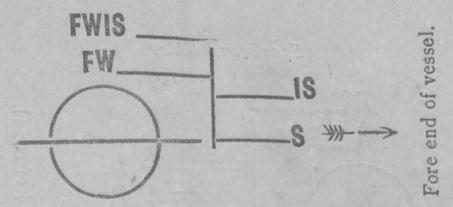
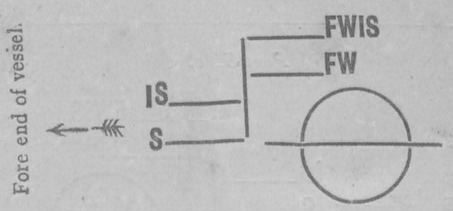
cancelled, and must be delivered to the Government for that purpose, and the owner shall then apply either to the original load-line authority, or to any other load-line authority approved by Government, for a new certificate.

Starboard Side.



Port Side.



G. C. Press, Simla.—No. 535 C. F.—12-8-99—140.

Marine (1899) Department.

G.O., No. 968 Marine
969

DATED 27 Oct 99

25/10/99

[Despatch Abstract.]

Lights and Lighthouses on the coasts of the Madras Presidency.

Reviewing the report on the working of the —— for 1898-99, submitted by the Presidency Port Officer.

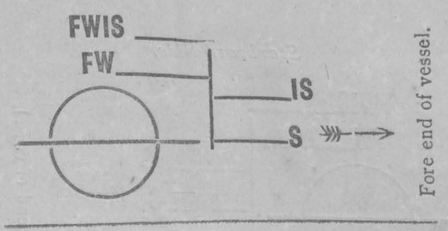
Lights and Lighthouses on the coasts of the Madras Presidency.

Forwarding copies of Nos. reviewing the report on the working of the —— for 1898-99 submitted by the P. P. O.

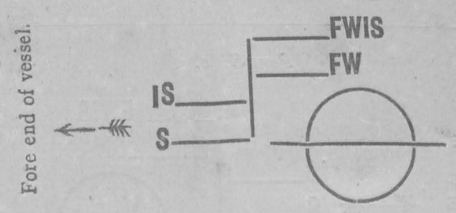
[No. 350—11-8-99.]

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Starboard Side.



Port Side.



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Forwarding copies of Nos: reviewing the report on the working of the ——— for 1898-99, submitted by the P. P. O.

[M. 259-11-8-99.]

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

Government {1899} of Madras.

MARINE.

Recd. } 1899. *Enclosures*

Regd. } *Spare copies*

G.O., Nos. 968, 969, 27th October 1899.

OCTOBER.

Lights and Lighthouses on the Coasts of the Madras Presidency

Forwarding copies of Proceedings reviewing the report on the working of the — for 1898–99, submitted by the Presidency Port Officer.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

Read—the following paper :—

From Commander T. G. R. FINNY, R.I.M., Presidency Port Officer, Madras, to the Secretary to Government, Marine Department, dated 3rd October 1899, No. 1923/321 G.

I have the honour to forward, herewith, the Annual report on lights and lighthouses on the coasts of the Madras Presidency for the official year 1898–99.

Enclosure.

REPORT ON THE LIGHTS AND LIGHTHOUSES ON THE COASTS OF THE MADRAS PRESIDENCY FOR THE OFFICIAL YEAR 1898–99.

General Remarks.

All the lights were exhibited throughout the year without interruption, those at Malpe, Kundapur and Hangarkotta being displayed as usual for eight months in the year only beginning from 15th September.

Heavy mineral oil was used at all the Lights except the Madras Harbour lights which as hitherto used kerosine oil.

The total cost of maintaining the several lights during the year was Rs. 1,82,406 against Rs. 1,22,848 in the previous year, showing an increase of Rs. 59,558, which is mainly due to Public Works charges on account of new Lighthouse works at Mulki, Manapad and Kistna. Details of expenditure on account of the different lights are furnished in Appendices A and A (i).

Particulars of Lights.

See Appendix B.

Inspections.

See Appendix C.

Testing of Lightning Conductors.

See Appendix C.

Arrangements were made for the Lighthouse Inspectors of the East and West Coast divisions being trained in the testing of Lightning Conductors.

Stores and Supplies.

Sufficiently maintained.

Consumption of oil.

Appendix D furnishes particulars of the number of hours each light was burning in the year and the actual consumption of oil at each light.

Remarks on Works connected with Lighthouses.

Hangarkotta.—The old stone column having been washed away with the keepers' temporary quarters a new wooden square pedestal was erected with temporary sheds for the keepers. A new column with pucka quarters in course of construction.

Malpe.—Floor and basement of cabin plastered with chunam, copper cap over chimney repaired.

Tellicherry.—Column painted, keepers' quarters tarred and whitewashed.

Calicut.—Column painted and keepers' quarters whitewashed.

Muttam.—New quarters for keepers and oil and store-room constructed.

Manapad.—New lighthouse and keepers' quarters under construction.

Tuticorin (Hare Island).—Woodwork of lantern door and platform of service room renewed. Column plastered, where necessary, with Portland cement.

Pamban.—Column painted.

Pulicat.—Column painted.

Armeghon.—Weight shaft in column widened by 2 inches on either side.

Point Divi.—Cupola and light pedestal painted and woodwork tarred. Sundry repairs to outbuildings.

Masulipatam.—Annual whitewashing, &c., carried out.

Sacramento.—A new post placed in east corner of lighthouse and a new ladder supplied.

Hope Island.—Column repaired, whitewashed, cement-washed and tarred. Attached buildings cement-washed and tarred.

Vakalapudi.—Clock work repaired and column painted.

Calingapatam.—Keepers' quarters repaired.

Establishment.

Conduct and efficiency generally satisfactory.

Appendix A.

Particulars of Charges relating to Different Lights.

Lights.	Establishment.		Oil.	Stores.	Contingencies and miscellaneous.	Construction and repairs.	Total 1898-99.	Total 1897-98.	Remarks.
	Head lightkeepers.	Lightkeepers.							
1	2	3	4	5	6	7	8	9	10
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Mulki	..	..	..	4 4 0	..	31,770 3 11	31,774 7 11	..	
Hangarkotta	..	195 3 9	39 4 4	31 14 10	88 11 0	541 12 6	896 14 5	439 14 7	1,300 2 6
Coondapoor	..	191 11 9	47 12 8	32 0 5	21 12 4	974 6 9	1,267 11 11	310 15 0	261 13 4
Malpe	..	191 11 9	39 5 8	66 12 3	10 13 3	6 0 0	314 10 11	310 5 8	279 11 6
Mangalore	..	296 13 5	93 4 5	157 12 9	41 2 5	3,643 1 10	4,232 2 10	710 10 7	860 6 5
Carnatore	..	239 11 4	2 6 10	164 3 10	30 0 0	..	436 6 0	375 18 1	304 10 11
Tellicherry	..	240 0 0	4 13 8	172 11 4	41 10 0	17 6 3	476 9 3	336 11 10	323 7 9
Calicut	..	331 10 8	117 7 7	217 13 0	23 1 0	287 7 9	977 8 0	906 10 2	658 15 0
									Light at end of pier.
Do.	..					Expenditure met from Calicut pier contingencies.			
Cochin	..	334 13 11	133 10 2	186 9 4	31 14 6	43 4 0	730 3 11	848 13 8	899 14 3
Mutttam	1,890 0 0	553 14 1	870 12 5	418 13 11	122 1 3	5,688 5 4	8,953 15 0	3,575 1 10	4,137 15 3
Manapad	758 6 8	316 11 1	77 8 9	89 5 8	83 9 11	30,886 10 7	32,212 4 8	17,388 0 4	1,754 9 5
Tuticorin	..	695 8 0	246 0 9	54 13 1	284 2 1	71 15 10	1,352 7 9	1,391 1 10	1,915 14 4
Pâmban	..	336 0 0	233 4 3	113 8 10	59 3 6	124 12 0	866 12 7	680 10 11	1,021 8 1
Tondi	..	216 0 0	82 6 4	73 4 6	20 12 6	..	392 7 4	384 10 10	328 13 7
Point Calimere	..	358 13 4	26 11 11	267 0 8	77 4 7	1,145 5 2	1,872 3 8	1,027 2 1	704 13 10
Negapatam	..	359 0 6	82 7 8	191 8 1	19 13 8	75 11 10	728 9 9	1,096 12 11	768 13 0
Cuddalore	..	460 8 0	58 1 9	37 6 7	41 14 3	..	557 14 7	946 2 8	570 12 2
Seven Pagodas	843 14 10	525 6 8	225 14 4	277 15 4	221 8 9	3,234 15 3	5,829 11 2	1,989 3 7	1,920 9 6
Madras	1,268 11 4	1,208 3 1	1,105 14 10	413 11 10	7 12 0	645 8 3	4,549 13 4	2,731 5 5	4,310 16 7
									Two lights mark the entrance to the harbour and two lights show the fair way.
Do.						Expenditure met from Madras port contingencies.			
Do.					132 8 5	1,160 14 8	3,206 5 4	1,872 12 2	1,663 11 4
Pulicat	740 4 2	702 14 8	188 15 6	280 11 11	179 9 9	96 0 0	2,979 7 10	4,268 15 3	2,512 2 1
Armeghon	912 11 10	743 15 5	192 3 11	264 14 11	194 8 7	57,094 2 11	60,184 5 11	66,915 3 0	2,463 6 3
Point Divi	870 5 7	783 12 11	226 5 10	115 2 1	62 2 10	8,112 10 5	8,505 9 5	353 11 11	362 1 1
Masulipatam	..	228 0 0	63 11 2	39 1 0					Bar lights.
Do.						Expenditure met from Landing and Shipping Dues Act III of 1885.			
Hope Island	..	1,282 9 11	259 10 2	92 11 7	90 14 4	117 0 0	1,842 14 0	2,140 7 2	2,299 7 9
Sacramento	..	372 0 0	92 11 7	34 5 9	66 6 6	208 5 10	773 13 8	634 2 4	634 0 11
Cocanada									Groynes lights.
Do.						Expenditure met from Landing and Shipping Dues Act III of 1885.			
Vakalpudi	840 0 0	566 1 0	214 2 6	140 5 2	129 10 9	414 3 3	2,304 6 8	3,784 6 5	2,073 11 7
Santopilly	921 4 2	516 15 1	843 15 10	157 13 8	147 6 2	63 10 9	2,661 1 8	3,854 11 1	4,569 13 4
Calingrapatam	..	1,090 8 0	394 3 0	203 2 0	256 5 7	182 5 10	2,136 8 5	3,117 4 2	5,995 0 2
Gopalpur	..	204 0 0	..	75 12 1	19 15 0	159 1 0	468 12 1	466 0 8	294 13 1
Do.						Expenditure met from Gopalpur pier contingencies.			
	2,506 10 11	1,47,572 5 11	1,82,406 4 0	1,22,847 13 2	46,112 2 0				Light at end of pier.
Total ..	8,455 10 7	13,542 10 4	5,963 3 10	4,365 10 5					

Appendix A (i).

Statement of Lighthouse Expenditure for 1898–99, compared with those for 1897–98.

—	1898-99.	1897-98.	Difference. More.	Difference. Less.
	Rs.	Rs.	Rs.	Rs.
Salaries of Head Lightkeepers and Lightkeepers ..	21,998	20,964	(a) 1,034	..
Oil	5,963	6,338	..	375
Stores	4,366	8,099	..	(b) 3,733
Contingencies	2,507	2,434	(c) 73	..
	34,834	37,835	1,107	4,108
Add Public Works charges	1,47,572	85,013	(d) 62,559	..
Total ..	1,82,406	1,22,848	63,666	4,108
			+ 59,558	

(a) The increase is due to payment of house-rent to Lightkeepers at Madras and Reliefkeepers and also to Head Lightkeepers who underwent training at the Madras lighthouse.

(b) No heavy debit as in previous year for new clock work, &c., hence decrease.

(c) This increase is so very small that it calls for no special remarks.

(d) This large increase is due to Public Works charges at Mulki, Manapad and Kistna lighthouses during the year under review.

APPENDIX

LIST of lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Coondapoor ..	Seventeen yards northward of the southern boundary pillar.	13° 38′	74° 40′	1	White ..	F.	....	8
Hangarkotta ..	About 700 yards to south of position of northern pillar now washed away.	13 27	74 41	1	Red ..	F.	....	6
Malpe ..	On the beach at the entrance to the river.	13 21	74 42	1	White ..	F.	....	8
Mangalore ..	On a hill above the town.	12 52	74 50	1	White ..	F.	....	14
Cannanore ..	On the Fort rampart.	11 51	75 22	1	Red ..	F.	....	6
Tellicherry ..	On the Fort wall ..	11 45	75 29	1	White ..	F.	....	8
Mahe (French Territory).	On the south side of the entrance to the river, at the foot of the flagstaff.	11 42	75 31	1	Red ..	F.	....	6
Calicut ..	On the beach ..	11 15	75 46	1	White ..	F.	....	14
Narakel ..	On the beach at mouth of creek.	10 03	76 12	1	Do. ..	F.	....	10
Cochin ..	On a small mound which formed a bastion of the old fort to the south of the harbour.	9 58	76 14	1	Do. ..	F.	....	15
Alleppy ..	On the beach, about one cable inland.	9 30	76 19	1	Do. ..	Rev.	One minute ..	17
Muttum Point. ..	On a rocky promontory, 300 yards from sea.	8 07	77 18	1	Do. ..	F.	....	16
Gulf of Manaar. Manapad Point.	On summit ..	8 22	78 04	1	Red ..	F.	....	8
Gulf of Manaar. Tuticorin. ..	On the north extreme of Hare Island 2½ miles east of Tuticorin town.	8 47	78 11	1	White ..	F.	....	14

[The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles ; all lights

B.

Coasts of the Madras Presidency.

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.	Candle power in units of 1,000 candles.	Remarks.
From S. 28° E. thro' E. to N. 6° W.	Steel mast ..	45	40	Dioptric, 6th order.	1888; altered, 1891; altered, 1894.	⅛	Exhibited from 15th September to 31st May.
From N. thro' E. to S., except where obscured by trees, between S. and S. 9° E. and by St. Mary's Isles between N. to N. 5° E., and N. 9° E. to N. 15° E.	Small white masonry column.	12	15	Dioptric, 6th order.	1896 ..	$\frac{1}{10}$	Do.
Visible seaward from N. to S. except where obscured from N. to N. 45° E. by trees, and from N. 53° E. to N. 57° E., and N. 73° E. to N. 80° E. by St. Mary's Isles.	Steel mast ..	53	50	Dioptric, 6th order.	1888; altered, 1891.	⅛	Do.
From N. 16° E., thro' E. to S. 16° W.	Small white masonry tower.	240	65	Dioptric, 4th order.	1842; improved, 1870.	1¼	
Seaward from N. 59° W. to S. 70° E.	Small light yellow masonry tower.	64	25	Dioptric, 6th order.	1843; improved, 1870; transferred to tower, 1880; 1885.	$\frac{1}{10}$	
Seaward from S. 59° E. to N. 38° W.	Small masonry tower.	82	27	Dioptric, 6th order.	1835; improved, 1870; transferred to tower, 1881.	⅛	
All round the compass.	Mast on the western bastion of the fort.	86	45	....	1885		Shown only during N.E. monsoon.
From N. 25° W. thro' E. to S. 14° E.	White column.	103	98	Dioptric, 4th order.	1874; improved, 1881.	1¼	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.
Seaward from N. 22° W. thro' E. to S. 22° E.	Flagstaff ..	95	102	Lantern ..	1865		Is exhibited only during the south-west monsoon, namely, from the 15th May to 30th September, when Cochin port is avoided by shipping.
Seaward from N. 20° W. thro' E. to S. 11° E.	White masonry column.	100	91	Dioptric, 4th order.	1839; improved, 1868.	1¼	
All round the compass.	Round white masonry tower.	113	115	Catadioptric, 1st order (Holophotal).	1862		
Seaward from N. 64° W. thro' N. to S. 84° E.	Column black and white horizontal stripes.	141	72	Dioptric 1st order.	1875; altered, 1893.	6	Is intended to mark the vicinity of the Crocodile Rock, which lies 3 miles S.W. ¾ S. of Caliapatam Point.
From N. 22° E. thro' W. to S. 22° W.	White masonry tower.	104	27	Dioptric, 4th order.	1888; improved, 1890.	$\frac{1}{10}$	Is intended to warn vessels of the dangerous shoal in the vicinity.
All round the compass.	Sandstone column, coloured brown, lantern white.	85	91	Do. ..	1845; improved, 1874; improved, 1893.	1	

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

Appendix

List of Lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating, or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Gulf of Mánaar. Pámban Pass.	On a sand-hill, about one mile east of Northern channel.	9° 17′	79° 13′	1	White ..	F.	....	14
Tondi ..	About 14 yards south of the Tondi Sea Custom House.	9 45	79 0	1	Red ..	F.	....	6
Point Calimere ..	On the point ..	10 18	79 51	1	Pale red.	F.	....	6
Negapatam ..	On the jetty near the Custom House.	10 45	79 51	1	White ..	F.	....	14
Karikal (French Territory).	North side of the Arselaar river entrance.	10 55	79 50	1	Do. ..	F.	....	9
Cuddalore ..	On cross trees of flagstaff.	11 43	79 46	1	Red ..	F.	....	6
Pondicherry (French territory).	In square, near the beach.	11 55	79 50	1	White ..	F.	....	15
	End of landing stage.	..	..	1	Red ..	F.	....	4
Seven Pagodas or Mahábalipuram.	On a rock, half a mile inland, and about 6 miles northward of Sadras.	12 37	80 11	1	Do. ..	F.	....	10
Madras ..	Main tower of new High Court.	13 05	80 17	1	White ..	Gp. Fl.	Half minute ..	20
Madras Leading Light.	End of iron pier ..	13 06	80 17	1	Red ..	F.	....	5
	Iron mast opposite Custom Office.	13 06	80 17	1	Green ..	F.	....	5
Madras Harbour.	End of north breakwater.	13 06	80 18	1	Red ..	F.	....	6
	End of south breakwater.	13 06	80 18	1	Do. ..	F.	....	6
Pulicat ..	Near the beach ..	13 25	80 20	1	White ..	F.	....	13
Armeghon ..	On the mainland, near village of Maniapolliem.	13 53	80 12	1	Do. ..	Fl.	Forty-five seconds.	15
Point Divi] ..	On bank of river about 2 miles north-west of the point.	15 59	81 08	1	Do. ..	F.	....	13
Masulipatam ..	In the Fort ..	16 09	81 09	1	Do. ..	F.	....	6
Sacramento Shoal light.	Near Kotapalem beacon.	16 35	82 17	1	Red ..	F.	....	10

[The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles; all lights

B—*cont.*

Coasts of the Madras Presidency—*cont.*

Are of illumination (Bearings are magnetic and from seaward).	Nature of construction, colour, or any peculiarity of lighthouse.	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.	Candle power in units of 1,000 candles.	Remarks.
All round the compass.	Circular masonry column.	97	72	Dioptric, 4th order.	1846; improved, 1860; improved, 1893.	1	As a guide to vessels making for the Pámban channel.
Visible from all directions seaward.	Steel mast ..	63	52	Dioptric, 6th order.	1892 ..	$\frac{1}{10}$	
All round the compass.	Steel mast, painted white.	55	45	Do. ..	1890 ..	$\frac{1}{10}$	As a guide to vessels passing between Point Calimere and the shoals to the eastward.
Seaward from N. to S.	Masonry column, painted white.	80	83	Dioptric, 4th order.	1846; improved, 1870; improved, 1893.	$1\frac{1}{4}$	
Visible from all directions seaward.	Staff ..	42	..	Lantern ..	1853 ..	..	
Seaward from N. to S.	Flagstaff ..	130	31	Dioptric, 6th order.	1889; 1891.	$\frac{2}{10}$	
Visible from all directions seaward.	Masonry column, painted light yellow.	89	76	Dioptric, 4th order.	1886 ..	..	When surf is heavy, and approach to landing prohibited, a fixed *green* light is shown, 26 feet high, visible about 3 miles.
Do. do. ..	Mast ..	31	..	....	1881 ..	..	
Seaward from N. to S.	Small grey turret.	116	26	Dioptric, 4th order.	1887; improved, 1893.	$\frac{1}{2}$	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.
Visible seaward from N. 21° E. thro' W. to S. 21° W.	Octagonal tower, gilded dome.	166	190	Dioptric, 3rd order.	1st June 1894.	$5\frac{1}{2}$ to 18	Shows flash 2 seconds, eclipse 3 seconds; flash 2 seconds eclipse 23 seconds.
From S. 50° W., thro' W. to N. 17° W.	Wooden post ..	30	..	Lantern D. ..	1888 ..	..	Leading lights kept in line lead through the centre of the harbour entrance.
Do. do. ..	Iron mast ..	60	..	Do. ..	1888 ..	..	
All round the compass.	Tower ..	37	25	Dioptric, 6th order.	1896 ..	$\frac{1}{10}$	To guide vessels entering or leaving the harbour at night.
Do. ..	Do.	37	25	Do. ..	1896 ..	$\frac{1}{10}$	
From N. 11° W. thro' W. to S. 11° E.	Masonry column, with horizontal black and white bands.	68	57	Dioptric, 4th order.	1859; improved, 1870; altered, 1881; improved, 1893.	$1\frac{1}{4}$	To guide vessels clear of the Pulicat shoal.
From N. E. thro' W. to S. E.	White masonry column.	107	111	Dioptric, 4th order.	1853; improved, 1870; improved, 1881; improved, 1893.	$3\frac{1}{4}$	A single flash of about 5 seconds duration every 45 seconds. Obscured on bearings north of N. 22° W. Warns vessels off the Armeghon shoal, the shoalest part of which ($1\frac{3}{4}$ fathoms) lies 6 miles off shore.
From N. 17° W. thro' W. to S. 38° W.	Do. do.	48	50	Dioptric, 4th order.	1851; improved, 1870; improved, 1893.	1	
From S. 26° W. thro' W. to N. 9° E.	Flagstaff on brick base.	69	112	Dioptric, 6th order.	1858; improved, 1870.	$\frac{1}{8}$	
From N. 45° E. thro' W. to S. 45° W.	Wooden structure.	25	16	Dioptric, 4th order.	1895 ..	$\frac{1}{10}$	Temporary.

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

Appendix

List of Lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating, or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Coringa or Hope Island.	On the southern part of island and distant about 2½ miles, from the sea.	16° 49′	82 19	1	White ..	F.	....	15
Cocanada. Vakalapudi.	4¾ miles north of Cocanada river and about 500 yards from the shore.	17 01	82 17	1	Do. ..	Fl.	Twenty seconds ..	14
Cocanada ..	One on the end of the North Groyne, and the other on the end of the South Groyne, entrance to the river.	..	..	2	Red. ..	F.	....	2½
Santopilly ..	On a small detached hill, three-quarters of a mile inland.	18 04	83 38	1	White ..	F.	....	16
Calingapatam ..	On sandy point ..	18 19	84 07	1	Do. ..	Occ.	Thirty seconds ..	14
Baruva ..	On the Port flagstaff.	18 43	84 34	2	Do. ..	F.	....	About 3
Gopalpur ..	On the mainland, 60 yards from low-water mark.	19 15	84 54	1	Do. ..	F.	....	10
	On the extreme end of the pier head.	..	..	1	Red.	F.	....	3

[The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles ; all lights

B—*cont.*

Coasts of the Madras Presidency—*cont.*

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.	Candle power in units of 1,000 candles.	Remarks.
From N. 5° E. through W. to S. 5° W.	Masonry tower, horizontal alternate bands of black and white.	83	94	Dioptric, 4th order.	1817 ; improved, 1886 ; improved, 1893.	$\frac{1}{10}$	To guide vessels clear of Sacramento shoal and Gódávari Point.
All round the compass.	White column.	80	76	Dioptric, 4th order.	1879 ..	3¼	This lighthouse is connected by telephone with Cocanada Port office.
Do.	Wooden post ..	10	..	....	1886 ..	..	To serve as a guide to boats entering or leaving Cocanada river.
From N. 45° E. through W. to S. 45° W.	Low white building.	163	31	Dioptric, 2nd order.	1849 ; improved, 1871 ; improved, 1886 ; improved, 1893.	4½	To warn mariners of the Santopilly rocks from which this light bears N.W. ⅜ W., distant 6½ miles.
Visible from all directions seaward.	Obelisk of cut stone ; column white ; outside ladder red.	76	73	Dioptric, 4th order.	1876 ; improved, 1890 ; improved, 1895.	$\frac{1}{10}$	Eclipse two and-a-half seconds. Intended to warn vessels of a small reef which projects from the point and which should not be passed in less than 8 fathoms when making the port at night.
Do.	Flagstaff ..	46	Shewn from yard arm of flag-staff.	Globular lanterns.	1895 ..	..	These lights are occasionally exhibited to indicate the position of the port flagstaff for the purpose of taking up an anchorage and are not to be relied on for purposes of navigation.
Seaward from N. 45° E. to S. 45° W.	Flagstaff, painted white.	54	33	Dioptric, 4th order.	Improved, 1871 ; improved, 1892.	$\frac{1}{6}$	As a guide to the anchorage.
All round the compass.	....	25	..	Lantern ..	1887 ..	..	

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

Appendix C.

Statement furnishing { (1) Particulars of inspections made of lighthouses on the Madras coasts in 1898–99. (2) Remarks in connection with lightning conductors.

Name of light.	Officers by whom inspected.	Number of inspections.	Remarks as to lightning conductors.
Kundapur	Presidency Port Officer	1	
	Port Officer, Mangalore	2	
	Superintendent of Works, Lighthouse Division ..	2	
Hangarcotta	Presidency Post Officer	1	
	Port Officer, Mangalore	2	
	Superintendent of Works, Lighthouse Division ..	1	
Malpe	Presidency Port Officer	1	
Mangalore	Port Officer, Mangalore	1	
Cannanore	Presidency Port Officer	1	Last tested in 1894.
Tellicherry	Port Officer, Tellicherry	1	
Calicut	Presidency Port Officer	12	
	Presidency Port Officer	1	Last tested in May 1896
	Executive Engineer	1	Tested during the year by Telegraph Department.
Cochin	Presidency Port Officer	1	
	Superintendent of Works, Lighthouse Division ..	1	Last tested in March 1896.
Muttum	Presidency Port Officer	1	
	Port Officer, Tuticorin	1	Tested during the year by Sub-Engineer, Public Works Department.
Manapad	Sub-Engineer, Public Works Department ..	2	
	.... ..	1	
Hare Island (Tuticorin).	Presidency Port Officer	..	Tested during the year by Sub-Divisional officer, Public Works Department.
	Superintendent of Works, Lighthouse Division ..	1	
	Sub-Divisional Officer, Public Works Department ..	1	
Pámban	Sub-Divisional Officer, Public Works Department ..	1	
	Sub-Engineer, Public Works Department ..	1	
Tondi	Port Officer, Pámban	4	Tested during the year by Sub-Engineer, Public Works Department.
Point Calimere ..	Port Officer, Negapatam	11	
	Executive Engineer, Public Works Department ..	1	
	Presidency Port Officer	1	
Negapatam	Executive Engineer	1	Last tested in 1897.
	Superintending Engineer	1	
Cuddalore	Presidency Port Officer	1	
Seven Pagodas ..	Presidency Port Officer	1	
	Executive Engineer	1	Last tested in 1897.
Madras	Presidency Port Officer	Frequently	
	Personal Assistant to Presidency Port Officer ..	Do.	
Pulicat	Presidency Port Officer	1	
	Assistant Engineer	1	Last tested in 1895.
Armeghon	Presidency Port Officer	1	
	Superintendent of Works, Lighthouse Division ..	1	Last tested in 1896.
Point Divi	Presidency Port Officer	1	
	Port Officer, Masulipatam	12	
	Superintendent of Works, Lighthouse Division ..	1	Last tested in 1895.
	Assistant Engineer	1	
Sacramento	Port Officer, Cocanada	5	
Hope Island	Port Officer, Cocanada	4	Tested during the year by Public Works Department.
Vakalapudi	Presidency Port Officer	1	
	Port Officer, Cocanada	10	Last tested in 1897-98.
	Overseer, Public Works Department	1	
Santopilly	Presidency Port Officer	1	
	Port Officer, Bimlipatam	9	Last tested in 1895.
Calingapatam ..	Presidency Port Officer	1	
	Port Officer, Gopalpur	1	Tested during the year by Executive Engineer.
	Superintending Engineer	1	
Gopalpur	Port Officer, Gopalpur	See *N.B.*	

N.B.—Lights in the immediate charge of the local Port Officers were frequently inspected by such officers.

Appendix D.

Statement showing the Description of Lights and the Consumption of Oil.

Light.	Description of burner.	Number of hours light was burning.	Consumption of oil during 1898-99 in gallons (fractions omitted.)	Consumption per hour in fluid ounce.	Standard consumption in fluid ounce.	Description.
Cannanore	Hinck's Duplex burner, wick 1″ wide.	4,340	46	1·7	2·3	Sixth, fixed.
Tellicherry		4,351	51	1·8		
Point Calimere ..		4,379	62	2·2		
Masulipatam		4,363	59	2·2		
Cuddalore		4,351	73	2·6		
Tondi		4,366	70	2·5		
Malpe *	Chance's Circular wick burner.	3,146	55	2·8	2·3	Sixth, fixed.
Kundapur *		3,146	54	2·7		
Hangarcotta *		3,057	52	2·7		
Gopalpur		4,367	76	2·7		
Sacramento	Hinck's Duplex burner, wick 1½″.	4,359	88	3·2	2·5	Fourth, fixed.
Manapad		4,284	74	2·7		
Hope Island	Large two-wick Douglass burner.	4,353	282	10·3	12	Fourth, fixed.
Calingapatam		4,376	347	12·7		
Seven Pagodas ..		4,354	218	8		
Pámban		4,405	217	7·8		
Tuticorin		4,305	215	7·9		
Point Divi		4,377	199	7·3		Fourth, fixed.
Negapatam	Two-wick Douglass burner ..	4,239	187	7	6·5to7	
Mangalore		4,350	207	7·6		
Pulicat		4,390	203	7·4		
Calicut		4,412	212	7·7		
Cochin		4,369	222	8·1		Fourth, flashing.
Armeghon		4,358	214	7·8		
Vakalapudi		4,350	232	8·5		Third, flashing.
Madras	Four-wick Douglass burner ..	4,466	894	32	37·8	Second, fixed.
Santopilly		4,386	828	30·2		First, fixed.
Muttum		4,336	872	32·1		

* Exhibited during only eight months every year.

Order—No. 968, Marine, dated 27th October 1899.

His Excellency the Governor in Council observes that the cost of maintaining the lights during the year was Rs. 34,834, as against Rs. 37,835 in the previous year and Rs. 35,033 in 1896–97. There was, in addition, an expenditure of Rs. 1,47,572 under the head of "Public Works charges," chiefly on account of the construction of new lighthouse works at Mulki, Manapad and Point Divi.

2. There was an increase in the year under review of Rs. 1,034 under head "Salaries", and a decrease of Rs 3,733 under head "Stores." Both are satisfactorily explained in Appendix A (i). Various discrepancies in the consumption of oil of individual lights are noticed which have not been explained. Thus at Santopilly the light burned 27 hours less than in the previous year, but consumed 51 gallons more. It is also noticed that in a large number of lighthouses the actual consumption per hour is in excess of the supposed standard. It seems necessary that either the consumption should be reduced or the standard rate increased.

3. Government is pleased to note that the conduct and efficiency of the establishment was generally satisfactory.

[Here enter No. 969, Marine, dated 27th October 1899.]

(True Extract.)

(Signed) W. B. DEWINTON,
Secretary to Government.

To the Presidency Port Officer.
" Superintendent of Works, Lighthouse Division.

ENDORSEMENT—No. 969, Marine, dated 27th October 1899.

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

(By order.)

(Signed) W. B. DEWINTON,
Secretary to Government.

Exd. T. K. Narayana Aiyangar.

Marine DEPARTMENT. 3

READ the following :—

Letter from the Presidency Port Officer, Madras, No. 1923/32/G, dated 3 October 99.

Report on lighthouse [illegible] for 1898-99

Circulated to

Hr. the Governor
(after nine-meeting to Members)

ORDERS

No. 968 Marine 27.10.99.

His Excellency the Governor in Council observes that the cost of maintaining the lights during the year was Rs 34,834 as against Rs. 37,635 in the previous year. The increase is said to be mainly due to Public Works charges on account of the new Lighthouse works at Pulicat, Manapad and Kistna.

2. Taking the cost of oil alone, there has been a saving in expenditure; the total outlay having been Rs: 5,963 as against Rs: 6,33[illegible] in the previous year, but there are noticeable differences in the consumption of

Rd. 4.11.99

There was, in addition, an expenditure of Rs 1,67,572 under the head 'Public Works charges' on account of the construction of new light houses at Pulicat, Manapad and Kistna.

2- There was an increase in the year under review of Rs 1036 under head 'Salaries' and a decrease of Rs 3733 under head 'Stores' for which satisfactory explanations are called in Appendix A (i)

[illegible]
1,000—28-2-12

No. 968, MARINE, 27TH OCTOBER 1899.

3. Government is pleased to note that the conduct and efficiency of the establishment was generally satisfactory.

[Here enter No. 969, Marine, dated 27th October 1899.]

(True Extract.)

(Signed) W. B. DEWINTON,
Secretary to Government.

To the Presidency Port Officer.
" Superintendent of Works, Lighthouse Division.

ENDORSEMENT—No. 969, Marine, dated 27th October 1899.

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

(By order.)

(Signed) W. B. DEWINTON,
Secretary to Government.

Exd. T. K. Narayana Aiyangar.

Marine DEPARTMENT. 3

READ the following :—

Letter from the Presidency Port Officer, Madras, No. 1923/321/G, dated 3 October 99

Report on Lighthouse Works for the year 1898-99

Circulated to

H.E. the Governor (after nine minutes)

ORDERS

No. 968 dated 27.10.99

His Excellency the Governor in Council observes that the cost of maintaining the lights during the year was Rs ~~1,82,406~~ 34,834 as against Rs. ~~1,22,848~~ 37,635 in the previous year, and 1896-97 Rs. 35,033. The increase is said to be mainly due to Public Works charges on account of the new Lighthouse works at Pulki, Ramapad and Kistna.

2. Taking the cost of oil alone, there has been a saving in expenditure; the total outlay having been Rs. 5,963 as against Rs. 6,33[illegible] in the previous year, but there are noticeable differences in the consumption of

There was, in addition, an expenditure of Rs 1,67,572 under the head 'P. W. Works charges', chiefly on account of the construction of new light houses at Pulki, Ramapad and Kistna.

2 - There has an increase in the year under review of Rs 1034 under head 'Salaries' and a decrease of Rs 3733 under head 'Store' charges are satisfactory as explained in Appendix A (i)

[illegible]
1,000—28-2-12.

of ~~individual lights~~ which have not been explained Thus at Santopilly, the light burned 27 hours less than in the previous year but consumed 51 gallons more. It is also noticed that in ~~the~~ a Group ~~majority~~ number of lighthouses the actual consumption per hour is in excess of the supposed standard. It seems necessary that either the consumption should be reduced or the standard rate increased.

3. The expenditure on stores has been much less than in the previous year; the figures being for

1897-98 — Rs 8099
and for 1898-99 — " 431

The lower ~~majority~~ charges of the previous year are said to be due to the supply of new clock work. The rate of expenditure in 1898-99 is thus assumed to be normal.

4. The other differences

↑ wherein discrepancies in the consumption of oil of individual lights are noticed

8

140

To The P. P. Officer
Supt: of works L. H. Dn:

are satisfactorily accounted for and call for no special remark.

R.S. 3. Govt: is pleased to note that the conduct & efficiency of the establishment has generally been satisfactory

17.10.11

Endorsement No
969 dated 27.10.99

Two copies forwarded to the Govt: of India, Department of Finance and Commerce.

R.S. 17.10.11

Accepted as per ord 27/10/99

Shaw Cohen 31/10/99

Marine (1899) Department.

CURRENT No. 1346

From

The Treasy Sartoffice, Madras

Order

No. 1923/321 4

Dated 3d October 99

Received 5-10 99

Enclosures 1 { Plan and abstract }

Spare copies 3.

SUBJECT.

Forwarding Annual Report on Lights and Lighthouses on the coasts of the Madras Presy. for 1898/99.

BACK PAPERS.

No.	Date.
910-11-9	31-10-98
1051-2	23-12-97
764-7	7-11-56

FURTHER PAPERS.

No.	Date.

Enclosure

REPORT ON THE LIGHTS AND LIGHTHOUSES ON THE COASTS OF THE MADRAS PRESIDENCY FOR THE OFFICIAL YEAR 1898-99.

Separate

General Remarks.

All the lights were exhibited throughout the year without interruption, those at Malpe, Kundapur and Hangarkotta being displayed as usual for eight months in the year only beginning from 15th September.

Heavy mineral oil was used at all the Lights except the Madras Harbour lights which as hitherto used kerosine oil.

The total cost of maintaining the several lights during the year was Rs. 1,82,406 against Rs. 1,22,848 in the previous year, showing an increase of Rs. 59,558, which is mainly due to Public Works charges on account of new Lighthouse works at Mulki, Manapad and Kistna. Details of expenditure on account of the different lights are furnished in Appendices A and A (i).

Particulars of Lights.

See Appendix B.

Inspections.

See Appendix C.

Testing of Lightning Conductors.

See Appendix C.

Arrangements were made for the Lighthouse Inspectors of the East and West Coast divisions being trained in the testing of Lightning Conductors.

Stores and Supplies.

Sufficiently maintained.

Consumption of oil.

Appendix D furnishes particulars of the number of hours each light was burning in the year and the actual consumption of oil at each light.

Remarks on Works connected with Lighthouses.

Hangarkotta.—The old stone column having been washed away with the keepers' temporary quarters a new wooden square pedestal was erected with temporary sheds for the keepers. A new column with pucka quarters in course of construction.

Malpe.—Floor and basement of cabin plastered with chunam, copper cap over chimney repaired.

Tellicherry.—Column painted, keepers' quarters tarred and whitewashed.

Calicut.—Column painted and keepers' quarters whitewashed.

Muttam.—New quarters for keepers and oil and store-room constructed.

Manapad.—New lighthouse and keepers' quarters under construction.

Tuticorin (Hare Island).—Woodwork of lantern door and platform of service room renewed. Column plastered, where necessary, with Portland cement.

Pamban.—Column painted.

Pulicat.—Column painted.

Armeghon.—Weight shaft in column widened by 2 inches on either side.

Point Divi.—Cupola and light pedestal painted and woodwork tarred. Sundry repairs to outbuildings.

Masulipatam.—Annual whitewashing, &c., carried out.

Sacramento.—A new post placed in east corner of lighthouse and a new ladder supplied.

Hope Island.—Column repaired, whitewashed, cement-washed and tarred. Attached buildings cement-washed and tarred.

Vakalapudi.—Clock work repaired and column painted.

Calingapatam.—Keepers' quarters repaired.

Establishment.

Conduct and efficiency generally satisfactory.

E-1 1746/99

Appendix A.

Particulars of Charges relating to Different Lights.

Lights.	Establishment. Head lightkeepers.	Establishment. Lightkeepers.	Oil.	Stores.	Contingencies and miscellaneous.	Construction and repairs.	Total 1898-99.	Total 1897-98.	Total 1896-97.	Remarks.
1	2	3	4	5	6	7	8	9	10	11
	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.	
Mulki	..	..	..	4 4 0	..	31,770 3 11	31,774 7 11	..	..	New
Hangarkotta	..	195 3 9	39 4 4	31 14 10	88 11 0	541 12 6	896 14 5	439 14 7	1,300 2 6	
Coondapoor	..	191 11 9	47 12 8	32 0 5	21 12 4	974 6 9	1,267 11 11	310 15 0	261 13 4	
Malpe	..	191 11 9	39 5 8	66 12 3	10 13 3	6 0 0	314 10 11	310 5 8	279 11 6	
Mangalore	..	296 13 5	93 4 5	157 12 9	41 2 5	3,643 1 10	4,232 2 10	710 10 7	860 6 5	
Cannanore	..	239 11 4	2 6 10	164 3 10	30 0 0	..	436 6 0	375 13 1	304 10 11	
Tellicherry	..	240 0 0	4 13 8	172 11 4	41 10 0	17 6 3	476 9 3	336 11 10	323 7 9	
Calicut	..	331 10 8	117 7 7	217 13 0	23 1 0	287 7 9	977 8 0	906 10 2	688 15 0	
Do.	Expenditure met from Calicut pier contingencies.									Light at end of pier.
Cochin	..	334 13 11	133 10 2	186 9 4	31 14 6	43 4 0	730 3 11	848 13 8	899 14 3	
Muttum	1,300 0 0	553 14 1	870 12 5	418 13 11	122 1 3	5,688 5 4	8,953 15 0	3,575 1 10	4,137 15 3	
Manapad	758 6 8	316 11 1	77 8 9	89 5 8	83 9 11	30,886 10 7	32,212 4 8	17,388 0 4	1,754 9 5	
Tuticorin	..	695 8 0	246 0 9	54 13 1	284 2 1	71 15 10	1,352 7 9	1,391 1 10	1,915 14 4	
Pámban	..	336 0 0	233 4 3	113 8 10	59 3 6	124 12 0	866 12 7	680 10 11	1,021 8 1	
Tondi	..	216 0 0	82 6 4	73 4 6	20 12 6	..	392 7 4	384 10 10	328 13 7	
Point Calimere	..	358 13 4	26 11 11	267 0 8	77 4 7	1,142 5 2	1,872 3 8	1,027 2 1	704 13 10	
Negapatam	..	359 0 6	82 7 8	191 8 1	19 13 8	75 11 10	728 9 9	1,096 12 11	768 13 0	
Cuddalore	..	460 8 0	58 1 9	37 6 7	41 14 3	..	597 14 7	946 2 8	570 12 2	
Seven Pagodas	843 14 10	525 6 8	225 14 4	277 15 4	221 8 9	3,234 15 3	5,329 11 2	1,989 3 7	1,920 9 6	
Madras	1,268 11 4	1,208 3 1	1,105 14 10	413 11 10	7 12 0	545 8 3	4,549 13 4	2,731 5 5	4,310 15 7	
Do.	Expenditure met from Madras port contingencies.									Two lights mark the entrance to the harbour and two lights show the fair way.
Do.										
Pulicat	740 4 2	702 14 8	188 15 6	280 11 11	132 8 5	1,160 14 8	3,206 5 4	1,872 12 2	1,663 11 4	
Armeghon	912 11 10	743 15 5	192 3 11	254 14 11	179 9 9	96 0 0	2,379 7 10	4,268 15 3	2,512 2 1	
Point Divi	870 5 7	783 12 11	226 5 10	115 2 1	194 8 7	57,994 2 11	60,184 5 11	66,915 3 0	2,463 6 3	
Masulipatam	..	228 0 0	63 11 2	39 1 0	62 2 10	8,112 10 5	8,505 9 5	353 11 11	352 1 1	
Do.	Expenditure met from Landing and Shipping Dues Act III of 1885.									Bar lights.
Hope Island	..	1,282 9 11	259 10 2	92 11 7	90 14 4	117 0 0	1,842 14 0	2,140 7 2	2,299 7 9	
Sacramento	..	372 0 0	92 11 7	34 5 9	66 6 6	208 5 10	773 13 8	634 2 4	534 0 11	
Cocanada	Expenditure met from Landing and Shipping Dues Act III of 1885.									Groynes lights.
Do.										
Vakalpudi	840 0 0	566 1 0	214 2 6	140 5 2	129 10 9	414 3 3	2,304 6 8	3,784 6 5	2,073 11 7	
Santopilly	921 4 2	516 15 1	843 15 10	157 13 8	147 6 2	63 10 9	2,651 1 8	3,854 11 1	4,569 13 4	
Calingapatam	..	1,090 8 0	394 3 0	203 2 0	256 5 7	182 5 10	2,126 8 5	3,117 4 2	5,995 0 2	
Gopalpur	..	204 0 0	..	75 12 1	19 15 0	169 1 0	468 12 1	456 0 8	294 13 1	
Do.	Expenditure met from Gopalpur pier contingencies.									Light at end of pier.
Total ..	8,455 10 7	13,542 10 4	5,963 3 10	4,365 10 5	2,506 10 11	1,47,572 5 11	1,82,406 4 0	1,22,847 13 2	45,112 2 0	

Appendix A (i).

Statement of Lighthouse Expenditure for 1898–99, compared with those for 1897–98.

—	1898-99.	1897-98.	Difference. More.	Difference. Less.
	Rs.	Rs.	Rs.	Rs.
Salaries of Head Lightkeepers	21,698	20,964	(a) 1,034	..
Salaries of Lightkeepers	6,963	6,338	..	375
Oil	4,366	8,099	..	(b) 3,733
Stores	2,507	2,434	(c) 73	..
Contingencies	34,834	37,835	1,107	4,103
	1,47,572	85,013	(d) 62,559	..
Add Public Works charges	1,92,406	1,22,848	63,666	4,108
Total ..			+ 59,558	

(a) The increase is due to payment of house-rent to Lightkeepers at Madras and Reliefkeepers and also to Head Lightkeepers who underwent training at the Madras lighthouse.

(b) No heavy debit as in previous year for new clock work, &c., hence decrease.

(c) This increase is so very small that it calls for no special remarks.

(d) This large increase is due to Public Works charges at Mulki, Manapad and Kistna lighthouses during the year under review.

APPENDIX

List of lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Coondapoor ..	Seventeen yards northward of the southern boundary pillar.	13° 38′	74° 40′	1	White ..	F.	....	8
Hangarkotta ..	About 700 yards to south of position of northern pillar now washed away.	13 27	74 41	1	Red ..	F.	....	6
Malpe ..	On the beach at the entrance to the river.	13 21	74 42	1	White ..	F.	....	8
Mangalore ..	On a hill above the town.	12 52	74 50	1	White ..	F.	....	14
Cannanore ..	On the Fort rampart.	11 51	75 22	1	Red ..	F.	....	6
Tellicherry ..	On the Fort wall ..	11 45	75 29	1	White ..	F.	....	8
Mahe (French Territory).	On the south side of the entrance to the river, at the foot of the flagstaff.	11 42	75 31	1	Red ..	F.	....	6
Calicut ..	On the beach ..	11 15	75 46	1	White ..	F.	....	14
Narakel ..	On the beach at mouth of creek.	10 03	76 12	1	Do. ..	F.	....	10
Cochin ..	On a small mound which formed a bastion of the old fort to the south of the harbour.	9 58	76 14	1	Do. ..	F.	....	15
Alleppy ..	On the beach, about one cable inland.	9 30	76 19	1	Do. ..	Rev.	One minute ..	17
Muttum Point. ..	On a rocky promontory, 300 yards from sea.	8 07	77 18	1	Do. ..	F.	....	16
Gulf of Manaar. — Manapad Point.	On summit ..	8 22	78 04	1	Red ..	F.	....	8
Gulf of Manaar. — Tuticorin. ..	On the north extreme of Hare Island 2½ miles east of Tuticorin town.	8 47	78 11	1	White ..	F.	....	14

[The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles ; all lights

B.

Coasts of the Madras Presidency.

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.	Candle power in units of 1,000 candles.	Remarks.
From S. 28° E. thro' E. to N. 6° W.	Steel mast ..	45	40	Dioptric, 6th order.	1888; altered, 1891; altered, 1894.	$\frac{1}{8}$	Exhibited from 15th September to 31st May.
From N. thro' E. to S., except where obscured by trees, between S. and S. 9° E. and by St. Mary's Isles between N. to N. 5° E., and N. 9° E. to N. 15° E.	Small white masonry column.	12	15	Dioptric, 6th order.	1896 ..	$\frac{1}{10}$	Do.
Visible seaward from N. to S. except where obscured from N. to N. 45° E. by trees, and from N. 53° E. to N. 57° E., and N. 73° E. to N. 80° E. by St. Mary's Isles.	Steel mast ..	53	50	Dioptric, 6th order.	1888; altered, 1891.	$\frac{1}{8}$	Do.
From N. 16° E., thro' E. to S. 16° W.	Small white masonry tower.	240	65	Dioptric, 4th order.	1842; improved, 1870.	$1\frac{1}{4}$	
Seaward from N. 59° W. to S. 70° E.	Small light yellow masonry tower.	64	25	Dioptric, 6th order.	1843; improved, 1870; transferred to tower, 1880; 1885.	$\frac{1}{10}$	
Seaward from S. 59° E. to N. 38° W.	Small masonry tower.	82	27	Dioptric, 6th order.	1835; improved, 1870; transferred to tower, 1881.	$\frac{1}{8}$	
All round the compass.	Mast on the western bastion of the fort.	86	45	....	1885 ..	..	Shown only during N.E. monsoon.
From N. 25° W. thro' E. to S. 14° E.	White column.	103	98	Dioptric, 4th order.	1874; improved, 1881.	$1\frac{1}{4}$	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.
Seaward from N. 22° W. thro' E. to S. 22° E.	Flagstaff ..	95	102	Lantern ..	1865 ..	..	Is exhibited only during the south-west monsoon, namely, from the 15th May to 30th September, when Cochin port is avoided by shipping.
Seaward from N. 20° W. thro' E. to S. 11° E.	White masonry column.	100	91	Dioptric, 4th order.	1839; improved, 1868.	$1\frac{1}{4}$	
All round the compass.	Round white masonry tower.	113	115	Catadioptric, 1st order (Holophotal).	1862 ..	..	
Seaward from N. 64° W. thro' N. to S. 84° E.	Column black and white horizontal stripes.	141	72	Dioptric 1st order.	1875; altered, 1893.	6	Is intended to mark the vicinity of the Crocodile Rock, which lies 3 miles S.W. $\frac{3}{4}$ S. of Caliapatam Point.
From N. 22° E. thro' W. to S. 22° W.	White masonry tower.	104	27	Dioptric, 4th order.	1888; improved, 1890.	$\frac{1}{10}$	Is intended to warn vessels of the dangerous shoal in the vicinity.
All round the compass.	Sandstone column, coloured brown, lantern white.	85	91	Do. ..	1845; improved, 1874; improved, 1893.	1	

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

APPENDIX

List of lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Coondapoor ..	Seventeen yards northward of the southern boundary pillar.	13° 38′	74° 40′	1	White ..	F.	....	8
Hangarkotta ..	About 700 yards to south of position of northern pillar now washed away.	13 27	74 41	1	Red ..	F.	....	6
Malpe ..	On the beach at the entrance to the river.	13 21	74 42	1	White ..	F.	....	8
Mangalore ..	On a hill above the town.	12 52	74 50	1	White ..	F.	....	14
Cannanore ..	On the Fort rampart.	11 51	75 22	1	Red ..	F.	....	6
Tellicherry ..	On the Fort wall ..	11 45	75 29	1	White ..	F.	....	8
Mahe (French Territory).	On the south side of the entrance to the river, at the foot of the flagstaff.	11 42	75 31	1	Red ..	F.	....	6
Calicut ..	On the beach ..	11 15	75 46	1	White ..	F.	....	14
Narakel ..	On the beach at mouth of creek.	10 03	76 12	1	Do. ..	F.	....	10
Cochin ..	On a small mound which formed a bastion of the old fort to the south of the harbour.	9 58	76 14	1	Do. ..	F.	....	15
Alleppy ..	On the beach, about one cable inland.	9 30	76 19	1	Do. ..	Rev.	One minute ..	17
Muttum Point. ..	On a rocky promontory, 300 yards from sea.	8 07	77 18	1	Do. ..	F.	....	16
Gulf of Manaar. Manapad Point.	On summit ..	8 22	78 04	1	Red ..	F.	....	8
Tuticorin. ..	On the north extreme of Hare Island $2\frac{1}{2}$ miles east of Tuticorin town.	8 47	78 11	1	White ..	F.	....	14

[The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles ; all lights

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...s of the Madras Presidency.

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.	Candle power in units of 1,000 candles.	Remarks.
From S. 28° E. thro' E. to N. 6° W.	Steel mast ..	45	40	Dioptric, 6th order.	1888; altered, 1891; altered, 1894.	$\frac{1}{2}$	Exhibited from 15th September to 31st May.
From N. thro' E. to S., except where obscured by trees, between S. and S. 9° E. and by St. Mary's Isles between N. to N. 5° E., and N. 9° E. to N. 15° E.	Small white masonry column.	12	15	Dioptric, 6th order.	1896 ..	$\frac{1}{10}$	Do.
Visible seaward from N. to S. except where obscured from N. to N. 45° E. by trees, and from N. 53° E. to N. 57° E., and N. 73° E. to N. 80° E. by St. Mary's Isles.	Steel mast ..	53	50	Dioptric, 6th order.	1888; altered, 1891.	$\frac{1}{2}$	Do.
From N. 16° E., thro' E. to S. 16° W.	Small white masonry tower.	240	65	Dioptric, 4th order.	1842; improved, 1870.	$1\frac{1}{4}$	
Seaward from N. 59° W. to S. 70° E.	Small light yellow masonry tower.	64	25	Dioptric, 6th order.	1843; improved, 1870; transferred to tower, 1880; 1885.	$\frac{1}{10}$	
Seaward from S. 59° E. to N. 38° W.	Small masonry tower.	82	27	Dioptric, 6th order.	1835; improved, 1870; transferred to tower, 1881.	$\frac{1}{2}$	
All round the compass.	Mast on the western bastion of the fort.	86	45	....	1885 ..	..	Shown only during N.E. monsoon.
From N. 25° W. thro' E. to S. 14° E.	White column.	103	98	Dioptric, 4th order.	1874; improved, 1881.	$1\frac{1}{4}$	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.
Seaward from N. 22° W. thro' E. to S. 22° E.	Flagstaff ..	95	102	Lantern ..	1865 ..	..	Is exhibited only during the south-west monsoon, namely, from the 15th May to 30th September, when Cochin port is avoided by shipping.
Seaward from N. 20° W. thro' E. to S. 11° E.	White masonry column.	100	91	Dioptric, 4th order.	1839; improved, 1868.	$1\frac{1}{4}$	
All round the compass.	Round white masonry tower.	113	115	Catadioptric, 1st order (Holophotal).	1862 ..	..	
Seaward from N. 64° W. thro' N. to S. 84° E.	Column black and white horizontal stripes.	141	72	Dioptric 1st order.	1875; altered, 1893.	6	Is intended to mark the vicinity of the Crocodile Rock, which lies 3 miles S.W. $\frac{3}{4}$ S. of Cadiapatam Point.
From N. 22° E. thro' W. to S. 22° W.	White masonry tower.	104	27	Dioptric, 4th order.	1888; improved, 1890.	$\frac{1}{10}$	Is intended to warn vessels of the dangerous shoal in the vicinity.
All round the compass.	Sandstone column, coloured brown, lantern white.	85	91	Do. ..	1845; improved, 1874; improved, 1893.	1	

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

Appx

List of Lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating, or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Gulf of Manaar. Pámban Pass.	On a sand-hill, about one mile east of Northern channel.	9° 17′	79° 13′	1	White ..	F.	....	14
Tondi ..	About 14 yards south of the Tondi Sea Custom House.	9 45	79 0	1	Red .	F.	....	6
Point Calimere ..	On the point ..	10 18	79 51	1	Pale red.	F.	....	6
Negapatam ..	On the jetty near the Custom House.	10 45	79 51	1	White ..	F.	....	14
Karikal (French Territory).	North side of the Arselaar river entrance.	10 55	79 50	1	Do. ..	F.	....	9
Cuddalore ..	On cross trees of flagstaff.	11 43	79 46	1	Red ..	F.	....	6
Pondicherry (French territory).	In square, near the beach.	11 55	79 50	1	White ..	F.	....	15
	End of landing stage.	..	..	1	Red ..	F.	....	4
Seven Pagodas or Mahábalipuram.	On a rock, half a mile inland, and about 6 miles northward of Sadras.	12 37	80 11	1	Do. ..	F.	....	10
Madras ..	Main tower of new High Court.	13 05	80 17	1	White ..	Gp. Fl.	Half minute ..	20
Madras Leading Light.	End of iron pier ..	13 06	80 17	1	Red ..	F.	....	5
	Iron mast opposite Custom Office.	13 06	80 17	1	Green ..	F.	....	5
Madras Harbour.	End of north breakwater.	13 06	80 18	1	Red ..	F.	....	6
	End of south breakwater.	13 06	80 18	1	Do. ..	F.	....	6
Pulicat ..	Near the beach ..	13 25	80 20	1	White ..	F.	....	13
Armeghon ..	On the mainland, near village of Maniapolliem.	13 53	80 12	1	Do. ..	Fl.	Forty-five seconds.	15
Point Divi ..	On bank of river about 2 miles north-west of the point.	15 59	81 08	1	Do. ..	F.	....	13
Masulipatam ..	In the Fort ..	16 09	81 09	1	Do. ..	F.	....	6
Sacramento Shoal light.	Near Kotapalem beacon.	16 35	82 17	1	Red ..	F.	....	10

(The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles; all lights

Coasts of the Madras Presidency—*cont.*

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.	Candle power in units of 1,000 candles.	Remarks.
All round the compass.	Circular masonry column.	97	72	Dioptric, 4th order.	1846; improved, 1860; improved, 1893.	1	As a guide to vessels making for the Pámban channel.
Visible from all directions seaward.	Steel mast ..	63	52	Dioptric, 6th order.	1892 ..	$\frac{1}{10}$	
All round the compass.	Steel mast, painted white.	55	45	Do. ..	1890 ..	$\frac{1}{10}$	As a guide to vessels passing between Point Calimere and the shoals to the eastward.
Seaward from N. to S.	Masonry column, painted white.	80	83	Dioptric, 4th order.	1846; improved, 1870; improved, 1893.	$1\frac{1}{4}$	
Visible from all directions seaward.	Staff ..	42	..	Lantern ..	1853 ..	..	
Seaward from N. to S	Flagstaff ..	130	31	Dioptric, 6th order.	1889; 1891.	$\frac{1}{10}$	
Visible from all directions seaward.	Masonry column, painted light yellow.	89	76	Dioptric, 4th order.	1886 ..	..	When surf is heavy, and approach to landing prohibited, a fixed *green* light is shown, 26 feet high, visible about 3 miles.
Do. do. ..	Mast ..	31	..	....	1881 ..	..	
Seaward from N. to S.	Small grey turret.	116	26	Dioptric, 4th order.	1887; improved, 1893.	$\frac{1}{2}$	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.
Visible seaward from N. 21° E. thro' W. to S. 21° W.	Octagonal tower, gilded dome.	166	190	Dioptric, 3rd order.	1st June 1894.	$5\frac{1}{2}$ to 18	Shows flash 2 seconds, eclipse 3 seconds; flash 2 seconds eclipse 23 seconds.
From S 50° W., thro' W. to N. 17° W.	Wooden post ..	30	..	Lantern D. ..	1888 ..	..	Leading lights kept in line lead through the centre of the harbour entrance.
Do. do. ..	Iron mast ..	60	..	Do. ..	1888 ..	..	
All round the compass.	Tower ..	37	25	Dioptric, 6th order.	1896 ..	$\frac{1}{10}$	To guide vessels entering or leaving the harbour at night.
Do. ..	Do.	37	25	Do. ..	1896 ..	$\frac{1}{10}$	
From N. 11° W. thro' W. to S. 11° E.	Masonry column, with horizontal black and white bands.	68	57	Dioptric, 4th order.	1859; improved, 1870; altered, 1881; improved, 1893.	$1\frac{1}{4}$	To guide vessels clear of the Pulicat shoal.
From N. E. thro' W. to S. E.	White masonry column.	107	111	Dioptric, 4th order.	1853; improved, 1870; improved, 1881; improved, 1893.	$3\frac{1}{4}$	A single flash of about 5 seconds duration every 45 seconds. Obscured on bearings north of N. 22° W. Warns vessels off the Armeghon shoal, the shoalest part of which ($1\frac{3}{4}$ fathoms) lies 6 miles off shore.
From N. 17° W. thro' W. to S. 38° W.	Do. do.	48	50	Dioptric, 4th order.	1851; improved, 1870; improved, 1893.	1	
From S. 26° W. thro' W. to N. 9° E.	Flagstaff on brick base.	69	112	Dioptric, 6th order.	1858; improved, 1870.	$\frac{1}{8}$	
From N. 45° E. thro' W. to S. 45° W.	Wooden structure.	25	16	Dioptric, 4th order.	1895 ..	$\frac{1}{10}$	Temporary.

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

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List of Lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating, or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Coringa or Hope Island.	On the southern part of island and distant about 2½ miles, from the sea.	16° 49′	82 19	1	White ..	F.	....	15
Cocanada. Vakalapudi.	4¾ miles north of Cocanada river and about 500 yards from the shore.	17 01	82 17	1	Do. ..	Fl.	Twenty seconds ..	14
Cocanada ..	One on the end of the North Groyne, and the other on the end of the South Groyne, entrance to the river.	..	..	2	Red. ..	F.	....	2½
Santopilly ..	On a small detached hill, three-quarters of a mile inland.	18 04	83 38	1	White ..	F.	....	16
Calingapatam ..	On sandy point ..	18 19	84 07	1	Do. ..	Occ.	Thirty seconds ..	14
Baruva ..	On the Port flagstaff.	18 43	84 34	2	Do. ..	F.	....	About 3
Gopalpur ..	On the mainland, 60 yards from low-water mark.	19 15	84 54	1	Do. ..	F.	....	10
	On the extreme end of the pier head.	..	..	1	Red.	F.	....	3

[The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles ; all lights

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Coasts of the Madras Presidency—*cont.*

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.	Candle power in units of 1,000 candles.	Remarks.
From N. 5° E. through W. to S. 5° W.	Masonry tower, horizontal alternate bands of black and white.	83	94	Dioptric, 4th order.	1817 ; improved, 1886 ; improved, 1893.	½	To guide vessels clear of Sacramento shoal and Gódávari Point.
All round the compass.	White column.	80	76	Dioptric, 4th order.	1879 ..	3¼	This lighthouse is connected by telephone with Cocanada Port office.
Do.	Wooden post ..	10	..	....	1886 ..	..	To serve as a guide to boats entering or leaving Cocanada river.
From N. 45° E. through W. to S. 45° W.	Low white building.	163	31	Dioptric, 2nd order.	1849 ; improved, 1871 ; improved, 1886 ; improved, 1893.	4½	To warn mariners of the Santopilly rocks from which this light bears N.W. ⅝ W., distant 6½ miles.
Visible from all directions seaward.	Obelisk of cut stone ; column white ; outside ladder red.	76	73	Dioptric, 4th order.	1876 ; improved, 1890 ; improved, 1895.	½	Eclipse two and-a-half seconds. Intended to warn vessels of a small reef which projects from the point and which should not be passed in less than 8 fathoms when making the port at night.
Do.	Flagstaff ..	46	Shewn from yard arm of flagstaff.	Globular lanterns.	1895 ..	..	These lights are occasionally exhibited to indicate the position of the port flagstaff for the purpose of taking up an anchorage and are not to be relied on for purposes of navigation.
Seaward from N. 45° E. to S. 45° W.	Flagstaff, painted white.	54	33	Dioptric, 4th order.	Improved, 1871 ; improved, 1892.	⅛	As a guide to the anchorage.
All round the compass.	....	25	..	Lantern ..	1887 ..	..	

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

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List of Lights on the

Name of light.	Location.	Latitude, N.	Longitude, E.	Number and relative position of lights.	Colour of lights.	Fixed, flashing, intermitting, alternating, or revolving.	Interval of revolution or flash or occultation.	Miles visible in clear weather.
Coringa or Hope Island.	On the southern part of island and distant about 2½ miles, from the sea.	16° 49′	82 19	1	White ..	F.	....	15
Cocanada. Vakalapudi.	4¾ miles north of Cocanada river and about 1500 yards from the shore.	17 01	82 17	1	Do. ..	Fl.	Twenty seconds ..	14
Cocanada ..	One on the end of the North Groyne, and the other on the end of the South Groyne, entrance to the river.	..	..	2	Red. ..	F.	....	2½
Santopilly ..	On a small detached hill, three-quarters of a mile inland.	18 04	83 38	1	White ..	F.	....	16
Calingapatam ..	On sandy point ..	18 19	84 07	1	Do. ..	Occ.	Thirty seconds ..	14
Baruva ..	On the Port flagstaff.	18 43	84 34	2	Do. ..	F.	....	About 3
Gopalpur ..	On the mainland, 60 yards from low-water mark.	19 15	84 54	1	Do. ..	F.	....	10
	On the extreme end of the pier head.	..	..	1	Red.	F.	....	3

[The candle power of each light is given in units of 1,000 candles to a minimum of $\frac{1}{10}$ or 100 candles ; all lights

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Coasts of the Madras Presidency—*cont.*

Arc of illumination (Bearings are magnetic and from seaward.)	Nature of construction, colour or any peculiarity of lighthouse.	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.	Candle power in units of 1,000 candles.	Remarks.
From N. 5° E. through W. to S. 5° W.	Masonry tower, horizontal alternate bands of black and white.	83	94	Dioptric, 4th order.	1817 ; improved, 1886 ; improved, 1893.	$\frac{1}{25}$	To guide vessels clear of Sacramento shoal and Gódávari Point.
All round the compass.	White column.	80	76	Dioptric, 4th order.	1879 ..	3¼	This lighthouse is connected by telephone with Cocanada Port office.
Do.	Wooden post ..	10	..	....	1886 ..	..	To serve as a guide to boats entering or leaving Cocanada river.
From N. 45° E. through W. to S. 45° W.	Low white building.	163	31	Dioptric, 2nd order.	1849 ; improved, 1871 ; improved, 1886 ; improved, 1893.	4½	To warn mariners of the Santopilly rocks from which this light bears N.W. ½ W., distant 6½ miles.
Visible from all directions seaward.	Obelisk of cut stone ; column white ; outside ladder red.	76	73	Dioptric, 4th order.	1876 ; improved, 1890 ; improved, 1895.	½	Eclipse two and-a-half seconds. Intended to warn vessels of a small reef which projects from the point and which should not be passed in less than 8 fathoms when making the port at night.
Do.	Flagstaff ..	46	Shewn from yard arm of flagstaff.	Globular lanterns.	1895 ..	..	These lights are occasionally exhibited to indicate the position of the port flagstaff for the purpose of taking up an anchorage and are not to be relied on for purposes of navigation.
Seaward from N. 45° E. to S. 45° W.	Flagstaff, painted white.	54	33	Dioptric, 4th order.	Improved, 1871 ; improved, 1892.	⅛	As a guide to the anchorage.
All round the compass.	....	25	..	Lantern ..	1887 ..	..	

of less power are also shown as $\frac{1}{10}$ except leading lights and occasional lights to which no candle power is assigned.]

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Appendix C.

Statement furnishing { (1) Particulars of inspections made of lighthouses on the Madras coasts in 1898–99. (2) Remarks in connection with lightning conductors.

Name of light.	Officers by whom inspected.	Number of inspections.	Remarks as to lightning conductors.
Kundapur	Presidency Port Officer	1	
	Port Officer, Mangalore	2	
	Superintendent of Works, Lighthouse Division ..	2	
Hangarcotta	Presidency Post Officer	1	
	Port Officer, Mangalore	2	
	Superintendent of Works, Lighthouse Division ..	1	
Malpe	Presidency Port Officer	1	
	Port Officer, Mangalore	1	
Mangalore	Presidency Port Officer	1	Last tested in 1894.
Cannanore	Presidency Port Officer	1	
	Port Officer, Tellicherry	12	
Tellicherry	Presidency Port Officer	1	Last tested in May 1896.
Calicut	Presidency Port Officer	1	Tested during the year by Telegraph Department.
	Executive Engineer	1	
Cochin	Presidency Port Officer	1	Last tested in March 1896.
	Superintendent of Works, Lighthouse Division ..	1	
Muttum	Presidency Port Officer	1	Tested during the year by Sub-Engineer, Public Works Department.
	Port Officer, Tuticorin	2	
	Sub-Engineer, Public Works Department ..	1	
Manapad	.... ..	..	Tested during the year by Sub-Divisional officer, Public Works Department.
Hare Island (Tuticorin).	Presidency Port Officer	1	
	Superintendent of Works, Lighthouse Division ..	1	
	Sub-Divisional Officer, Public Works Department ..	1	
Pámban	Sub-Divisional Officer, Public Works Department ..	1	Tested during the year by Sub-Engineer, Public Works Department.
	Sub-Engineer, Public Works Department ..	1	
Tondi	Port Officer, Pámban	4	
Point Calimere ..	Port Officer, Negapatam	11	
	Executive Engineer, Public Works Department ..	1	
Negapatam	Presidency Port Officer	1	Last tested in 1897.
	Executive Engineer	1	
	Superintending Engineer	1	
Cuddalore	Presidency Port Officer	1	
Seven Pagodas ..	Presidency Port Officer	1	Last tested in 1897.
	Executive Engineer	1	
Madras	Presidency Port Officer	Frequently	
	Personal Assistant to Presidency Port Officer ..	Do.	
Pulicat	Presidency Port Officer	1	Last tested in 1895.
	Assistant Engineer	1	
Armeghon	Presidency Port Officer	1	Last tested in 1896.
	Superintendent of Works, Lighthouse Division ..	1	
Point Divi	Presidency Port Officer	1	Last tested in 1895.
	Port Officer, Masulipatam	12	
	Superintendent of Works, Lighthouse Division ..	1	
	Assistant Engineer	1	
Sacramento	Port Officer, Cocanada	5	
Hope Island	Port Officer, Cocanada	4	Tested during the year by Public Works Department.
Vakalapudi	Presidency Port Officer	1	Last tested in 1897–98.
	Port Officer, Cocanada	10	
	Overseer, Public Works Department	1	
Santopilly	Presidency Port Officer	1	Last tested in 1895.
	Port Officer, Bimlipatam	9	
Calingapatam ..	Presidency Port Officer	1	Tested during the year by Executive Engineer.
	Port Officer, Gopalpur	1	
	Superintending Engineer	1	
Gopalpur	Port Officer, Gopalpur	See *N.B.*	

N.B.—Lights in the immediate charge of the local Port Officers were frequently inspected by such officers.

Appendix D.

Statement showing the Description of Lights and the Consumption of Oil.

Light.	Description of burner.	Number of hours light was burning.	Consumption of oil during 1898-99 in gallons (fractions omitted.)	Consumption per hour in fluid ounce.	Standard consumption in fluid ounce.	Description.
Cannanore	Hinck's Duplex burner, wick 1" wide.	4,340	46	1·7	2·3	Sixth, fixed.
Tellicherry		4,351	51	1·8		
Point Calimere ..		4,379	62	2·2		
Masulipatam		4,363	59	2·2		
Cuddalore	Chance's Circular wick burner.	4,351	73	2·6	2·3	Sixth, fixed.
Tondi		4,366	70	2·5		
Malpe *		3,146	55	2·8		
Kundapur *		3,146	54	2·7		
Hangarcotta *		3,057	52	2·7		
Gopalpur		4,367	76	2·7		
Sacramento	Hinck's Duplex burner, wick 1½".	4,359	88	3·2	2·5	Fourth, fixed.
Manapad		4,284	74	2·7		
Hope Island	Large two-wick Douglass burner.	4,353	282	10·3	12	Fourth, fixed.
Calingapatam		4,376	347	12·7		
Seven Pagodas ..		4,354	218	8	6·5to7	Fourth, flashing.
Pámban	Two-wick Douglass burner ..	4,405	217	7·8		
Tuticorin		4,305	215	7·9		
Point Divi		4,377	199	7·3		
Negapatam		4,239	187	7		
Mangalore		4,350	207	7·6		
Pulicat		4,390	203	7·4		
Calicut		4,412	212	7·7		
Cochin		4,369	222	8·1		
Armeghon		4,358	214	7·8		
Vakalapudi		4,350	232	8·5		
Madras	Four-wick Douglass burner ..	4,466	894	32	37·8	Third, flashing.
Santopilly		4,386	828	30·2		Second, fixed.
Muttum		4,336	872	32·1		First, fixed.

6309

* Exhibited during only eight months every year.

No. 1923/321/G

Heading Annual Report
Lighthouses

Presidency Port Office,

Madras, 3rd October 1899.

From

Enclosures per packet post.

Commander, T.G.R.Finny, R.I.M.,
Presidency Port Officer,
Madras,

To

THE SECRETARY TO GOVERNMENT,
MARINE DEPARTMENT,
CHEPAK.

Sir,

I have the honour to forward herewith the Annual Report on Lights and Lighthouses on the coasts of the Madras Presidency for the official year 1898/1899.

I have the honour to be,
sir,
your most obedient servant,

Commander, R.I.M.,
Presidency Port Officer.

With 3 spare copies

157

18/1-12

18-1-12 ✓

8/8

28/11/92/56

[Ref. 4]

15,000—18-5-03

DEPARTMENT.

968-9 0727-10 [illegible]-99

Paper taken out of the Records from the charge of the Referencer.

Press / ~~Miscellaneous~~ / ~~Routine~~ No. [illegible], dated [illegible] 1907

Date taken out.	For what purpose.			Initials of clerk taking the paper or of attender.	Date returned.	Initials of attender.
	Department.	C. No.	Year.			
29/10/03	Mar	541	03	[illegible]	15/2/04	[illegible]
19/6/04	do	0[illegible]	1	[illegible]	14-11-04	[illegible]
18/1/12	Mar	70	12	MS	27/2/12	
28/11/92	R.H.	Ro		Referee		
19/11/92	Police					

[illegible] 500

Date taken out.	For what purpose.			Initials of clerk taking the paper or of attender.	Date returned.	Initials of attender.
	Department.	C. No.	Year.			

Marine (1899) Department.

G.O., No. 970 Marine

Dated 31 Dec 1899.

[Despatch Abstract.]

Royal Indian Marine List-

Sanctioning the purchase by the Dr Conservator of Ports of a copy of the ——, the cost thereon being met from Port Funds

[M.—6. 500—11-9-99.]

Indexed. 31/12/16/99

Date taken out.	For what purpose.			Initials of clerk taking the paper or of attender.	Date returned.	Initials of attender.
	Department.	C. No.	Year.			

Marine (1899) Department.

G.O., No. 970 Marine

DATED 31 Oct 1899.

[Despatch Abstract.]

Royal Indian Marine Circ.

Sanctioning the purchase by the Conservator of Ports of a copy of the ——, the cost thereon being met from Port Funds.

[M.—6. 500—11-2-99.]

Indexed. 31/10/99