

Marine (1896) Department.

1069, 1164.

G.O., No. 766 Juan

DATED 7<sup>th</sup> November 1896.

*W. J. P.*  
*W. J. P.*

[Despatch Abstract.]

Lights and Lighthouses. Letter from the Pres.  
Port Officer submitting ~~a~~ <sup>the</sup> annual  
report on the — on the Coasts of the Madras  
Presidency for 1895-96, recorded with remarks.

Lights & Lighthouses. Forwarding copies of Pres.  
recording with remarks letter from the P.O.  
Officer submitting the annual report  
on the — on the Coasts of the Madras Presy.  
for 1895-96.

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Forwarding copies of Proceedings recording, with remarks, letter from the Presidency Port Officer submitting the Annual Report on the — on the coasts of the Madras Presidency for 1895-96.



GOVERNMENT OF MADRAS.  
MARINE DEPARTMENT.

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READ—the following papers:—

From Commander H. A. STREET, R.I.M., Presidency Port Officer, Madras, to the Secretary to Government, Marine Department, dated 26th September 1896, No. 1813/324 G.

I have the honour to forward herewith the Annual Report on the Lights and Lighthouses on the coasts of the Madras Presidency for the official year 1895-96.

## GENERAL REMARKS.

No interruption in the display of any of the lights occurred during the year. The several apparatus, columns and keepers' quarters received the attention necessary to maintain them in good order.

2. As a temporary measure and to meet urgent requirements, a fourth order dioptric fixed light (Red) was placed on a wooden structure on the Beach in the vicinity of the Sacramento Shoal and exhibited on the 1st October 1895.

3. At Calingapatam the fourth order dioptric fixed light (Red) was replaced by a fourth order occulting light on the 1st September 1895.

4. A sixth order fixed dioptric light (Red) was placed on a tower at the end of each arm of the Madras Harbour, and exhibited on 1st January 1896.

5. A joint inspection of the lights was made by the then Presidency Port Officer (Captain Powell) and Mr. Ashpitel, C.E., of the Public Works Department, and a report submitted to Government giving expression to the respective views of these officers as to the best means for improving the lighting of the coasts. The question has since been under the consideration of Government and orders in respect thereto were not passed till after the close of the year under review.

6. The usual inspection by coast Port officers of the lights in their respective districts was carried out.

7. With the exception of the Madras Harbour lights heavy mineral oil was used for all the lights.

8. The total cost for maintaining the lighthouses during the year was Rs. 46,097 against Rs. 56,556 in the previous year, showing a decrease of Rs. 10,459, in the charges of oil, stores, contingencies and Public Works charges—*vide* statement attached regarding lighthouse charges.

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## LIGHTNING CONDUCTORS.

See remarks in Appendix C.

## ESTABLISHMENTS.

Details of the lighthouse staff are given in Appendix D and of cost in Appendix A.

## PARTICULARS OF LIGHTS.

See Appendix B.

## STORES AND SUPPLIES.

Were well maintained.

## LIGHTHOUSE CHARGES.

Appendix A affords particulars of charges for the year. The following is a comparative statement thereof for the past three years:—

|                                                 | 1893-94. | 1894-95. | 1895-96. |
|-------------------------------------------------|----------|----------|----------|
|                                                 | RS.      | RS.      | RS.      |
| Establishment, oil, stores and contingencies .. | 32,589   | 43,907   | 34,390   |
| Public Works charges ..                         | 7,409    | 12,649   | 11,707   |
| Total ..                                        | 39,998   | 56,556   | 46,097   |

The variations under each detailed head of charge are explained below:—

|                                               | 1894-95. | 1895-96. | Difference. |        |
|-----------------------------------------------|----------|----------|-------------|--------|
|                                               | RS.      | RS.      | More.       | Less.  |
| Salaries of Superintendents and Lightkeepers. | 20,661   | 21,606   | 945         | ..     |
| Oil ..                                        | 7,514    | 6,738    | ..          | 776    |
| Stores ..                                     | 12,817   | 3,694    | ..          | 9,123  |
| Contingencies ..                              | 2,915    | 2,352    | ..          | 563    |
| Public Works charges ..                       | 12,649   | 11,707   | ..          | 942    |
| Total ..                                      | 56,556   | 46,097   | 945         | 11,404 |
|                                               |          |          | — 10,459    |        |

The increase under salaries of Superintendents and lightkeepers was due to payment of leave allowance to the late Superintendent of the Madras Lighthouse and also to increased rate of pay drawn for the lightkeepers under G.O., No. 166, Marine, dated 7th May 1894. There was a decrease under all other heads.

APPENDIX A.  
PARTICULARS OF CHARGES relating to different Lights.

|                | Establishment.   |               | Oil.      | Stores.    | Contingencies and miscellaneous. | Construction and repairs. | Total, 1895-96. | Total, 1894-95. | Total, 1893-94. | Remarks.                                                                      |
|----------------|------------------|---------------|-----------|------------|----------------------------------|---------------------------|-----------------|-----------------|-----------------|-------------------------------------------------------------------------------|
|                | Superintendents. | Lightkeepers. |           |            |                                  |                           |                 |                 |                 |                                                                               |
| 1              | 2                | 3             | 4         | 5          | 6                                | 7                         | 8               | 9               | 10              | 11                                                                            |
| Coondapoor     | RS. A. P.        | RS. A. P.     | RS. A. P. | RS. A. P.  | RS. A. P.                        | RS. A. P.                 | RS. A. P.       | RS. A. P.       | RS. A. P.       | Light at end of pier.                                                         |
| Malpe          | ..               | 191 11 8      | 34 7 2    | 34 8 0     | 50 9 5                           | ..                        | 311 4 3         | 414 8 11        | 404 11 7        |                                                                               |
| Mangalore      | ..               | 191 11 9      | 22 15 5   | 34 10 5    | 26 14 7                          | 11 6 0                    | 287 10 2        | 271 8 11        | 289 12 4        | Two lights mark the entrance to the harbour and two lights show the fair way. |
| Cananore       | ..               | 331 13 6      | 348 0 11  | 81 1 2     | 43 7 4                           | 4,297 7 11                | 5,101 14 10     | 694 5 5         | 940 2 10        |                                                                               |
| Tellicherry    | ..               | 220 12 11     | 39 15 3   | 5 8 5      | 59 1 8                           | 12 0 0                    | 337 6 3         | 408 15 7        | 333 1 5         | Bar lights.                                                                   |
| Calicut        | ..               | 228 0 0       | 134 7 4   | 67 13 3    | 90 3 4                           | 28 0 5                    | 492 7 6         | 1,044 14 7      | 530 14 9        |                                                                               |
| Do.            | ..               | 333 3 5       | 252 5 7   | 157 4 2    | 35 0 5                           | 893 15 10                 | 1,671 13 5      | 889 1 4         | 1,004 15 7      | Groyne lights.                                                                |
| Cochin         | ..               | ..            | 234 15 11 | 99 13 9    | 72 5 3                           | 28 0 0                    | 778 12 9        | 846 6 5         | 878 5 9         |                                                                               |
| Beypore        | ..               | ..            | 936 0 1   | 427 3 1    | 191 9 7                          | ..                        | 3,491 4 6       | 2,849 8 8       | 51 13 1         | Light at end of pier.                                                         |
| Muttum         | ..               | 1,333 10 7    | 157 5 11  | 31 3 9     | 51 14 9                          | ..                        | 1,290 8 1       | 2,927 9 3       | 3,956 2 5       |                                                                               |
| Manapad        | ..               | 698 11 2      | 161 12 5  | 161 12 5   | 190 0 7                          | 343 10 10                 | 1,683 9 7       | 1,418 8 9       | 2,084 8 10      | Two lights mark the entrance to the harbour and two lights show the fair way. |
| Tuticorin      | ..               | ..            | 361 7 3   | 128 6 4    | 47 2 10                          | ..                        | 880 10 2        | 521 3 9         | 1,476 9 10      |                                                                               |
| Pamban         | ..               | ..            | 139 0 10  | 20 15 10   | 54 8 6                           | ..                        | 432 6 1         | 426 14 3        | 336 1 6         | Bar lights.                                                                   |
| Tondi          | ..               | ..            | 59 1 5    | 5 8 4      | 38 5 8                           | ..                        | 353 13 11       | 645 11 7        | 499 5 0         |                                                                               |
| Point Calimere | ..               | ..            | 252 9 3   | 142 6 9    | 36 13 8                          | 99 0 0                    | 861 4 1         | 738 2 11        | 700 1 5         | Groyne lights.                                                                |
| Negapatam      | ..               | ..            | 56 7 6    | 5 13 0     | 50 11 0                          | ..                        | 564 9 4         | 1,191 5 11      | 526 0 4         |                                                                               |
| Cuddalore      | ..               | ..            | 139 14 2  | 512 1 0    | 39 1 1                           | 68 8 0                    | 2,098 8 9       | 1,952 10 1      | 1,606 9 2       | Light at end of pier.                                                         |
| Seven Pagodas  | ..               | ..            | 404 2 5   | 227 12 2   | 177 3 4                          | 367 8 2                   | 3,523 14 2      | 5,133 4 5       | 6,724 4 1       |                                                                               |
| Madras         | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Two lights mark the entrance to the harbour and two lights show the fair way. |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Bar lights.                                                                   |
| Pulicat        | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Arneghon       | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Groyne lights.                                                                |
| Point Divi     | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Masulipatam    | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Light at end of pier.                                                         |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Hope Island    | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Bar lights.                                                                   |
| Sacramento     | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Cocanada       | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Groyne lights.                                                                |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Vakalapudi     | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Light at end of pier.                                                         |
| Santapilly     | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Calangapatam   | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Bar lights.                                                                   |
| Gopalpur       | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Groyne lights.                                                                |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Total ..       | 10,743 1 5       | 10,862 14 2   | 6,738 4 8 | 3,693 12 7 | 2,362 3 11                       | 11,706 9 6                | 46,096 14 3     | 56,556 0 7      | 39,998 5 8      |                                                                               |



APPENDIX  
List of Lights on the

| Name of Light.                            | Location.                                                                            | Latitude,<br>N. | Longitude,<br>E. | Number and relative<br>position of lights. | Colour of lights. | Fixed, flashing, inter-<br>mitting, alternating,<br>or revolving. | Interval of revola-<br>tion or flash or<br>occultation. |
|-------------------------------------------|--------------------------------------------------------------------------------------|-----------------|------------------|--------------------------------------------|-------------------|-------------------------------------------------------------------|---------------------------------------------------------|
| Coondapoor ..                             | On a site 50 feet to the northward of the southern boundary pillar of the port.      | 13° 37' 30"     | 74° 39' 40"      | 1                                          | White ..          | F.                                                                | ....                                                    |
| Malpé ..                                  | In the vicinity of the Custom House.                                                 | 13 20 40        | 74 42 0          | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Mangalore ..                              | On a hill above the town, and near some high trees.                                  | 12 52 17        | 74 50 08         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Cannanore ..                              | On the fort rampart near the beach.                                                  | 11 51 10        | 75 21 45         | 1                                          | Red ..            | F.                                                                | ....                                                    |
| Tellicherry ..                            | On the Fort wall near the beach.                                                     | 11 44 50        | 75 28 30         | 1                                          | White ..          | F.                                                                | ....                                                    |
| Mahé (French Territory).                  | On the south side of the entrance to the river at the foot of the flagstaff.         | 11 42 10        | 75 31 10         | 1                                          | Red ..            | F.                                                                | ....                                                    |
| Calicut ..                                | Near the beach ..                                                                    | 11 15 05        | 75 45 35         | 1                                          | White ..          | F.                                                                | ....                                                    |
| Narakel (Cochin Territory).               | On the beach at mouth of creek, 5 miles to the northward of Cochin.                  | 10 03 0         | 76 12 0          | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Cochin ..                                 | On a small mound which formed a bastion of the old fort to the south of the harbour. | 9 57 47         | 76 13 45         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Alleppy or Alipee (Travancore Territory). | On the beach, about one cable inland.                                                | 9 30 0          | 76 19 0          | 1                                          | Do. ..            | Rev. ..                                                           | One minute ..                                           |
| Muttum ..                                 | On a rocky promontory 300 yards from sea, known as Muttum Point.                     | 8 07 30         | 77 18 10         | 1                                          | Do. ..            | F.                                                                | ....                                                    |

\* These Lights have hitherto in Light Lists been described as dioptric; they are

## B.

## Coasts of the Madras Presidency.

| Miles visible in clear weather. | Arc of illumination. (Bearings are magnetic and from seaward.)                                                                                             | Nature of construction, colour or any peculiarity of light-house.                  | Height, in feet, of centre of lantern above high water. | Height, in feet, of building from base to vane. | Character and order of illuminating apparatus. | Year lighted.                                                             | Remarks.                                                                                                                                                                                                                         |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6                               | 180°                                                                                                                                                       | Steel mast ..                                                                      | 45                                                      | 40                                              | 6th Order * Catadioptric port light.           | 1st October 1888; present light, 1st Nov. 1891; altered, 15th Sept. 1894. | Exhibited only from 15th September to 31st May.                                                                                                                                                                                  |
| 6 to 8                          | From N. thro' E. to S., shut in between N. and N.E. by trees, N. 53° E. and N. 57° E. by St. Mary's Islands, N. 73° E. to N. 80° E. by St. Mary's Islands. | Do. ..                                                                             | 53                                                      | 50                                              | Do.                                            | 1st October 1888; present light, 1st Nov. 1891.                           | Do.                                                                                                                                                                                                                              |
| 14                              | From N. by E. ½ E. thro' E. to S. by W. ½ W.                                                                                                               | Small white masonry tower.                                                         | 240                                                     | 65                                              | * Catadioptric, 4th order.                     | 1st October 1842; improved, 1870.                                         |                                                                                                                                                                                                                                  |
| 6 to 8                          | Between the bearings of N. W. by W. ½ W. and E. by S. ½ S.                                                                                                 | Small masonry tower of a light yellow colour.                                      | 64                                                      | 25 from the rampart.                            | * Catadioptric, 6th order, port light.         | 17th Oct. 1843; improved, 1870; transferred to tower, 1880.               |                                                                                                                                                                                                                                  |
| 6 to 8                          | N.W. thro' E. to S.E.                                                                                                                                      | Small masonry tower.                                                               | 70                                                      | 26                                              | * Do.                                          | 1835; improved, 1870; transferred to tower, 1881.                         |                                                                                                                                                                                                                                  |
| 7                               | All round the compass.                                                                                                                                     | Small white pyramid.                                                               | 52                                                      | 7                                               | ..                                             | 1835 ..                                                                   | Shown only during N.E. monsoon.                                                                                                                                                                                                  |
| 14                              | From N. 25 W. thro' E. to S. 14 E.                                                                                                                         | White column..                                                                     | 102                                                     | 98                                              | * Catadioptric, 4th order.                     | 1847; improved, 1881.                                                     | To guide vessels to the anchorage clear of the reef, which lies about 1 mile S. 30° W. from the light. A small red light is exhibited from the head of the pier as a guide for small coasting craft when entering the roadstead. |
| 10                              | 180° from N.N. W. thro' E. to S.S.E.                                                                                                                       | Flagstaff ..                                                                       | 95                                                      | 102                                             | Country made lantern.                          | 1865 ..                                                                   | Is exhibited from 15th May to 30th September.                                                                                                                                                                                    |
| 14                              | From N. by W. ½ W. thro' E. to S. by E.                                                                                                                    | White laterite column.                                                             | 100                                                     | 91                                              | Catadioptric, 4th order.                       | 1st April 1839; improved, 1868.                                           |                                                                                                                                                                                                                                  |
| 17                              | All round the compass.                                                                                                                                     | Masonry round white tower.                                                         | 113                                                     | 115                                             | Catadioptric, 1st order (Hologophotal).        | 1862.                                                                     |                                                                                                                                                                                                                                  |
| 17                              | From N. 64 W. thro' N. and E. to S. 84 E.                                                                                                                  | Dark gray granite column, showing black and white horizontal stripes from seaward. | 142                                                     | 72                                              | * Catadioptric, 1st order.                     | 1875; altered, 1st January 1893.                                          | Is intended to mark the vicinity of the Crocodile Rock, which lies 3 miles S.W. ½ S. of Cadiapatam Point.                                                                                                                        |

all fitted with either reflectors or mirrors and show over an arc of from 180° to 270°.



## List of Lights on the

| Name of Light.                   | Location.              | Latitude,<br>N.                                                                                                              | Longitude,<br>E. | Number and relative<br>position of lights. | Colour of lights. | Fixed, flashing, inter-<br>mitting, alternating,<br>or revolving. | Interval of revolu-<br>tion or flash or<br>occultation.                                                                                                               |
|----------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------|-------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gulf of Manar.                   | Manapad ..             | On summit of Manapad Point.                                                                                                  | 8° 22' 30"       | 78° 6' 30"                                 | 1                 | Red ..                                                            | F. ....                                                                                                                                                               |
|                                  | Tuticorin ..           | On the north extreme of Hare Island or Paundian-tivo, 2½ miles east of Tuticorin town.                                       | 8 47 10          | 78 11 20                                   | 1                 | White ..                                                          | F. ....                                                                                                                                                               |
|                                  | Pámban or Pámban Pass. | On a sand-hill about one mile east of Northern channel.                                                                      | 9 17 14          | 79 12 38                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                               |
| Tondi..                          | ..                     | About 14 yards due south of the Tondi Sea Custom House.                                                                      | 9 44 45          | 79 00 30                                   | 1                 | Red ..                                                            | F. ....                                                                                                                                                               |
| Point Calimere..                 | ..                     | On the point about 30 miles south of Negapatam.                                                                              | 10 18 0          | 79 51 30                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                               |
| Negapatam ..                     | ..                     | On the jetty near to the river mouth.                                                                                        | 10 45 30         | 79 50 20                                   | 1                 | White ..                                                          | F. ....                                                                                                                                                               |
| Karikal (French Territory).      | ..                     | At the mouth of the Arasalar river.                                                                                          | 10 55 0          | 79 50 35                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                               |
| Cuddalore ..                     | ..                     | On cross trees of flag-staff.                                                                                                | 11 43 0          | 79 46 15                                   | 1                 | Red ..                                                            | F. ....                                                                                                                                                               |
| Pondicherry (French Territory).  | ..                     | In square, near the beach.                                                                                                   | 11 55 25         | 79 49 35                                   | 1                 | White ..                                                          | F. ....                                                                                                                                                               |
| Do. ..                           | ..                     | End of landing stage.                                                                                                        | ..               | ..                                         | 1                 | Red ..                                                            | F. ....                                                                                                                                                               |
| Seven Pagodas or Mahábali-puram. | ..                     | On a rock half a mile inland marked on chart "Ruined Pagoda" on rock very conspicuous and about 6 miles northward of Sadras. | 12 36 55         | 80 11 31                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                               |
| Madras or Fort St. George.       | ..                     | On the main tower of the Law Courts on the Esplanade, north of the Fort.                                                     | 13 05 13         | 80 16 52                                   | 1                 | White ..                                                          | Fl. Double flashing of half minute periods giving two flashes of about 2 seconds separated by an eclipse of about 3 seconds followed by a long eclipse of 23 seconds. |
| Madras Leading Light.            | ..                     | Madras Pier T. Head.                                                                                                         | 13 05 44         | 80 17 18                                   | 1                 | Red ..                                                            | F. ....                                                                                                                                                               |
| Madras Harbour Lights.           | ..                     | On the towers marking the entrance to the harbour.                                                                           | Madras Harbour.  | Madras Harbour.                            | 2                 | Do. ..                                                            | F. ....                                                                                                                                                               |
| Madras Leading Light.            | ..                     | Custom office Terrace.                                                                                                       | 13 05 47         | 80 17 05                                   | 1                 | Green ..                                                          | F. ....                                                                                                                                                               |

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## Coasts of the Madras Presidency—cont.

| Miles visible in clear weather. | Arc of illumination. (Bearings are magnetic and from seaward.)                                                                | Nature of construction, colour, or any peculiarity of light-house. | Height, in feet, of centre of lantern above high water. | Height, in feet, of building from base to vane. | Character and order of illuminating apparatus. | Year lighted.                                    | Remarks.                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------|------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8                               | N.N.E. thro' E. to S.S.W.                                                                                                     | White masonry tower.                                               | 104                                                     | 27                                              | * Catadioptric, 4th order, port light.         | June 1888..                                      | Is intended to warn vessels of the dangerous shoal in the vicinity.                                                                                                                                                                                              |
| 14                              | All round the compass.                                                                                                        | Sandstone column, coloured brown, lantern white.                   | 85                                                      | 31                                              | Dioptric, 4th order.                           | 15th May 1845; improved, 1874; improved, 1893.   |                                                                                                                                                                                                                                                                  |
| 14                              | Do.                                                                                                                           | Circular masonry column.                                           | 97                                                      | 72                                              | Do.                                            | 21st April 1846; improved, 1860; improved, 1893. |                                                                                                                                                                                                                                                                  |
| 6 to 8                          | Visible from all directions seaward.                                                                                          | Steel mast ..                                                      | 63                                                      | 52                                              | * Catadioptric, 6th order, port light.         | 1st October 1892.                                | As a guide to vessels making for the Pámban channel.                                                                                                                                                                                                             |
| 6 to 5                          | All round the compass.                                                                                                        | Steel mast, painted white.                                         | 49                                                      | ..                                              | Dioptric, 6th order, port light.               | 1st June 1890.                                   | As a guide to vessels passing between Point Calimere and the shoals to the eastward.                                                                                                                                                                             |
| 14                              | From N. 5 W. thro' W. to S.S.E.                                                                                               | Masonry column, painted white.                                     | 79                                                      | 83                                              | * Catadioptric, 4th order.                     | 1st August 1846; improved, 1870; improved, 1893. |                                                                                                                                                                                                                                                                  |
| 9                               | Visible from all directions seaward.                                                                                          | Do.                                                                | 42                                                      | ..                                              | Lamp burning coconut oil.                      | 1853.                                            |                                                                                                                                                                                                                                                                  |
| 6 to 8                          | N. thro' W. to S.                                                                                                             | Flagstaff ..                                                       | 130                                                     | 31                                              | * Catadioptric, 6th order, port light.         | 1st July 1889; present light, 5th Oct. 1891.     | When surf is heavy, and approach to landing prohibited, a fixed green light is shown.                                                                                                                                                                            |
| 14                              | Visible from all directions seaward.                                                                                          | Masonry column, painted light yellow.                              | 89                                                      | 76                                              | Dioptric, 4th order.                           | 1886 ..                                          |                                                                                                                                                                                                                                                                  |
| 4                               | Do.                                                                                                                           | ....                                                               | 31                                                      | ..                                              | ....                                           | 1881 ..                                          |                                                                                                                                                                                                                                                                  |
| 10                              | From N. thro' W. to south (180°).                                                                                             | Small grey turret.                                                 | 119                                                     | 26                                              | * Catadioptric, 4th order.                     | 10th July 1887; improved, 1893.                  | Is intended to warn mariners of the dangerous outlying patches of rock composing the Tripalore reef and other reported dangers in its vicinity, to avoid which vessels navigating between Sadras and Covelong should not come into a less depth than 13 fathoms. |
| 20                              | Shows all round the compass visible from all directions seaward on the following bearings, from N. to E. thro' W. to S. by W. | Tower is an octagonal structure of brick and stone.                | 166                                                     | 190                                             | Dioptric, 3rd order.                           | 1st June 1894.                                   |                                                                                                                                                                                                                                                                  |
| 5                               | From S. 51° 45' W. thro' W. to N. 17° W.                                                                                      | Wooden post ..                                                     | 30                                                      | ..                                              | Ship's side light, Dioptric.                   | 15th Oct. 1888.                                  |                                                                                                                                                                                                                                                                  |
| 6                               | All round the compass.                                                                                                        | Masonry towers.                                                    | 37                                                      | 25                                              | Port lights dioptric, 6th order.               | 1st January. 1896.                               | To guide vessels leaving the harbour or making the anchorage at night.                                                                                                                                                                                           |
| 5                               | From S. 51° 45' W. thro' W. to N. 17° W.                                                                                      | Wooden post ..                                                     | 60                                                      | ..                                              | Ship's side light, Dioptric.                   | 15th Oct. 1888.                                  | To guide vessels leaving the harbour or making the anchorage at night.                                                                                                                                                                                           |

all fitted with either reflectors or mirrors and show over an arc of from 180° to 270°.



## List of Lights on the

| Name of Light.                              | Location.                                                                                                        | Latitude,<br>N. | Longitude,<br>E. | Number and relative<br>position of lights. | Colour of lights. | Fixed, flashing, inter-<br>mitting, alternating,<br>or revolving. | Interval of revolu-<br>tion or flash or<br>occultation. |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------|------------------|--------------------------------------------|-------------------|-------------------------------------------------------------------|---------------------------------------------------------|
| Pulicat ..                                  | Near the beach ..                                                                                                | 13° 25' 15"     | 80° 19' 06"      | 1                                          | White ..          | F.                                                                | ....                                                    |
| Armeghon or Ar-<br>mogham.                  | On the mainland,<br>village of Moona or<br>Moonapollum.                                                          | 13 53 08        | 80 11 47         | 1                                          | Do. ..            | Rev.                                                              | Every 45 seconds ..                                     |
| Point Divi or<br>Divy.                      | About 2 miles north-<br>west of the Point.                                                                       | 15 58 55        | 81 09 25         | 1                                          | Do. ..            | ..                                                                | ....                                                    |
| Masulipatam ..                              | In the Fort ..                                                                                                   | 16 09 15        | 81 09 25         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Coringa or Hope<br>Island.                  | On the southern part<br>of Hope Island,<br>Coringa Harbour,<br>and distant about 2½<br>miles from the sea.       | 16 49 05        | 82 18 58         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Cocanada or Va-<br>kalapudi.                | 4½ miles north of<br>Cocanada river and<br>about 500 yards<br>from the shore.                                    | 17 0 40         | 82 16 30         | 1                                          | Do. ..            | Rev.                                                              | Every 20 seconds ..                                     |
| Cocanada River.                             | One on the end of the<br>north groyne, and<br>the other on the end<br>of the south groyne,<br>entrance to river. | ..              | ..               | 2                                          | Red ..            | F.                                                                | ....                                                    |
| Sacramento Shoal<br>Light (tem-<br>porary). | On the sand half-a-<br>mile from the beach<br>near the Kcttapo-<br>liem beacon.                                  | 16 34 40        | 82 16 30         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Santipilly ..                               | On a small detached<br>hill some distance<br>inland. This dis-<br>tance said to be ¼ of<br>a mile.               | 18 04 56        | 83 37 35         | 1                                          | White ..          | F.                                                                | ....                                                    |
| Calingapatam ..                             | On the point ..                                                                                                  | 18 19 0         | 84 07 30         | 1                                          | Do. ..            | Occult-<br>ing<br>every<br>half a<br>minute.                      | 27½ seconds light and<br>2½ seconds eclipse.            |
| Baruva ..                                   | On the port flagstaff.                                                                                           | 18 42 30        | 84 34 0          | 2                                          | Do. ..            | F.                                                                | ....                                                    |
| Gopalpur ..                                 | On the mainland 60<br>yards from low<br>water mark.                                                              | 19 13 0         | 84 52 0          | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Do. ..                                      | On the extreme end<br>of the pier head,<br>port of Gopalpur.                                                     | ..              | ..               | 1                                          | Red ..            | F.                                                                | ....                                                    |

\* These Lights have hitherto in Light Lists been described as dioptric; they are

## Coasts of the Madras Presidency—cont.

| Miles visible in clear<br>weather. | Arc of illumination.<br>(Bearings are mag-<br>netic and from sea-<br>ward.) | Nature of construc-<br>tion, colour, or any<br>peculiarity of light-<br>house.                                                           | Height, in feet, of<br>centre of lantern<br>above high water. | Height, in feet, of<br>building from base<br>to vane.        | Character and order<br>of illuminating ap-<br>paratus.  | Year lighted.                                                                                               | Remarks.                                                                                                                                                                                                     |
|------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14                                 | From N. by W.<br>thro' W. to S.<br>by E.                                    | Masonry column<br>with black<br>bands.                                                                                                   | 68                                                            | 57                                                           | * Catadioptric,<br>4th order.                           | 1859; im-<br>proved,<br>1870; al-<br>tered, 1881;<br>improved,<br>1893.                                     | To guide vessels clear of the<br><i>Pulicat shoal</i> .                                                                                                                                                      |
| 14                                 | From N.E. thro'<br>W. to S.E.                                               | White masonry<br>column.                                                                                                                 | 107                                                           | 111                                                          | Dioptric, 4th<br>order, single<br>flash, 45<br>seconds. | 1st Jan.<br>1853;<br>improved,<br>1870;<br>present<br>light, 1881;<br>improved,<br>1893.                    | Warns vessels off the <i>Arme-<br/>ghon shoal</i> , the shoalest part<br>of which (1½ fathoms) lies 6<br>miles off shore.                                                                                    |
| 12                                 | From N.E. thro'<br>W. to S.                                                 | Do.                                                                                                                                      | 48                                                            | 50                                                           | * Catadioptric,<br>4th order.                           | 1st May<br>1851;<br>improved,<br>1870;<br>improved,<br>1893.                                                | Is intended to guide vessels<br>clear of the point.                                                                                                                                                          |
| 6                                  | From S. 26° W.<br>thro' W. to ..<br>9° E.                                   | Flagstaff ..                                                                                                                             | 69                                                            | 112                                                          | * Catadioptric,<br>6th order.                           | 1858;<br>improved,<br>1870.                                                                                 | As a guide for vessels to the<br>anchorage.                                                                                                                                                                  |
| 14                                 | From N. 5° E.<br>thro' W. to S.<br>5° W.                                    | Masonry tower,<br>horizontal al-<br>ternate bands<br>of black and<br>white.                                                              | 83                                                            | 94                                                           | * Catadioptric,<br>4th order.                           | 1817;<br>improved,<br>1886;<br>improved,<br>1893.                                                           | Is intended to guide vessels<br>clear of Sacramento shoal<br>and Gôdâvari Point.                                                                                                                             |
| 14                                 | All round the<br>compass.                                                   | White column ..                                                                                                                          | 80                                                            | 76                                                           | Dioptric, 4th<br>order, single<br>flash, 20 seconds.    | 15th Janu-<br>ary 1879.                                                                                     | This light is intended as a<br>guide to vessels approaching<br>Cocanada anchorage.                                                                                                                           |
| 2½                                 | Do.                                                                         | Wooden post ..                                                                                                                           | 10                                                            | ..                                                           | ....                                                    | 15th Sep-<br>tember<br>1886.                                                                                | To guide boats entering or<br>leaving Cocanada river.                                                                                                                                                        |
| 10                                 | From N. 45 E.<br>thro' W. to S.<br>45 W.                                    | Temporary<br>wooden struc-<br>ture with that-<br>ched roof.                                                                              | 25½                                                           | 16½                                                          | Dioptric, 4th<br>order, port<br>light.                  | 1st October<br>1895.                                                                                        |                                                                                                                                                                                                              |
| 16                                 | From N.E. thro'<br>W. to S.W.                                               | On a small base-<br>ment on the<br>top of a small<br>hill with a<br>small building<br>by the side of<br>the lantern on<br>the west side. | 163-77                                                        | 31-15                                                        | * Catadioptric,<br>2nd order; im-<br>proved, 1893.      | 1st Novem-<br>ber 1849;<br>improved,<br>1871;<br>present<br>light, 1886;<br>improved,<br>16th Aug.<br>1888. | Exhibited to warn mariners<br>of the <i>Santipilly Rocks</i> , from<br>which this light bears N.W.<br>½ W., distant 6½ miles.                                                                                |
| 14                                 | Visible from all<br>directions sea-<br>ward.                                | Obelisk of cut<br>stone; column<br>white; outside<br>ladder red.                                                                         | 76                                                            | 73                                                           | Dioptric, 4th<br>order.                                 | 15th Decem-<br>ber 1876;<br>improved,<br>1st June<br>1890; al-<br>tered, 1st<br>Sept. 1895.                 | Intended to warn vessels of a<br>small reef which projects<br>from the point and which<br>should not be passed in less<br>than 8 fathoms when making<br>the port at night.                                   |
| About<br>3                         | All round the<br>compass.                                                   | Flagstaff ..                                                                                                                             | 46                                                            | Shown<br>from<br>Yard-<br>arm<br>of<br>flag-<br>staff.<br>33 | Globe lanterns.                                         | 12th Octo-<br>ber 1895.                                                                                     | These lights are occasionally<br>exhibited to indicate the<br>position of the port flag-<br>staff for the purpose of taking<br>up an anchorage and are not<br>to be relied on for purposes<br>of navigation. |
| 10                                 | From N.E. thro'<br>N.W. to S.W.                                             | Flagstaff, paint-<br>ed white.                                                                                                           | 54                                                            | ..                                                           | * Catadioptric,<br>4th order,<br>port light.            | Present<br>light, 1871;<br>1st March<br>1892.                                                               | As a guide to the anchorage.                                                                                                                                                                                 |
| 3                                  | All round the<br>compass.                                                   | ....                                                                                                                                     | 25                                                            | ..                                                           | Country lantern.                                        | 1st April<br>1887.                                                                                          | Points out the sea end of the<br>pier.                                                                                                                                                                       |

all fitted with either reflectors or mirrors and show over an arc of from 180° to 270°.



## APPENDIX C.

STATEMENT furnishing—(1) Particulars of inspections made of lighthouses on the Madras Coasts in 1895-96, (2) Remarks in connection with lightning conductors.

| (1)                 |                                                      |                       | (2)                                                                |
|---------------------|------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| Name of lights.     | Officers by whom inspected.                          | Number of inspection. | Remarks as to lightning conductors.                                |
| Coondapoor ..       | Port officer, Mangalore ..                           | 3                     | Lightning conductor not tested during the year.                    |
| Malpé ..            | Do. do. ..                                           | 3                     |                                                                    |
| Mangalore ..        | Executive Engineer ..                                | 2                     |                                                                    |
| Cannanore ..        | Port officer, Calicut ..                             | 1                     | Lightning conductor tested and found satisfactory.                 |
|                     | Do. Tellicherry ..                                   | 8                     |                                                                    |
|                     | Assistant Engineer ..                                | 1                     |                                                                    |
| Tellicherry ..      | Port officer, Calicut ..                             | 1                     | Lightning conductor not tested during the year.                    |
| Calicut ..          | Assistant Engineer ..                                | 1                     |                                                                    |
| Cochin ..           | Executive do. ..                                     | 2                     |                                                                    |
|                     | Nil ..                                               | ..                    |                                                                    |
| Muttum ..           | Port officer, Tuticorin ..                           | 2                     | Lightning conductor tested and in good order.                      |
|                     | Executive Engineer ..                                | 1                     |                                                                    |
|                     | Sub-divisional officer (P.W.D.) ..                   | 1                     |                                                                    |
| Manapad ..          | Port officer, Tuticorin ..                           | 2                     | Lightning conductor not tested during the year.                    |
|                     | Sub-divisional officer (P.W.D.) ..                   | 1                     |                                                                    |
|                     | Executive Engineer ..                                | 1                     |                                                                    |
| Tuticorin ..        | Sub-divisional officer (P.W.D.) ..                   | 2                     | Lightning conductor not tested during the year.                    |
| Pámban ..           | Do. do. ..                                           | 1                     |                                                                    |
| Tondi ..            | Port officer, Pámban ..                              | 4                     |                                                                    |
| Point Calimere ..   | Do. Negapatam ..                                     | 12                    | Lightning conductor not tested during the year.                    |
| Negapatam ..        | Nil ..                                               | ..                    |                                                                    |
|                     | ..                                                   | ..                    |                                                                    |
| Cuddalore ..        | Presidency Port Officer ..                           | 1                     | Lightning conductor tested during the year and found satisfactory. |
|                     | Personal Assistant to the Presidency Port Officer .. | 1                     |                                                                    |
|                     | Superintending Engineer ..                           | 1                     |                                                                    |
| Seven Pagodas ..    | Executive Engineer ..                                | 2                     | Lightning conductor not tested during the year.                    |
| Pulicat ..          | Do. do. ..                                           | 1                     |                                                                    |
| Arneghon ..         | Do. do. ..                                           | 1                     |                                                                    |
|                     | Sub-divisional officer, (D.P.W.) ..                  | 4                     | Lightning conductor not tested during the year.                    |
| Point Divi ..       | Do. do. ..                                           | 1                     |                                                                    |
|                     | Superintending Engineer ..                           | 12                    |                                                                    |
| Hope Island ..      | Port officer, Masulipatam ..                         | 4                     | Lightning conductor not tested during the year.                    |
|                     | Do. Cocanada ..                                      | 1                     |                                                                    |
| Vakalapudi ..       | Superintending Engineer ..                           | 1                     |                                                                    |
|                     | Port officer, Cocanada ..                            | 9                     | Lightning conductor tested during the year and in order.           |
| Sacramento Shoal .. | Do. do. ..                                           | 4                     |                                                                    |
|                     | Presidency Port Officer ..                           | 1                     |                                                                    |
| Santopilly ..       | Executive Engineer ..                                | 1                     | Lightning conductor not tested during the year.                    |
|                     | Port officer, Bimlipatam ..                          | 12                    |                                                                    |
|                     | Do. Gopalpur ..                                      | 1                     |                                                                    |
| Calingapatam ..     | Presidency Port Officer ..                           | 1                     | Lightning conductor not tested during the year.                    |
|                     | District Engineer ..                                 | 1                     |                                                                    |
| Gopalpur ..         | Presidency Port Officer ..                           | 1                     |                                                                    |

Note.—At stations where there is a Port officer or Conservator, such officers, as *ex-officio* Superintendents, frequently visited the lighthouses, in addition to the outside inspections above noticed.

APPENDIX D.  
STATEMENT showing the sanctioned Establishments of Lighthouses on the Madras Coasts as they stood on the 31st March 1896.

| Lights.                          | Superintendents. |            |            | Head Light-keepers. |            |            | Light-keepers. |            |         |            | Total staff of each light. | Remarks.                                                             |
|----------------------------------|------------------|------------|------------|---------------------|------------|------------|----------------|------------|---------|------------|----------------------------|----------------------------------------------------------------------|
|                                  | 1st Class.       | 2nd Class. | 3rd Class. | 1st Class.          | 2nd Class. | 3rd Class. | 1st Class.     | 2nd Class. |         | 3rd Class. |                            |                                                                      |
|                                  |                  |            |            |                     |            |            |                | Rs. 100.   | Rs. 70. |            |                            |                                                                      |
|                                  |                  |            |            |                     |            |            |                |            |         |            |                            |                                                                      |
| Coondapoor ..                    | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | (b) 1      | 2                          | (a) Plus charge allowance of Rs. 1.                                  |
| Malpé ..                         | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | (b) 1      | 2                          | (b) Temporary for 8 months (October to May).                         |
| Mangalore ..                     | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | 1          | 2                          | (c) Plus charge allowance of Rs. 2.                                  |
| Cannanore ..                     | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | ..         | 3                          | (d) Plus house allowance of Rs. 25.                                  |
| Tellicherry ..                   | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | ..         | 2                          | (e) Temporarily. Plus charge allowance of Rs. 2                      |
| Calicut ..                       | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | 1          | 3                          | and provision allowance of Rs. 1.                                    |
| Cochin ..                        | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | 1          | 3                          | (f) Temporarily. Plus provision allowance of Rs. 1.                  |
| Muttum ..                        | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..      | 2          | 4                          | (g) Plus flag-signalling allowance of Rs. 10.                        |
| Manapad ..                       | 1                | ..         | 1          | ..                  | ..         | ..         | ..             | 1          | ..      | 1          | 3                          | (h) Also a flag-signaller on Rs. 8.                                  |
| Tuticorin (Hare Island) ..       | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..      | ..         | 3                          | (i) Plus charge allowance of Rs. 20.                                 |
| Pámban ..                        | ..               | ..         | ..         | ..                  | ..         | See below. | ..             | ..         | ..      | ..         | 3                          | (j) Rising to Rs. 9.                                                 |
| Tondi ..                         | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | 1          | 3                          | (k) The whole of Calingapatam establishment is Sub. <i>pro tem</i> . |
| Point Calimere ..                | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | ..         | 5                          | (l) Also two water boys on Rs. 7 each.                               |
| Negapatam ..                     | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | ..         | 7                          |                                                                      |
| Cuddalore ..                     | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | ..         | 5                          |                                                                      |
| Mahabalipuram (Seven Pagodas) .. | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | ..         | 5                          |                                                                      |
| Madras ..                        | (d) 1            | 1          | ..         | ..                  | ..         | See below. | 1              | ..         | ..      | 1          | 3                          |                                                                      |
| Pulicat ..                       | ..               | ..         | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | ..         | 5                          |                                                                      |
| Arneghon ..                      | ..               | 1          | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | 1          | 7                          |                                                                      |
| Point Divi ..                    | ..               | 1          | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | 1          | 5                          |                                                                      |
| Masulipatam ..                   | ..               | 1          | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | 2          | 6                          |                                                                      |
| Coringa or Hope Island ..        | ..               | ..         | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | ..         | 6                          |                                                                      |
| Sacramento ..                    | ..               | ..         | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | ..         | 6                          |                                                                      |
| Vakalapudi ..                    | ..               | ..         | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | (t) 2      | 2                          |                                                                      |
| Santopilly ..                    | (g) 1            | 1          | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..      | (h) 1      | 2                          |                                                                      |
| Calingapatam (k) ..              | ..               | ..         | ..         | ..                  | ..         | ..         | 1              | ..         | ..      | 1          | 5                          |                                                                      |
| Gopalpur ..                      | ..               | ..         | (h) 1      | ..                  | ..         | ..         | 1              | ..         | ..      | (j) 1      | 5                          |                                                                      |

Note.—The lightkeepers on entertainment will receive Rs. 7 per mensem during their first year of service, after which, if well-reported on, they will receive Rs. 8 during their second year and Rs. 9 thereafter. All lightkeepers at Muttum, Manapad, Seven Pagodas, Arneghon, Point Divi, Hope Island, Vakalapudi and Santopilly receive an allowance of Rs. 1 per mensem, as compensation for the difficulty and expenses connected with obtaining supplies.

## AMALGAMATED Establishment.

| Lighthouses. | Head Light-keeper and Head Signaller. |         |         |        |        | Lightkeeper and Signaller. |         |        |        |        | Total staff. |              |
|--------------|---------------------------------------|---------|---------|--------|--------|----------------------------|---------|--------|--------|--------|--------------|--------------|
|              | Rs. 20.                               | Rs. 11. | Rs. 10. | Rs. 9. | Rs. 8. | Rs. 11.                    | Rs. 10. | Rs. 9. | Rs. 8. | Rs. 7. | Total staff. | Total staff. |
|              |                                       |         |         |        |        |                            |         |        |        |        |              |              |
| Tuticorin .. | ..                                    | ..      | ..      | ..     | ..     | ..                         | ..      | ..     | ..     | ..     | 5            | 5            |
| Cuddalore .. | ..                                    | ..      | ..      | ..     | ..     | ..                         | ..      | ..     | ..     | ..     | 3            | 3            |

Temporary.—Lighthouse mechanic, Rs. 80 per mensem, rising by annual increments of Rs. 5 to Rs. 100.



From Commander H. A. STREET, R.I.M., Presidency Port Officer, Madras, to the Secretary to Government, Marine Department, dated 27th October 1896, No. 1815/347 G.

In reply to Marine Department memo. \* No. 514 E., dated 10th October 1896,

\* Enclosure herewith returned.

I have the honour to state that the figures under the respective headings of oil and stores in appendix A of the Light-

house Report for 1895-96 do not represent the expenditure of such stores. As stated in appendix A, they represent the particulars of charges under such heads relating to the different lights, and these charges include freight and departmental expenses debited in the accounts of the year to Port funds by the India Office through the Accountant-General.

2. The cost of oil received and supplied during 1894-95 but not debited in the accounts of that year in the absence of information from the India Office of the invoice value thereof, was debited in the accounts of the subsequent year, viz., 1895-96, under the heading "Oil," and the cost of oil supplied during the latter year, information of which was available within the close of the year, was also debited during that year. The sum of Rupees (274-13-6) two hundred and seventy-four, annas thirteen and pies six, debited against Masulipatam Light, is subject to adjustment between Point Divi and Masulipatam Lights in proportion to the actual quantity of oil supplied to them during the year, and this will be done in the accounts of the current year.

ORDER—No. 766, Marine, dated 7th November 1896.

Recorded.

2. It would appear from the Presidency Port Officer's letter, No. 1815/347 G., dated 27th October 1896, that, owing to disturbing adjustment entries in the accounts, the figures put forward in appendix A of the report cannot well be utilized for an intelligible administrative review. The Presidency Port Officer will, in future, show clearly the quantities of oil and stores actually used during the year at each light-house, and will institute a comparison, explaining any great differences that may be apparent.

3. Orders have since been passed on Mr. Ashpitel's report as to the best means of improving the lighting of the coasts, and a separate Public Works Divisional charge has been organized to admit of sanctioned proposals being elaborated and carried into execution.

[Here enter No. 767, Marine, dated 7th November 1896.]

(True Extract.)

(Signed) D. McNEIL CAMPBELL, Colonel, R.E.,  
Secretary to Government.

To the Presidency Port Officer.  
„ the Public Works Department.  
„ F. W. Ashpitel, Esq.

ENDORSEMENT—No. 767, Marine, dated 7th November 1896.

Five copies forwarded to the Government of India, Department of Finance and Commerce.

(By order.)

Colonel, R.E.,  
Secretary to Government.

Exd. T. K. Narayana Aiyangar.

No 766 marine of 7th November 1896.

# PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following

From the Presy Port Officer No 1813/324 of 26 September 1896.  
1815/347 G of 27 October

Recorded.

2. It would appear from the Presidency Port Officer's letter No. 1815/347 G dated 27 October 1896 that owing to disturbing adjustment entries in the accounts, the figures put forward in appendix A of the report cannot well be utilised for an intelligible administrative review. The Presidency Port Officer will, in future, show clearly the quantities of oil and stores actually used during the year at each light-house, and <sup>will</sup> institute a comparison, explaining any great differences that may be apparent.



3. Orders have since been passed on Mr. Ashputel's report as to the best means of improving the lighting of the Conats, and a separate Public Works Division Charge has been organised to admit of sanctioned proposals being elaborated and carried into execution.

(H.E. No. 767 Marine of 7<sup>th</sup> Novr 1896)

Five copies forwarded to the Secy of India, Department of Finance & Commerce.

R.S.

5/11/96  
W

25/11/96

S.D. 25/11/96

The Presy Port Officer  
Public Works Dept.  
Mr. Ashputel Esq.

Hms

Marine  
MARINE DEPARTMENT.

Annual report on Lights and Light houses

From the Presidency Port office, Madras, P. 1813/324  
G. dated 26<sup>th</sup> September 1896.

— so — R 1815/347 G. of 27<sup>th</sup> October 1896.

766  
7673

FOR ORDERS. with reference to

This being so, I think the Hon. member's note P.P.O. No. 121 be asked to give dated 3<sup>rd</sup> October 1896 some info in future as to on the draft order in the actual quantities of oil & the gile. It will be stores actually used in the year.

22/11/96

seen from the Presidency Port officer's explanation that, owing to disturbing adjustment entries in the accounts, the figures put forward in appendix A cannot well be utilised for an intelligible administrative review.

30/10/96

M

R.S.

Hms. 30/10 R3/11.



FOR ORDERS.

The Public Works Dept. S.E.

Annual report on lights & light houses.

Marine  
PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following

Letter from the Presidency  
Port officer, Madras,  
forwarding Annual  
Report on the lights  
and Light houses  
for 1895-96.

(H.E. 1893/324 G. of 26 Sept. 1896)

The variation in expenditure on oil & stores  
is in some cases very large, e.g.

|                 | oil            | stores |
|-----------------|----------------|--------|
| 1. Muttum       | 936            | 427    |
| 2. Tervurajodas | <del>140</del> | 512    |
| 3. Negapatam    | 253            | 142    |
| 4. Point Dini   | 92             | 86     |
| 5. Madras       | 404            | 228    |
| 6. Tautopilly   | 998            | 414    |

No. 5 is the best of the lot. Why should No. 1 & 6 be so much more expensive?

No. 2, 3 & 4 are all of the same class. Whence the great variations in their cost?

A study of the figures is? no doubt disclose other points on which questions might properly be asked—

W

3/10/96

The Presy. Port officer.

" P. W. Sept 11

F. W. Ashpiter Esq.

Recorded.

2. Orders have since been passed on Mr. Ashpiter's report as to the best means of improving the lighting of the coasts, and a separate Public Works Divisional charge has been organised to admit of sanctioned proposals being elaborated and carried into execution.

(H.E. 1896)

Five copies forwarded to the Government of India, Department of Finance and Commerce.

2/10/96



Marine (1896) Department.

CURRENT No. 1164

Order

From

The Presidency Post Office,  
Madras

No.  $\frac{1815}{347}$  4

Dated 27 October 1896

Received 28.10.96

Enclosures one.

Spare copies

SUBJECT.

Explaining information  
regarding the inequalities  
in expenditure on oil and  
stores at the various  
Lighthouses in the Presy  
burning the same class  
of light.



BACK PAPERS.

| G.O.  | No.  | Department. | Date.    |
|-------|------|-------------|----------|
|       | 5142 | mar         | 10-10-96 |
| 459   | mar  | bo          | 24-6-96  |
| 245-6 | Coly | bo          | 8-4-96   |
| 47    | mar  | bo          | 24-1-96  |
| 306   | bo   | bo          | 25-4-95  |
| 288-9 | Coly | bo          | 2-10-95  |
| 166   | Coly | bo          | 7-10-94  |

FURTHER PAPERS.

### Heading.

No. 1815  
347 4

PRESIDENCY PORT OFFICE.

Madras, 27 October 1896.

From

Commander H. A. Street, R.I.M.,

PRESIDENCY PORT OFFICER,

Madras,

To

THE SECRETARY TO GOVERNMENT,

MARINE DEPARTMENT,

*Chepak.*

SIR,

X  
Enclosure  
herewith  
returned

In reply to Marine Department Memorandum No. 514 E dated 10th October 1896, I have the honor to state that the figures under the respective headings of oil and stores in Appendix A of the Lighthouse report for 1895/ 96 do not represent the expenditure of such stores. As stated in Appendix A, they represent the particulars of charges under such heads relating to the different lights & these charges include freight and departmental expenses debited in the accounts of the year to Port Funds by the India Office through the Accountant General.

2. The cost of oil received and supplied during 1894/95 but not debited in the accounts of that year in the absence of information from the India Office of the invoice value thereof was debited in the accounts of the subsequent year viz 1895/96 under the heading "Oil" and the cost of oil supplied during the latter year, information of which was available within the close of the year, was also debited during that year. The sum of Rs.(274-13-6) two hundred and seventy four annas thirteen and pies six, debited against Masulipatam Light is subject to adjustment between Point Devi and Masulipatam Lights in proportion to



the actual quantity of oil supplied to them during the year and this will be done in the accounts of the current year.

I have the honor to be,

Sir,

Your Obedient Servant,

*H. A. Theet*

Commander, R.I.M.,

Presidency Port Officer.

Classified Statement of lights in the Madras Presidency and the expenditure on oil and stores at each.

| Names of Lights                   | Expenditure on |    |    |        |    |    | Remarks.                               |
|-----------------------------------|----------------|----|----|--------|----|----|----------------------------------------|
|                                   | oil            |    |    | stores |    |    |                                        |
|                                   | Rs             | as | p  | Rs     | as | p  |                                        |
| <del>I</del> Order (Catadioptric) |                |    |    |        |    |    |                                        |
| Muttum                            | 936            | 0  | 1  | 427    | 3  | 1  |                                        |
| II Order (Catadioptric)           |                |    |    |        |    |    |                                        |
| Santapally                        | 998            | 6  | 6  | 414    | 12 | 7  |                                        |
| III Order (Dioptric)              |                |    |    |        |    |    |                                        |
| Madras.                           | 404            | 2  | 5  | 227    | 12 | 2  |                                        |
| IV Order (Catadioptric)           |                |    |    |        |    |    |                                        |
| Mangalore                         | 348            | 0  | 11 | 81     | 1  | 2  |                                        |
| Calicut                           | 252            | 5  | 7  | 157    | 4  | 2  |                                        |
| Cochin                            | 234            | 15 | 11 | 99     | 13 | 9  |                                        |
| Manapad                           | 157            | 5  | 11 | 31     | 3  | 9  |                                        |
| Negapatam                         | 252            | 9  | 3  | 142    | 6  | 9  |                                        |
| Seven Pagodas                     | 139            | 14 | 2  | 512    | 1  | 0  |                                        |
| Pulicat                           | 181            | 12 | 8  | 265    | 5  | 1  |                                        |
| Point Diu                         | 91             | 11 | 6  | 85     | 9  | 0  |                                        |
| Coringa or Hope Island            | 377            | 7  | 8  | 163    | 14 | 3  |                                        |
| Gopalpur                          | 170            | 14 | 4  | 53     | 1  | 8  |                                        |
| V Order (Dioptric)                |                |    |    |        |    |    |                                        |
| Luticorin                         | 284            | 9  | 3  | 161    | 12 | 5  |                                        |
| Pamban                            | 361            | 7  | 3  | 128    | 6  | 4  |                                        |
| Armeneghon                        | 139            | 4  | 1  | 237    | 4  | 10 |                                        |
| Cocanada or Vakalapudi            | 333            | 10 | 11 | 126    | 11 | 5  |                                        |
| Sacramento Shoal                  | 180            | 15 | 4  | 87     | 5  | 8  |                                        |
| Calingapatam                      | 131            | 6  | 6  | 49     | 4  | 5  |                                        |
| VI Order (Catadioptric)           |                |    |    |        |    |    |                                        |
| Coondapur                         | 34             | 7  | 2  | 34     | 8  | 0  | Light exhibited from 15 Sept to 31 Dec |
| Malpe                             | 22             | 15 | 5  | 34     | 10 | 5  | — do —                                 |
| Cannanore                         | 39             | 15 | 3  | 5      | 8  | 5  |                                        |
| Jellicheruvu                      | 134            | 7  | 4  | 67     | 13 | 3  |                                        |
| Tondi                             | 139            | 0  | 10 | 20     | 15 | 10 |                                        |
| Cuddalore                         | 56             | 7  | 6  | 15     | 13 | 0  |                                        |
| Masulipatam                       | 274            | 13 | 6  | 66     | 9  | 10 |                                        |
| VII Order (Dioptric)              |                |    |    |        |    |    |                                        |
| Point Calimere                    | 59             | 1  | 5  | 5      | 8  | 4  |                                        |
| Total                             | 6,738          | 4  | 8  | 2,693  | 12 | 7  |                                        |

15

Light exhibited from 15 Sept to 31 Dec

— do —

15

*H. A. Theet*

*H. A. Theet*



Marine (1896) Department.

CURRENT No. 1069

Order

From

The Presidency Port Officer,  
Madras

No. 1813  
324 4

Dated 26 September 1896

Received 1<sup>st</sup> October 1896

Enclosures

Spare copies 3

SUBJECT.

Forwarding Annual  
Report on the Lights and  
Lighthouses for 1895/96.

He are See f. o. d. 288.96  
of 2.10.95

Defunct for 1894-5  
7/10/95

Encls 1  
Mar 11/64/96



# BACK PAPERS.

# FURTHER PAPERS.

| G.O. | No. | Department. | Date. |
|------|-----|-------------|-------|
|------|-----|-------------|-------|

|       |     |     |          |
|-------|-----|-----|----------|
| 459   | Mar | Mar | 24.6.96. |
| 47    | Mar | Mar | 24.6.96. |
| 306   | Mar | Mar | 25-10-95 |
| 288-9 | Mar | Mar | 2-10-95  |
| 166   | Mar | Mar | 2-10-95  |

| G.O. | No. | Department. | Date. |
|------|-----|-------------|-------|
|------|-----|-------------|-------|

|   |      |     |  |
|---|------|-----|--|
| 7 | 1164 | 26. |  |
|---|------|-----|--|

Presy: PORT OFFICE, MADRAS,  
26<sup>th</sup> September 1896.

No.  $\frac{1873}{3249}$

FROM

Commander H. A. STREET, R.I.M.,  
PRESIDENCY PORT OFFICER,

To

THE SECRETARY TO GOVERNMENT,  
MARINE DEPARTMENT,

SIR,

I have the honour to forward herewith the Annual Report on the Lights and Lighthouses on the Coasts of the Madras Presidency for the Official Year 1895/96.

I have the honour to be,  
Sir,

Your most obedient servant,

H. A. Street

Comdr. R.I.M.  
Presidency Port Officer.

## GENERAL REMARKS.

No interruption in the display of any of the lights occurred during the year. The several apparatus, columns and keepers' quarters received the attention necessary to maintain them in good order.

2. As a temporary measure and to meet urgent requirements, a fourth order dioptric fixed light (Red) was placed on a wooden structure on the Beach in the vicinity of the Sacramento Shoal and exhibited on the 1st October 1895.

3. At Calingapatam the fourth order dioptric fixed light (Red) was replaced by a fourth order occulting light on the 1st September 1895.

4. A fourth order fixed dioptric light (Red) was placed on a tower at the end of each arm of the Madras Harbour, and exhibited on 1st January 1896.

5. A joint inspection of the lights was made by the then Presidency Port Officer (Captain Powell) and Mr. Ashpitel, C.E., of the Public Works Department, and a report submitted to Government giving expression to the respective views of these officers as to the best means for improving the lighting of the coasts. The question has since been under the consideration of Government and orders in respect thereto were not passed till after the close of the year under review.

6. The usual inspection by coast Port officers of the lights in their respective districts was carried out.

7. With the exception of the Madras Harbour lights heavy mineral oil was used for all the lights.

8. The total cost for maintaining the lighthouses during the year was Rs. 46,097 against Rs. 56,556 in the previous year, showing a decrease of Rs. 10,459, in the charges of oil, stores, contingencies and Public Works charges—vide statement attached regarding lighthouse charges.



## LIGHTNING CONDUCTORS.

See remarks in Appendix C.

## ESTABLISHMENTS.

Details of the lighthouse staff are given in Appendix D and of cost in Appendix A.

## PARTICULARS OF LIGHTS.

See Appendix B.

## STORES AND SUPPLIES.

Were well maintained.

## LIGHTHOUSE CHARGES.

Appendix A affords particulars of charges for the year. The following is a comparative statement thereof for the past three years:—

|                                                 | 1893-94.      | 1894-95.      | 1895-96.      |
|-------------------------------------------------|---------------|---------------|---------------|
| Establishment, oil, stores and contingencies .. | RS.<br>32,589 | RS.<br>43,907 | RS.<br>34,390 |
| Public Works charges ..                         | 7,409         | 12,649        | 11,707        |
| Total ..                                        | 39,998        | 56,556        | 46,097        |

The variations under each detailed head of charge are explained below:—

|                                               | 1894-95.      | 1895-96.      | Difference. |        |
|-----------------------------------------------|---------------|---------------|-------------|--------|
|                                               |               |               | More.       | Less.  |
| Salaries of Superintendents and Lightkeepers. | RS.<br>20,661 | RS.<br>21,606 | 945         | ..     |
| Oil ..                                        | 7,514         | 6,738         | ..          | 776    |
| Stores ..                                     | 12,817        | 3,694         | ..          | 9,123  |
| Contingencies ..                              | 2,915         | 2,352         | ..          | 563    |
| Public Works charges ..                       | 12,649        | 11,707        | ..          | 942    |
| Total ..                                      | 56,556        | 46,097        | 945         | 11,404 |
|                                               |               |               | — 10,459    |        |

The increase under salaries of Superintendents and lightkeepers was due to payment of leave allowance to the late Superintendent of the Madras Lighthouse and also to increased rate of pay drawn for the lightkeepers under G.O., No. 166, Marine, dated 7th May 1894. There was a decrease under all other heads.

## APPENDIX A.

PARTICULARS of Charges relating to different Lights.

|                | Establishment.   |               | Oil.      | Stores.    | Contingencies and miscellaneous. | Construction and repairs. | Total, 1895-96. | Total, 1894-95. | Total, 1893-94. | Remarks.                                                                      |
|----------------|------------------|---------------|-----------|------------|----------------------------------|---------------------------|-----------------|-----------------|-----------------|-------------------------------------------------------------------------------|
|                | Superintendents. | Lightkeepers. |           |            |                                  |                           |                 |                 |                 |                                                                               |
| 1              | 2                | 3             | 4         | 5          | 6                                | 7                         | 8               | 9               | 10              | 11                                                                            |
| Coondapoor     | RS. A. P.        | RS. A. P.     | RS. A. P. | RS. A. P.  | RS. A. P.                        | RS. A. P.                 | RS. A. P.       | RS. A. P.       | RS. A. P.       |                                                                               |
| Malpe          | ..               | 191 11 8      | 34 7 2    | 34 8 0     | 50 9 5                           | ..                        | 311 4 3         | 414 8 11        | 404 11 7        |                                                                               |
| Mangalore      | ..               | 191 11 9      | 22 15 5   | 34 10 5    | 26 14 7                          | 11 6 0                    | 287 10 2        | 271 8 11        | 289 12 4        |                                                                               |
| Cannalore      | ..               | 331 13 6      | 348 0 11  | 81 1 2     | 43 7 4                           | 4,297 7 11                | 5,101 14 10     | 694 5 5         | 940 2 10        |                                                                               |
| Tellicherry    | ..               | 220 12 11     | 39 15 3   | 5 8 5      | 59 1 8                           | 12 0 0                    | 337 6 3         | 408 15 7        | 333 1 5         |                                                                               |
| Calicut        | ..               | 228 0 0       | 134 7 4   | 67 13 3    | 90 3 4                           | — 28 0 5                  | 492 7 6         | 1,044 14 7      | 530 14 9        |                                                                               |
| Do.            | ..               | 333 3 5       | 252 5 7   | 157 4 2    | 35 0 5                           | 893 15 10                 | 1,671 13 5      | 889 1 4         | 1,004 15 7      |                                                                               |
| Cochin         | ..               | 343 9 10      | 234 15 11 | 99 13 9    | 72 5 3                           | 28 0 0                    | 778 12 9        | 845 6 5         | 878 5 9         | Light at end of pier.                                                         |
| Beypore        | ..               | 602 13 2      | 936 0 1   | 427 3 1    | 191 9 7                          | ..                        | 3,491 4 6       | 2,849 8 8       | 51 13 1         |                                                                               |
| Muttam         | ..               | 1,333 10 7    | 157 5 11  | 31 3 9     | 51 14 9                          | ..                        | 1,290 8 1       | 2,927 9 3       | 3,566 2 5       |                                                                               |
| Manapad        | ..               | 698 11 2      | 351 4 6   | 161 12 5   | 190 0 7                          | 343 10 10                 | 1,883 9 7       | 1,418 8 9       | 2,084 8 10      |                                                                               |
| Tuticorin      | ..               | 703 8 6       | 284 9 3   | 128 6 4    | 47 2 10                          | ..                        | 880 10 2        | 1,621 3 9       | 1,476 9 10      |                                                                               |
| Pamban         | ..               | 343 9 9       | 361 7 3   | 20 15 10   | 54 8 6                           | ..                        | 452 6 1         | 426 14 3        | 336 1 6         |                                                                               |
| Tondi          | ..               | 227 12 11     | 139 0 10  | 5 8 4      | 38 5 8                           | ..                        | 363 13 11       | 545 11 7        | 439 5 0         |                                                                               |
| Point Culimere | ..               | 250 14 6      | 59 1 5    | 142 6 9    | 36 13 8                          | 99 0 0                    | 361 4 1         | 738 2 11        | 700 1 5         |                                                                               |
| Negapatam      | ..               | 330 6 5       | 252 9 3   | 5 13 0     | 50 11 0                          | ..                        | 564 9 4         | 1,191 5 11      | 526 0 4         |                                                                               |
| Cuddalore      | ..               | 451 9 10      | 56 7 6    | 512 1 0    | 39 1 1                           | 68 8 0                    | 2,098 8 9       | 1,952 10 1      | 1,606 9 2       |                                                                               |
| Seven Pagodas  | ..               | 840 0 0       | 139 14 2  | 512 1 0    | 39 1 1                           | ..                        | 3,523 14 2      | 5,133 4 5       | 6,724 4 1       |                                                                               |
| Madras         | ..               | 1,678 5 4     | 404 2 5   | 227 12 2   | 177 3 4                          | 367 8 2                   | ..              | ..              | ..              |                                                                               |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Two lights mark the entrance to the harbour and two lights show the fair way. |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Bar lights.                                                                   |
| Pulicat        | ..               | 450 3 2       | 181 12 8  | 265 5 1    | 86 2 6                           | 3 0 0                     | 1,826 7 5       | 3,431 1 11      | 3,995 4 9       | Groynes lights.                                                               |
| Armenghon      | ..               | 612 5 2       | 139 4 1   | 237 4 10   | 93 15 6                          | 130 7 9                   | 2,413 5 4       | 5,625 15 4      | 2,421 15 6      |                                                                               |
| Point Divi     | ..               | 595 9 10      | 91 11 6   | 85 9 0     | 57 13 8                          | 2 14 0                    | 1,673 10 0      | 2,674 14 1      | 2,323 4 9       |                                                                               |
| Masilupatam    | ..               | 225 12 11     | 274 13 6  | 66 9 10    | 44 9 0                           | ..                        | 611 13 3        | 465 10 4        | 296 2 11        |                                                                               |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Hop Island     | ..               | 779 13 11     | 377 7 8   | 163 14 3   | 120 2 9                          | 14 8 5                    | 2,295 15 0      | 2,702 10 1      | 2,065 8 0       |                                                                               |
| Sacramento     | ..               | 152 12 1      | 180 15 4  | 87 5 8     | 160 14 1                         | 1,077 14 4                | 1,559 13 6      | ..              | ..              |                                                                               |
| Cocanada       | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              |                                                                               |
| Vakalapudi     | ..               | 578 9 9       | 333 10 11 | 126 11 5   | 109 10 9                         | 84 4 5                    | 2,072 15 3      | 2,364 6 9       | 2,492 2 1       |                                                                               |
| Santapilly     | ..               | 542 0 8       | 998 6 6   | 414 12 7   | 151 4 4                          | 66 1 9                    | 8,012 9 10      | 2,747 9 6       | 2,278 6 9       |                                                                               |
| Calingapatam   | ..               | 438 10 9      | 131 6 6   | 49 4 5     | 244 0 9                          | 4,233 14 6                | 5,889 11 3      | 13,726 12 5     | 778 12 0        |                                                                               |
| Gopalpur       | ..               | 206 2 0       | 170 14 4  | 53 1 8     | 28 9 7                           | ..                        | 458 11 7        | 502 3 5         | 490 7 5         |                                                                               |
| Do.            | ..               | ..            | ..        | ..         | ..                               | ..                        | ..              | ..              | ..              | Light at end of pier.                                                         |
| Total          | 10,743 1 5       | 10,862 14 2   | 6,738 4 8 | 3,693 12 7 | 2,352 3 11                       | 11,706 9 6                | 46,096 14 3     | 56,556 0 7      | 39,998 5 8      |                                                                               |



# APPENDIX List of Lights on the

| Name of Light.                             | Location.                                                                            | Latitude,<br>N. | Longitude,<br>E. | Number and relative<br>position of lights. | Colour of lights. | Fixed, flashing, inter-<br>mitting, alternating,<br>or revolving. | Interval of revolu-<br>tion or flash<br>occultation. |
|--------------------------------------------|--------------------------------------------------------------------------------------|-----------------|------------------|--------------------------------------------|-------------------|-------------------------------------------------------------------|------------------------------------------------------|
| Coondapoor ..                              | On a site 50 feet to the northward of the southern boundary pillar of the port.      | 13° 37' 30"     | 74° 39' 40"      | 1                                          | White ..          | F.                                                                | ....                                                 |
| Malpé ..                                   | In the vicinity of the Custom House.                                                 | 13 20 40        | 74 42 0          | 1                                          | Do. ..            | F.                                                                | ....                                                 |
| Mangalore ..                               | On a hill above the town, and near some high trees.                                  | 12 52 17        | 74 50 08         | 1                                          | Do. ..            | F.                                                                | ....                                                 |
| Cannanore ..                               | On the fort rampart near the beach.                                                  | 11 51 10        | 75 21 45         | 1                                          | Red ..            | F.                                                                | ....                                                 |
| Tellicherry ..                             | On the Fort wall near the beach.                                                     | 11 44 50        | 75 28 30         | 1                                          | White ..          | F.                                                                | ....                                                 |
| Mahé (French Territory).                   | On the south side of the entrance to the river at the foot of the flagstaff.         | 11 42 10        | 75 31 10         | 1                                          | Red ..            | F.                                                                | ....                                                 |
| Calicut ..                                 | Near the beach ..                                                                    | 11 15 05        | 75 45 35         | 1                                          | White ..          | F.                                                                | ....                                                 |
| Narakel (Cochin Territory).                | On the beach at mouth of creek, 5 miles to the northward of Cochin.                  | 10 03 0         | 76 12 0          | 1                                          | Do. ..            | F.                                                                | ....                                                 |
| Cochin ..                                  | On a small mound which formed a bastion of the old fort to the south of the harbour. | 9 57 47         | 76 13 45         | 1                                          | Do. ..            | F.                                                                | ....                                                 |
| Alleppy or Alipees (Travancore Territory). | On the beach, about one cable inland.                                                | 9 30 0          | 76 19 0          | 1                                          | Do. ..            | Rev. ..                                                           | One minute ..                                        |
| Muttam ..                                  | On a rocky promontory 300 yards from sea, known as Muttam Point.                     | 8 07 30         | 77 18 10         | 1                                          | Do. ..            | F.                                                                | ....                                                 |

\* These Lights have hitherto in Light Lists been described as dioptric; they are

## B.

## Coasts of the Madras Presidency.

| Miles visible in clear weather. | Arc of illumination. (Bearings are magnetic and from seaward.)                                                                                         | Nature of construction, colour or any peculiarity of light-house.                  | Height, in feet, of centre of lantern above high water. | Height, in feet, of building from base to vane. | Character and order of illuminating apparatus. | Year lighted.                                                             | Remarks.                                                                                                                                                                                                                         |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6                               | 180°                                                                                                                                                   | Steel mast ..                                                                      | 45                                                      | 40                                              | 6th Order * Catadioptric light.                | 1st October 1888; present light, 1st Nov. 1891; altered, 15th Sept. 1894. | Exhibited only from 15th September to 31st May.                                                                                                                                                                                  |
| 6 to 8                          | From N. thro' E. to S., shut in between N. and N.E. by trees, N. 53 E. and N. 57 E. by St. Mary's Islands, N. 73 E. to N. 80 E. by St. Mary's Islands. | Do. ..                                                                             | 53                                                      | 50                                              | Do.                                            | 1st October 1888; present light, 1st Nov. 1891.                           | Do.                                                                                                                                                                                                                              |
| 14                              | From N. by E. ½ E thro' E. to S. by W. ½ W.                                                                                                            | Small white masonry tower.                                                         | 240                                                     | 65                                              | * Catadioptric, 4th order.                     | 1st October 1842; improved, 1870.                                         |                                                                                                                                                                                                                                  |
| 6 to 8                          | Between the bearings of N. W. by W. ½ W. and E. by S. ½ S.                                                                                             | Small masonry tower of a light yellow colour.                                      | 64                                                      | 25 from the rampart.                            | * Catadioptric, 6th order, port light.         | 17th Oct. 1843; improved, 1870; transferred to tower, 1880.               |                                                                                                                                                                                                                                  |
| 6 to 8                          | N.W. thro' E. to S.E.                                                                                                                                  | Small masonry tower.                                                               | 70                                                      | 26                                              | * Do.                                          | 1835; improved, 1870; transferred to tower, 1881.                         |                                                                                                                                                                                                                                  |
| 7                               | All round the compass.                                                                                                                                 | Small white pyramid.                                                               | 52                                                      | 7                                               | ..                                             | 1885 ..                                                                   | Shown only during N.E. monsoon.                                                                                                                                                                                                  |
| 14                              | From N. 25 W. thro' E. to S. 14 E.                                                                                                                     | White column..                                                                     | 102                                                     | 98                                              | * Catadioptric, 4th order.                     | 1847; improved, 1881.                                                     | To guide vessels to the anchorage clear of the reef, which lies about 1 mile S. 30° W. from the light. A small red light is exhibited from the head of the pier as a guide for small coasting craft when entering the roadstead. |
| 10                              | 180° from N.N. W. thro' E. to S.S.E.                                                                                                                   | Flagstaff ..                                                                       | 95                                                      | 102                                             | Country made lantern.                          | 1865 ..                                                                   | Is exhibited from 15th May to 30th September.                                                                                                                                                                                    |
| 14                              | From N. by W. ½ W. thro' E. to S. by E.                                                                                                                | White laterite column.                                                             | 100                                                     | 91                                              | Catadioptric, 4th order.                       | 1st April 1839; improved, 1868.                                           |                                                                                                                                                                                                                                  |
| 17                              | All round the compass.                                                                                                                                 | Masonry round white tower.                                                         | 113                                                     | 115                                             | Catadioptric, 1st order (Holo-photal).         | 1862.                                                                     |                                                                                                                                                                                                                                  |
| 17                              | From N. 64 W. thro' N. and E. to S. 84 E.                                                                                                              | Dark gray granite column, showing black and white horizontal stripes from seaward. | 142                                                     | 72                                              | * Catadioptric, 1st order.                     | 1875; altered, 1st January 1893.                                          | Is intended to mark the vicinity of the Crocodile Rock, which lies 3 miles S.W. ½ S. of Cadiapatam Point.                                                                                                                        |

all fitted with either reflectors or mirrors and show over an arc of from 180° to 270°.



## List of Lights on the

| Name of Light.                          | Location.                    | Latitude,<br>N.                                                                                                                                    | Longitude,<br>E.   | Number and relative<br>position of lights. | Colour of lights. | Fixed, flashing, inter-<br>mitting, alternating,<br>or revolving. | Interval of revolu-<br>tion or flash or<br>occultation.                                                                                                                                    |
|-----------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------|-------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gulf of Manar.                          | Manapad ..                   | On summit of Mana-<br>pad Point.                                                                                                                   | 8° 22' 30"         | 78° 6' 30"                                 | 1                 | Red ..                                                            | F. ....                                                                                                                                                                                    |
|                                         | Tuticorin ..                 | On the north extreme<br>of Hare Island or<br>Paundian-tivo, 2½<br>miles east of Tuticorin town.                                                    | 8 47 10            | 78 11 20                                   | 1                 | White ..                                                          | F. ....                                                                                                                                                                                    |
|                                         | Pámban or<br>Pámban<br>Pass. | On a sand-hill about<br>one mile east of<br>Northern channel.                                                                                      | 9 17 14            | 79 12 38                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                                                    |
| Tondi..                                 | ..                           | About 14 yards due<br>south of the Tondi<br>Sea Custom House.                                                                                      | 9 44 45            | 79 00 30                                   | 1                 | Red ..                                                            | F. ....                                                                                                                                                                                    |
| Point Calimere..                        | ..                           | On the point about<br>30 miles south of<br>Negapatam.                                                                                              | 10 18 0            | 79 51 30                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                                                    |
| Negapatam ..                            | ..                           | On the jetty near to<br>the river mouth.                                                                                                           | 10 45 30           | 79 50 20                                   | 1                 | White ..                                                          | F. ....                                                                                                                                                                                    |
| Karikal (French<br>Territory).          | ..                           | At the mouth of the<br>Arasalar river.                                                                                                             | 10 55 0            | 79 50 35                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                                                    |
| Cuddalore ..                            | ..                           | On cross trees of flag-<br>staff.                                                                                                                  | 11 43 0            | 79 46 15                                   | 1                 | Red ..                                                            | F. ....                                                                                                                                                                                    |
| Pondicherry<br>(French Terri-<br>tory). | ..                           | In square, near the<br>beach.                                                                                                                      | 11 55 25           | 79 49 35                                   | 1                 | White ..                                                          | F. ....                                                                                                                                                                                    |
| Do. ..                                  | ..                           | End of landing stage.                                                                                                                              | ..                 | ..                                         | 1                 | Red ..                                                            | F. ....                                                                                                                                                                                    |
| Seven Pagodas<br>or Mahábalipuram.      | ..                           | On a rock half a mile<br>inland marked on<br>chart "Ruined Pa-<br>goda" on rock very<br>conspicuous and<br>about 6 miles north-<br>ward of Sadras. | 12 36 55           | 80 11 31                                   | 1                 | Do. ..                                                            | F. ....                                                                                                                                                                                    |
| Madras or Fort<br>St. George.           | ..                           | On the main tower<br>of the Law Courts<br>on the Esplanade,<br>north of the Fort.                                                                  | 13 05 13           | 80 16 52                                   | 1                 | White ..                                                          | Fl. Double flashing of half<br>minute periods giving<br>two flashes of about 2<br>seconds separated by<br>an eclipse of about 3<br>seconds followed by<br>a long eclipse of 23<br>seconds. |
| Madras Leading<br>Light.                | ..                           | Madras Pier T. Head.                                                                                                                               | 13 05 44           | 80 17 18                                   | 1                 | Red ..                                                            | F. ....                                                                                                                                                                                    |
| Madras Harbour<br>Lights.               | ..                           | On the towers mark-<br>ing the entrance to<br>the harbour.                                                                                         | Madras<br>Harbour. | Madras<br>Harbour.                         | 2                 | Do. ..                                                            | F. ....                                                                                                                                                                                    |
| Madras Leading<br>Light.                | ..                           | Custom office Terrace.                                                                                                                             | 13 05 47           | 80 17 05                                   | 1                 | Green ..                                                          | F. ....                                                                                                                                                                                    |

\* These Lights have hitherto in Light Lists been described as dioptric; they are

## Coasts of the Madras Presidency -- cont.

| Miles visible in clear<br>weather. | Arc of illumination.<br>(Bearings are mag-<br>netic and from sea-<br>ward.)                                                                               | Nature of construc-<br>tion, colour, or any<br>peculiarity of light-<br>house. | Height, in feet, of<br>centre of lantern<br>above high water. | Height, in feet, of<br>building from base<br>to vane. | Character and order<br>of illuminating ap-<br>paratus. | Year lighted.                                                       | Remarks.                                                                                                                                                                                                                                                                                      |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8                                  | N.N.E. thro' E.<br>to S.S.W.                                                                                                                              | White masonry<br>tower.                                                        | 104                                                           | 27                                                    | * Catadioptric,<br>4th order<br>port light             | June 1889..                                                         | Is intended to warn vessels of<br>the dangerous shoal in the<br>vicinity.                                                                                                                                                                                                                     |
| 14                                 | All round the<br>compass.                                                                                                                                 | Sandstone<br>column, colour-<br>ed brown, lan-<br>tern white.                  | 85                                                            | 31                                                    | Dioptric, 4th<br>order.                                | 15th May<br>1845; im-<br>proved,<br>1874; im-<br>proved,<br>1893.   |                                                                                                                                                                                                                                                                                               |
| 14                                 | Do.                                                                                                                                                       | Circular masonry<br>column.                                                    | 97                                                            | 72                                                    | Do.                                                    | 21st April<br>1846; im-<br>proved,<br>1860; im-<br>proved,<br>1893. | As a guide to vessels making<br>for the Pámban channel.                                                                                                                                                                                                                                       |
| 6 to 8                             | Visible from all<br>directions sea-<br>ward.                                                                                                              | Steel mast ..                                                                  | 63                                                            | 52                                                    | * Catadioptric,<br>6th order,<br>port light.           | 1st October<br>1892.                                                |                                                                                                                                                                                                                                                                                               |
| 6 to 5                             | All round the<br>compass.                                                                                                                                 | Steel mast, pain-<br>ted white.                                                | 49                                                            | ..                                                    | Dioptric, 6th<br>order, port<br>light.                 | 1st June<br>1890.                                                   | As a guide to vessels passing<br>between Point Calimere and<br>the shoals to the eastward.                                                                                                                                                                                                    |
| 14                                 | From N. 5 W.<br>thro' W. to<br>S.S.E.                                                                                                                     | Masonry column,<br>painted white.                                              | 79                                                            | 83                                                    | * Catadioptric,<br>4th order.                          | 1st August<br>1846; im-<br>proved,<br>1870; im-<br>proved,<br>1893. |                                                                                                                                                                                                                                                                                               |
| 9                                  | Visible from all<br>directions sea-<br>ward.                                                                                                              | Do.                                                                            | 42                                                            | ..                                                    | Lamp burning<br>cocoanut oil                           | 1853.                                                               |                                                                                                                                                                                                                                                                                               |
| 6 to 8                             | N. thro' W. to S.                                                                                                                                         | Flagstaff ..                                                                   | 130                                                           | 31                                                    | * Catadioptric,<br>6th order,<br>port light.           | 1st July<br>1889; pre-<br>sent light,<br>5th Oct.<br>1891.          |                                                                                                                                                                                                                                                                                               |
| 14                                 | Visible from all<br>directions sea-<br>ward.                                                                                                              | Masonry column,<br>painted light<br>yellow.                                    | 89                                                            | 76                                                    | Dioptric, 4th<br>order.                                | 1886 ..                                                             | When surf is heavy, and<br>approach to landing prohib-<br>ited, a fixed green light is<br>shown.                                                                                                                                                                                              |
| 4                                  | Do.                                                                                                                                                       | ....                                                                           | 31                                                            | ..                                                    | ....                                                   | 1881 ..                                                             |                                                                                                                                                                                                                                                                                               |
| 10                                 | From N. thro'<br>W. to south<br>(180°).                                                                                                                   | Small<br>turret.                                                               | 119                                                           | 26                                                    | * Catadioptric,<br>4th order.                          | 10th July<br>1887; im-<br>proved,<br>1893.                          | Is intended to warn mariners<br>of the dangerous outlying<br>patches of rock composing<br>the Tripaloro reef and other<br>reported dangers in its vicin-<br>ity, to avoid which vessels<br>navigating between Sadras<br>and Covelong should not<br>come into a less depth than<br>13 fathoms. |
| 20                                 | Shows all round<br>the compass<br>visible from all<br>directions sea-<br>ward on the<br>following bear-<br>ings, from N. to<br>E. thro' W.<br>to S. by W. | Tower is an<br>octagonal struc-<br>ture of brick<br>and stone.                 | 166                                                           | 190                                                   | Dioptric, 3rd<br>order.                                | 1st June<br>1894.                                                   | Service intensity full power<br>18,000 candles.                                                                                                                                                                                                                                               |
| 5                                  | From S. 51° 45'<br>W. thro' W. to<br>N. 17° W.                                                                                                            | Wooden post ..                                                                 | 30                                                            | ..                                                    | Ship's side light,<br>Dioptric.                        | 15th Oct.<br>1888.                                                  | To guide vessels leaving the<br>harbour or making the an-<br>chorage at night.                                                                                                                                                                                                                |
| 6                                  | All round the<br>compass.                                                                                                                                 | Masonry towers.                                                                | 37                                                            | 25                                                    | Port lights diop-<br>tric, 6th order.                  | 1st January.<br>1896.                                               |                                                                                                                                                                                                                                                                                               |
| 5                                  | From S 51° 45'<br>W. thro' W. to<br>N. 17° W.                                                                                                             | Wooden post ..                                                                 | 60                                                            | ..                                                    | Ship's side light,<br>Dioptric.                        | 15th Oct.<br>1888.                                                  | To guide vessels leaving the<br>harbour or making the an-<br>chorage at night.                                                                                                                                                                                                                |

All fitted with either reflectors or mirrors and show over an arc of from 180° to 270°.



List of Lights on the

| Name of Light.                              | Location.                                                                                                        | Latitude,<br>N. | Longitude,<br>E. | Number and relative<br>position of lights. | Colour of lights. | Fixed, flashing, inter-<br>mitting, alternating,<br>or revolving. | Interval of revolu-<br>tion or flash or<br>occultation. |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------|------------------|--------------------------------------------|-------------------|-------------------------------------------------------------------|---------------------------------------------------------|
| Pulicat ..                                  | Near the beach ..                                                                                                | 13° 25' 15"     | 80° 19' 06"      | 1                                          | White ..          | F.                                                                | ....                                                    |
| Armeghon or Ar-<br>mogham.                  | On the mainland,<br>village of Moona or<br>Moonapollum.                                                          | 13 53 08        | 80 11 47         | 1                                          | Do. ..            | Rev.                                                              | Every 45 seconds ..                                     |
| Point Divi or<br>Divy.                      | About 2 miles north-<br>west of the Point.                                                                       | 15 58 55        | 81 09 25         | 1                                          | Do. ..            | ..                                                                | ....                                                    |
| Masulipatam ..                              | In the Fort ..                                                                                                   | 16 09 15        | 81 09 25         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Coringa or Hope<br>Island.                  | On the southern part<br>of Hope Island,<br>Coringa Harbour,<br>and distant about 2½<br>miles from the sea.       | 16 49 05        | 82 18 58         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Cocanada or Va-<br>kalapudi.                | 4½ miles north of<br>Cocanada river and<br>about 500 yards<br>from the shore.                                    | 17 0 40         | 82 16 30         | 1                                          | Do. ..            | Rev.                                                              | Every 20 seconds ..                                     |
| Cocanada River.                             | One on the end of the<br>north groyne, and<br>the other on the end<br>of the south groyne,<br>entrance to river. | ..              | ..               | 2                                          | Red ..            | F.                                                                | ....                                                    |
| Sacramento Shoal<br>Light (tem-<br>porary). | On the sand half-a-<br>mile from the beach<br>near the Kcttapol-<br>liem beacon.                                 | 16 34 40        | 82 16 30         | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Santipilly ..                               | On a small detached<br>hill some distance<br>inland. This dis-<br>tance said to be ¾ of<br>a mile.               | 18 04 56        | 83 37 35         | 1                                          | White ..          | F.                                                                | ....                                                    |
| Calingapatam ..                             | On the point ..                                                                                                  | 18 19 0         | 84 07 30         | 1                                          | Do. ..            | Ocscut-<br>ing<br>every<br>half a<br>minute.                      | 27½ seconds light and<br>2½ seconds eclipse.            |
| Baruva ..                                   | On the port flagstaff.                                                                                           | 18 42 30        | 84 34 0          | 2                                          | Do. ..            | F.                                                                | ....                                                    |
| Gopalpur ..                                 | On the mainland 60<br>yards from low<br>water mark.                                                              | 19 13 0         | 84 52 0          | 1                                          | Do. ..            | F.                                                                | ....                                                    |
| Do. ..                                      | On the extreme end<br>of the pier head,<br>port of Gopalpur.                                                     | ..              | ..               | 1                                          | Red ..            | F.                                                                | ....                                                    |

\* These Lights have hitherto in Light Lists been described as dioptric; they are

## Coasts of the Madras Presidency—cont.

| Miles visible in clear<br>weather. | Arc of illumination.<br>(Bearings are mag-<br>netic and from sea-<br>ward.) | Nature of construc-<br>tion, colour, or any<br>peculiarity of light-<br>house.                                                           | Height, in feet, of<br>centre of lantern<br>above high water. | Height, in feet, of<br>building from base<br>to vane.  | Character and order<br>of illuminating ap-<br>paratus.  | Year lighted.                                                                                               | Remarks.                                                                                                                                                                                                     |
|------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14                                 | From N. by W.<br>thro' W. to S.<br>by E.                                    | Masonry column<br>with black<br>bands.                                                                                                   | 68                                                            | 57                                                     | *Catadioptric,<br>4th order.                            | 1859; im-<br>proved,<br>1870; al-<br>tered, 1881;<br>improved,<br>1893.                                     | To guide vessels clear of the<br><i>Pulicat shoal</i> .                                                                                                                                                      |
| 14                                 | From N.E. thro'<br>W. to S.E.                                               | White masonry<br>column.                                                                                                                 | 107                                                           | 111                                                    | Dioptric, 4th<br>order, single<br>flash, 45<br>seconds. | 1st Jan.<br>1853;<br>improved,<br>1870;<br>present<br>light, 1881;<br>improved,<br>1893.                    | Warns vessels off the <i>Arme-<br/>ghon shoal</i> , the shoalest part<br>of which (1½ fathoms) lies 6<br>miles off shore.                                                                                    |
| 12                                 | From N.E. thro'<br>W. to S.                                                 | Do.                                                                                                                                      | 48                                                            | 50                                                     | *Catadioptric,<br>4th order.                            | 1st May<br>1851;<br>improved,<br>1870;<br>improved,<br>1893.                                                | Is intended to guide vessels<br>clear of the point.                                                                                                                                                          |
| 6                                  | From S. 26° W.<br>thro' W. to N.<br>9° E.                                   | Flagstaff ..                                                                                                                             | 69                                                            | 112                                                    | *Catadioptric,<br>6th order.                            | 1858;<br>improved,<br>1870.                                                                                 | As a guide for vessels to the<br>anchorage.                                                                                                                                                                  |
| 14                                 | From N. 5° E.<br>thro' W. to S.<br>5° W.                                    | Masonry tower,<br>horizontal al-<br>ternate bands<br>of black and<br>white.                                                              | 83                                                            | 94                                                     | *Catadioptric,<br>4th order.                            | 1817;<br>improved,<br>1886;<br>improved,<br>1893.                                                           | Is intended to guide vessels<br>clear of Sacramento shoal<br>and Gódvári Point.                                                                                                                              |
| 14                                 | All round the<br>compass.                                                   | White column ..                                                                                                                          | 80                                                            | 76                                                     | Dioptric, 4th<br>order, single<br>flash, 20 seconds.    | 15th Janu-<br>ary 1879.                                                                                     | This light is intended as a<br>guide to vessels approaching<br>Cocanada anchorage.                                                                                                                           |
| 2½                                 | Do.                                                                         | Wooden post ..                                                                                                                           | 10                                                            | ..                                                     | ....                                                    | 15th Sep-<br>tember<br>1886.                                                                                | To guide boats entering or<br>leaving Cocanada river.                                                                                                                                                        |
| 10                                 | From N. 45 E.<br>thro' W. to S.<br>45 W.                                    | Temporary<br>wooden struc-<br>ture with that-<br>ched roof.                                                                              | 25½                                                           | 16½                                                    | Dioptric,<br>order,<br>light.                           | 4th<br>port<br>1st October<br>1895.                                                                         |                                                                                                                                                                                                              |
| 16                                 | From N.E. thro'<br>W. to S.W.                                               | On a small base-<br>ment on the<br>top of a small<br>hill with a<br>small building<br>by the side of<br>the lantern on<br>the west side. | 163-77                                                        | 31-15                                                  | *Catadioptric,<br>2nd order; im-<br>proved, 1893.       | 1st Novem-<br>ber 1849;<br>improved,<br>1871;<br>present<br>light, 1886;<br>improved,<br>16th Aug.<br>1888. | Exhibited to warn mariners<br>of the <i>Santipilly Rocks</i> , from<br>which this light bears N.W.<br>¾ W., distant 6½ miles.                                                                                |
| 14                                 | Visible from all<br>directions sea-<br>ward.                                | Obelisk of cut<br>stone; column<br>white; outside<br>ladder red.                                                                         | 76                                                            | 73                                                     | Dioptric,<br>order.                                     | 4th<br>15th Decem-<br>ber 1876;<br>improved,<br>1st June<br>1890; al-<br>tered, 1st<br>Sept. 1895.          | Intended to warn vessels of a<br>small reef which projects<br>from the point and which<br>should not be passed in less<br>than 8 fathoms when making<br>the port at night.                                   |
| About<br>3                         | All round the<br>compass.                                                   | Flagstaff ..                                                                                                                             | 46                                                            | Shown<br>from<br>Yard-<br>arm<br>of<br>flag-<br>staff. | Globe lanterns.                                         | 12th Octo-<br>ber 1895.                                                                                     | These lights are occasionally<br>exhibited to indicate the<br>position of the port flag-<br>staff for the purpose of taking<br>up an anchorage and are not<br>to be relied on for purposes<br>of navigation. |
| 10                                 | From N.E. thro'<br>N.W. to S.W.                                             | Flagstaff, paint-<br>ed white.                                                                                                           | 54                                                            | 33                                                     | *Catadioptric,<br>4th order,<br>port light.             | Present<br>light, 1871;<br>1st March<br>1892.                                                               | As a guide to the anchorage.                                                                                                                                                                                 |
| 3                                  | All round the<br>compass.                                                   | ....                                                                                                                                     | 25                                                            | ..                                                     | Coantry lantern.                                        | 1st April<br>1887.                                                                                          | Points out the sea end of the<br>pier.                                                                                                                                                                       |

all fitted with either reflectors or mirrors and show over an arc of from 180° to 270°.



## APPENDIX C.

STATEMENT furnishing—(1) Particulars of inspections made of lighthouses on the Madras Coasts in 1895-96, (2) Remarks in connection with lightning conductors.

| (1)              |                                                      | (2)                   |                                                                    |
|------------------|------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| Name of lights.  | Officers by whom inspected.                          | Number of inspection. | Remarks as to lightning conductors.                                |
| Coondapoor ..    | Port officer, Mangalore ..                           | 3                     | Lightning conductor not tested during the year.                    |
| Malpé ..         | Do. do. ..                                           | 3                     |                                                                    |
| Mangalore ..     | Executive Engineer ..                                | 2                     |                                                                    |
| Cannanore        | Port officer, Calicut ..                             | 1                     | Lightning conductor tested and found satisfactory.                 |
|                  | Do. Tellicherry ..                                   | 8                     |                                                                    |
|                  | Assistant Engineer ..                                | 1                     |                                                                    |
| Tellicherry      | Port officer, Calicut ..                             | 1                     | Lightning conductor not tested during the year.                    |
|                  | Assistant Engineer ..                                | 1                     |                                                                    |
| Calicut ..       | Executive do. ..                                     | 2                     | Lightning conductor tested and in good order.                      |
| Cochin ..        | Nil ..                                               | ..                    |                                                                    |
| Muttum ..        | Port officer, Tuticorin ..                           | 2                     | Lightning conductor tested and in good order.                      |
|                  | Executive Engineer ..                                | 1                     |                                                                    |
|                  | Sub-divisional officer (P.W.D.) ..                   | 1                     |                                                                    |
| Manapad          | Port officer, Tuticorin ..                           | 2                     | Lightning conductor tested during the year and found satisfactory. |
|                  | Sub-divisional officer (P.W.D.) ..                   | 1                     |                                                                    |
|                  | Executive Engineer ..                                | 1                     |                                                                    |
| Tuticorin        | Sub-divisional officer (P.W.D.) ..                   | 2                     | Lightning conductor not tested during the year.                    |
| Pámban           | Do. do. ..                                           | 1                     |                                                                    |
| Tondi ..         | Port officer, Pámban ..                              | 4                     |                                                                    |
| Point Calimere   | Do. Negapatam ..                                     | 12                    | Lightning conductor not tested during the year.                    |
| Negapatam        | Nil ..                                               | ..                    |                                                                    |
| Cuddalore        | Presidency Port Officer ..                           | 1                     |                                                                    |
|                  | Personal Assistant to the Presidency Port Officer .. | 1                     | Lightning conductor tested during the year and found satisfactory. |
|                  | Superintending Engineer ..                           | 1                     |                                                                    |
| Seven Pagodas    | Executive Engineer ..                                | 2                     |                                                                    |
| Pulicat ..       | Do. do. ..                                           | 1                     | Lightning conductor not tested during the year.                    |
| Arneghon         | Do. do. ..                                           | 1                     |                                                                    |
|                  | Sub-divisional officer, (D.P.W.) ..                  | 4                     |                                                                    |
| Point Divi       | Do. do. ..                                           | 1                     | Lightning conductor tested during the year and in order.           |
|                  | Superintending Engineer ..                           | 1                     |                                                                    |
|                  | Port officer, Masulipatam ..                         | 12                    |                                                                    |
| Hope Island      | Do. Cocanada ..                                      | 4                     | Lightning conductor not tested during the year.                    |
|                  | Superintending Engineer ..                           | 2                     |                                                                    |
| Vakalapudi       | Port officer, Cocanada ..                            | 2                     | Lightning conductor tested during the year and in order.           |
| Sacramento Shoal | Do. do. ..                                           | 4                     |                                                                    |
|                  | Presidency Port Officer ..                           | 1                     |                                                                    |
|                  | Executive Engineer ..                                | 1                     | Lightning conductor not tested during the year.                    |
| Santopilly       | Port officer, Bimlipatam ..                          | 12                    |                                                                    |
| Calingapatam     | Do. Gopalpur ..                                      | 1                     |                                                                    |
|                  | Presidency Port Officer ..                           | 1                     | Lightning conductor tested during the year and in order.           |
|                  | District Engineer ..                                 | 1                     |                                                                    |
| Gopalpur         | Presidency Port Officer ..                           | 1                     |                                                                    |

Note.—At stations where there is a Port officer or Conservator, such officers, as *ex-officio* Superintendents, frequently visited the lighthouses, in addition to the outside inspections above noticed.

APPENDIX D.  
STATEMENT showing the sanctioned Establishments of Lighthouses on the Madras Coasts as they stood on the 31st March 1896.

| STATEMENT showing the sanctioned Establishments of 1898 |                  |            |            |                     |            |            |                |            |            |                            |                                                                      |
|---------------------------------------------------------|------------------|------------|------------|---------------------|------------|------------|----------------|------------|------------|----------------------------|----------------------------------------------------------------------|
| Lights.                                                 | Superintendents. |            |            | Head Light-keepers. |            |            | Light-keepers. |            |            | Total staff of each light. | Remarks.                                                             |
|                                                         | 1st Class.       | 2nd Class. | 3rd Class. | 1st Class.          | 2nd Class. | 3rd Class. | 1st Class.     | 2nd Class. | 3rd Class. |                            |                                                                      |
|                                                         | Ra. 100.         | Ra. 70.    | Ra. 50.    | Ra. 15.             | Ra. 12.    | Ra. 10.    | Ra. 9.         | Ra. 8.     | Ra. 7.     |                            |                                                                      |
| Coondapoor ..                                           | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | (b) 1      | 2                          | (a) Plus charge allowance of Rs. 1.                                  |
| Malpé ..                                                | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | (b) 1      | 2                          | (b) Temporary for 8 months (October to May).                         |
| Manapad ..                                              | ..               | ..         | ..         | ..                  | ..         | (c) 1      | ..             | ..         | ..         | 3                          | (c) Plus charge allowance of Rs. 2.                                  |
| Tellicherry ..                                          | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..         | 2                          | (d) Plus house allowance of Rs. 25.                                  |
| Calicut ..                                              | ..               | ..         | ..         | ..                  | ..         | (c) 1      | ..             | ..         | ..         | 2                          | (d) Plus house allowance of Rs. 25.                                  |
| Cochin ..                                               | ..               | ..         | ..         | ..                  | ..         | (c) 1      | ..             | ..         | ..         | 3                          | (e) Temporarily. Plus charge allowance of Rs. 1.                     |
| Muttum ..                                               | ..               | ..         | ..         | ..                  | ..         | (c) 1      | ..             | ..         | ..         | 3                          | (e) Temporarily. Plus provision allowance of Rs. 1.                  |
| Tuticorin (Hare Island)                                 | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 6                          | (f) Temporarily. Plus provision allowance of Rs. 1.                  |
| Pamban ..                                               | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 4                          | (g) Plus flag-signalling allowance of Rs. 10.                        |
| Tondi ..                                                | ..               | ..         | ..         | ..                  | ..         | See below. | ..             | ..         | ..         | 3                          | (g) Plus flag-signaller on Rs. 8.                                    |
| Point Calinière ..                                      | ..               | ..         | ..         | ..                  | ..         | (c) 1      | ..             | ..         | ..         | 2                          | (h) Also a flag-signaller on Rs. 8.                                  |
| Negapatam ..                                            | ..               | ..         | ..         | ..                  | ..         | (a) 1      | ..             | ..         | ..         | 3                          | (i) Plus charge allowance of Rs. 20.                                 |
| Cuddalore ..                                            | ..               | ..         | ..         | ..                  | ..         | (c) 1      | ..             | ..         | ..         | 3                          | (j) Rising to Rs. 9.                                                 |
| Madras ..                                               | ..               | ..         | ..         | ..                  | ..         | (c) 1      | ..             | ..         | ..         | 3                          | (k) The whole of Calingapatam establishment is Sub. <i>pro tem</i> . |
| Mahabalipuram (Seven Pagodas)                           | ..               | ..         | ..         | ..                  | ..         | See below. | ..             | ..         | ..         | 5                          | (l) Also two water boys on Rs. 7 each.                               |
| Pulicat ..                                              | ..               | ..         | ..         | ..                  | ..         | 1          | ..             | ..         | ..         | 7                          |                                                                      |
| Arneghon ..                                             | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 6                          |                                                                      |
| Point Divi ..                                           | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 6                          |                                                                      |
| Masulipatam ..                                          | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 6                          |                                                                      |
| Coringa or Hope Island                                  | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 2                          |                                                                      |
| Sacramento ..                                           | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 6                          |                                                                      |
| Vakalapudi ..                                           | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 5                          |                                                                      |
| Santopilly ..                                           | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 5                          |                                                                      |
| Calingapatam (k)                                        | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 5                          |                                                                      |
| Gopalpur ..                                             | ..               | ..         | ..         | ..                  | ..         | ..         | ..             | ..         | ..         | 2                          |                                                                      |

Note.—The lightkeepers on entertainment will receive Rs. 7 per mensem during their first year of service, after which, if well-reported on, they will receive Rs. 8 during their second year and Rs. 9 thereafter. All lightkeepers at Muttum, Manapad, Seven Pagodas, Arneghon, Point Divi, Hope Island, Vakalapudi and Santopilly receive an allowance of Rs. 1 per mensem, as compensation for the difficulty and expenses connected with obtaining supplies.

## ANALGAMATED Establishment.

| Lighthouses. | Head Light-keeper and Signaller. |         |         | Total staff. |        |   |
|--------------|----------------------------------|---------|---------|--------------|--------|---|
|              | Rs. 20.                          | Rs. 11. | Rs. 10. | Rs. 9.       | Rs. 8. |   |
|              |                                  |         |         |              |        |   |
| Tuticorin    | 1                                | 1       | ..      | 1            | 1      | 6 |
| Cuddalore    | 1                                | ..      | ..      | ..           | 2      | 3 |

Temporary.—Lighthouse mechanic, Rs. 80 per mensem, rising by annual increments of Rs. 5 to Rs. 100.