KODAIKÁNAL AND MADRAS OBSERVATORIES.

REPORT FOR THE YEAR 1907.

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KODAIKANAL AND MADRAS OBSERVATORIES.

I.—REPORT OF THE KODAIKÁNAL OBSERVATORY FOR THE YEAR 1907.

1. **Staff.**—The staff of the Observatory on the 31st December 1907 was as follows : —

Director	C. Michie Smith, B.Sc. (*on furlough*).
Acting Director	J. Evershed.
Assistant Director	*Vacant.*
First Assistant	K. V. Sivarama Aiyar, M.A.
Second Assistant	S. Sitarama Aiyar, B.A.
Third Assistant	G. Nagaraja Aiyar.
Fourth Assistant	S. Balasundaram Aiyar.
Writer	L. N. Krishnaswami Aiyar (*on leave*).
Acting Writer	K. A. Visvanatha Aiyar.
Photographic Assistant	R. Krishna Aiyar.

Mr. Evershed joined his appointment on January 21, after a visit to the principal American observatories.

The director was absent on combined privilege leave and furlough for nine months from April 1. The assistant director acted as director during the period. The first assistant was on leave from March 7 to November 4. The second and third assistants acted as first and second assistants respectively, while the post of the third assistant was filled by S. Muthuswami Aiyar, B.A. The writer was on leave from October 3, his place being filled by K. A. Visvanatha Aiyar, the Periyakulam observer.

The subordinate staff of the observatory consists of a book-binder, a book-binder's boy, a mechanic, four peons, a boy peon for the dark room, and two lascars.

2. **Distribution of work.**—The director was in charge of the spectrograph until he went on leave. The assistant director is in charge of the spectroheliograph. The first, second, and third assistants are in charge of the work with the Cooke equatorial (spectroscopic), the Lerebour and Secretan equatorial (visual), the photoheliograph, the transit instrument, and the seismometer. They have also to do the astronomical computing and the preparation of the observations for the press. The fourth assistant has charge of the clock comparisons and, with the help of the writer, is responsible for the whole of the meteorological work. The writer is responsible for the accounts, correspondence, and all office records. The photographic assistant has charge of most of the photographic developing, printing, etc.

3. **Buildings and grounds** – (*a*) *Spectroheliograph building.*—The new moving roof for covering the siderostat was fit for use by the end of January, but the gearing for moving the roof had not been received at the end of the year. A pier for a new spectrograph was constructed in November.

(*b*) *Photoheliograph building.*—The new dome was completed on March 26 and the photoheliograph was moved into it next day. The dome works well and gives satisfaction.

(*c*) *House for the Assistant Director.*—This building was not ready for occupation till December.

(*d*) *Other buildings.*—All the buildings are in good condition.

(*e*) The aeromotor was dismantled for repairs in March and had not been re-erected by the end of the year. All the water required had to be carried by the lascars.

4. **Instruments.**—The following are the principal instruments belonging to the Observatory or in use at the present time:—

Six-inch Cooke equatorial.

Six-inch Lerebour and Secretan equatorial remounted by Grubb with a five-inch Grubb portrait lens of 36 inches focus attached.

Spectrograph I.—consisting of slit, collimator lens of 4 or 7 feet focus, 2-inch parabolic grating, and camera tube without lens. Used in connection with an 11-inch polar siderostat and 6-inch Grubb lens of 40 feet focus.

A rhomb with ends cut at 45°, mounted on a graduated circle, can be placed in front of the slit so as to enable any part of the limb to be brought on to the slit.

Spectrograph II.—consisting of slit, collimator lens of 3 feet focus, 3-inch plane grating and camera lens of 7 feet focus. Used in connection with the 12-inch photo-visual lens of the spectroheliograph.

Spectroheliograph—with 18-inch siderostat and 12-inch Cooke photo-visual lens of 20 feet focus, by the Cambridge Scientific Instrument Company.

An auxiliary spectroheliograph attached to the above, made in the Observatory workshop.

Six-inch transit instrument and barrel chronograph, formerly the property of the Survey of India

Six-prism table spectroscope—Hilger.

Photoheliograph Dallmeyer No. 4.

Theodolite, six-inch—Cooke.

Two phototheodolites by Steinheil, for cloud photography.

Sextant.

Evershed spectroscope with three prisms for prominence and sunspot work, by Hilger.

Mean time clock, Kullberg 6326.

Do. Shelton.

Do. Chronometer 6299.

Sidereal chronometer, Kullberg 6134.

Tape chronograph, Fuess.

Micrometer for measuring spectrum photographs, Hilger.

Dividing engine, Cambridge Scientific Instrument Company, Limited.

Two Balfour Stewart actinometers.

Buchanan's solar calorimeter.

Induction coil with necessary adjuncts.

Small polar siderostat.

Universal instrument.

Complete set of meteorological instruments, including Richard barograph and thermograph, and wind recorders.

A high class screw cutting turning lathe by Messrs Cooke & Sons.

The Spectroheliograph.—The new moving roof was ready about the end of January and the spectroheliograph was in constant use from January 31st. In April the new collimator slit referred to in the last report was fitted and the camera slit was modified in several ways to secure greater stability and to afford protection from dust; a device was also added to facilitate setting the slit on any desired position in the spectrum and for automatically recording its exact position after each exposure. The working of the instrument, after these modifications, has been entirely satisfactory.

The auxiliary spectroheliograph is intended for photographing the hydrogen flocculi with high dispersion. It is of the Littrow type with one lens serving for both collimator and camera, and a plane grating. A large direct vision prism and plane mirror can be substituted for the grating the light being twice transmitted through the prism. The collimator slit is placed vertically above and in line with the camera slit, and the whole apparatus is attached to the side of the main spectroheliograph and moves with it. Up to the present time only experimental plates have been taken with this instrument, mostly for purposes of adjustment.

OBSERVATIONS.

(a) Solar Physics.

5. The first five months of the year were favourable for solar observations. September and December were also favourable, but the remaining five months were distinctly unfavourable. There were only thirteen days in the year on which no observations were possible. The following table shows for each day the observations that were made.

Table A.

Solar Observations in 1907.

A = Spots observed. B = Spot spectra. C = Prominences. D = Photoheliograms. E = Spectroheliograms.

Date.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1 ..	A B C D	A B C D E	A B C D E	A — C D E	A — C D E	A — C D E	A — D —	A — D *E*	A — D *E*	A — C D E	A — *E*	A — C D E
2 ..	A B C D	A B C D E	A B C D E	A — C D *E*	A — C D E	A — C D E	—	*A* — D *E*	A B C D E	A — D *E*	A — C D E	A — C D E
3 ..	A B C D	A B C D *E*	A B C D E	A B C D *E*	A — C D E	A B C D E	A — C D E	A — C D *E*	A B C D E	—	A — D *E*	A B C D E
4 ..	A B C D	A B C D E	A B C D E	A B C D E	A — C D E	A B C D E	A — C D E	A — C D E	A B C D E	A — C D E	—	A — C D E
5 ..	—	A B *C* D E	A B C D E	A B C D E	A B C D *E*	A — C D E	A B C D E	A — D *E*	A — C D E	A — C D E	—	A B C D E
6 ..	A — D	A B C D E	A B C D E	A — C D E	A B C D E	A — C D *E*	A — C D E	A — C D *E*	A B C D E	A — D *E*	—	A — C D E
7 ..	A B C D	A B C D E	A B C D E	A B C D E	A — C D E	A — *C* D E	A — D *E*	A — D —	A — C D E	A — C D E	A — *C* D E	A — C D E
8 ..	A B C D	A B C D E	A B C D E	A B C D E	A B C D E	A — C D E	A — C D E	A — D —	A — C D E	A — D *E*	A —	A B C D E
9 ..	A B C D	A B C D E	A B C D E	A B C D E	A — C D E	A — C D E	A — *C* D *E*	A — C D E	A — C D E	A — C D E	A — D —	A B C D E
10 ..	A — D	A B C D E	A B C D E	A B C D E	A — C D E	A — D *E*	A — C D *E*	A — D *E*	A B C D E	A — C D E	A — D —	A B C D E
11 ..	A —	A B C D E	A B C D E	A — *C* D *E*	A B C D E	A —	A — C D E	A — D —	A — *C* D E	A B C D E	A — C D E	A B C D E
12 ..	A B C D	A B C D E	A B C D E	A — C D E	A B C D E	A —	A — C D E	A — D —	A B C D E	A B C D E	A — D —	A — C D E
13 ..	A B C D	A B C D E	A B C D E	A — C D E	A B C D E	—	A — C D *E*	A — D *E*	A — C D E	A — C D E	A — D *E*	—
14 ..	A B C D	A B C D E	A B C D E	A — C D E	A — C D E	A — *C* D *E*	A — C D E	A — *C* D *E*	A — C D E	A B C D E	A — D *E*	A — C D E
15 ..	A B C D	A B C D E	A B C D E	A — C D *E*	A — C D E	A — D —	A — C — E	A — D *E*	A — *C* D E	A — C D E	A B C D E	A — C D E
16 ..	A B C D	A B C D E	A B C D E	A — C D *E*	A — C D E	A — C D E	A — C D E	A — C D *E*	A — D *E*	A B C D E	A — C D E	—
17 ..	A B C D	A B C D E	A B C D E	A — C D	A — C D E	A — *C* D E	A B C D E	A — C D E	A — C D E	A B C D E	A B C D E	A — C D E
18 ..	A B C D	A B C D E	A B C D E	A — C D *E*	A — C D E	A — D —	A B C D *E*	A — C D E	A — C — E	A — D *E*	A — C D E	—
19 ..	A B C D	A — C D E	A — C D E	A — C D E	A — C D E	A — D *E*	A — D —	A — C D E	A B C — E	A — C D E	A B C D E	A — C D E
20 ..	A — C D	A B C D E	A — C D E	A — C D E	A — C D E	A — C D E	A —	A — *C* D —	A — C — E	A B C D *E*	A B C D E	A — C D E
21 ..	A B C D	A B C D E	A — C D E	A — C D E	A — C D E	A B C D E	A — D —	A — D *E*	A — C D E	A — C D E	A — C D E	A B C D E
22 ..	A B C D	A B C D E	A — C D E	A — C D E	A — C D E	A — C D E	A — D —	A B C D E	A — C D E	A B C D E	A — C D E	A — C D *E*
23 ..	A B C D	A B C D E	A — C D E	A B C D E	A — C D E	A — *C* D *E*	A — D —	A — C D *E*	A B C D E	A — C D E	A — *C* D *E*	A B C D E
24 ..	A B C D	A B C D E	A — C D E	A B C D E	A — C D E	A B C D E	A — *C* D *E*	A — C D E	A — D *E*	A — D *E*	A — D *E*	A — C D E
25 ..	A B C D	A B C D E	A — C D E	A B C D E	A — C D E	A — C D E	A C D *E*	A — C D E	A — *C* D *E*	—	A — C D E	A — C D E
26 ..	A B C D	A B C D E	A — C D E	A B C D E	A — C D E	A — C D E	A — *C* D *E*	—	A B C D E	A — C D E	A — *C* D *E*	A — C D E
27 ..	A B C D	A B C D E	A — C D E	A — D —	A — C D E	A — C D E	—	A B C D E	A — C D E	A — C D E	A — C D E	A — C D E
28 ..	A B C D	A B C D E	A — C D E	A — C D *E*	A — C D E	A — C D E	A — C D *E*	A B C D E	A — C D E	A — *C* D E	A — C D E	A — C D E
29 ..	A B C D		A — C D E	A — C D E	A — C D E	A — C D E	A — C D E	A — C D E	A — C D E	A — C D E	A — C D E	A — C D E
30 ..	A B C D		A — C D E	A — C D E	A — C D E	—	A — C D E	A — D *E*	A B C D E	A — C D E	A — C D E	A — C D E
31 ..	A B C D		A — C D E		A B C D E		A — C D E	A B C D *E*		A — *C* D *E*		A — C D E

Note.—Where a letter is in italics it means that on that day observations were not complete.

SOLAR Observations—Abstract.

	1907.												
	January.	February	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
A	30	28	31	30	31	29	29	30	30	29	27	28	352
B	26	27	18	11	7	4	4	4	10	6	4	8	129
C	27	28	31	29	31	22	22	18	27	24	18	28	305*
D	29	28	31	30	31	25	28	30	27	29	23	28	339
E	*	28	31	28	31	24	23	25	30	29	23	28	300

* Siderostat had been dismantled for erection of new sliding roof.

6. **Photographs of the sun** with the Dallmeyer photoheliograph were taken on 339 days against 317 in 1906. During February, March, April, and May no days were missed. Seven were missed in November and five in June. During the year it was possible to send to Greenwich all the solar negatives required to fill in the gaps in the Greenwich and Dehra Dun set of daily photographs, and all but one of those that were required to replace photographs that were reported to be ill-defined. A copy of each sun photograph is printed in P.O.P. and is kept for ready reference.

7. **Observations of sunspots.**—The sun is examined for spots and faculæ every morning when the weather permits. The sun's image is projected on an 8-inch disc and the positions of the spots and faculæ are marked on it. There were only 13 days in the year on which this class of observation could not be made.

8. **Sunspot spectra.**—The record of the most prominent widened lines in spot spectra was carried out as heretofore until March 1 when it was discontinued, and, in accordance with the recommendation of the International Union of Solar Research, particular attention was given to the region of spectrum between λ 5210 and F, the affected lines being compared directly with Hale's photographic map of the spot spectrum. As the whole region is too extensive to be examined completely on any one day it is observed in successive portions on different days.

Simultaneously with the visual observations a photographic investigation of the spectrum of some of the larger spots has been successfully carried out, using spectrographs I. and II. The plates obtained show a vast amount of detail and cover the regions D to F and Hγ to Hδ. Some of the results of an examination and measurement of these plates have been published during the year and a more detailed discussion of one of the plates is still in progress.

9. **Prominences.**—Prominences were recorded visually on 305 days against 269 in 1906. On 18 of these days the observations were either not complete or not considered satisfactory on account of poor seeing. The record of the prominences is made round the disc on which the spots and faculæ have been projected. The record is compared with the photographs taken with the spectroheliograph and all prominences shown in the photograph but not in the drawing are added in blue pencil. Where there is much difference between the photograph and the drawing, the differences are noted. In the case of eruptive or metallic prominences the spectra are examined and the most conspicuous bright lines are recorded. All conspicuous displacements of the C line are also noted and their amounts estimated.

10. **Spectroheliograms.**—Photographs with the spectroheliograph were taken on 300 days out of 334 possible days during the eleven months the instrument was in use. On 45 of these days the results were not satisfactory owing to unfavourable weather. Many excellent photographs have however been obtained when the conditions were apparently very unfavourable owing to strong sky glare due to cirrus clouds. As a rule, only a very short time is available in the early morning when the definition is good enough to secure fine detail in the photographs, and in cloudless

weather the hour between 8 and 9 A.M. is the best. Usually four negatives of the disc and two of the limb are taken every day. Measures are made of the position angles and heights of the prominences on the best limb photograph of each day and an enlarged positive of the best disc photograph is made on bromide paper. All such positives obtained during a month are correctly oriented and pasted on a large card board sheet, this being found very convenient for a general study of the markings.

Prominence spectroheliograms for 53 days were received from the Solar Observatory, South Kensington, and flocculi plates for 291 days were sent in exchange.

General Spectroscopic work.—In addition to spot spectrum work, spectrograph II. has been employd in photographing the chromosphere line $H\delta$ under various conditions, with a view to an accurate determination of its wave-length in the solar spectrum. The general result of a measurement of the plates so far obtained goes to show that Rowland's value for this line (4102·000) is about 0·10 A too large and that the line does not deviate appreciably from its theoretical position according to the formula of Balmer.

An investigation is also in progress with this instrument for determining the rotation period of the higher gases in the chromosphere.

Photographs of the spectrum of comet 1907 d were obtained with a prismatic camera attached to the 6-inch Cooke Equatorial. The results have been communicated to the Royal Astronomical Society.

Summary of Results.

11. **Sunspots.**—The following table shows the monthly number of new groups observed, the mean daily number of spots visible, and the distribution between the northern and southern hemispheres :—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
New groups	30	32	28	33	18	17	20	22	36	30	18	17	301
Daily number	5·9	7·1	5·3	5·3	3·1	2·7	3·1	4·3	6·0	4·9	4·0	3·7	4·6
North	25	17	16	10	8	6	8	8	18	17	7	5	145
South	5	15	12	23	10	11	12	14	18	13	11	12	156

The total number of new groups seen during the year was 301 against 297 last year. On no day was the sun's surface observed to be free from spots. There were seventeen days on which only one group was visible. Ten groups or more were visible on five days.

The distribution of the groups between the two hemispheres was more nearly equal this year than during the preceding years. For seven months there were more spots in the southern than in the northern hemisphere.

The mean daily number of groups varied from 2·7 in June to 7·1 in February and the average for the year was 4·6. The mean latitude of the spots was 10°·9 in the northern hemisphere and 12°·4 in the southern. There were four groups within 1° and four other groups within 2° of the equator. The most important groups seen during the year were the following :—

No. 1010, 1034, 1061, 1094, 1116. This group came round the limb on December 12 last year as a large regular spot with a few small companions and finally disappeared on the visible disc not far from the western limb on April 14. This spot is interesting as having persisted for five solar rotations, lasting for over four months, and undergoing immense changes during its course. In

January it was scattered over 10° of latitude and 19° of longitude and it remained a huge scattered group during February also. In March most of the smaller companions had disappeared and the main spot also was decreased in size. In April it was a small round and regular spot when it came round the east limb, but was reduced to a single dot for two days before its final disappearance. The spectrum of the spot showed great disturbance during most of its course.

No. 1051 / 1081 came round the limb on January 27 and consisted of a leading large spot with a double umbra and a large train of followers. On the 30th its spectrum showed great disturbance in the hydrogen line, and D_3 was intensely dark. It was seen during two rotations.

No. 1057 / 1090 came round the limb on February 4. It was at first irregular in outline and had many small companions, but by the time it had reached the central meridian most of the companions had disappeared and the main spot had increased in size and had become more regular in shape. The umbra was a double one. It returned again on March 3 as a round and regular spot and traversed the disc unchanged until it disappeared at the west limb on the 15th.

No. 1058 / 1086 formed on the visible disc on February 5. It rapidly developed and on the 9th it consisted of two pairs of regular spots close together. It returned again on February 28.

No. 1075 was first seen on February 20 and was formed on the visible disc. It rapidly developed and after it had crossed the central meridian, on the 23rd, it consisted of three moderate-sized spots in a train.

No. 1115 which appeared at the east limb on March 31 was the only large spot seen during April.

No. 1145 formed on the visible disc on May 3, about a day's journey from the central meridian. It rapidly developed till the 6th when it attained its maximum size. This was a very disturbed spot.

No. 1146 came round the east limb on May 4. It was a large group visible to the naked eye, and at first consisted of a main spot with double umbra and smaller companions. The umbræ afterwards became united. The main spot became smaller as it approached the west limb and the umbra again divided into two.

No. 1148 was first seen on May 7 as two small dots half way between the east limb and the central meridian. It grew day after day till the 11th after which it began to decrease in size.

No. 1175 was first observed here on June 14 not far from the east limb. It consisted, in the beginning, of 3 distinct moderate-sized spots of regular outline very near each other. This was one of the largest spots seen during the year and was visible to the naked eye.

No. 1185 was on the sun from July 11 to 23. This was a spot of round and regular outline quite free from smaller companions. The spectrum indicated some disturbance on the 14th when the C line was strongly reversed close to it.

No. 1187 came round the east limb on July 12 and was in about the same region as that occupied by the larger spot (No. 1175) of June. In the beginning it consisted of a double spot but the rear companion soon broke up into smaller dots.

No. 1189 was a small spot when it was first seen near the east limb on July 20. It soon developed and attained its maximum size on the 26th, when it was on the central meridian, after which it became smaller.

No. 1210 came round the east limb on August 14 and consisted, in the beginning, of a long stream extending over nearly 14° of longitude It contained two main spots, one leading and the other at the rear.

No. 1215 was first seen near the east limb on August 27 and consisted of a train of three spots with a number of small companions. It traversed the disc without undergoing much change and disappeared at the west limb on September 9.

No. 1228 was visible from September 6 to 18. It developed from small dots into a long scattered group.

Nos. 1237 and 1241 were visible from September 12 to 24 and 17 to 28 respectively. They were single spots of round and regular outline. They traversed the solar disc without undergoing any great change.

No. {1242, 1273} came round the east limb as a small dot on September 17. The number and size of the spots increased from day to day. On the 26th it was a train extending over 20° of longitude. It appeared again on October 14 and traversed the solar disc as a long train with a chief spot leading. On several occasions the hydrogen lines were seen reversed close to the spot.

No. 1267 came round the east limb on October 9 and was growing for the next five days, after which it began to decrease in size until it disappeared round the west limb on the 21st.

No. 1292 came round the east limb on November 9 and was last seen on the 22nd. It underwent little change from day to day and remained a long train containing several large spots and extensive penumbral patches. On November 20, when it was near the west limb, the spectrum showed considerable disturbance. The group was also associated with intensely bright metallic prominences at the west limb.

Nos. 1288 and 1293 were also fairly large spots which appeared in November but they did not show any activity, nor did they undergo any marked changes from day to day except that No. 1293 dwindled as it neared the west limb.

Nos. 1304, 1306 and 1307 were fairly large spots that were seen in December, but there was nothing striking about them.

No. 1311 was first observed on December 14 as a train of small spots and in the course of a few days formed a fine double spot-group.

No. 1312 came round the limb on December 15. This was associated with prominences at both limbs and showed C reversed on the umbra on the 22nd, 23rd, and 27th.

No. 1321 came round the east limb on December 31.

12. **Prominences.**—The general activity of the two hemispheres for all classes of prominences, as compared with the previous year, may be inferred from the following table:—

Mean daily profile areas of Prominences.

	1906.	1907.
North	2·51 square minutes.	1·92 square minutes.
South	2·17 ,, ,,	2·27 ,, ,,
Total	4·68 ,, ,,	4·19 ,, ,,

It is seen from the above that the general reduction of activity in 1907 is confined to the northern hemisphere, the southern showing a slight increase. In the latitude distribution a remarkable difference is shown between the two hemispheres, which are usually more or less symmetrical as regards the latitudes of the zones of maxima and minima. From the beginning of the year the northern polar prominences, which were strongly represented during 1906, practically ceased to exist, whilst the south polar region still continued active, the whole region between $-45°$ and the south pole producing a very considerable number of large prominences. The region from latitude $-10°$ to $-45°$ has been the most prolific, however, in this hemisphere; but no clearly marked zones of maxima are shown. In the north, on the other hand, two well-defined maxima occur in the zones $+25°$ to $+30°$ and $+50°$ to $+55°$.

Metallic prominences were of frequent occurrence, 111 having been recorded. Of these, 54 were confined to the northern spot zone, and had a mean latitude of $+15°{\cdot}7$, 50 were confined to the southern spot zone, with a mean latitude of $-15°{\cdot}6$, the remaining 7 were distributed in longitude in a narrow zone entirely outside the spot regions, the mean latitude being $-72°$. The only metallic elements observed in these high latitude prominences were Na, Mg, and Fe, whilst some of the prominences in spot-latitudes gave, in addition, the lines of Ba and Ca, together with a considerable number of unidentified lines, probably including Ni, Mn, Cr, and Ti.

As a full list of prominences observed is being published in the Bulletins of the Observatory it is only necessary to give here a few notes of the more important prominences of the year.

January.—Large prominences were abundant. No less than 71 reached a height of about 1 minute and upwards, and of these 9 were over 2 minutes high. The tallest seen was on the 24th at position angle 72° and this reached a height of 210 seconds.

February.—Large prominences were as abundant as in January. Seventy-five prominences of over 1 minute in height were recorded and of these 10 were more than 2 minutes high. The tallest was one seen on the 4th at position angle 90° which reached a height of 210 seconds.

March.—Large prominences were abundant, as in previous months. There were 50 which were equal to or exceeding a minute in height and 30 covering 10° or more of the solar limb. Six were two minutes or more in height. The tallest of the month and perhaps the highest recorded here was photographed in Ca light on the 14th at $9^h\ 25^m$ between position angle 3° and 15°. It was $6\frac{1}{2}$ minutes high, and was probably eruptive as it was absent from two other photographs taken half an hour and one hour later. On the 20th a huge cloud, about 150″ high and overhanging 25° of the limb between position angles 95° and 110°, was photographed.

April.—There were 59 prominences of 1 minute or more in height. On the 9th and 22nd prominences were observed extending over about 30° of the solar limb. On the former date, at position angle 30°, a fine prominence of a very complicated structure and covering nearly 20° of limb was seen, and a series of photographs showed that in an interval of 39 minutes it increased in height from 105″ to 135″.

May.—There were as many as 87 of about or more than a minute in height. Four of these were 2 minutes high and two exceeded $4\frac{1}{2}$ minutes. The tallest was 290″ high and was observed and photographed on the 3rd at position angle 45°. On May 8 a very large number of prominences covered the solar limb and almost a continuous series of prominences, large and small, extended from position angle 25° to 100°.

June.—Owing to poor observing weather during the greater part of the month only 22 large prominences were recorded. The tallest was 140″ high and was photographed on the 24th at position angle 152°.

July.—There were 28 large prominences observed on the 19 days when observations were possible. On the 4th, at position angle 266°, an intensely bright eruptive prominence was photographed which was rapidly increasing in height. It was 200″ high at $8^h\ 10^m$ I.S.T. and about 8^m later it had attained a height of 315″, or nearly 142,000 miles.

August.—There were only 28 large prominences observed during the month. The highest was about two minutes in altitude, and was photographed on the 22nd at position angle 343°.

September.—There were 47 large prominences observed, of which seven were two minutes or more in height. The tallest recorded was two and a half minutes high, and was observed on the 10th at position angle 288°.

October.—There were 39 large prominences observed, of which eight were about two minutes high. The tallest recorded was on the 30th and was 150″ high.

November.—Twenty-five prominences were observed in the month a minute or more in height. The highest was a detached cloud 180″ high photographed on the 2nd. Metallic prominences were observed on the 21st and 22nd associated with spot 1292 referred to above.

December.—Fifty-eight prominences of one minute or more in height were observed in the month. A region about latitude + 45° West and covering more than 50° of longitude contained a series of prominences two minutes or more in height. The highest one, a cloud 170″ high, was seen on the 26th. On the 5th there was a closely connected group of prominences occupying more than 30° near the east limb. There were seven metallic prominences observed during the month.

(*b*) Other Observations.

13. **Time.**—Time is determined with the transit instrument when necessary. The standard clock and the chronometers are compared and rated daily.

The standard clock is also compared daily with the Madras standard clock by means of the signals sent at 4 P.M. over all telegraph lines in India.

The usual time signal to the station was not given throughout the year owing to the failure of the Public Works Department to repair the flagstaff. A new flagstaff is now in course of erection and the time signal, which is much appreciated, will be restarted as soon as the new staff is ready.

14. **Meteorology.**—Meteorological observations were carried on as in former years. Eye observations are made at 8^h, 10^h, and 16^h local mean time. Temperatures and pressure are recorded by a Richard thermograph and barograph and the mean daily pressure and temperature are obtained from the traces corrected by reference to the eye observations. The wind direction and velocity are got from a Beckley anemograph placed on a tower sufficiently far from the observatory to be undisturbed by the buildings.

Temperature.—The mean temperature for the whole year was 0°·4 below the assumed average. The only months in which there was any considerable difference from normal were April and August, in the former of which the temperature was 1°·7 and the latter 1°·9 below normal. The highest shade temperature recorded was 74°·7 on June 3, and the lowest 40°·8 on January 15 and December 25. The highest temperature in the sun was 147°·6 on June 21, and the lowest grass minimum 19°·9 on January 20.

Humidity.—The relative humidity was largely below normal in May and largely above normal in March and April. For the whole year it was 1 per cent. above normal.

Winds.—The wind velocity was above average in May, August, November, and December and below it in all other months. In August the excess was 102 miles per day and in July the defect was 68 miles per day. The highest daily records were 809 miles on November 5 and 785 miles on August 7.

Rain.—The rainfall for the year was nearly 20 per cent. below normal. It was normal in March and May, in considerable excess in November, and in defect in all other months, the greatest defect being 4·9 inches in October. The greatest fall in one day was 3·63 inches on November 19.

Cloud and sunshine.—The sunshine recorded for the year was a little above the normal. It was considerably in excess in January, February, and May and considerably in defect in August.

The transparency of the lower atmosphere as judged by the visibility of the Nilgiris was much below the average. It was the lowest recorded since 1901.

15. **Seismology.**—The Milne horizontal pendulum was in use throughout the year and the results are given in Appendix I., but during part of the time the records were not quite satisfactory. This was probably owing to the fact that the point of the pivot had got blunted. This has now been rectified. The number of distant earthquakes recorded was only 24, which is far the smallest number for any year since the instrument was set up. Copies of the records and of the chief seismograms are supplied to the British Association Committee and to others when asked for.

16. **Library.**—A card catalogue of the library, which was begun some time ago but was not carried far owing to pressure of work, has been almost completed by Mrs. Evershed. One hundred and fifty-one volumes were bound during the year.

17. **Publications.**—Bulletins Nos. VIII. to XI. were published and distributed during the year, and No. XII. was in type at the close of the year.

Bulletins Nos. VIII. and XI. give the observations of sunspot spectra made between January 1906 and February 1907. Nos. IX. and X. contain lists of prominences observed from January to December 1906. No. XII. will bring the latter record up to the end of June 1907.

In addition to these the following papers were published by members of the staff :—

"Distribution of prominences in latitude in the year 1906 from observations made at Kodaikánal on 156 days in the first half of the year and 105 days in the second half by J. Evershed." R.A.S. M.N. LXVII., 7.

"The ultra-violet region in sunspot spectra", and

"The spectrum of Comet 1907d (Daniel)" by J. Evershed, R.A.S. M.N. LXVIII., 1.

"The Weakened and Obliterated lines in the sunspot spectrum," by G. Nagaraja. A.P.J. XXVI., 3.

18. **General.**—The Director-General of Observatories visited Kodaikánal and Madras at the end of January and the beginning of February. The Officiating Director inspected the Madras Observatory in November. The whole staff worked well throughout the year.

The Director, when on leave, took part in the Paris Meeting of the International Congress for Solar Research, and then and on other occasions had an opportunity of discussing many points connected with the work of the Observatory with the chief authorities on the subject.

KODAIKÁNAL,
13*th February* 1908.

C. MICHIE SMITH,
Director, Kodaikánal and Madras Observatories.

II.—REPORT OF THE MADRAS OBSERVATORY FOR THE YEAR 1907.

Staff.—Mr. R. Ll. Jones went on 16 months' leave from the 6th May and I took over charge from him on that date. There was no change in the permanent ministerial staff of the Observatory.

Mr. S. Solomon Pillai took privilege leave for one month from the 19th April and again for one month from the 7th December on account of ill-health. His leave has since been extended by another month. On the first occasion, Mr. C. N. Ramaswamy Aiyangar, M.A., acted as First Assistant and on the present occasion Mr. A. A. Narayana Aiyar, B.A., is acting as First Assistant.

Mr. M. G. Subrahmanyam is under orders of transfer to Bombay and his place will be filled by Mr. A. A. Narayana Aiyar.

2. **Time service.**—The astronomical observations made during the year were, as usual, solely directed to time determinations. Transits of the sun were also taken occasionally to check the rate of the clock when unfavourable weather prevented the regular star observations from being taken.

The time gun at the Fort was fired correctly at noon and at 8 P.M. on 709 occasions out of 730, giving a percentage of success of 97·1.

The time ball at the Port office was dropped at 1 P.M. correctly on all occasions except four. On three of these it was dropped correctly at 2 P.M.

The 8-hour and 16-hour rolls were sent as in the previous years except that the 60th seconds are now being omitted in the 8-hour rolls also from 1st October, at the request of the Master Attendant, Colombo. Both the 8-hour and 16-hour rolls were found to be not quite satisfactory, the intervals between successive seconds being sometimes unequal. An entirely automatic arrangement for sending the roll has been suggested and is now under consideration. It would, in eliminating the personal equation, be a distinct improvement.*

3. **Meteorological observations.**—Meteorological observations were made as usual at 8, 10, 16 and 20 hours, local mean time. The observations of the 10 and 16 hours were reduced and sent to the India Meteorological Office, Alipore, on Form F. The original method of observing the movement of clouds was discontinued from the 1st March, from which date the present method, personally explained by Mr. J. H. Field, Imperial Meteorologist, has been used.

Besides the ordinary weather messages, special storm observations were sent on one occasion to Simla and on 138 occasions to Calcutta.

The tabulation of the traces of the Barograph, Thermograph and Anemograph at Madras and of the Anemograph at Dodabetta are up to date.

4. **Buildings.**—Ordinary repairs to the buildings were made during the year. The dome of the 8-inch equatorial, which is worn out, has not yet been replaced by a new one, but money for a new dome has been provided in the budget for next year.

5. **Instruments.**—The following is the list of instruments at the Madras Observatory on the 31st December 1907 :—

(*a*) *Astronomical.*

Eight-inch Equatorial Telescope—Troughton & Simms.
Sidereal Clock—Haswall.
" Dent No. 1408.
" S. Riefler No. 61.
Mean Time Clock with galvanometer—Shepherd & Sons.
Meridian Circle—Troughton & Simms.
Mean Time Clock—J. Monk.
Mean Time Chronometer—V. Kullberg 5394.
" " 6544.
" Parkinson & Frodsham 2352.
Portable Transit Instrument—Dolland.

* The final signal at 16h is sent by the clock and is not affected by the personal equation of the sender.

C.M.S.

Portable Telescope with stand.
Tape Chronograph—R. Fuess.
Relay for use with the Chronograph—Siemens.

(b) *Meteorological.*

Richard's Barograph—No. 10 L. Casella.
Richard's Thermograph—No. 3618 L. Casella.
Beckley's Anemograph—Adie.
Sunshine Recorder—No. 149 L. Casella.
Anemoscope—P. Orr & Sons.
Nephoscope—Mons. Jules Daboscq & Ph. Pellin.
Barometer, Fortin's—1771 L. Casella.
Barometer, Fortin's—725 L. Casella (spare).
Barometer, Fortin's—1420 L. Casella (spare).
Dry bulb thermometer—No. 94221 L. Casella.
Dry bulb thermometer—No. 38037 Negretti & Zambra (spare).
Wet bulb thermometer—No. 94219 L. Casella.
Wet bulb thermometer—No. 38037 Negretti and Zambra (spare).
Dry maximum thermometer—No. 8581 Negretti and Zambra.
Dry minimum thermometer—No. 69047 L. Casella.
Wet minimum thermometer—No. 91753 Negretti & Zambra.
Sun maximum thermometer—No. 10479 Negretti & Zambra.
Grass minimum thermometer—No. 3377 Negretti & Zambra.
Raingauge (8″ diameter)—No. 1042 Negretti & Zambra.
Measure glass for above.
Raingauge (5″ diameter).
Measure glass for above.

The Chronograph which was sent out with two connections imperfectly insulated was put in order and brought into use for transit work from the 29th August. The Riefler Clock has been keeping a steady rate, the variation between the maximum and minimum daily rate throughout the year being only 0·31 seconds. Towards the end of the year the catgut cord of the Riefler Clock was replaced by a silk one, the movement was cleaned and oiled, and the aneroid was adjusted. Almost immediately afterwards the second-beats were found to be of unequal length, which necessitated the opening of the clock again for adjustment.

The Acting Director, Kodaikánal and Madras Observatories, visited the Madras Observatory in November and cleaned the object-glass of the Equatorial and the wires of the Meridian Circle.

6. **Weather Summary.**—The following is a summary of the meteorological conditions at Madras during the year 1907 :—

Pressure.—The atmospheric pressure was above normal in March, April, May, September and October, and below normal in the other months of the year. The greatest excess was 0·020 inches in April and the greatest defect was 0·031 inches in November. The highest pressure recorded was 30·098 inches on December 29, the lowest pressure was 29·518 inches on July 25.

Temperature.—The mean temperature of the air was normal in January and December, and above normal in all the other months except April, when it was below normal. The maximum in the shade was above normal in March, May, June, July, August and September and below normal in the other six months, the greatest excess being 4°·3 F. in May and the greatest defect being 1°·5 F. in November. The minimum in the shade was normal in May, below normal in January, April, and December, and above in the remaining months of the year; that on grass was normal in April and above normal in the other 11 months. The maximum in the sun was below normal throughout the year, the greatest defect being 12°·4F. in November. The highest temperature in the sun was 151° 2·F. on August 27, and that in the shade was 109°·0 F. on May 24. On January 31, the lowest temperature in the shade (59°·6F.) and on grass (55°·2 F) occurred.

Humidity.—The humidity was below normal in May, June, and August, and above in all the other months. The lowest percentage was 29 on October 15.

Wind.—The wind direction was normal in January, May, and July. It was more northerly in October and December, more easterly in March, April, and November, more southerly in February and September, and more westerly in June and August.

The wind velocity was above normal in March, August, and November, and below normal in the remaining months, the greatest deficiency in the mean daily velocity being 46 miles per diem in May.

Cloud.—The percentage of cloud was in slight excess in April and November and in defect in all the other months.

Sunshine.—The percentage of bright sunshine was above normal in July and September and below normal in the remaining months. The greatest defect was 16·5 in November. There were 2,234·6 hours of bright sunshine during the year.

Rainfall.—The rainfall was above the average in June, October, November, and December, and below in the other eight months. The greatest defect was 4·40 inches in September, the fall in the month being only 7 per cent. of the average amount. The rainfall from the 15th October to the end of the year was 24·99 inches against an average of 26·00 inches. The total rainfall for the year was 44·68 inches—4·34 inches below the normal. The greatest fall on a single day was 5·06 inches on October 2.

Storm.—A cyclone of moderate intensity, which formed in the Andaman Sea, crossed the Madras Coast between Madras and Nellore on the afternoon of the 26th November. The rainfall received on that day was 3·18 inches.

MADRAS OBSERVATORY,
18*th January* 1908.

R. LITTLEHAILES,
Officiating Deputy Director.

Appendix I.

KODAIKÁNAL Observatory Seismological Records in 1907.

No.	Date.	P.T. Commence G.M.T.	L.W. Commence G.M.T.	Maxima G.M.T.	End G.M.T.	Max. Amp.	Duration.	Remarks
	1907.	H. M.	H. M.	H. M.	H. M.	MM. ″	H. M.	
1	Jan. 2 ..	12 15·8	12 24·9	12 36·4 13 15·6	13 50	0·6 0·3 0·5 0·3	1 34	
2	4 ..	No. P. Ts.	5 23·8	5 30·2 5 41·2	8 34	..	3 10*	
3	4 ..	9 50·5?	10 5·9	10 9·0	10 35	0·6 0·3	0 44	
4	8 ..	5 40·9	6 3·8	6 12·0	7 7	0·7 0·3	0 44	
5	Feb. 3 ..	No. P. Ts.	19 56·7	19 57·7	20 37	0·4 0·2	0 40	
6	Mar. 29 ..	20 53·6	21 3·1	21 4·1	21 57	1·0 0·54	1 03	Bitlis.
7	31 ..	No. P. Ts.	22 24·2	22 25·2	23 12	0·6 0·27	0 48	
8	Apr. 13 ..	Do.	18 48·9	18 51·0	19 54	0·6 0·27	1 06	
9	15 ..	6 30·0	7 32·9	7 42·1	8 28	2·1 1·14	1 58	Mexico
10	18 ..	21 9·0	21 26·9	21 32·6	22 23	1·8 0·77	1 14	
				21 39·2	..	1·5 0·72	..	
11	19 ..	0 0·8	0 20·2	0 25·3	1 25	1·95 0·94	1 24	
12	26 ..	19 18·6	19 24·1	19 25·8	19 40	0·75 0 32	0 22	
13	May 25 ..	12 0·2	12 24·3	12 25·4	12 41	0·25 0·12	0 41	
14	25 ..	14 18·2	14 29·0	14 29·5	14 48	0·50 0·24	0 30	

There were some very small tremors on May 31 at 13h 12m, on June 1st from 10h to 10h 30m and also on June 24—maximum at 16h 36m (G.M.T).

No.	Date.	P.T. Commence G.M.T.	L.W. Commence G.M.T.	Maxima G.M.T.	End G.M.T.	Max. Amp.	Duration.	Remarks
15	June 25 ..	18 2·5	18 9·6	18 10·2	18 59	1·5 0·68	0 57	
16	Sept. 2 ..	16 14·7?	16 17·5	16 18·1	18 07	0·5 0·3	1 52	
16a	5 ..	Small	Tremors	23 03	and	23h 29m.	Ending at 23h 40m	
17	Oct. 4 ..	10 39·2	10 43·3	10 45·3	11 16	2·4 0·9	0 37	
17a	5 ..	Small	Tremors	From	3 56	to 4h 01m	..	
17b	11 ..	..	Do.	..	15 15	to 15h 32m	..	
18	21 ..	4 34·0	4 36·0	?	6 37	?	2 03	Boom went to one side.
19	27 ..	5 28?	5 32·2	5 32·8	5 47	2·2 0 9	0 19	Sheet marked at 5h 21m.
19a	Nov. 12 ..	Small	Tremors	From	8 06	to 8 16	..	
19b	16 ..	..	Do.	..	22 20	to 22 41	..	
20	21 ..	20 09·0	20 13·0	20 15·0	21 20	4·5 2·2	1 11	Karadagh.
21	22 ..	No. P. Ts.	6 17·0	6 19·0	6 32	0·8 0·4	0 15	
22	Dec. 5 ..	12 48·0	12 53·2	12 57·8	13 16	0·5 0·2	0 28	
23	15 ..	No. P. Ts.	17 54·8	17 55·9	18 54	0·4 0·2	0 59	Many small maxima.
24	30 ..	5 57·2	6 06·0	6 08·0 7 13·0	7 38	0·5 0·2	1 41	

* Several very large maxima reaching to at least 25mm—largest uncertain. Sheet changed at 6h 46m (G.M.T.).

Appendix II.

Latitude—10° 13′ 50″ N.
Longitude—5h 09m 52s E.

Height of barometer cistern above sea level 7,688 feet.

MEAN monthly and annual Meteorological Results at the Kodaikánal Observatory in 1907.

Month.	Barometer.		Dry bulb thermometer.				Wet bulb.		Tension of vapour.	Relative humidity.	Sun Max. *in vac.*	Min. on grass.	Wind.			Rain.		Clear sky.	Bright sun-shine.
	Reduced to 32°.	Daily range.	Mean.	Max.	Min.	Range.	Mean.	Min.	By Blanford's tables.				Daily velocity.	Mean direction.		Amount.	Days.		
	INCHES.	INCHES.	°	°	°	°	°	°	INCHES.	CENTS.	°	°	MILES.	POINTS.	POINTS.	INCHES.	NO.	CENTS.	HOURS.
January ..	22·834	0·069	53·1	62·8	46·3	16·5	46·9	40·6	0·265	66	115·1	36·1	261	6	E. N. E.	0·97	1	64	248·6
February ..	·844	·070	55·3	67·6	47·6	20·0	47·6	41·5	·259	59	124·9	36·7	294	6	E. N. E.	..	..	74	248·9
March ..	·851	·072	57·0	68·4	51·0	17·4	50·2	44·6	·300	64	129·9	41·5	296	8	E.	1·79	4	69	244·8
April ..	·821	·078	57·7	67·3	52·2	15·1	53·4	47·9	·368	77	131·0	44·5	253	9	E. by S.	6·26	9	46	200·9
May ..	·822	·072	60·5	70·2	54·4	15·8	53·9	49·3	·351	66	130·3	47·2	280	6	E. N. E.	5·37	9	59	229·2
June ..	·758	·060	57·9	65·5	53·6	11·9	53·6	49·2	·370	77	123·6	48·5	344	26	W. N. W.	1·94	7	33	132·7
July ..	·742	·059	56·3	62·7	52·7	10·0	53·7	50·4	·389	85	114·7	48·0	380	23	W. by S.	3·90	13	24	101·4
August ..	·776	·068	54·9	61·1	51·8	9·3	52·7	49·7	·379	88	115·7	48·7	426	27	N.W.by W.	6·36	11	17	71·6
September ..	·796	·075	56·4	63·6	52·0	11·6	53·6	49·7	·385	84	122·7	46·5	·257	31	N. by W.	3·64	9	35	128·9
October ..	·812	·080	55·5	62·3	51·4	10·9	52·9	49·3	·378	85	116·0	46·8	·265	1	N. by E.	6·24	10	29	123·8
November ..	·810	·071	53·9	60·4	49·9	10·5	51·2	46·6	·354	84	109·7	44·9	·307	3	N.E. by N.	10·02	13	27	123·9
December ..	·819	·068	52·8	61·6	46·9	14·7	47·1	40·6	·273	68	111·9	39·9	·324	3	N.E. by N.	1·97	5	51	218·9
Annual ..	22·807	0·070	55·9	64·5	50·8	13·6	51·4	46·6	0·339	75	120·5	44·1	307	2	N.N.E.	48·46	91	44	2,073·6

EXTREME monthly Meteorological Records at the Kodaikánal Observatory in 1907.

Month.	Barometer.					Dry bulb thermometer.				Wet bulb.		Humidity.		Sun Th. *in vacuo.*		Grass therm.		Wind.				Rain.	
	Highest.		Lowest.		Range.	Highest.		Lowest.		Lowest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.		Greatest Fall.	
	INCHES.	DAY.	INCHES.	DAY.	INCHES.	°	DAY.	°	DAY.	°	DAY.	CENTS.	DAY.	°	DAY.	°	DAY.	MILES.	DAY.	MILES.	DAY.	INCHES.	DAY.
January ..	22·916	1	22·773	18	0·143	70·4	28	**40·8**	15	32·3	28	9	27	128·9	24	**19·9**	20	424	5	140	7	0·84	6
February ..	·939	27	·765	2	·174	72·0	13	44·9	10	**32·1**	13	10	13	130·3	25	30·3	6	451	26	126	1	..	..
March ..	**943**	5	·758	13	·185	72·0	15	46·0	2	36·0	16	9	9	144·2	18	35·2	8	573	8	171	26	0·56	20
April	·902	4	·740	27	·162	72.4	24	48·1	4	41·3	4	36	24	141·4	26	37·2	4	390	21	151	28	1·12	8
May	·919	20	·742	4	·177	74·3	26	50·2	16	41·4	7	23	7	140·9	14	42·4	18	536	6,7	146	24	1·00	18
June	·876	20,21	**·639**	13	·237	**74·7**	3	50·9	17	42·2	23	33	23	**147·6**	21	41·7	20	624	13	122	20	0·46	9
July	·838	10	·640	24	·198	67·2	11	49·7	30	46·6	30	55	15	136·8	13	43·1	8	776	1	147	4	0·78	5
August ..	·856	18	·687	6	·169	64·6	18	49·3	27	47·2	27	67	29	135·1	22	45·3	19	785	7	188	18	1·37	30
September ..	·874	21	·726	9	·148	68·5	19	49·4	6	44·6	8	53	10	139·3	10	42·4	30	543	5	115	21	0·81	22
October ..	·901	11	·725	3	·176	68·5	19	48·1	28	42·6	14	43	14	137·6	19	40·6	28	459	2	**110**	25	1·40	5
November ..	·904	19	·731	26	·173	64·3	29	45·6	13	37·1	26	27	26	127·2	29	37·6	15	**809**	5	162	28	**3·63**	19
December ..	·894	11	·734	16	·160	67·7	29	**40·8**	25	32·2	6	**7**	6	129·6	7	26·5	**9**	569	17	168	18	0·66	17

Appendix III.

KODAIKÁNAL mean hourly Wind Velocity for the year 1907.

Month.	Hours.																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
January	12	12	12	12	11	12	11	11	12	12	12	13	13	11	10	9	7	6	8	9	10	11	12	11
February	13	13	14	14	14	14	14	14	15	16	18	17	15	13	11	10	8	6	6	8	8	9	11	13
March	12	13	14	14	14	15	15	15	15	16	16	16	14	12	11	10	9	8	9	9	8	8	9	12
April	9	9	10	10	11	10	10	11	11	12	12	13	12	12	12	12	11	10	10	10	10	10	9	9
May	11	11	11	12	12	12	12	12	12	13	14	14	13	12	13	13	12	10	10	10	10	10	10	11
June	16	16	16	15	16	16	16	14	14	13	13	13	13	12	13	12	12	13	14	16	16	16	15	16
July	16	16	17	17	17	17	16	15	14	14	15	15	15	15	16	15	14	14	16	16	16	18	17	17
August	22	21	19	19	18	18	19	16	18	16	16	15	16	15	15	16	17	18	18	19	19	18	19	18
September	13	12	12	12	13	12	11	11	10	10	10	9	9	9	9	10	9	9	9	10	12	12	12	12
October	11	11	11	11	10	11	12	13	13	11	12	12	11	11	11	10	10	9	10	10	11	12	11	11
November	15	14	14	15	15	14	13	13	13	13	13	13	13	12	10	10	10	10	12	12	13	13	13	13
December	15	16	16	15	15	15	15	14	14	13	13	13	15	13	11	11	9	10	11	12	13	13	15	15
Annual ..	14	14	14	14	14	14	14	13	13	13	14	14	13	12	12	12	11	10	11	12	12	12	13	13

Appendix IV.

KODAIKÁNAL Mean Hourly Bright Sunshine for the year 1907.

Month.	Hours.													Remarks.
	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	
January ..	0·13	0·75	0·85	0·88	0·85	0·89	0·87	0·85	0·71	0·62	0·51	0·10	..	
February ..	·18	·92	1·00	1·00	1·00	·98	·96	·76	·72	·62	·53	·21	..	
March ..	·3[illegible]	·95	·98	·96	·94	·86	·69	·59	·45	·37	·44	·35	..	
April	·14	·70	·83	·87	·84	·81	·74	·63	[illegible]	·35	25	·09	..	
May	·30	·76	·84	·93	·89	·89	·73	·61	·50	·45	·35	·14	..	
June	·14	·45	·58	·56	·58	·46	·43	·41	·24	·26	·26	·10	..	
July	·11	·42	·48	·45	·45	·35	·25	·25	·26	·17	·06	·02	..	
August ..	·06	·25	·37	·40	·38	·30	·23	·15	·08	·06	·03	·01	..	
September ..	·05	·57	·72	·63	·59	·49	·36	·21	·22	·22	·20	·05	..	
October ..	..	·33	·66	·66	·54	·47	·32	30	·21	·29	·19	·03	..	
November ..	·07	·36	·45	·59	·54	·45	·40	·39	·33	·31	·22	·01	..	
December ..	·07	·54	·70	·77	·85	·81	·77	·77	·68	·61	·46	·03	..	
Mean ..	0·13	0·58	0·70	0·72	0·70	0·65	0·56	0·49	0·40	0·36	0·29	0·10	..	

Appendix V.

NUMBER of days in each month on which the Nilgiris were visible in 1907.

Month.	Very clear.	Visible.	Just visible.	Tops only visible.	Total.
January	..	11	4	3	18
February	..	5	4	2	11
March	..	1	5	1	7
April	2	2	10	1	15
May	..	..	1	..	1
June	6	2	2	..	10
July	3	3	4	.	10
August	2	5	..	..	7
September	11	4	6	..	21
October	4	1	5	..	10
November	2	5	3	4	14
December	3	5	9	3	20
Total ..	33	44	53	14	144

Latitude—10° 9′ N.

Longitude—5h 10m 10s E.

Appendix VI.

Height of barometer cistern above mean sea level 9,44 feet.

MEAN monthly and annual Meteorological Results at the Periyakulam Observatory in 1907.

Month.	Barometer.		Dry bulb thermometer.				Wet bulb.		Tension of vapour.	Relative humidity.	Sun Max. *in vac.*	Min. on grass.	Wind.			Rain.		Clear sky.
	Reduced to 32°.	Daily range.	Mean.	Max.	Min.	Range.	Mean.	Min.	By Blanford's tables.				Daily velocity.	Mean direction.		Amount.	Days.	
	INCHES.	INCHES.	°	°	°	°	°	°	INCHES.	CENTS.	°	°	MILES.	POINTS.	POINTS.	INCHES.	NO.	CENTS.
January	29·001	0·141	74·6	86·7	63·8	22·9	66·4	61·6	0·540	63	134·7	57·2	38·7	18	S.E. by S.	0·80	2	64
February	28·987	·165	78·8	92·2	65·9	26·3	67·4	63·2	·517	53	141·0	57·4	51·2	10	E.S.E.	..	..	72
March	·949	·160	81·9	95·3	69·5	25·8	70·8	66·0	·614	56	147·7	63·6	74·0	14	S.S.E.	7·18	6	68
April	·898	·162	80·7	91·7	72·5	19·2	73·1	69·5	·714	68	146·8	68·8	48·9	17	S. by W.	11·95	11	44
May	·857	·133	82·7	96·5	73·0	23·5	73·0	69·2	·686	61	149·2	69·0	66·0	16	S	5·01	7	55
June	·820	·112	81·1	93·4	72·0	21·4	71·1	68·1	630	59	148·1	68·2	101·1	17	S. by W.	0·24	..	37
July	·814	·110	80·4	92·7	71·4	21·3	71·3	68·3	·646	62	148·0	68·1	74·3	14	S.S.E.	2·72	6	31
August	·877	·114	79·0	90·1	71·1	19·0	70·2	65·8	·620	62	150·0	67·6	92·7	18	S.S.W.	1·52	2	25
September	·880	·140	81·4	94·6	71·4	23·2	70·6	67·2	·603	57	158·1	67·3	85·9	18	S.S.W.	1·93	4	46
October	·885	·141	79·2	88·7	72·3	16·4	71·9	68·9	·687	69	146·4	68·6	43·5	16	S.	7·00	9	34
November	·886	141	77·3	86·1	70·4	15·7	70·7	67·3	666	71	138·7	67·9	35·7	13	S.E. by S.	5·81	9	37
December	·890	·122	75·1	86·4	65·8	20·6	67·4	63·0	·572	65	139·8	61·7	32·2	12	S.E.	1·67	3	46
Annual ..	28·895	0·137	79·4	91·2	69·9	21·3	70·3	66·5	0·625	62	145·7	65·4	62·0	15	S. by E.	45·83	59	47

EXTREME monthly Meteorological Records at the Periyakulam Observatory in 1907.

Month.	Barometer.					Dry bulb thermometer.				Wet bulb.		Humidity.		Sun. Th. *in vacuo.*		Grass therm.		Wind.				Rain.	
	Highest.		Lowest.		Range.	Highest.		Lowest.		Lowest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.		Greatest fall.	
	INCHES.	DAY.	INCHES.	DAY.	INCHES.	°	DAY.	°	DAY.	°	DAY.	CENTS.	DAY.	°	DAY.	°	DAY.	MILES.	DAY.	MILES.	DAY.	INCHES.	DAY.
January	29·111	1	28·887	27	0·224	90·7	29	51·6	29	49·5	29	12	28	142·1	2	40·3	29	62·6	23	23·3	4	0·47	10
February	·131	9	·811	14	·320	95·9	24	58·6	13	56·4	13	21	21	146·3	28	48·0	13	87·5	11	21·9	1	..	..
March	·087	6	·777	14	·310	99·4	18	60·0	7	55·0	8	15	7	163·2	18	49·6	7	114·0	2	40·7	23	2·27	20
April	·054	4	·660	25	·394	96·0	25	65·5	1	62·7	1	30	24	157·8	28	62·9	4	83·7	5	22·7	19	2·31	11
May	28·982	18	·701	4	·281	99·2	3	66·8	21	65·2	21	21	6	154·9	7	62·9	21	122·1	16	16 8	9	1·74	22
June	·985	7	·661	15	·324	98·8	3	67·0	28	63·3	24	30	23	164·1	29	61·3	28	212·8	10	21·5	14	0·09	13
July	·953	10	·645	25	·308	97·3	5, 6	66·3	30	62·4	30	29	29	159·8	5	61·4	30	117·9	29	36·1	9	0·91	9
August	·990	26	·730	5	·260	94·5	27	66·7	27	64·0	27	38	15	163·5	27	62·7	27	160·1	1	37·1	8	0·93	5
September	·979	21	·740	9	·239	99·0	13	66·8	7	63·1	7	31	9	165·2	10	61·9	7	139·4	9	32·4	2	0·59	29
October	·985	25	·782	10	·203	92·8	17	74·4	2	61·1	28	54	28	157·3.	19	63·0	15	73·7	18	5·5	30	1·47	9
November	·978	13	·786	2	·192	90·3	17	65·3	16	62·7	27	44	14	151·7	16	60·6	15	89·0	7	7·5	9	1·67	8
December	·977	6	·796	9,12	·181	90·9	10	58·1	28	55·4	28	31	30	148·3	18	50·9	28, 30	52·1	15	19·5	15	0·97	13

Appendix VII.

MADRAS OBSERVATORY.—Abnormals from monthly means for the year 1907.

Abnormals of	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Reduced atmospheric pressure	— 0·020	— 0·005	+ 0·004	+ 0·020	+ 0·005	— 0·017	— 0·026	— 0·006	+ 0·003	+ 0·003	— 0·081	— 0·028	— 0·008
Temperature of air	Same as	+ 0·7	+ 1·1	— 0·5	+ 1·8	+ 1·3	+ 1·0	+ 2·0	+ 1·6	+ 0·5	+ 0·2	Same as	+ 0·8
Do. of evaporation	+ 1·1	+ 1·4	+ 1·5	+ 0·4	+ 0·5	+ 0·5	+ 1·8	+ 1·0	+ 2·0	+ 1·0	+ 1·6	+ 0·5	+ 1·1
Percentage of humidity	+ 5	+ 4	+ 2	+ 4	— 3	— 2	+ 4	— 3	+ 3	+ 3	+ 7	+ 3	+ 2
Greatest solar heat in *vacuo*	— 5·8	— 4·2	— 2·2	— 1·4	— 1·2	— 3·4	— 5·5	— 2·0	— 1·3	— 11·2	— 12·4	— 7·3	— 4·8
Maximum in shade	— 0·7	— 0·4	+ 0·5	— 0·5	+ 4·3	+ 1·8	+ 0·4	+ 3·2	+ 1·8	— 0·4	— 1·5	— 0·8	+ 0·6
Minimum in shade	— 0·6	+ 0·4	+ 1·3	— 0·6	Same as	+ 1·2	+ 0·2	+ 1·4	+ 0·8	+ 0·1	+ 0·5	— 0·4	+ 0·3
Do. on grass	+ 0·2	+ 0·9	+ 2·3	Same as	+ 0·3	+ 1·2	+ 1·1	+ 1·9	+ 1·7	+ 1·1	+ 2·0	+ 0·1	+ 1·1
Rainfall in inches	— 0·78	— 0·28	— 0·39	— 0·50	— 2·12	+ 0·69	— 1·07	— 0·48	— 4·40	+ 0·83	+ 2·95	+ 1·21	..
Do. since January	— 0·78	— 1·06	— 1·45	— 1·95	— 4·07	— 3·38	— 4·45	— 4·93	— 9·33	— 8·50	— 5·55	— 4·34	— 4·34
General direction of wind	Same as	1 point S.	2 points E.	1 point E.	Same as	1 point W.	Same as	2 points W.	2 points S.	2 points N.	2 points E.	1 point N.	1 point E.
Daily velocity in miles	— 7	— 3	+ 6	— 35	— 46	— 28	— 20	+ 12	— 15	— 3	+ 2	— 22	— 13
Percentage of cloudy sky	— 14	— 4	— 1	+ 6	— 10	— 8	— 12	— 8	— 16	— 8	+ 3	— 13	— 7
Do. of bright sunshine	— 7·7	— 15·9	— 8·7	— 3·9	— 9·8	— 14·9	+ 0·9	— 10·5	+ 4·3	— 7·2	— 16·5	— 7·4	— 7·7

+ means *above* normal , — *below*.

Appendix VIII.

ABSTRACT of the mean meteorological condition of Madras in the year 1907 compared with the average of past years.

Mean values of	1907.	Difference from	Average.
Reduced atmospheric pressure	29·856	0·008 below.	29·864
Temperature of air	81·9	0·8 above.	81·1
Do. of evaporation	75·6	1·1 ,,	74·5
Percentage of humidity	74	2 ,,	72
Greatest solar heat in *vacuo*	134·9	4·8 below	139·7
Maximum in shade	91·4	0·6 above.	90·8
Minimum in shade	75·0	0·3 ,,	74·7
Do. on grass	73·0	1·1 ,,	71·9
Rainfall in inches on 88 days	44·68	4·34 below.	49·02
General direction of wind	S.E. by E.	1 point E.	S.E.
Daily velocity in miles	158	13 below.	171
Percentage of cloudy sky	42	7 ,,	49
Do. of bright sunshine	50·7	7·7 ,,	58·4

DURATION and quantity of the wind from different points.

From	Hours.	Miles.	From	Hours.	Miles.	From	Hours.	Miles.	From	Hours.	Miles.
North ..	248	1,610	East ..	271	1,420	South ..	106	826	West ..	310	2,813
N. by E. ..	190	1,261	E. by S. ..	339	1,788	S. by W...	155	1,089	W. by N...	255	2,304
N.N.E. ..	353	2,227	E.S.E. ..	386	1,887	S.S.W. ..	148	1,026	W.N.W. ..	105	937
N.E. by N...	488	3,273	S.E. by E.	619	3,542	S.W. by S.	173	1,225	N.W. by W.	90	542
N.E. ..	342	2,268	S.E. ..	756	4,755	S.W. ..	165	1,146	N.W. ..	66	403
N.E. by E.	258	1,673	S.E. by S.	543	4.215	S.W. by W.	197	1,352	N.W. by N.	120	786
E.N.E. ..	228	1,310	S.S.E. ..	229	1,727	W.S.W. ..	284	1,843	N.N.W. ..	114	860
E. by N. ..	406	2,284	S. by E. ..	126	1,027	W. by S...	395	3,234	N. by W...	179	1,199

There were 116 calm hours during the year. The resultant corresponding to the above numbers is represented by a E.S.E. wind, blowing with a uniform daily velocity of 24 miles.

Appendix IX.

MADRAS OBSERVATORY.—Number of hours of wind from each point in the year 1907.

Month.	N.	1	2	3	4	5	6	7	E.	9	10	11	12	13	14	15	S.	17	18	19	20	21	22	23	W.	25	26	27	28	29	30	31	Calm.
January	..	7	43	259	145	35	6	24	65	41	70	110	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
February	..	..	..	..	1	38	85	142	73	55	29	65	111	46	2	3	2	1	1	2	2	1	..	..	..	..	..	..	..	..	..	..	13
March	..	7	..	2	16	54	40	145	10	29	42	26	205	107	21	9	4	7	8	6	..	..	..	..	..	..	..	..	..	..	..	..	6
April	..	1	..	..	..	3	7	14	1	51	56	204	113	149	17	8	5	10	9	10	4	1	12	2	2	3	1	1	1	12	2	3	18
May	2	..	..	..	..	2	1	6	28	34	29	85	115	79	41	35	42	56	28	36	20	19	18	11	17	9	9	5	1	2	1	..	13
June	4	2	..	6	8	3	2	4	4	8	12	22	29	34	29	24	19	38	19	11	30	40	46	84	88	81	27	17	10	8	2	4	5
July	10	1	1	3	1	1	8	2	3	12	14	13	73	46	28	11	7	17	27	34	53	56	89	93	48	32	13	9	8	4	8	14	5
August	2	..	1	..	..	1	1	2	2	8	2	16	18	24	10	20	14	13	30	45	26	57	70	163	102	67	12	18	6	7	3	3	1
September	2	2	16	..	2	4	4	3	12	54	97	104	52	33	21	9	8	7	17	15	23	22	34	31	16	39	21	15	15	21	7	4	10
October	44	57	88	99	16	44	10	23	11	30	16	20	2	24	58	6	4	5	5	8	5	1	1	4	4	6	5	19	18	39	34	27	16
November	30	29	79	60	73	55	37	27	50	17	19	24	38	1	2	1	1	1	4	6	2	..	14	7	33	18	17	6	7	12	17	20	13
December	154	84	130	59	80	18	27	14	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	40	104	7
Annual ..	248	190	353	488	342	258	228	406	271	339	386	619	756	548	229	126	106	155	148	173	165	197	284	395	310	255	105	90	66	120	114	179	116

Appendix X.

MADRAS OBSERVATORY.—Number of miles of wind from each point in the year 1907.

Month.	N.	1	2	3	4	5	6	7	E.	9	10	11	12	13	14	15	S.	17	18	19	20	21	22	23	W.	25	26	27	28	29	30	31	Total.
January	..	88	280	1823	987	166	40	81	222	154	230	188	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4259
February	..	..	..	..	.10	165	464	750	355	228	155	293	550	251	16	24	12	8	6	13	14	4	..	..	..	..	..	..	..	..	..	..	3318
March	..	88	..	24	45	309	172	770	88	203	160	159	1392	931	193	92	56	71	84	60	..	..	..	..	..	..	..	..	..	..	..	..	4897
April	..	12	..	..	..	31	64	67	10	284	332	1325	759	1171	103	60	44	76	63	60	23	6	44	11	11	23	7	5	5	49	4	24	4673
May	18	.	..	..	..	18	10	53	179	159	173	456	804	727	467	316	364	401	216	298	171	163	143	84	141	79	92	47	12	14	6	..	5606
June	10	18	..	45	62	31	18	33	30	62	103	189	220	318	273	202	124	256	150	77	233	252	313	693	907	727	241	89	34	38	13	6	5767
July	43	8	6	21	2	5	58	18	28	70	99	94	527	351	207	69	46	106	142	216	355	432	659	852	450	329	112	56	25	24	40	62	5512
August	15	..	8	..	..	3	13	3	28	73	14	147	160	206	71	157	85	70	187	282	167	363	460	1310	1004	658	102	88	28	28	20	14	5764
September	14	15	53	..	17	33	36	27	84	286	487	538	228	201	145	65	57	63	121	113	145	129	165	209	143	279	208	119	83	107	51	16	4237
October	177	265	391	497	131	254	88	131	71	132	51	51	13	54	238	37	32	31	28	40	20	3	7	30	26	22	24	57	122	281	209	214	3727
November	252	230	602	438	534	498	218	223	241	87	83	102	102	5	14	5	6	7	29	66	18	..	52	45	131	187	151	81	94	176	171	147	4995
December	1081	537	887	425	480	165	129	78	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69	346	716	4997
Annual ..	1610	1261	2227	3273	2268	1673	1310	2234	1420	1738	1887	3542	4755	4215	1727	1027	826	1089	1026	1225	1146	1352	1843	3234	2813	2304	937	542	403	786	860	1199	57752

Appendix XI.

MADRAS OBSERVATORY.—Number of inches of rain from each point in the year 1907.

Month.	N.	1	2	3	4	5	6	7	E.	9	10	11	12	13	14	15	S.	17	18	19	20	21	22	23	W.	25	26	27	28	29	30	31	Calm
January	..	..	..	0·11		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..
February	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
March	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..
April	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0·10	..	0·02	..
May	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..
June	..	..	..	..	..	..	..	..	..	..	0·05	..	0·01	0· 1		0·11	0·15	0·12	0·02	..	0·71	0·05	0·05	.	..	0·05	0·03	0·22	..	0·10	.	..	0·02
July	0·09	..	..	..	..	0·13	..	..	..	0·01	..	0·03		..	..		..	0·08	..	·023	0·03	0·01	0·53	1·18	0·02	0·02	..	..	0·02	0·09	0·31	0·02	..
August	0·06	..	0·01	..	..	.	..	..	..	0·09	..	0·03	0·06	..	..	0·02	..	0·11	0·52	0·40	0·66	0·98	0·06	0·06	0·06	0·10	..	0·14	0·15	..	..	0·57	..
September	0·03	..	0·01	..	..	..	0·06	..	0·04	..	..	0·03	..	..	..	..	..	..	0·02	0·01	0·01	..	..	..	..	..	..	0·05	0·02	0·01	..	..	..
October	1·72	0·63	0·87	0·45	0·08	0·04	0·16	0·16	0·04	1·12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0·12		1·23	0·05	1·37	1·61	0·35	1·83	..
November	0·09	1·79	0·77	0·27	1·01	0·11	0·15	1·19	0·18	1·15	0·56	..	0·05	..		..	..	0·01	0·47	0·60	0·03	..	0·56	0·02	0·02	1·45	1·43	0·05	2·53	0·95	0·13	0·59	..
December	0·76	0·28	0·03	0·79	1·21	0·11	0·55	0·95	1·18	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	.	..	..	..	.	0·01	0·52	0·10	..
Annual ..	2·75	2·70	1·69	1·62	2·30	0·39	0·92	2·30	1·44	2·37	0·61	0·09	0·12	0·11	.	0·13	0·15	0·32	1·03	1·24	1·44	1·04	1·20	1·26	0·22	1·62	2·69	0·51	4·09	3·87	1·31	3·13	0·02

Appendix XII.

MADRAS OBSERVATORY.—Wind, cloud, and bright sunshine, 1907.

Month.	Wind resultant.		Clouds (0—10).					Bright sunshine.	
	Velocity.	Direction.	8 H.	10 H.	16 H.	20 H.	Mean.	Average per day.	Greatest number of hours in a day.
	MILES.							HOURS.	
January	121	N.E.	2·6	2·8	2·2	1·2	2·3	7·6	9·1
February	101	E. by S.	1·6	3·0	2·0	1·2	2·0	8·9	10·0
March	124	S.E. by E.	2·8	3·8	1·6	1·2	2·3	8·4	10·5
April	133	S.E. by E.	4·2	4·1	3·1	2·0	3·4	8·5	11·0
May	121	S. by E.	2·9	2·5	3·5	2·0	2·8	7·3	9·0
June	100	S.W. by W.	5·8	5·2	6·6	5·3	5·6	4·1	7·3
July	97	S.W.	6·5	6·3	6·0	4·9	5·9	4·3	8·2
August	130	W.S.W.	5·9	5·3	7·7	6·5	6·4	3·8	8·0
September	38	S. by E.	5·0	4·7	5·6	3·0	4·6	5·9	10·6
October	63	N.N.E.	4·7	5·5	6·4	4·1	5·1	5·3	10·2
November	96	N.N.E.	6·6	6·5	6·3	5·3	6·2	4·1	8·5
December	144	N. by E.	4·2	4·4	3·8	3·2	3·9	5·6	8·2
Annual ..	24	E.S.E.	4·4	4·5	4·6	3·3	4·2	6·2	9·2

Appendix XIII.

Mean monthly and annual Meteorological Results at the Madras Observatory in 1907.

	Barometer.		Dry bulb thermometer.				Wet bulb.		Tension of vapour.	Relative humidity.	Sun Max. *in vac.*	Min. on grass.	Wind.			Rain.		Cloudy sky.	Bright sun-shine.	Dew point.
	Reduced to 32°.	Daily range.	Mean.	Max.	Min.	Range.	Mean.	Min.	By Blanford's tables.				Daily velocity.	Mean direction.		Amount.	Days.			
	INCHES.	INCHES.	°	°	°	°	°	°	INCHES.	CENTS.	°	°	MILES.	PTS.		INCHES.	NO.	CENTS.	HOURS.	°
January	29·977	0·115	75·1	83·9	66·9	17·1	70·3	66·3	0·680	78	132·6	63·3	137	5	N.E. by E.	0·11	3	23	234·4	66·6
February	·959	·121	77·4	86·2	68·4	17·8	72·2	68·1	·724	77	135·5	64·7	119	9	E. by. S.	..	..	20	249·2	68·6
March	·909	·128	81·1	89·7	73·4	16·3	75·4	72·4	·808	76	138·3	70·9	158	10	E. S. E.	..	..	23	261·1	71·5
April	·845	·132	83·5	92·4	76·6	15·9	78·0	75·2	·889	78	140·3	74·7	156	12	S. E.	0·12	2	34	255·3	74·4
May	·740	·118	88·5	102·1	80·8	21·3	78·8	75·2	·856	64	141·8	79·2	181	15	S. by [illegible]	..	..	28	226·4	72·7
June	·686	·121	87·7	100·1	81·5	18·7	77·1	73·8	·788	60	137·1	79·8	192	20	S. W.	2·80	9	56	121·9	69·7
July	·695	·119	85·5	96·0	78·7	17·3	77·7	74·7	845	69	133·2	77·7	178	20	S. W.	2·80	11	59	132·0	73·6
August	·744	·130	85·3	96·9	78·7	18·2	77·0	73·8	·816	67	138·0	77·3	186	21	S.W. by W.	4·08	19	64	118·1	71·5
September	·781	·130	84·6	95·0	77·9	17·2	78·3	75·0	·885	75	140·0	76·7	141	16	S.	0·29	6	46	175·7	74·1
October	·845	·117	81·1	88·6	75·3	13·3	76·6	74·2	·859	81	127·9	73·9	120	5	N.E. by E.	11·88	16	51	164·1	73·4
November	·893	·105	77·7	83·5	72·8	10·7	74·5	72·0	·815	86	125·0	71·5	167	4	N. E.	16·16	15	62	122·1	72·3
December	·950	·110	75·5	82·8	69·4	13·4	71·1	68·2	·709	80	128·5	66·5	161	1	N. by E.	6·49	7	39	174·3	68·0
Annual ..	29·835	0·121	81·9	91·4	75·0	16·4	75·6	72·4	0·806	74	134·9	73·0	158	11	S. E. by E.	44·68	88	42	2,234·6	71·4

Extreme monthly Meteorological Records at the Madras Observatory in 1907.

	Barometer.					Dry bulb thermometer.				Wet bulb.		Humidity.		Sun Th. *in vacuo.*		Grass therm.		Wind.				Rain.	
	Highest.		Lowest.		Range.	Highest.		Lowest.		Lowest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.		Greatest fall.	
	INCHES.	DAY.	INCHES.	DAY.	INCHES.	°	DAY.	°	DAY.	°	DAY.	CENTS.	DAY.	°	DAY.	°	DAY.	MILES.	DAY.	MILES.	DAY.	INCHES	DAY.
January	30·080	1	29·869	27	0·211	86·5	29	59·6	31	59·5	31	57	19, 23, 25	137·3	13	55·2	31	230	12	62		0·07	1
February	.094	9	·806	14	·288	91·2	24	63·6	13	63·4	13	56	3	142·0	24	59·1	13	171	5	71		..	..
March	·031	5	·720	13	·311	95·1	23	66·2	4	65·4	4	46	26	144·5	24	62·1	4	259	24	76	6	..	..
April	29·991	3	·662	30	·329	97·4	30	71·6	12	70·8	12	55	28	147·0	28	69·6	1	218	25	106	19	0·10	12
May	·857	13	·591	3	·266	109·0	24	76·3	1	71·5	19	33	3	146·3	4	72·6	10	286	30	115	1	..	..
June	·858	20	·526	15	·332	107·6	1	74·9	14	71·6	24	31	23	148·6	21	73·1	15	254	26	123	15	1·38	13
July	·848	10	·515	25	·333	100·8	14	75·0	9	71·9	31	36	27	143·5	13	72·8	9	237	27	133	21	1·20	17
August	·852	26	·585	6	·267	101·0	20	73·6	11	71·1	16	37	16	151·2	27	72·4	7	241	13	111	11	1·08	30
September	·918	24	·633	9	·285	100·6	10	72·6	1, 24	72·0	10	42	11	149·7	16	74·0	1, 11, 25	191	9	90	13	0·12	6
October	30·001	28	·669	16	·332	99·3	15	71·4	14	70·6	15	29	15	145·4	16	68·9	14	182	18	68	20	5·06	2
November	·024	19	·651	26	·373	87·4	5	65·8	14	63·9	14	62	10	138·8	2	64·9	14	316	26	70	19	3·64	13
December	·098	29	·812	8	·286	86·8	9	61·8	5	60·7	5	47	8	140·6	18	58·0	5	295	14	107	17	3·27	14