

Public (1896) Department.

ORDINARY PRINTED.

G.O., No. 6089

DATED 11th June 1896

INDEXED.

[Despatch Abstract.]

MADRAS OBSERVATORY.

Recording the administration report of the---for 1895, and forwarding copy of the proceedings to the Government of India.

BACK PAPERS.

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

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
C 2052 of 97							

Nos. 608, 609, PUBLIC, 11TH JUNE 1896.

GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

READ—the following papers :—

From the Government Astronomer, Madras, dated 15th May 1896, No. 99.

ENCLOSURE.

ADMINISTRATION REPORT OF THE MADRAS OBSERVATORY FOR THE YEAR 1895.

Staff.—The Government Astronomer was absent from Madras on privilege leave and deputation connected with the Kodaikānal Observatory from May 17th to October 9th. During his absence Professor R. Ll. Jones acted as Government Astronomer. Mr. P. N. Varadachari, the Sixth Assistant, died on the 21st June 1895, and his place was filled temporarily by N. Subramaniya Aiyar.

2. Buildings and Instruments.—The buildings and instruments were maintained in good order throughout the year. The screws of the micrometers of the transit instrument having been found to be so much worn that it was impossible to obtain accurate values for the circle errors, the micrometers were dismounted and sent home to the makers, Messrs. Troughton and Simms, for repairs. The old gun-metal screws were replaced by new steel screws and the microscopes were returned to Madras in good order in November. They were at once re-erected and found to give excellent results. There is no means in the Observatory for rigidly testing the accuracy of the screws, but such tests as were possible have been applied with satisfactory results. A Kew-pattern photoheliograph, intended for the Kodaikānal Observatory, was received in April, but was not erected, as no place was available in which it could be set up. An iron hut will, however, be built for it shortly.

3. Time Service.—The time service was maintained as in former years. The time-gun at Fort St. George failed on 15 occasions out of 726, giving a percentage of success of 98. The causes of the failures may be classed thus :—

Due to the earthplate at the Fort having been stolen	3
Do. connection with the new earthplate not having been properly soldered	4
Do. gunner being late	1
Do. broken telegraph line	3
Do. miss-fires	3
Cause unknown	1
Total	15

So that the causes of all the failures (with the possible exception of one) lay beyond the direct control of the Observatory. The semaphore at the Port office failed to drop on two days and on six other days it failed at 1 o'clock, but was dropped at 2 o'clock. On all other days throughout the year it was dropped correctly at 1 o'clock. The failures of the semaphore were, with one exception, due to interruptions on the line, the remaining failure was due to the Marine signaller having lost the key of the signal room. The 4 P.M. time signal was sent from the Observatory on every day throughout the year, but on two occasions it was not received at the Telegraph Office.

The fault on both occasions lay in the switch board at the Telegraph Office. During October the noon gun was not fired on Sundays. This was due to an order of the Commander-in-Chief, which was rescinded on representations made by the Government Astronomer.

4. *Observations.*—As for many years past observations have been sacrificed to reduction, but in addition to the necessary observations for the determination of the true time, a large amount of work has been done in determining the graduation errors of the meridian circle. The readings taken with the old screws have all been rejected and the work was re-commenced on the arrival of the new screws. By the close of the year the errors of the four quadrants had been determined, and the work will be pushed on as rapidly as other more pressing duties will allow.

5. *Reduction and Publication of old Observations.*—Volume VIII. of the "Madras Meridian Circle Observations" was issued at the beginning of the year. A preliminary reduction of the observations for N.P.D. of the circumpolar stars for the whole period 1862–1887 was completed, but the value obtained for the latitude still requires correction for the graduation errors of the circle, and until these have been determined, it is useless to discuss the result farther. The preparation of the catalogue of about 5,000 stars, which will contain the final results of the 51,000 observations dealt with in the eight volumes already published, is well in hand. At the close of the year the catalogue places had been prepared for all except the close polar stars for the first four hours of right ascension, and every effort will be made to complete the work as rapidly as is consistent with strict accuracy in the results. A pamphlet containing the Madras Daily Meteorological Means was prepared and was in the press at the close of the year. These means have been deduced from long series of observations (extending over 80 years in the case of the rainfall and 50 years for the barometer) and are specially intended for use in the various meteorological offices which issue daily weather reports.

6. *The Library.*—During the year 226 volumes and pamphlets were presented to the library.

7. *The New Observatory.*—Work on the new Solar Physics Observatory at Kodaikānal has not advanced so fast as had been hoped for, but some progress has been made. The details of the equipment of the observatory have been fully worked out in consultation with astronomers at home and have been approved of by the Indian Observatories Committee. The site at Kodaikānal has been taken over, a road has been opened to the top of the hill, and materials have been collected for the Astronomer's house. In October His Excellency Lord Wenlock laid the foundation stone of the observatory. There seems no good reason why the future progress of the work should not be rapid, but unexpected causes of delay seem to spring up at every turn, and the actual building has not yet commenced.

8. *Meteorological.*—The meteorological registers were maintained as in former years and the chief features of the year's meteorology are shown in the appended tables and diagram.

Temperature.—The mean temperature of the air was below normal in March, July, August, October, and December, and above normal during the rest of the year. The greatest excess was $1^{\circ}5$ in June and the greatest defect $1^{\circ}1$ in July. The mean maximum temperature was above average for the first six months of the year and in September and December. The greatest excesses were $2^{\circ}7$ in May and $2^{\circ}6$ in January. The maximum recorded was $109^{\circ}1$ on May 18th and the minimum $57^{\circ}3$ on December 11th, the lowest ever recorded in Madras. The mean daily range was above average in all months except June, the difference being about 3° for each of the first three months of the year. The maximum solar heat in vacuo was above normal in all months except July; this excess was upwards of 8° in April, May, June, and November and was $6^{\circ}1$ for the whole year.

Pressure.—The barometer was below normal in January, March, August, and December, normal in September, and above normal during the rest of the year; the greatest variation was $+0.046$ inch in November.

Rainfall.—No rain fell during the first four months of the year and the fall in May and June was less than half the normal, but for the rest of the year the rainfall was nearly average. The monsoon rainfall amounted to 27.95 inches against an average of 27.6 inches.

Wind.—The mean wind direction was nearly normal in all months except February when it was two points more southerly and October when it was four points more easterly than normal. The velocity was largely in defect during the most of the year. The defect in the daily velocity amounted to no less than 46 miles in July and August. The maximum in any one day was 330 miles on May 3rd and the minimum 26 miles on October 15th.

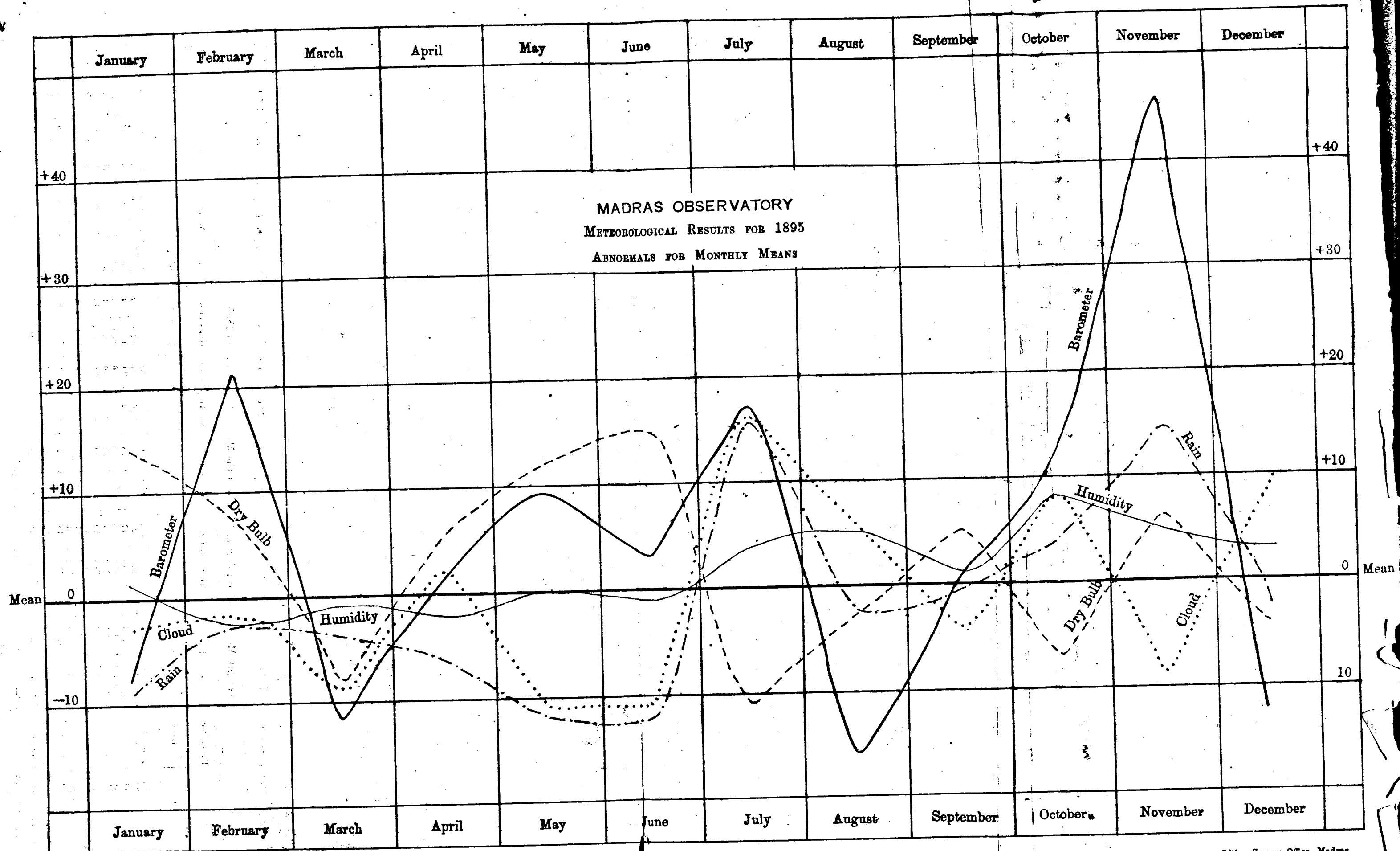
Sunshine.—There were 2,461 hours of bright sunshine against an average for the five preceding years of 2,675 hours.

APPENDIX I. MEAN Monthly and Annual Meteorological Results at the Madras Observatory in 1895.

	Barometer.		Dry Bulb Thermometer.				Wet Bulb.	Tension of Vapour.		Sun Max. in Vac.	Min. on Grass.	Wind.		Rain.		Clear Sky.	Bright sunshine.		
	Reduced to 32°.	Daily Range.	Mean.	Max.	Min.	Range.	Mean.	By Blanford's Tables.				MILES.	POINTS.	POINTS.	INCHES.			NO.	DAYS.
								Relative Humidity.											
	INCHES.	INCHES.	°	°	°	°	°	INCHES.	CENTS.	°	°	°	°	°	°	°	°		
January	29.987	0.108	76.3	86.0	67.1	18.9	70.4	0.666	74	145.8	64.3	117	5	N.E. by E.	..	66	261.8		
February	29.985	0.118	77.3	87.5	68.8	20.7	70.4	0.653	72	146.3	64.2	121	10	E.S.E.	..	78	279.3		
March	29.987	0.130	79.4	89.3	69.3	20.0	72.8	0.721	78	146.6	66.9	139	11	S.E. by E.	..	86	307.3		
April	29.827	0.138	84.7	94.9	76.9	18.0	77.4	0.846	71	149.7	75.5	181	12	S.E.	..	70	279.0		
May	29.742	0.126	88.2	100.4	81.5	18.8	79.6	0.896	67	150.9	80.6	228	15	S. by E.	0.94	73	264.3		
June	29.705	0.121	88.2	99.4	82.2	17.2	77.8	0.815	61	148.5	81.3	234	18	S.S.W.	0.90	47	165.6		
July	29.741	0.115	83.7	93.3	77.6	15.7	76.9	0.797	69	136.6	76.4	152	20	N.W.	5.43	17	79.1		
August	29.731	0.120	82.9	92.8	76.8	16.0	76.9	0.847	75	141.7	75.5	126	19	S.W. by S.	4.56	27	136.1		
September	29.773	0.124	83.7	94.0	77.3	16.7	77.1	0.845	73	147.4	75.6	120	18	S.S.W.	4.62	10	173.5		
October	29.852	0.119	80.1	87.9	74.5	13.4	76.9	0.883	86	142.0	78.3	99	8	East.	11.42	23	154.7		
November	29.968	0.110	78.2	86.2	72.0	14.1	74.7	0.814	84	142.9	69.2	124	2	N.N.E.	14.65	52	200.9		
December	29.966	0.109	75.1	82.6	69.3	13.3	70.7	0.699	80	136.5	66.2	189	1	N. by E.	5.05	38	169.5		
Annual	29.848	0.120	81.5	91.2	74.3	16.9	75.1	0.790	74	144.6	79.4	152	12	S.E.	47.37	97	2461.1		

EXTREME Monthly Meteorological Records at the Madras Observatory in 1895.

	Barometer.			Dry Bulb Thermometer.			Humidity.		Sun Th. in Vauo.			Grass Therm.		Wind.		Rain.		
	Highest.	Lowest.	Range.	Highest.	Lowest.	INCHES.	DAY.	CENTS.	DAY.	°	DAY.	°	MILES.	DAY.	MILES.		Lowest.	Highest.
January	30.089	29.893	0.196	87.6	64.2	50	28	154.6	27	61.0	2	260	4	56	22	..	..	
February	30.108	29.843	0.265	90.1	63.5	36	28	154.4	14	61.7	4	214	24	83	4	..	..	
March	30.064	29.736	0.328	91.2	63.4	47	3	152.3	30	60.4	3	178	27	92	3	..	..	
April	30.001	29.611	0.390	108.1	70.4	30	26	158.9	6	68.1	1	269	12	124	21	..	..	
May	29.882	29.555	0.327	109.7	74.4	29	19	156.4	21	73.2	15	330	3	145	6	0.91	15	
June	29.835	29.574	0.261	106.6	77.4	31	17	154.8	17	76.0	28	308	19	165	24	0.37	23	
July	29.841	29.626	0.215	102.9	73.6	36	28	153.6	28	72.4	8	221	29	86	13	0.83	7	
August	29.851	29.594	0.257	98.8	73.2	44	1	156.8	28	71.9	12	176	27	74	18	0.98	11	
September	29.899	29.630	0.269	100.1	71.3	33	2	167.4	7	70.3	13	246	6	31	30	1.26	21	
October	29.966	29.697	0.269	92.2	67.3	51	9	151.9	17	67.6	25	222	25	23	15	3.12	25	
November	30.073	29.835	0.238	89.7	67.5	63	6	153.3	3	62.7	14	245	21	43	2	4.67	26	
December	30.114	29.765	0.349	86.3	57.3	41	10	145.4	3	52.8	11	307	28	68	13	1.27	15	



Reg. No. 2901
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(Signed) **C. MICHIE SMITH,**
Government Astronomer.

Litho. Survey Office, Madras.
1896

SCALES.

Barometer ————— 1 Div. = 0.001 Inch.
Dry Bulb ————— " = 0.1 Degree.
Rain ————— " = 0.1 Inch.
Cloud " = 1 per cent.
Humidity ————— " = 1 per cent.

APPENDIX II.

MADRAS Observatory Meteorological Observations—Abnormals for monthly Means.

1895.	January.	February.	March.	April.	May.	June.
1	2	3	4	5	6	7
Reduced atmospheric pressure	- 0.008	+ 0.021	- 0.012	+ 0.001	+ 0.009	+ 0.003
Temperature of air	+ 1.4	+ 0.7	- 0.8	+ 0.5	+ 1.2	+ 1.5
Do. of evaporation	+ 1.3	- 0.2	- 1.1	- 0.1	+ 1.2	+ 1.1
Percentage of humidity	+ 1	- 3	- 1	- 2	..	- 1
Greatest solar heat in vacuo	+ 7.7	+ 6.3	+ 6.1	+ 8.0	+ 8.4	+ 8.7
Maximum in shade	+ 2.6	+ 1.6	+ 0.2	+ 2.2	+ 2.7	+ 1.3
Minimum in shade	- 0.6	- 1.4	- 3.0	- 0.4	+ 0.7	+ 1.6
Do. on grass	+ 1.2	+ 0.4	- 1.7	+ 1.2	+ 1.7	+ 2.7
Rainfall in inches	- 0.89	- 0.28	- 0.39	- 0.63	- 1.17	- 1.21
Do. since January 1st	- 0.89	- 1.17	- 1.56	- 2.19	- 3.36	- 4.57
General direction of wind	..	2-S.	1-E.	1-E.	..	1-S.
Daily velocity in miles	- 28	- 2	- 12	- 5	..	+ 14
Percentage of clear sky	+ 3	+ 2	+ 9	- 2	+ 11	+ 11
Do. of bright sunshine	- 2	+ 0.9	+ 1.4	- 2	- 1.8	- 9.3

1895.	July.	August.	September.	October.	November.	December.	Annual.
8	9	10	11	12	13	14	
Reduced atmospheric pressure	+ 0.017	- 0.016	..	+ 0.012	+ 0.046	- 0.013	+ 0.005
Temperature of air	- 1.1	- 0.3	+ 0.5	- 0.7	+ 0.6	- 0.4	+ 0.3
Do. of evaporation	..	+ 0.8	+ 0.9	+ 1.3	+ 1.9	+ 0.2	+ 0.7
Percentage of humidity	+ 4	..	+ 1	+ 8	+ 5	+ 3	+ 2
Greatest solar heat in vacuo	- 0.3	+ 2.4	+ 7.1	+ 5.6	+ 9.4	+ 2.9	+ 6.1
Maximum in shade	- 2.3	- 0.7	+ 1.2	- 0.8	+ 1.7	- 0.1	+ 0.8
Minimum in shade	- 1.1	- 0.6	+ 0.1	- 0.9	- 0.4	- 0.8	- 0.6
Do. on grass	- 0.3	+ 0.2	+ 0.7	+ 0.4	- 0.4	- 0.2	+ 0.5
Rainfall in inches	+ 1.56	- 0.20	- 0.07	+ 0.42	+ 1.44	- 0.23	- 1.65
Do. since January 1st	- 3.01	- 3.21	- 3.28	- 2.86	- 1.42	- 1.65	- 1.65
General direction of wind	..	..	..	4-E.	1-N.	1-N.	..
Daily velocity in miles	- 46	- 46	- 36	- 24	- 38	+ 9	- 18
Percentage of clear sky	- 16	- 6	+ 4	- 8	+ 9	- 10	+ 1
Do. of bright sunshine	- 10.5	- 6.5	+ 3.8	- 13.2	+ 3.1	- 18.1	- 5.1

+ means above and - below the average.

From the Government Astronomer, Madras, dated 2nd June 1896, No. 107.

ORDER—No. 608, Public, dated 11th June 1896.

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(True Extract.)

Chief Secretary

To the Government Astronomer.
Editors' Table.

ENDORSEMENT—No. 609, Public, dated 11th June 1896.

Copy to the Government of India, Revenue and Agricultural Department.

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Chief Secretary.

Ed. A. Raith.

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G.O., &c., Nos. 608, 609,
11th June 1896.

JUNE.

Madras Observatory.

Recording the administration report of the —
for 1895, and forwarding copy of the proceedings
to the Government of India.

CURRENT No. 1539

Pub. Dept.

No. 107

The Observatory.

Madras 2nd June 1896.

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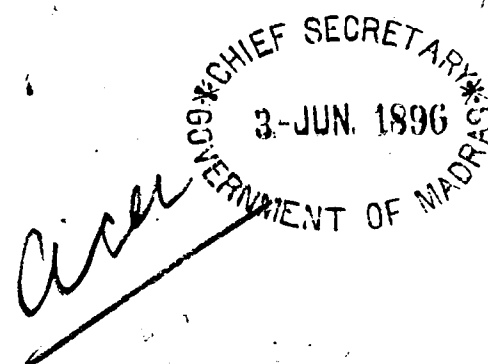
Chief Secretary to Government

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No 1097 dated 28th May 1896.

Chichester Smith

Govt Astronomer



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C.S. 5.6.96

CURRENT No. 1495

THE OBSERVATORY,

NUNGUMBAKUM,

No. 99

Madras, 15 May 1896.

FROM

THE GOVERNMENT ASTRONOMER,

Madras.

TO

The Hon'ble Mr. J. F. Price

Chief Secretary to Government

SIR,

with the Governor, St. Thomas,

Cochin.

I have the honor to forward
herewith a copy of the Administrative
report of the Madras Observatory
for the year 1895.

2. The diagram has not yet been
received from the Press.

I have the honor to be,

Sir,

Your most obedient Servant

C. Christie Smith

Govt. Astronomer.

CURRENT No. 1695 Pub. No. 457-58 28-6-95

From

The Govt. Astronomer.

Madras.

Public Dept

No. 99.

Dated 15 May 1896

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Enclosure

Encls - one

Subject

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the Madras Observatory for
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Is this routine thing also?

[G.
74]

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along
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Public DEPARTMENT.



Memorandum. No 1097
20-5-96.

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1891

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