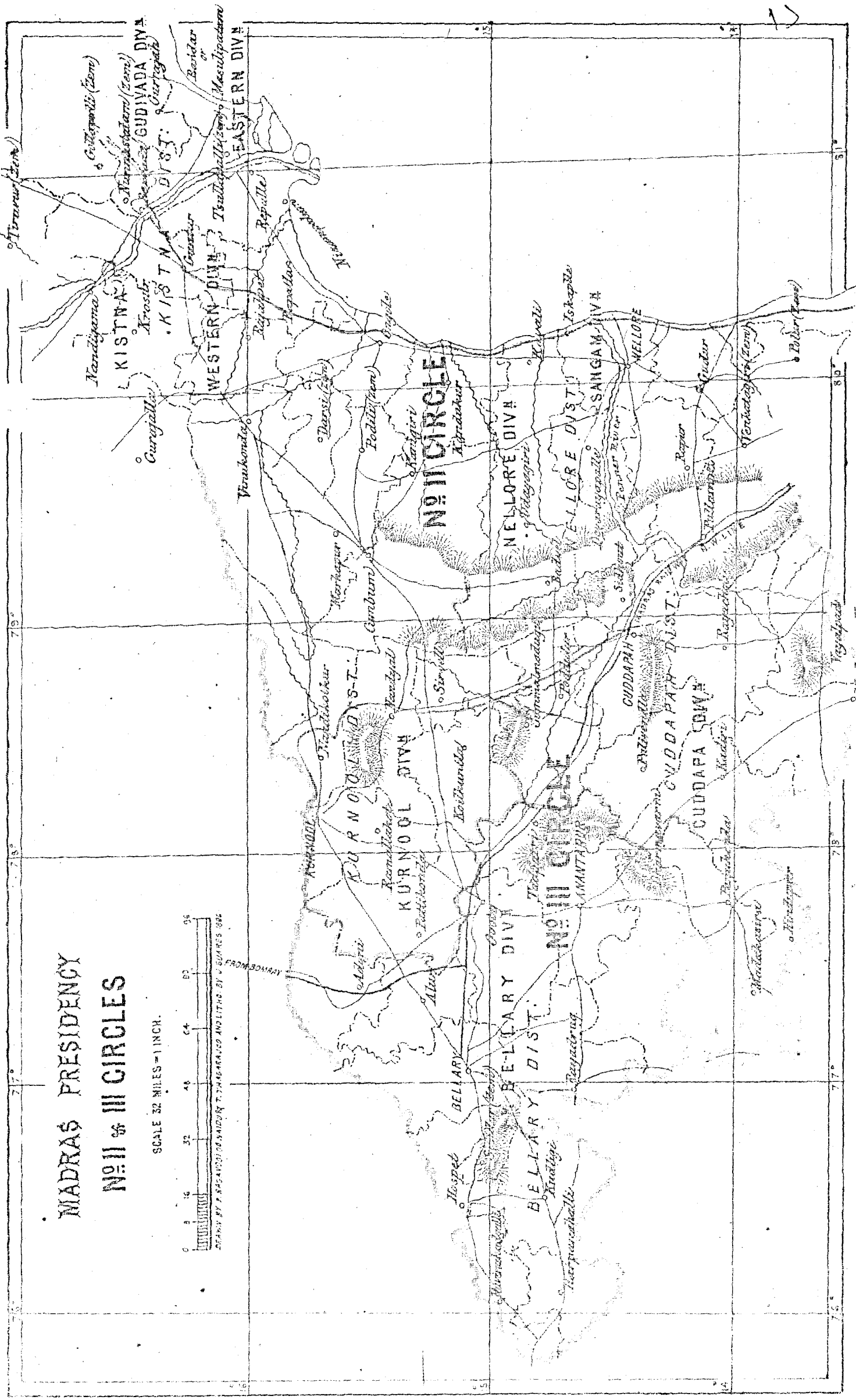
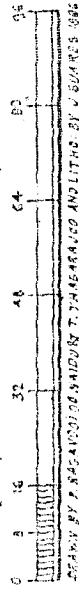
221. **Ramnad.**—In connection with "Ward's Estates" in this division a sum of Rs. 2,074 was expended on certain original and repair works out of a grant of Rs. 6,500.



MADRAS PRESIDENCY

NO II & III CIRCLES

SCALE 32 MILES = 1 INCH.



MADRAS PRESIDENCY
No. IV & V CIRCLES

SCALE 32 MILES = 1 INCH.
 DRAWN BY A. G. V. S. AND T. M. G. IN 1865.

The map shows the following divisions and districts:

- No. IV CIRCLE:** Includes Coimbatore District, Nilgiri District, and parts of the Western Ghats.
- No. V CIRCLE:** Includes North Arcot District, South Arcot District, and parts of the Eastern Ghats.
- No. VI CIRCLE:** Includes the City of Madras and surrounding areas.
- No. VII CIRCLE:** Includes the Western Ghats and parts of the Eastern Ghats.

Major cities and towns shown include Madras, Bangalore, Coimbatore, Nilgiri, and various smaller towns in the districts.

MADRAS PRESIDENCY
No. IV & V CIRCLES

SCALE 32 MILES = 1 INCH.

DETAILED MAP OF THE MADRAS PRESIDENCY, No. IV & V CIRCLES, showing districts, towns, and geographical features. The map includes a scale bar (0 to 64 miles) and a title 'MADRAS PRESIDENCY No. IV & V CIRCLES'. It shows the coastline of South India with various districts like South Canara, Coorg, West Coast, Nilgiri, and Coimbatore. Major towns like Mangalore, Calicut, and Coimbatore are marked. The map is oriented with North at the top.

MADRAS PRESIDENCY

No. IV & V CIRCLES

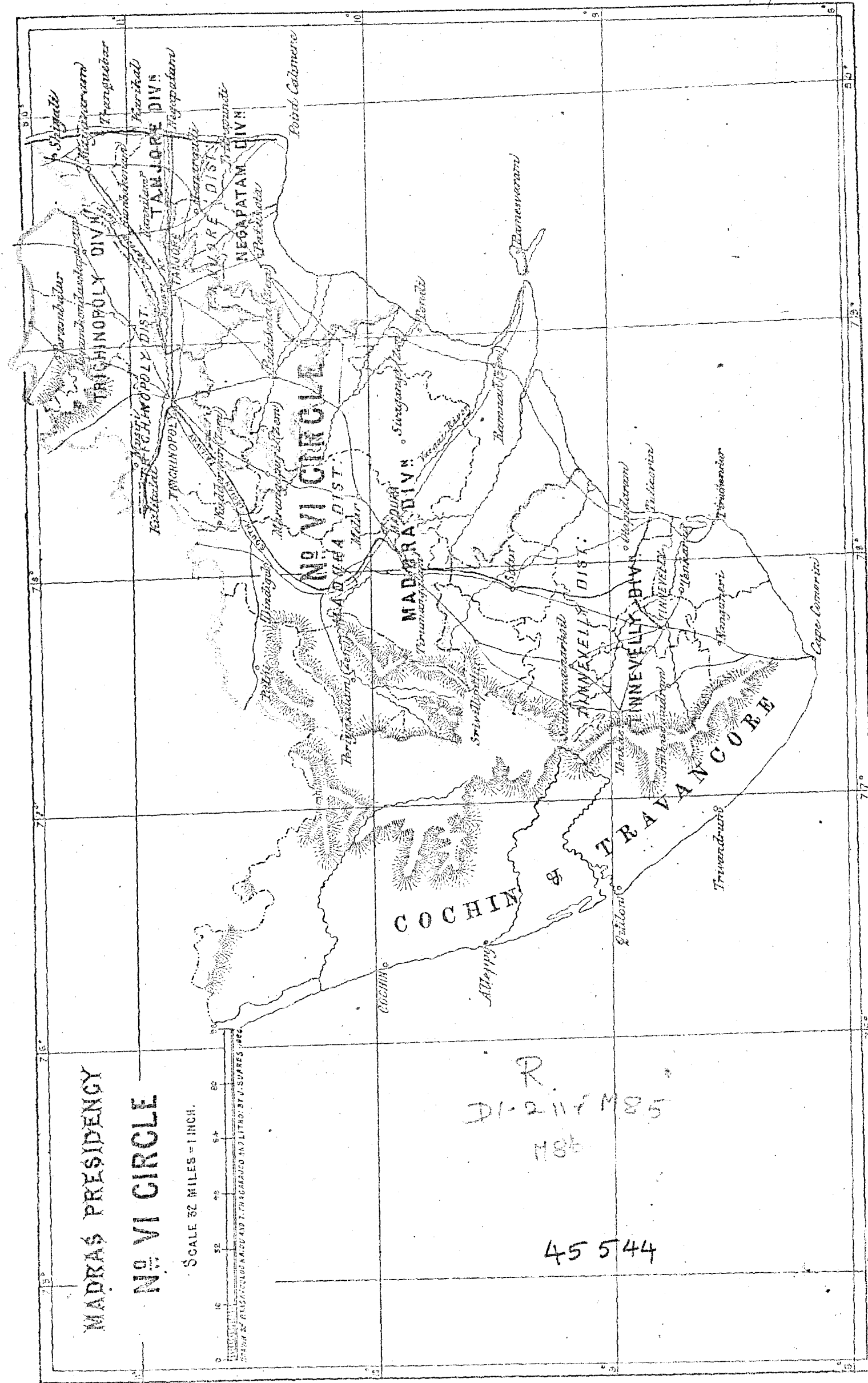
SCALE 32 MILES = 1 INCH.

DETAILED MAP OF THE MADRAS PRESIDENCY, showing the division into four circles: No. IV, No. V, No. VI, and No. VII. The map includes major cities like Madras, Bangalore, and Coimbatore, and various districts such as North Arcot, South Arcot, and Salem. A scale bar indicates 32 miles and 1 inch. The map is oriented with North at the top.

MADRAS PRESIDENCY

NO VI CIRCLE

SCALE 32 MILES = 1 INCH.



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