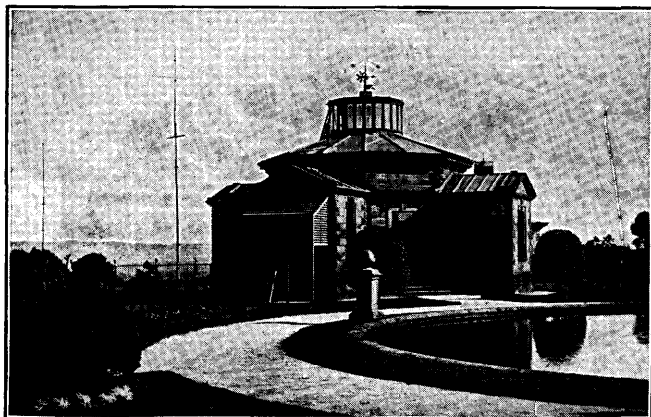


STONYHURST COLLEGE OBSERVATORY.

Lat. $53^{\circ} 50' 38.5''$ N. Long. $9^m 52^s .88$ W.
Height of the Barometer above the Sea, 381 feet.



(FOUNDED 1838.)

Results of Geophysical and Solar Observations,

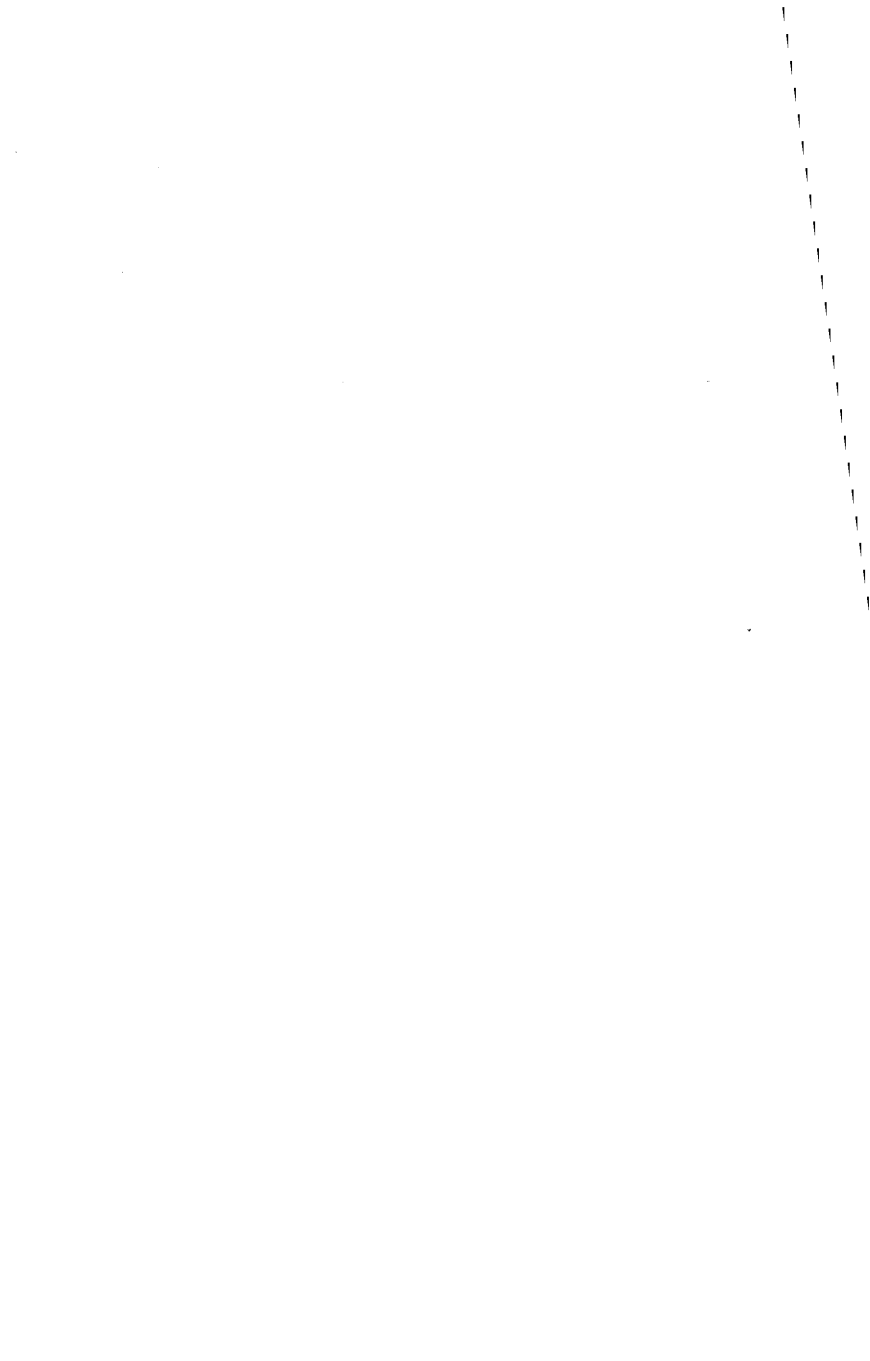
1934.

With Report and Notes of the Director,

Rev. J. P. ROWLAND, S.J., B.Sc., F.R.A.S., F.R.Met.Soc.

BLACKBURN :

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REPORT AND NOTES.

GENERAL.—The Staff of the Observatory was augmented in September by the part-time services of Father J. Lawrence, S.J., B.Sc., M.A. (Oxon.), who is teaching Physics in the College, and Father H. Macklin, S.J., B.Sc. (Oxon.), who is also on the teaching staff, continues to assist in so far as his other duties permit. Mr. Wilfred Brown, as the only full-time assistant, is responsible for the routine meteorological work, the changing of the recording instruments and development of photographic records.

The Director gave a number of lectures to various societies during the year, and attended the meeting of the British Association at Aberdeen, in September. He had been nominated a permanent member of General Committee earlier in the year.

In June and July the whole Observatory was repainted, both internally and externally, and some woodwork which had become affected with dry-rot was renewed.

In our last Report we inadvertently omitted to mention that in May, 1933, the Robinson Anemograph, which has been in continuous service at the Observatory since 1867, and was the property of the Meteorological Office, was presented by the Air Ministry to the Observatory. We take this opportunity of expressing our appreciation and thanks for the donation.

METEOROLOGICAL.—The Meteorological records have been continued without interruption throughout the year, and Weekly and Monthly Reports have been supplied as heretofore to the Meteorological Office, London.

The feature of the year's weather of most general interest is probably the return of the amount of rainfall to more normal conditions, for though the total for the year, 44·392 in., is three inches below the average, this deficit must be regarded as insignificant, and the severe drought of 1933 may be considered as definitely over. But whilst the year's rainfall differed little from the normal, its distribution was very irregular. February, July and November had considerable deficiencies, amounting in the aggregate to 7·235 inches, or 60% of the average for these months. February, especially, was remarkably dry, with a total precipitation of only 0·315 in., or only 9% of the average. May, October and December, on the other hand, were wet months—October being exceptionally so, the total of 8·084 in. being over three inches, or 61% above the average. The amounts in the other six months of the year differed little from normal.

The greatest abnormality in the meteorological conditions of the year was the remarkable mildness of December, which is unprecedented in our 87 years' records. The mean maximum temperature $48^{\circ}\cdot9$, and the mean minimum $42^{\circ}\cdot4$, were respectively $5^{\circ}\cdot4$ and $8^{\circ}\cdot4$ above the average, whilst the adopted mean temperature of the month, $45^{\circ}\cdot8$, was $6^{\circ}\cdot7$ above the average. There was not a single occasion

of frost, either in the air or on the ground throughout the month, the lowest temperature in the screen, $38^{\circ}\cdot 0$, being no less than 16° above the average.

There was very little frost or snow in the winter months, either at the beginning or end of the year. The summer months were, on the whole, fine, June, July and September having an excess of sunshine, and August about the average.

An unusually long sequence of sunless days occurred from November 19th to December 3rd, inclusive, a period of 15 consecutive days on which no sunshine was recorded, and on the 22 days from November 15th to December 6th, there was sunshine on only two days, amounting to $3\cdot 2$ hours— $3\cdot 1$ hours on November 18th, and $0\cdot 1$ hour on December 4th. Such a sunless spell has not occurred since December 24th, 1883, to January 10th, 1884, a period of 18 consecutive days without recorded sunshine.

No extreme temperatures were recorded during the year. The adopted mean temperature, $48^{\circ}\cdot 4$, is $1^{\circ}\cdot 4$ above the average. The highest shade temperature, $83^{\circ}\cdot 8$, on July 11th, is $2^{\circ}\cdot 7$ above the average, and the lowest, $24^{\circ}\cdot 2$, on February 2nd and March 14th, is $7^{\circ}\cdot 4$ above the average. The mean temperatures of March, May and August were slightly below normal, the deficiency being due to the absence of warm days rather than to any exceptionally cold ones, whilst the mean for April was almost exactly normal. The remaining months all had mean temperatures above the average, the condition resulting chiefly from the absence of low minima.

A very severe thunderstorm occurred after 9 p.m. on September 15th, which seriously affected electric supply from the "Grid" system, several Lancashire towns being without light for a time during the progress of the storm.

Heavy falls of rain of one inch or more in 24 hours occurred on :—May 15th, September 19th, and October 4th.

A rainless spell of 13 days extended from June 29th to July 11th, inclusive, and temperature rose above 80° on five of the six days from July 6th to 11th, the highest being 83°·8 on the 11th.

Rainless periods of five days or more occurred as follows :—February 1—6, February 10—18, March 27—April 3, May 26—June 5, June 29—July 11, September 10—14. A total of six periods, with an average of 8·7 days each.

Bright sunshine for 10 hours or more was recorded on :—March 27th ; April 20th ; May 14th, 17th, 24th, 31st ; June 1st, 2nd, 3rd, 4th, 11th, 12th, 17th, 18th, 29th, 30th ; July 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 19th, 21st, 23rd ; August 4th, 19th, 24th, 25th, 26th ; September 13th, 14th. A total of 36 days, with an average of 12·1 hours each day.

Days on which notable continuous sunshine occurred were :—January 19th, 27th ; February 13th, 15th, 26th ; March 27th, 28th ; April 7th, 20th ; May 12th, 31st ; June 1st, 2nd, 3rd, 11th, 30th ;

July 2nd, 3rd, 7th, 8th, 9th, 10th ; August 25th, 26th ; September 13th, 14th ; October 8th, 16th ; November 6th, 12th.

Eight gales of wind of 37 m.p.h. mean hourly velocity, or more, were recorded :—Jan. 11th, March 16th, May 6th, August 20th, October 14th and 25th, and December 8th and 9th. The gale which occurred on May 6th was the most severe, having a mean hourly velocity of 48 m.p.h., in direction S. by E., at 1500 G.M.T., and a maximum gust of 61 m.p.h. Although a gust of 66 m.p.h. was recorded during the gale of August 20th, the mean hourly velocity on that occasion was only 38 m.p.h. The total mileage for the year was very nearly normal, but new records were set up in both October and November. The mileage in October, 9,925, which is a record for the month, was above the average by 46%. This excess was balanced by the great deficit in November, the total of 4,419 miles being 38% less than the normal, and 435 miles less than the previous record minimum mileage of 1933.

SYNOPTIC METEOROLOGY.—The service has been continued throughout the year. A daily chart—for 0700 G.M.T.—was posted up in the College, and a daily forecast of local weather supplied to the *Lancashire Daily Post*. Occasional forecasts have been supplied to other newspapers, on request.

MAGNETICAL.—Absolute measures of Horizontal Magnetic Force have been made once each month, by the method of Vibration and Deflection. The constants of the magnetometer needles were described

in our 1921 Annual Report (*p.* vii). The Inclination is also measured, once each month, by two needles, with Dover's Circle, No. 159. The Declination is observed each week, and usually at about 16 hours. The Differential Instruments, or Photo-Magneto-graphs, which have been in practically continuous action since the year 1866, are of the Kew Observatory pattern, except that the radial distances between the centres of the magnets and the surfaces of the respective cylinders are somewhat shorter, being 152·4 Cms. The time-scale is provided by cutting off the light every two hours, by means of a relay operated by the Synchronome Clock. The scale values of the instruments are as follows :—

For the Unifilar	...	11·28'	per Cm. of Ordinate.
„ Bifilar	...	·000507	C.G.S. „ „

Owing to the cumulative effect of secular variation in Declination, it has become impossible to maintain the Vertical Force Balance in the Magnetic Meridian, and accordingly the instrument was dismantled on June 11th, 1930, and has since remained out of action.

Four daily readings are measured on the curves, the highest, the lowest, and those at the hours 4 and 16. The Base-line values are determined from the measures of the curve ordinates at the times of the absolute observations, the adopted value for each month being, in the case of Declination, the mean of the four or five observations of the month, and in the case of the Horizontal Force, the single value obtained from the observation about the middle of the month.

In the Tabular Summary on *p.* 37 the Absolute

Measures of Horizontal Direction and Force are corrected by the difference between the curve ordinate at the time of observation and the monthly mean of the four daily readings on the five quietest days of the month, according to the rule stated on page xii of our Report for 1908.

The Vertical and Total Forces are deduced from the measures of the Horizontal Force, and the angle of Inclination or Dip.

In the Table of Magnetic Disturbances (page 38) the intention is that a *calm* (c) shall mean a smooth curve ; *small* (s) a disturbance noteworthy only as opposed to a calm ; *moderate* (m) a disturbance not to be neglected for any comparison with other phenomena, solar or terrestrial ; *greater* (g) a marked disturbance ; and *very great* (v.g.) a decided storm.

The rule followed in assigning these letters to denote the magnetic character of a day is as follows:—

From the measured ranges of D and H in minutes of arc on the five quietest days of a month a mean value is obtained of D and H combined. Similarly for each day of the month a mean value in minutes of arc of the range of D and H combined is set down. The excess of this daily mean range over the mean for the five quietest days gives the magnetic character of the day. Till the year 1927, inclusive, the following values of the excess were adopted for the table of magnetic disturbances :— 0 to 2 calm, 3 to 7 small, 8 to 15 moderate, 16 to 20 great, above 20 very great.

It has, however, been felt for some time (*cf.* Report 1925, p. xxiv) that the ranges assigned for the higher

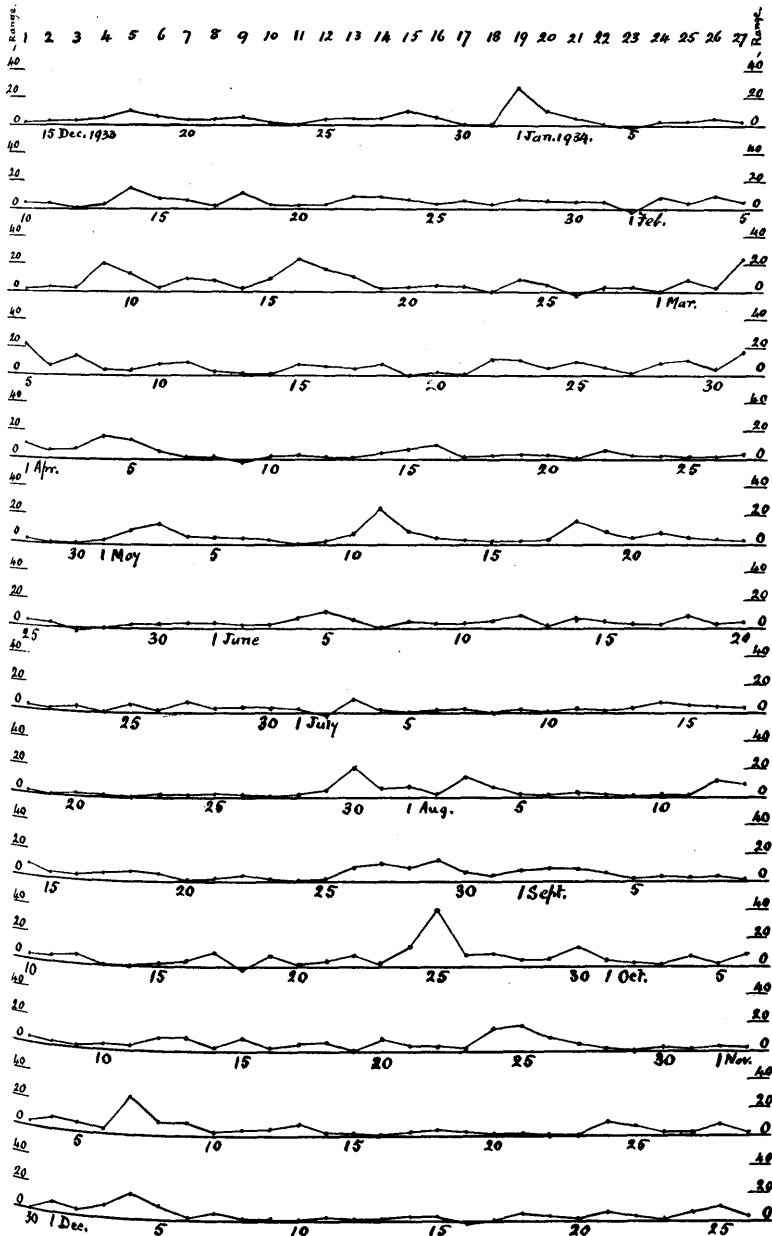
character letters were too low, and accordingly a change was made in 1928 and the following scale adopted: (c) 0-2, (s) 3-7, (m) 8-20, (g) 21-65, (v.g.) over 65.

It follows from the nature of the process that these indications are not absolute, but relative to the mean amount of disturbance on the quiet days.

Corresponding tabulations are sent quarterly to the Meteorological Institute at De Bilt (Holland), for the International Committee on Terrestrial Magnetism. In these the significant notes are restricted to three—0 (quiet), 1 (moderately disturbed), and 2 (highly disturbed). The character figures are assigned according to the scheme detailed in the *Annuaire* for 1918 of the Royal Dutch Meteorological Institute. The civil day is used for both the international figures and for our own characteristic letters.

Magnetic activity again shows a decline on last year, though with the development of the new Solar cycle, Solar activity, as manifested by the presence of sunspots shows an increase. The variations in solar and magnetic activity for the past five years are exhibited in the following Table:—

	Solar				Magnetic Mean Daily Range	
	Spotless Days	Mean Area (1/5000 of Disc)	Decln.	H.F.		
1930	4	2.44	16.9	88.7		
1931	46	1.26	13.8	59.5		
1932	118	0.81	14.4	62.8		
1933	249	0.41	13.4	58.1		
1934	175	0.58	12.4	53.1		



1934. DAILY MAGNETIC CHARACTER IN 27-DAY PERIODS.

There were again no disturbances classed as "very great," and the number of days of "greater" disturbance fell from 15 to 10, and of "moderate" from 102 to 77, whilst the number ranking as "small" increased from 127 to 139, and of "calms," from 121 to 139.

The chart on p. xiii. shows the magnetic character of each day of the year, divided into 27-day periods, the ordinates representing the values of diurnal range from which our character letters are determined, as explained on pp. xi-xii. Whilst there are indications of associations of disturbances over several periods, the recurrences are less definitely at 27-day intervals than in some former years. There is a suggestion of the shortening of the period in some cases, and a lengthening in others. This may perhaps be attributable to the circumstance that in the present year there are two principal belts of disturbed areas on the sun, one that of spots of the expiring solar cycle in low latitudes, which have a shorter period of rotation, the other that of spots of the new cycle, in high latitudes, with a correspondingly longer period of rotation.

The greatest disturbance of the year (not shown on the chart), occurred on December 29th—25 days after that of December 4th, which in turn was at 27 days interval after that of November 7th. On December 29th the Aurora was observed in the North of England between 18 h. and 19 h., when the magnetic disturbance was at its maximum.

"Sudden Commencements" were noted on the following dates, those marked with a query (?) being doubtful:—Feb. 8, 16 h. 18 m.; April 10, 23 h. 45 m. (?);

May 11, 20 h. 10 m. ; May 18, 2 h. 42 m. (?) ;
 May 18, 4 h. 6 m. ; June 4, 19 h. 48 m. ; June 14,
 12 h. 37 m. ; July 3, 10 h. 40 m. (?) ; July 30, 3 h. 18 m. ;
 November 24, 16 h. 2 m.

ASTRONOMICAL TIME SERVICE.—The rhythmic time signals from Rugby at 1000 G.M.T. have been regularly taken throughout the year, and the errors and rates of the sidereal and mean time clocks and chronometers determined from them. On occasion, supplementary time signals have also been received. Time marks are made by the Synchronome Clock every minute on the Milne-Shaw Seismograph, and every two hours on the Magnetographs.

ASTRONOMICAL.—Owing to shortage of Staff, it has not been possible to undertake any systematic programme of night work. Preparation was made to observe occultations on a number of occasions, but in every case observation was prevented by clouds. Continuously cloudy skies also prevented any observation of Nova Herculis, 1934, until January 4th, 1935, on which date, and some subsequent dates, plates of the spectrum were obtained. On several occasions when preparations had been made, the sky clouded over before an exposure could be made.

SOLAR OBSERVATIONS.—Observation of the Solar Surface was made on 251 days, with the results shown in the table on pp. 39–40. Of the 251 days of observation 249 yielded drawings, of which 219 are complete, and show all spots and faculæ, and of the remaining 30, 22 are complete for spots. Professor Brunner, of Zurich, supplied 70 drawings used for measurement, and 42 observations of spotless days to fill gaps in our

own observations, and two of the Catania drawings, kindly put at our disposal by Professor Bemporad, were used to further complete the record, and others were used for comparison purposes.

The routine work of solar drawing was normally carried out by the Director, and in his absence generally by Mr. Brown. Father Macklin is responsible for the measurements and reductions.

Owing to the continued shortage of staff it has still not been found possible to carry out any systematic spectroscopic observations of the Sun, or to complete the spectrohelioscope.

Sun-spot statistics have been sent regularly to Professor Brunner, of Zurich, for the preparation of the "Sun-Spot Numbers," published in the quarterly Bulletin under the auspices of the I.A.U.

The observation days and daily projected areas in units $1/5000$ of the disc, are recorded on pages 39 and 40. The horizontal lines on these pages indicate the commencement of a new solar rotation in accordance with the Greenwich Convention.

There were no spots on 175 days, including the Zurich and Catania observations, as against 249 in 1933.

The Sun-Spot Statistics are given on pp. 41—42. The groups are numbered in the order of their appearance in the Stonyhurst drawings. Spots special to the Zurich or Catania drawings receive the same number with a suffix as the Stonyhurst group which is nearest

XVII.

to them. There were 17 such groups this year, as will be seen in the Table, only one of appreciable size, 33₄, which occurred entirely during the prolonged sunless period in November and December, already referred to, when no observation at Stonyhurst was possible.

Finally, a number of the values of maximum area were obtained from the Zurich drawings. These have been duly indicated.

The following Table shows the distribution of spot groups in the Northern and Southern Hemispheres for the four quarters of the year, with their maximum projected areas. The last column but one gives the sum of the maximum projected areas of all the groups on the sun during the period in question.

Quarter	Northern Hemisphere		Southern Hemisphere		Sum. of Max'm Areas	Daily Mean Areas
	No. of Groups	Max'm Areas	No. of Groups	Max'm Areas		
Jan.—March ..	7	2.95	5	0.81	3.76	0.16
April—June ...	7	5.06	7	15.08	20.14	1.45
July—Sept. ...	8	3.58	7	2.80	6.38	0.34
Oct.—Dec. ...	4	2.43	12	5.45	7.88	0.32
TOTALS	26	14.02	31	24.14	38.16	0.58

With the establishment of the new cycle, solar activity shows a marked increase on last year. As indicated in the Table under Magnetical Notes, on p. xii, the number of spotless days fell from 249 to 175, and the mean daily disc area of spots increased from 0.42 to 0.58, whilst the number of groups

observed increased from 31 to 57, of which no less than 41 were groups in high latitudes, belonging to the new cycle.

SEISMOLOGICAL.—Except for a few days in June, when the instrument was out of action, owing to the renovation work in progress, the Milne-Shaw seismograph has been in continuous service throughout the year. The total number of earthquakes recorded during the year was 117, as against 106 last year, distributed as follows :—

Jan	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
8	10	10	4	2	6	21	12	10	11	12	11	117

Of these the most notable, both from its actual magnitude and from the densely populated area in which it occurred, was that which caused widespread destruction in Northern India on January 15th. This earthquake, indeed, must rank as one of the greatest on record, the area of complete destruction covering about 15,000 square miles, and the shock having been felt up to distances of about 1,000 miles from the epicentre.

Others of note were :—

Feb.	14	...	N.W. of Philippine Islands.
March	5	...	New Zealand.
„	29	...	Roumania.
April	15	...	Philippine Islands.
June	2	...	North of Iceland.
July	18	...	Panama.
„	21	...	New Hebrides.
Dec.	15	...	Tibet.
„	31	...	Aleutian Islands.

On August 16th was recorded a tremor which was felt over a considerable area in Ross and Cromarty, and Inverness, probably due to a movement in the Great Glen, or associated Faults. The movement on the record was very slight.

Preliminary measurements of the principal shocks have been sent to the Official Centres, and complete bulletins are in preparation.

A number of original records or photographic copies of particular earthquakes have been supplied on request for special investigations.

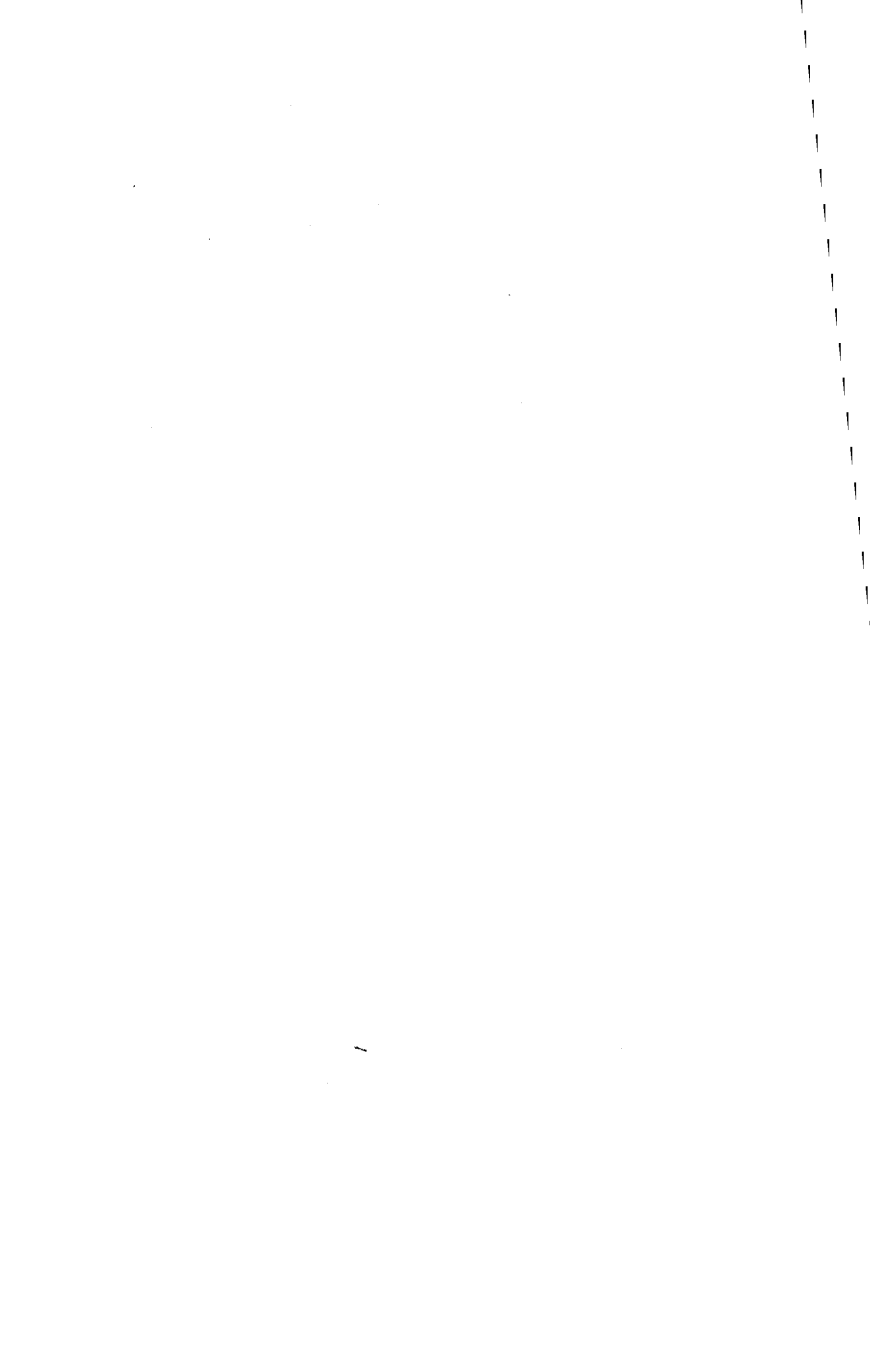
Our grateful thanks are tendered to the Governments, Institutions, Observatories and individuals who have kindly contributed presentations to the Library during the year.

J. P. ROWLAND, S.J.,
Director.

MAXIMUM GUSTS FOR EACH DAY OF THE YEAR, 1934.

RECORDED BY THE DINES TUBE ANEMOGRAPH.

1934	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1934
DAY													DAY
1	22	31	25	36	21	20	32	30	29	26	21	25	1
2	18	8	33	47	22	32	28	33	39	14	27	25	2
3	23	15	34	42	22	27	22	33	37	34	20	26	3
4	35	29	32	26	22	24	18	19	32	50	44	26	4
5	24	25	43	55	41	28	16	17	23	40	29	30	5
6	43	27	32	23	61	38	14	25	31	31	30	18	6
7	45	47	40	29	41	31	19	26	26	34	20	30	7
8	34	50	25	26	26	26	26	18	36	26	18	45	8
9	38	39	24	28	19	18	25	37	31	34	34	54	9
10	38	31	31	22	18	13	14	39	26	43	28	19	10
11	50	35	30	48	17	25	15	37	23	30	22	36	11
12	59	16	39	44	33	22	21	34	13	44	10	30	12
13	43	21	32	45	47	20	25	23	20	46	15	24	13
14	42	15	31	41	52	18	35	18	27	56	22	28	14
15	48	13	37	44	43	10	25	25	26	46	36	23	15
16	47	19	49	26	38	20	27	29	38	37	30	18	16
17	60	15	34	32	46	25	26	18	36	40	9	32	17
18	39	24	49	24	40	22	28	17	32	40	5	43	18
19	32	33	31	31	42	42	31	33	29	31	19	26	19
20	13	33	28	26	44	39	22	66	29	42	15	28	20
21	21	41	32	34	59	28	27	48	27	39	10	16	21
22	29	32	18	27	48	59	22	35	47	44	30	20	22
23	25	23	16	40	28	45	27	27	44	25	24	19	23
24	23	27	25	28	27	53	23	24	31	27	18	27	24
25	34	27	20	21	21	26	38	14	30	50	30	27	25
26	43	37	30	38	24	28	48	15	47	45	33	30	26
27	39	36	23	38	35	32	44	30	35	54	20	41	27
28	8	22	22	43	27	30	46	33	32	42	22	30	28
29	12	—	31	13	18	24	28	40	27	37	2	27	29
30	25	—	27	20	22	26	28	26	34	20	22	30	30
31	21	—	20	—	23	—	36	18	—	32	—	34	31



METEOROLOGICAL REPORT.

JANUARY, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.						
Mean Reading of the Barometer	inches 29·574	29·485						
Highest „ „ on the 31st	„ 30·311	30·131						
Lowest „ „ on the 14th	„ 28·315	28·595						
Range of Barometer Readings	„ 1·996	1·536						
Highest Reading of a Max. Therm. on the 17th ...	52·3	51·4						
Lowest Reading of a Min. Therm. on the 25th ...	24·3	22·0						
Range of Thermometer Readings	28·0	29·4						
Mean of Highest Daily Readings	44·2	42·6						
Mean of Lowest Daily Readings	34·3	33·4						
Mean Daily Range	9·9	9·2						
Deduced Mean Temp. (from mean of Max. and Min.)	39·1	37·7						
Mean Temperature from Dry Bulb	40·1	38·1						
Adopted Mean Temperature	39·6	37·9						
Mean Temperature of Evaporation	38·4	36·7						
Mean Temperature of Dew Point	36·2	34·6						
Mean elastic force of Vapour	inches 0·214	0·202						
Mean weight of Vapour in a cub. ft. of air, grains	2·5	2·4						
Mean additional weight required for saturation „	0·4	0·4						
Mean degree of Humidity (saturation 100)	85	87						
Mean weight of a cubic foot of air	grains 548·2	549·1						
Mean amount of Cloud (0—10)	7·9	7·8						
Fall of Rain	inches 4·372	4·451						
Greatest Rainfall in one day (16th).....	„ 0·660	0·829						
No. of days on which ·005 in. or more Rain fell...	19	19·8						
Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	0	0	0	8	13	7	3
Mean Velocity in miles per hr.	0	0	0	0	13·7	11·9	11·9	7·3
Total No. of miles.....	0	0	0	0	2637	3725	2006	523
Total No. of miles registered	8891						Mean*	
Greatest hourly velocity (11th, at 0430 G.M.T., Dir. S. by E.).....	37						8295	
							41	

* For the last 67 years.

JANUARY, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	...	+	0.089 in.
Monthly range	"	"	"	"	+	0.460 in.
Mean of highest daily temperatures	...	...	...	...	+	1.6°
Mean of lowest	"	"	"	"	+	0.9°
Mean daily range	...	...	...	...	+	0.7°
Adopted mean temperature	...	...	...	...	+	1.7°
Total rainfall	...	...	...	...	—	0.079 in.

Ground Frost on the 1st, 20th, 21st, 25th and 28th—31st.
 Hoar Frost on the 20th, 25th, 28th, 29th and 31st. Snow on the 16th and 21st. Hail on the 8th and 26th. Heavy Rain on the 15th, 16th and 18th. Gale of Wind on the 11th. Fog on the 2nd, 21st, 22nd, 29th and 30th.

EXTREME READINGS FOR JANUARY.

During 87 Years.

Highest reading of Barometer	...	1896 (9th)	.....	30.597 in.
Lowest	"	"	...	1884 (26th) .....27.803 in.
Highest temperature	...	...	...	1877 (7th) 59.9°
Lowest	"	"	...	1881 (15th) 4.6°
Highest adopted mean temperature	...	...	...	1916 44.7°
Lowest	"	"	...	1881 29.2°
Greatest fall of rain	...	...	...	1928 .....12.267 in.
Least	"	"	...	1881 0.472 in.
Greatest fall of rain in one day	...	...	...	1914 (8th) 2.074 in.
Greatest No. of days on which				
.005 in. or more rain fell	...	1890	.....	30
Least	"	"	...	†1879 8
*Greatest hourly velocity of wind	...	...	...	1899 (12th) 63 mls.
*Greatest No. of miles registered	...	...	...	1890 11661
*Least	"	"	...	1881 4352

* Since 1867 only.

† And in 1850.

FEBRUARY, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.						
Mean Reading of the Barometer	inches 29·996	29·503						
Highest ,, ,, on the 15th...	,, 30·515	30·114						
Lowest ,, ,, on the 24th...	,, 29·320	28·670						
Range of Barometer Readings	,, 1·195	1·444						
Highest Reading of a Max. Therm. on the 15th ...	48·8	52·1						
Lowest Reading of a Min. Therm. on the 2nd	24·2	22·8						
Range of Thermometer Readings	24·6	29·3						
Mean of Highest Daily Readings	43·7	43·8						
Mean of Lowest Daily Readings	34·4	33·6						
Mean Daily Range	9·3	10·2						
Deduced Mean Temp. (from mean of Max. and Min.)	38·7	38·2						
Mean Temperature from Dry Bulb	39·6	38·5						
Adopted Mean Temperature	39·2	38·4						
Mean Temperature of Evaporation	37·7	36·8						
Mean Temperature of Dew Point	35·2	34·6						
Mean elastic force of Vapour	inches 0·206	0·196						
Mean weight of Vapour in a cub. ft. of air, grains	2·4	2·4						
Mean additional weight required for saturation ,,	0·5	0·4						
Mean degree of Humidity (saturation 100)	83	86						
Mean weight of a cubic foot of air	grains 556·8	548·8						
Mean amount of Cloud (0—10)	7·8	7·5						
Fall of Rain	inches 0·315	3·485						
Greatest Rainfall in one day (24th)	,, 0·180	0·750						
No. of days on which ·005 in. or more Rain fell...	5	16·5						
Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	2	0	1	0	4	15	3
Mean Velocity in miles per hr.	10·3	6·8	0	7·3	0	3·6	11·0	4·8
Total No. of miles.....	743	323	0	175	0	350	3962	345
Total No. of miles registered	5898						Mean*	
Greatest hourly velocity (8th, at 0330 G.M.T., Dir. W.)	32						7326	
							40	

* For the last 67 years.

FEBRUARY, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	+	0.493 in.
Monthly range	..	..	..	—	0.249 in.
Mean of highest daily temperatures	...	...	...	—	0.1°
Mean of lowest	..	..	..	+	0.8°
Mean daily range	...	...	...	—	0.9°
Adopted mean temperature	...	...	...	+	0.8°
Total rainfall	...	...	...	—	3.170 in.

Ground Frost on the 2nd, 13th, 15th, 24th, and 26th—28th.
 Hoar Frost on the 2nd and 15th. Hail on the 25th. Fog on the 2nd, 3rd, 12th, 14th, 15th and 16th.

EXTREME READINGS FOR FEBRUARY, During 87 Years.

Highest reading of Barometer	...	1902 (1st)	.....	30.476 in.		
Lowest	..	..	...	1900 (19th)	.....	27.870 in.
Highest temperature	...	...	...	1877 (8th)	.....	58.3°
Lowest	..	.....	...	1902 (11th)	.....	5.0°
Highest adopted mean temperature	...	1869	.....	44.0°		
Lowest	..	..	...	1855	.....	28.6°
Greatest fall of rain	.....	1848	.....	8.882 in.		
Least	..	.....	...	1932	.....	0.123 in.
Greatest fall of rain in one day	...	1909 (3rd)	.....	2.000 in.		
Greatest No. of days on which .005 or more rain fell	.....	1910	.....	27		
Least	..	..	...	1855	.....	4
*Greatest hourly velocity of wind	..	1903 (27th)	.....	60 mls.		
*Greatest No. of miles registered	...	1868	.....	12577		
*Least	..	..	...	1917	.....	3160

* Since 1867 only.

MARCH, 1934.

Results of Observations taken during the Month.								Mean for the last 87 years.
Mean Reading of the Barometer	inches	29.218						29.453
Highest " " on the 25th ...	" "	29.983						30.044
Lowest " " on the 15th ...	" "	28.139						28.663
Range of Barometer Readings	"	1.844						1.381
Highest Reading of a Max. Therm. on the 25th...		51.6						56.8
Lowest Reading of a Min. Therm. on the 14th...		24.2						23.5
Range of Thermometer Readings		27.4						33.3
Mean of Highest Daily Readings		45.0						46.9
Mean of Lowest Daily Readings		34.1						34.5
Mean Daily Range		10.9						12.4
Deduced Mean Temp. (from mean of Max. and Min.)		38.6						39.8
Mean Temperature from Dry Bulb		40.1						40.4
Adopted Mean Temperature		39.4						40.1
Mean Temperature of Evaporation		38.1						38.2
Mean Temperature of Dew Point		35.5						35.8
Mean elastic force of Vapour	inches	0.208						0.210
Mean weight of Vapour in a cub. ft. of air, grains		2.4						2.4
Mean additional weight required for saturation ..		0.5						0.5
Mean degree of Humidity (saturation 100)		82						85
Mean weight of a cubic foot of air	grains	541.8						546.0
Mean amount of Cloud (0—10)		6.8						7.4
Fall of Rain	inches	2.467						3.267
Greatest Rainfall in one day (5th)	"	0.284						0.743
No. of days on which .005 in. or more Rain fell...		23						16.6
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of Days	3	4	6	0	0	5	11	2
Mean Velocity in miles per hr.	7.0	7.7	8.1	0	0	11.0	12.0	7.0
Total No. of miles.....	504	743	1165	0	0	1317	3166	337
Total No. of miles registered						7232	Mean* 8239	
Greatest hourly velocity (16th, at 1830 G.M.T., Dir. S. by E.)						38	39	

* For the last 67 years.

MARCH, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	—	0·235 in.
Monthly range	„	...	...	+	0·463 in.
Mean of highest daily temperatures	...	...	...	—	1·9°
Mean of lowest	„	„	...	—	0·4°
Mean daily range	...	...	...	—	1·5°
Adopted mean temperature	...	...	...	—	0·7°
Total rainfall	...	...	...	—	0·800 in.

Ground Frost on the 1st, 3rd, 9th, 14th, 19th, 22nd, 23rd, 27th, 28th, 30th and 31st. Hoar Frost on the 14th, 25th, 27th and 28th. Snow on the 5th, 7th, 10th, 14th and 17th. Hail on the 5th, 6th, 7th, 17th and 18th. Gale of Wind on the 16th. Fog on the 24th. Solar Halo on the 16th.

EXTREME READINGS FOR MARCH,

During 87 Years.

Highest reading of Barometer	...	1854 (4th)	.....	30·452 in.
Lowest	„	1876 (10th)	.....	28·100 in.
Highest temperature	...	1871 (25th)	.....	68·0°
Lowest	„	1874 (10th)	.....	11·1°
Highest adopted mean temperature	...	1920	.....	44·2°
Lowest	„	1883	.....	34·4°
Greatest fall of rain	.....	1912	.....	7·205 in.
Least	„	1852	.....	0·352 in.
Greatest fall of rain in one day	...	1898 (17th)	.....	1·540 in.
Greatest No. of days on which				
·005 in. or more rain fell	...	†1914	.....	28
Least	„	1852	.....	3
*Greatest hourly velocity of wind	...	1905 (15th)	.....	57 mls.
*Greatest No. of miles registered	...	1903	.....	12773
*Least	„	1929	.....	4437

* Since 1867 only.

† And in 1861.

APRIL, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.						
Mean Reading of the Barometer	inches 29·314	29·479						
Highest „ „ on the 30th ...	„ 29·806	29·953						
Lowest „ „ on the 24th ...	„ 28·660	28·802						
Range of Barometer Readings	„ 1·146	1·151						
Highest Reading of a Max. Therm. on the 15th...	65·9	64·2						
Lowest Reading of a Min. Therm. on the 7th ...	29·0	28·3						
Range of Thermometer Readings	36·9	35·9						
Mean of Highest Daily Readings	51·1	54·0						
Mean of Lowest Daily Readings	38·7	37·9						
Mean Daily Range	12·4	16·1						
Deduced Mean Temp. (from mean of Max. and Min.)	43·4	43·8						
Mean Temperature from Dry Bulb	45·0	44·7						
Adopted Mean Temperature	44·2	44·3						
Mean Temperature of Evaporation	41·6	41·6						
Mean Temperature of Dew Point	37·7	38·2						
Mean elastic force of Vapour	inches 0·225	0·234						
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·7						
Mean additional weight required for saturation „	0·8	0·7						
Mean degree of Humidity (saturation 100)	73	80						
Mean weight of a cubic foot of air	grains 538·1	541·9						
Mean amount of Cloud (0—10)	7·3	6·8						
Fall of Rain	inches 2·188	2·565						
Greatest Rainfall in one day (23rd).....	„ 0·503	0·594						
No. of days on which ·005 in. or more Rain fell...	17	15·0						
Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	9	0	1	5	4	8	0
Mean Velocity in miles per hr.	8·7	10·1	0	3·8	16·9	6·8	9·8	0
Total No. of miles.....	627	2182	0	92	2024	657	1876	0
Total No. of miles registered	7458	Mean*		7452				
Greatest hourly velocity (15th, at 1500 G.M.T., Dir. S.)	33	36						

* For the last 67 years.

APRIL, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	—	0.165 in.
Monthly range	..	...	...	—	0.005 in.
Mean of highest daily temperatures	...	...	...	—	2.9°
Mean of lowest	..	..	...	+	0.8°
Mean daily range	...	...	...	—	3.7°
Adopted mean temperature	...	...	...	—	0.1°
Total rainfall	...	...	...	—	0.377 in.

Ground Frost on the 1st, 4th, 6th, 7th, 9th, 20th, 22nd and 25th. Hoar Frost on the 4th. Snow on the 6th and 7th. Hail on the 24th. Heavy Rain on the 23rd. Thunder on the 12th, 18th and 24th. Lightning on the 12th, 18th and 24th. Solar Halo on the 13th.

EXTREME READINGS FOR APRIL, During 87 Years.

Highest reading of Barometer	...	1906 (8th)	.....	30.317 in.
Lowest	..	1919 (14th)	.....	28.250 in.
Highest temperature	.....	1852 (14th)	.....	74.1°
Lowest	..	1917 (2nd)	.....	13.6°
Highest adopted mean temperature	.....	1865	.....	48.5°
Lowest	..	1917	.....	39.8°
Greatest fall of rain	.....	1867	.....	5.672 in.
Least	..	1852	.....	0.478 in.
Greatest fall of rain in one day	...	1923 (12th)	.....	1.260 in.
Greatest No. of days on which				
.005 in. or more rain fell	.....	1920	.....	27
Least	..	1852	.....	4
*Greatest hourly velocity of wind	..	1911 (19th)	.....	53 mls.
*Greatest No. of miles registered	...	1904	.....	11016
*Least	..	1884	.....	5047

* Since 1867 only.

MAY, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.							
Mean Reading of the Barometer	inches 29.623	29.536							
Highest " " on the 10th ...	" 30.019	29.977							
Lowest " " on the 16th ...	" 28.890	28.949							
Range of Barometer Readings	" 1.129	1.028							
Highest Reading of a Max. Therm. on the 11th...	71.4	71.9							
Lowest Reading of a Min. Therm. on the 17th...	36.2	32.2							
Range of Thermometer Readings	35.2	39.7							
Mean of Highest Daily Readings	56.8	59.2							
Mean of Lowest Daily Readings	43.5	42.7							
Mean Daily Range	13.3	16.5							
Deduced Mean Temp. (from mean of Max. and Min.)	48.5	49.2							
Mean Temperature from Dry Bulb	49.6	50.1							
Adopted Mean Temperature	49.1	49.7							
Mean Temperature of Evaporation	46.9	46.5							
Mean Temperature of Dew Point	44.0	43.0							
Mean elastic force of Vapour	inches 0.289	0.280							
Mean weight of Vapour in a cub. ft. of air, grains	3.3	3.2							
Mean additional weight required for saturation ..	0.8	0.8							
Mean degree of Humidity (saturation 100)	80	77							
Mean weight of a cubic foot of air	grains 537.4	536.8							
Mean amount of Cloud (0—10)	6.5	7.0							
Fall of Rain	inches 4.279	2.495							
Greatest Rainfall in one day (15th).....	" 1.240	0.653							
No. of days on which .005 in. or more Rain fell...	16	14.8							
Wind:—Direction	N	NE	E	SE	S	SW	W	NW	
No. of days.....	0	2	2	0	2	7	18	0	
Mean Velocity in miles per hr.	0	4.4	7.9	0	21.8	9.7	10.2	0	
Total No. of miles.....	0	212	381	0	1046	1631	4415	0	
Total No. of miles registered	7685							Mean* 6844	
Greatest hourly velocity (6th, at 1500 G.M.T., Dir. S. by E.).....	48							32	

* For the last 67 years.

MAY, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	..	...	...	+	0.087 in.
Monthly range	„	...	...	+	0.101 in.
Mean of highest daily temperatures	...	...	...	—	2.4°
Mean of lowest	„	„	...	+	0.8°
Mean daily range	...	...	...	—	3.2°
Adopted mean temperature	...	...	...	—	0.6°
Total rainfall	...	...	...	+	1.784 in.

Hail on the 14th and 16th. Heavy Rain on the 6th, 15th and 20th. Gale of Wind on the 6th. Fog on the 1st, 6th, 8th and 11th. Solar Halo on the 24th and 27th.

EXTREME READINGS FOR MAY,

During 87 Years.

Highest reading of Barometer	...	1881 (10th)	.....	30.332 in.
Lowest	„	1887 (28th)	.....	28.559 in.
Highest temperature	.....	1864 (19th)	.....	82.5°
Lowest	„	1855 (4th)	.....	23.5°
Highest adopted mean temperature	.....	1848	.....	55.1°
Lowest	„	1855	.....	45.0°
Greatest fall of rain	.....	1924	.....	6.765 in.
Least	„	1859	.....	0.249 in.
Greatest fall of rain in one day	...	1881 (5th)	.....	1.647 in.
Greatest No. of days on which				
.005 in. or more rain fell	...	1924	.....	26
Least	„	†1859	.....	4
*Greatest hourly velocity of wind	...	1888 (2nd)	.....	49 mls.
*Greatest No. of miles registered	...	1888	.....	9648
*Least	„	1918	.....	5113

* Since 1867 only.

† And in 1848.

JUNE, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.						
Mean Reading of the Barometer	inches 29·637	29·561						
Highest „ „ on the 2nd ...	„ 29·949	29·938						
Lowest „ „ on the 21st ...	„ 29·015	29·045						
Range of Barometer Readings	„ 0·934	0·892						
Highest Reading of a Max. Therm. on the 16th ..	75·0	76·4						
Lowest Reading of a Min. Therm. on the 3rd ...	42·3	39·2						
Range of Thermometer Readings	32·7	37·2						
Mean of Highest Daily Readings	65·3	64·9						
Mean of Lowest Daily Readings	49·3	48·2						
Mean Daily Range	16·0	16·7						
Deduced Mean Temp. (from mean of Max. and Min.)	55·5	54·8						
Mean Temperature from Dry Bulb	57·3	55·4						
Adopted Mean Temperature	56·4	55·1						
Mean Temperature of Evaporation	53·1	51·8						
Mean Temperature of Dew Point	49·3	48·2						
Mean elastic force of Vapour	inches 0·351	0·345						
Mean weight of Vapour in a cub. ft. of air, grains	3·9	3·8						
Mean additional weight required for saturation „	1·4	1·0						
Mean degree of Humidity (saturation 100)	75	78						
Mean weight of a cubic foot of air	grains 530·4	531·3						
Mean amount of Cloud (0—10)	6·0	7·1						
Fall of Rain	inches 2·639	3·288						
Greatest Rainfall in one day (21st)	„ 0·562	0·798						
No. of days on which ·005 in. or more Rain fell...	11	15·0						
Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	11	1	0	1	3	9	1
Mean Velocity in miles per hr.	5·5	6·4	10·4	0	6·2	9·4	8·7	3·8
Total No. of miles.....	531	1684	249	0	148	680	1872	91
Total No. of miles registered	5255						Mean* 6160	
Greatest hourly velocity (22nd, at 0900 G.M.T., Dir. W.S.W.)	32						29	

* For the last 67 years.

JUNE, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	...	+	0.076 in.
Monthly range	..	...	...	...	+	0.041 in.
Mean of highest daily temperatures	...	...	...	...	+	0.4°
Mean of lowest	..	..	...	...	+	1.1°
Mean daily range	...	...	...	...	—	0.7°
Adopted mean temperature	...	...	...	...	+	1.3°
Total rainfall	...	...	...	...	—	0.649 in.

Heavy Rain on the 21st. Fog on the 15th and 26th. Thunder
on the 7th, 8th and 28th. Solar Halo on the 3rd, 4th, 6th and 18th.

EXTREME READINGS' FOR JUNE,

During 87 Years.

Highest reading of Barometer	...	1874 (15th)	.....	30.219 in
Lowest	..	1862 (12th)	.....	28.632 in.
Highest temperature	.....	1893 (18th)	.....	88.7°
Lowest	..	1902 (9th)	.....	32.0°
Highest adopted mean temperature	.....	1896	.....	59.3°
Lowest	..	1907	.....	51.5°
Greatest fall of rain	.....	1907	.....	8.705 in.
Least	..	1925	.....	0.282 in.
Greatest fall of rain in one day	...	1857 (8th)	.....	2.093 in.
Greatest No. of days on which				
.005 in. or more rain fell	...	†1912	.....	27
Least	..	1887	.....	4
*Greatest hourly velocity of wind...	...	1897 (16th)	.....	45 mls
*Greatest No. of miles registered	...	1877	.....	8384
*Least	..	1915	.....	3967

* Since 1867 only.

† And in 1907.

JULY, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.						
Mean Reading of the Barometer	inches	29·583	29·523					
Highest " " on the 3rd, 8th	"	29·929	29·904					
Lowest " " on the 31st ...	"	29·144	29·002					
Range of Barometer Readings	"	0·785	0·902					
Highest Reading of a Max. Therm. on the 11th ...		83·8	78·2					
Lowest Reading of a Min. Therm. on the 4th ...		44·2	43·1					
Range of Thermometer Readings		39·6	35·1					
Mean of Highest Daily Readings		71·1	67·2					
Mean of Lowest Daily Readings		55·1	51·4					
Mean Daily Range		16·0	15·8					
Deduced Mean Temp. (from mean of Max. and Min.)		61·2	57·7					
Mean Temperature from Dry Bulb		63·1	58·2					
Adopted Mean Temperature		62·2	58·0					
Mean Temperature of Evaporation		58·0	54·9					
Mean Temperature of Dew Point		53·7	52·0					
Mean elastic force of Vapour	inches	0·413	0·389					
Mean weight of Vapour in a cub. ft. of air, grains		4·6	4·4					
Mean additional weight required for saturation ..		1·8	1·1					
Mean degree of Humidity (saturation 100)		72	81					
Mean weight of a cubic foot of air	grains	523·3	527·3					
Mean amount of Cloud (0—10)		5·6	7·4					
Fall of Rain	inches	2·172	4·035					
Greatest Rainfall in one day (25th)	"	0·584	0·877					
No. of days on which ·005 in. or more Rain fell...		14	16·8					
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	2	2	0	0	4	19	2
Mean Velocity in miles per hr.	4·4	6·8	7·1	0	0	6·9	8·6	3·6
Total No. of Miles.....	211	326	342	0	0	666	3916	175
Total No. of miles registered	5636						Mean*	
Greatest hourly velocity (27th, at 1300 G.M.T., Dir. W.N.W.).....	27						6297	
							28	

* For the last 67 years.

JULY, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	+	0.060 in.
Monthly range	..	..	..	—	0.117 in.
Mean of highest daily temperatures	...	...	...	+	3.9°
Mean of lowest	..	..	..	+	3.7°
Mean daily range	...	...	...	+	0.2°
Adopted mean temperature	...	...	...	+	4.2°
Total rainfall	...	...	...	—	1.863 in.

Heavy Rain on the 25th. Thunder on the 6th, 12th, 17th, 18th, 30th and 31st. Lightning on the 12th, 18th and 30th. Solar Halo on the 18th and 19th.

EXTREME READINGS FOR JULY,

During 87 Years.

Highest reading of Barometer	...	1911 (10th)	.....	30.203 in.	
Lowest	1922 (6th)	28.493 in.
Highest temperature	.....	1901 (20th)	.....	89.0°
Lowest	1857 (1st)	36.0°	
Highest adopted mean temperature	.....	1901	.....	63.2°
Lowest	1922	54.0°
Greatest fall of rain	.....	1888	.....	8.475 in.
Least	1868	0.669 in.	
Greatest fall of rain in one day	...	1888 (2nd)	.....	2.482 in.	
Greatest No. of days on which						
.005 in. or more rain fell	...	1920	.....	28	
Least	†1917	8
*Greatest hourly velocity of wind	..	1892 (8th)	.....	44 mls.	
*Greatest No. of miles registered	...	1879	.....	8288	
*Least	1913	4577

* Since 1867 only.

† And in other years.

AUGUST, 1934.

Results of Observations taken during the Month.								Mean for the last 87 years.
Mean Reading of the Barometer	inches	29.408						29.493
Highest " " on the 26th ...	"	29.859						29.897
Lowest " " on the 2nd ...	"	28.866						28.949
Range of Barometer Readings	"	0.993						0.948
Highest Reading of a Max. Therm. on the 8th ...		72.2						75.9
Lowest Reading of a Min. Therm. on the 25th		42.0						42.1
Range of Thermometer Readings		30.2						33.8
Mean of Highest Daily Readings		64.4						66.1
Mean of Lowest Daily Readings		51.4						51.0
Mean Daily Range		13.0						15.1
Deduced Mean Temp. (from mean of Max. and Min.)		56.2						56.9
Mean Temperature from Dry Bulb		57.7						57.8
Adopted Mean Temperature		57.0						57.4
Mean Temperature of Evaporation		54.1						54.5
Mean Temperature of Dew Point		50.8						51.8
Mean elastic force of Vapour	inches	0.372						0.387
Mean weight of Vapour in a cub. ft. of air, grains		4.2						4.3
Mean additional weight required for saturation "		1.2						1.0
Mean degree of Humidity (saturation 100)		58						82
Mean weight of a cubic foot of air	grains	525.7						527.2
Mean amount of Cloud (0—10)		7.3						7.3
Fall of Rain	inches	5.457						5.123
Greatest Rainfall in one day (29th)	"	0.795						1.069
No. of days on which .005 in. or more Rain fell...		20						18.7
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	1	1	3	2	5	17	2
Mean Velocity in miles per hr.	0	7.3	6.8	8.9	4.0	9.4	8.7	4.2
Total No. of miles.....	0	174	162	640	191	1127	3546	202
Total No. of miles registered						6042		Mean* 6287
Greatest hourly velocity (20th, at 1330 G.M.T., Dir. W.S.W.).....						38		30

* For the last 67 years.

AUGUST, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	—	0·085 in.
Monthly range	„	...	...	+	0·045 in.
Mean of highest daily temperatures	...	...	...	—	1·7°
Mean of lowest	„	„	...	+	0·4°
Mean daily range	...	...	...	—	2·1°
Adopted mean temperature	...	...	...	—	0·4°
Total rainfall	...	...	...	+	0·334 in.

Heavy Rain on the 2nd, 10th and 29th. Gale of Wind on the 20th. Thunder on the 6th, 22nd, 29th and 30th. Lightning on the 22nd, 29th and 30th.

EXTREME READINGS FOR AUGUST,

During 87 Years.

Highest reading of Barometer	...	1932 (22nd)	.....	30·208 in.
Lowest	„	1917 (28th)	.....	28·156 in.
Highest temperature	.....	1868 (2nd)	.....	88·0°
Lowest	„	1887 (13th)	.....	33·4°
Highest adopted mean temperature	.....	1911	.....	62·1°
Lowest	„	1848	.....	52·5°
Greatest fall of rain	.....	1891	.....	9·869 in.
Least	„	1932	.....	1·653 in.
Greatest fall of rain in one day	...	1929 (23rd)	.....	2·350 in.
Greatest No. of days on which				
·005 in. or more rain fell	...	1891	.....	27
Least	„	1880	.....	6
*Greatest hourly velocity of wind...	...	1903 (31st)	.....	45 mls.
*Greatest No. of miles registered	...	1903	.....	8486
*Least	„	1915	.....	3918

* Since 1867 only.

SEPTEMBER, 1934.

Results of Observations taken during the Month.								Mean for the last 87 years.
Mean Reading of the Barometer	inches	29.482						29.544
Highest " " on the 12th ...	"	29.987						30.007
Lowest " " on the 22nd ...	"	29.149						28.892
Range of Barometer Readings	"	0.838						1.112
Highest Reading of a Max. Therm. on the 14th ...		73.8						71.7
Lowest Reading of a Min. Therm. on the 1st ..		39.2						36.8
Range of Thermometer Readings		34.6						34.9
Mean of Highest Daily Readings		62.9						61.7
Mean of Lowest Daily Readings		49.7						47.4
Mean Daily Range		13.2						14.3
Deduced Mean Temp. (from mean of Max. and Min.)		55.0						53.3
Mean Temperature from Dry Bulb		56.6						54.3
Adopted Mean Temperature		55.8						53.8
Mean Temperature of Evaporation		53.1						51.1
Mean Temperature of Dew Point		49.9						48.4
Mean elastic force of Vapour	inches	0.360						0.340
Mean weight of Vapour in a cub. ft. of air, grains		4.0						3.9
Mean additional weight required for saturation ..		1.1						0.9
Mean degree of Humidity (saturation 100)		78						82
Mean weight of a cubic foot of air	grains	528.1						532.5
Mean amount of Cloud (0—10)		5.3						6.7
Fall of Rain	inches	4.205						4.315
Greatest Rainfall in one day (19th)	"	1.210						0.982
No. of days on which .005 in. or more Rain fell...		19						16.4
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	3	2	0	9	8	7	0
Mean Velocity in miles per hr.	3.1	4.9	8.3	0	12.7	9.3	9.9	0
Total No. of miles	75	353	399	0	2747	1777	1667	0
Total No. of miles registered					7018			
Greatest hourly velocity (26th, at 0830 G.M.T., Dir. S.)					32			
								Mean* 6005
								31

* For the last 67 years.

SEPTEMBER, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	—	0.062 in.
Monthly range	..	..	..	—	0.274 in
Mean of highest daily temperatures	...	...	...	+	0.6°
Mean of lowest	..	..	..	+	2.3°
Mean daily range	...	...	...	—	1.7°
Adopted mean temperature	...	...	...	+	2.0°
Total rainfall	...	...	...	—	0.110 in.

Heavy Rain on the 19th. Fog on the 12th. Thunder on the 1st, 4th, 15th, 17th and 18th. Lightning on the 1st, 4th, 15th and 17th.

EXTREME READINGS FOR SEPTEMBER,

During 87 Years.

Highest reading of Barometer	...	1851 (15th)	.....	30.247 in
Lowest	..	1918 (23rd)	.....	28.210 in.
Highest temperature	.....	1868 (6th)	.....	85.0°
Lowest	..	†1885 (25th)	.....	29.8°
Highest adopted mean temperature	.....	1865	.....	59.1°
Lowest	..	1863	.....	50.9°
Greatest fall of rain	.....	1918	.....	12.620 in.
Least	..	1910	.....	0.652 in.
Greatest fall of rain in one day	...	1932 (2nd)	.....	2.800 in.
Greatest No. of days on which .005 in. or more rain fell	...	1918	.....	29
Least	..	†1915	.....	6
*Greatest hourly velocity of wind	..	1875 (26th)	.....	53 mls.
*Greatest No. of miles registered	...	1869	.....	9053
*Least	..	1888	.....	3261

* Since 1867 only.

† And in other years.

OCTOBER, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.						
Mean Reading of the Barometer	inches 29.432	29.445						
Highest " " on the 8th ...	" 29.972	30.020						
Lowest " " on the 4th ...	" 28.431	28.684						
Range of Barometer Readings	" 1.541	1.336						
Highest Reading of a Max. Therm. on the 6th ...	63.0	63.9						
Lowest Reading of a Min. Therm. on the 31st ...	32.8	29.9						
Range of Thermometer Readings	30.2	34.0						
Mean of Highest Daily Readings	53.8	54.4						
Mean of Lowest Daily Readings	45.1	42.2						
Mean Daily Range	8.7	12.2						
Deduced Mean Temp. (from mean of Max. and Min.)	48.5	47.3						
Mean Temperature from Dry Bulb	49.9	48.1						
Adopted Mean Temperature	49.2	47.8						
Mean Temperature of Evaporation	47.2	45.5						
Mean Temperature of Dew Point	44.3	43.0						
Mean elastic force of Vapour	inches 0.292	0.279						
Mean weight of Vapour in a cub. ft. of air, grains	3.4	3.2						
Mean additional weight required for saturation ..	0.7	0.6						
Mean degree of Humidity (saturation 100)	80	84						
Mean weight of a cubic foot of air	grains 534.7	537.3						
Mean amount of Cloud (0—10)	8.1	7.3						
Fall of Rain	inches 8.084	5.008						
Greatest Rainfall in one day (4th)	" 1.160	0.983						
No. of days on which .005 in. or more Rain fell...	29	19.0						
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	0	0	0	5	8	14	3
Mean Velocity in miles per hr.	12.4	0	0	0	14.2	14.9	12.7	10.9
Total No. of miles.....	298	0	0	0	1704	2869	4270	784
Total No. of miles registered,	9925	Mean*		6833				
Greatest hourly velocity (14th and 25th, at 0400 and 1600 G.M.T., Dir. W. and S. by E.).....	38			37				

* For the last 67 years.

OCTOBER, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	—	0.013 in.
Monthly range	..	..	..	+	0.205 in.
Mean of highest daily temperatures	..	..	..	—	0.6°
Mean of lowest	..	..	..	+	2.9°
Mean daily range	..	..	..	—	3.5°
Adopted mean temperature	..	..	..	+	1.4°
Total rainfall	..	..	..	+	3.076 in.

Ground Frost on the 31st. Hail on the 4th, 9th, 15th, 23rd, 27th, 28th and 29th. Snow on the 31st. Heavy Rain on the 4th, 10th, 14th, 19th and 28th. Gales of Wind on the 14th and 25th. Fog on the 1st. Thunder on the 5th and 15th. Lightning on the 5th and 15th.

EXTREME READINGS FOR OCTOBER, During 87 Years.

Highest reading of Barometer	...	1884 (5th)	.....	30.306 in.
Lowest	..	..	..	1862 (19th) .....28.139 in.
Highest temperature	.....	1890 (12th)	.....	74.0°
Lowest	..	..	..	1895 (28th) 17.8°
Highest adopted mean temperature	.....	1921	.....	53.8°
Lowest	..	..	..	1895 42.8°
Greatest fall of rain	.....	1870	.....	13.437 in
Least	..	..	..	1922 0.918 in.
Greatest fall of rain in one day	...	1870 (8th)	.....	2.529 in.
Greatest No. of days on which				
.005 ins or more rain fell	...	†1934	.....	29
Least	..	..	..	1920 8
*Greatest hourly velocity of wind	..	1877 (15th)	.....	52 mls.
*Greatest No. of miles registered	...	1934	.....	9925
*Least	..	..	..	1915 3965

* Since 1867 only.

† And in other years.

NOVEMBER, 1934.

Results of Observations taken during the Month.		Mean for the last 87 years.							
Mean Reading of the Barometer	inches 29·612	29·459							
Highest " " on the 24th ...	" 30·152	30·066							
Lowest " " on the 9th ...	" 28·741	28·575							
Range of Barometer Readings	" 1·411	1·491							
Highest Reading of a Max. Therm. on the 26th ...	50·7	55·7							
Lowest Reading of a Min. Therm. on the 1st	26·0	25·7							
Range of Thermometer Readings	24·7	30·0							
Mean of Highest Daily Readings	46·5	47·1							
Mean of Lowest Daily Readings	38·0	36·9							
Mean Daily Range	8·5	10·2							
Deduced Mean Temp. (from mean of Max. and Min.)	41·9	41·6							
Mean Temperature from Dry Bulb	43·1	42·1							
Adopted Mean Temperature	42·5	41·9							
Mean Temperature of Evaporation	41·3	39·9							
Mean Temperature of Dew Point	39·2	38·2							
Mean elastic force of Vapour	inches 0·239	0·232							
Mean weight of Vapour in a cub. ft. of air, grains	2·8	2·8							
Mean additional weight required for saturation ..	0·5	0·4							
Mean degree of Humidity (saturation 100)	85	87							
Mean weight of a cubic foot of air	grains 545·5	544·4							
Mean amount of Cloud (0—10)	7·8	7·4							
Fall of Rain	inches 2·249	4·451							
Greatest Rainfall in one day (8th)	" 0·550	0·995							
No. of days on which ·005 in. or more Rain fell ...	18	18·1							
Wind :—Direction	N	NE	E	SE	S	SW	W	NW	
No. of days.....	8	6	0	0	2	2	12	0	
Mean Velocity in miles per hr.	5·9	7·0	0	0	6·3	3·2	6·3	0	
Total No. of miles.....	1127	1009	0	0	304	155	1824	0	
Total No. of miles registered	4419							Mean* 7056	
Greatest hourly velocity (26th, at 1200 G.M.T., Dir. W.S.W.).....	20							40	

* For the last 67 years.

NOVEMBER, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	...	+	0.153 in.
Monthly range	..	..	..	..	—	0.080 in.
Mean of highest daily temperatures	...	...	...	...	—	0.6°
Mean of lowest	..	..	..	..	+	1.1°
Mean daily range	...	...	...	...	—	1.7°
Adopted mean temperature	...	...	...	...	+	0.6°
Total rainfall	...	...	...	...	—	2.202 in.

Ground Frost on the 1st—3rd, 7th, 8th, 13th, 14th and 18th.
 Hoar Frost on the 3rd, 7th, 13th and 14th. Snow on the 1st and 8th. Heavy Rain on the 7th and 8th. Fog on the 8th, 17th—23rd, and 27th.

EXTREME READINGS FOR NOVEMBER, During 87 Years.

Highest reading of Barometer	...	1922 (15th)	.....	30.375 in.	
Lowest	1891 (11th)	27.938 in.
Highest temperature	.....	1900 (1st)	.....	62.4°
Lowest	1901 (15th)	17.5°	
Highest adopted mean temperature	†	1899	.....	47.0°	
Lowest	1915	36.3°
Greatest fall of rain	.....	1866	.....	9.026 in.
Least	1855	1.158 in.	
Greatest fall of rain in one day	...	1866 (16th)	.....	3.700 in.	
Greatest No. of days on which .005 in. or more rain fell	...	1913	.....	28	
Least	1848	6
*Greatest hourly velocity of wind...	...	1887 (1st)	.....	62 mls.	
*Greatest No. of miles registered....	...	1888	.....	12813	
*Least	1934	4419

* Since 1867 only.

† And in 1881.

DECEMBER, 1934.

Results of Observations taken during the Month		Mean for the last 87 years.						
Mean Reading of the Barometer	inches 29·077	29·436						
Highest ,, ,, on the 1st.....	,, 29·763	30·072						
Lowest ,, ,, on the 15th ...	,, 28·189	28·571						
Range of Barometer Readings	,, 1·574	1·531						
Highest Reading of a Max. Therm. on the 4th	53·9	52·6						
Lowest Reading of a Min. Therm. on the 22nd, 26th	38·0	22·0						
Range of Thermometer Readings	15·9	30·6						
Mean of Highest Daily Readings	48·9	43·5						
Mean of Lowest Daily Readings	42·4	34·0						
Mean Daily Range	6·5	9·5						
Deduced Mean Temp. (from mean of Max. and Min.)	45·7	38·8						
Mean Temperature from Dry Bulb	45·9	39·4						
Adopted Mean Temperature	45·8	39·1						
Mean Temperature of Evaporation	44·3	37·5						
Mean Temperature of Dew Point	42·5	35·5						
Mean elastic force of Vapour	inches 0·272	0·209						
Mean weight of Vapour in a cub. ft. of air, grains	3·1	2·4						
Mean additional weight required for saturation ,,	0·5	0·4						
Mean degree of Humidity (saturation 100)	87	87						
Mean weight of a cubic foot of air	grains 532·6	546·9						
Mean amount of Cloud (0—10)	9·2	7·7						
Fall of Rain	inches 5·965	4·617						
Greatest Rainfall in one day (2nd)	,, 0·720	0·823						
No. of days on which ·005 in. or more Rain fell...	25	20·1						
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	2	4	3	14	3	3	1
Mean Velocity in miles per hr.	4·3	7·0	8·6	10·6	12·7	11·2	10·1	10·9
Total No. of miles.....	104	338	828	760	4265	803	729	261
Total No. of miles registered	8088						*Mean 7775	
Greatest hourly velocity (9th, at 1330 G.M.T., Dir. S.S.E.).....	45						42	

* For the last 87 years.

DECEMBER, 1934.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	—	0.359 in.
Monthly range	„	...	...	+	0.043 in.
Mean of highest daily temperature	...	...	...	+	5.4°
Mean of lowest	„	„	...	+	8.4°
Mean daily range	...	...	...	—	3.0°
Adopted mean temperature	...	...	...	+	6.7°
Total rainfall	...	...	...	+	1.348 in.

Heavy Rain on the 2nd, 4th, 5th and 7th. Gales of Wind on the 8th and 9th. Fog on the 3rd, 6th, 17th and 21st.

EXTREME READINGS FOR DECEMBER,

During 87 Years.

Highest reading of Barometer	...	1905 (12th)	.....	30.484 in.
Lowest	„	1886 (8th)	.....	27.350 in.
Highest temperature	.....	1876 (9th)	.....	58.1°
Lowest	„	1860 (24th)	.....	6.7°
Highest adopted mean temperature	.....	1934	.....	45.8°
Lowest	„	1878	.....	30.3°
Greatest fall of rain	.....	1918	.....	10.597 in.
Least	„	1890	.....	0.550 in.
Greatest fall of rain in one day	...	1870 (19th)	.....	1.962 in.
Greatest No. of days on which				
.005 in. or more rain fell	...	1918	.....	30
Least	„	1890	.....	8
*Greatest hourly velocity of wind...	...	1894 (22nd)	.....	72 mls.
*Greatest No. of miles registered	...	1929	.....	11493
*Least	„	1933	.....	4477

* Since 1867 only.

† And in 1853.

Summary of Observations, 1934.

Results of Observations taken during the Year.	Mean for the last 87 Years	
<i>Readings of Barometer in inches.</i>		
Mean of the Year	29·496	29·494
Highest Monthly Mean (February)	29·996	29·752
Lowest " " (December)	29·072	29·225
Highest Reading (February 15th).....	30·515	30·300
Lowest " (March 15th)	28·139	28·217
Range	2·376	2·083
<i>Thermometer, Fahrenheit.</i>		
Highest Monthly Mean Temperature (July)	62·2	58·6
Lowest " " " (February) ...	39·2	35·8
Highest Reading of a Max. Therm. (July 11th) ...	83·8	81·1
Lowest " Min. " (Feb. 2, Mar. 14)	24·2	16·8
Range of Thermometer Readings	59·6	64·3
Mean of Highest Daily " 	54·5	54·3
Mean of Lowest Daily " 	43·0	41·1
Mean Daily Range	11·5	13·2
Deduced Mean Temp. (from Mean of Max. and Min.)	47·7	46·7
Mean Temperature from Dry Bulb.....	49·0	47·2
Adopted Mean Temperature of the Year	48·4	47·0
Mean Temperature of Evaporation	46·2	44·7
Mean Temperature of Dew Point	43·2	42·2
Mean elastic force of Vapour	0·280	0·275
Mean weight of Vapour in a cub. ft. of air...grns.	3·2	3·2
Mean additional weight required for saturation "	0·8	0·7
Mean degree of Humidity (saturation 100).....	80	84
Mean weight of a cubic foot of air	536·9	539·0
Mean amount of Cloud (0—10)	7·1	7·3
Total fall of Rain	44·392	47·393
Greatest Monthly Rainfall (October).....	8·084	7·612
Least " " (February)	0·315	1·209
Greatest Rainfall in one day (May 15th)	1·240	1·663
No. of days per Month on which ·005 inch or more Rain fell	18·0	17·2

SUMMARY OF WIND, 1934.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	26	42	18	8	48	66	140	17
Mean Velocity in miles per hour...	6.8	7.3	8.2	8.7	13.0	9.9	9.9	6.9
Total No. of miles for each Direction	4220	7344	3526	1667	15066	15757	33249	2718

		Mean for the last 67 years.
Total No. of miles registered	83547	84682
Greatest Monthly Total (October).....	9925	9877
Least " " (November)	4419	4879
Greatest recorded hourly velocity (May 6)	48	50
Prevailing Direction of Wind	W.	W.

DIFFERENCES, 1934.

The signs + and — mean respectively above and below the
YEARLY average.

Mean barometric pressure	+	0.002 in.
Yearly range " " " " " "	+	0.293 in.
Mean of highest daily temperatures	+	0.2°
Mean of lowest " " " " " "	+	1.9°
Mean daily range	—	1.7°
Adopted mean temperature	+	1.4°
Total rainfall	—	3.001 in.

**ABSOLUTE EXTREMES
FOR THE LAST 87 YEARS.**

Readings of Barometer, in inches.

Highest monthly mean	1932 (Feb.)	30·082
Lowest " "	1868 (Dec.)	28·984
Highest yearly "	1921	29·615
Lowest " "	1872	29·319
Greatest monthly range	1886 (Dec.)	2·795
Least " "	1852 (July)	0·505
Highest reading	1896 (Jan. 9th)	30·597
Lowest "	1886 (Dec. 8th)	27·350
Extreme range.....		3·247

Thermometer, Fahrenheit.

Highest monthly mean temperature ...	1901 (July)	63·2
Lowest " " "	1855 (Feb.)	28·6
Highest yearly " "	1921	49·4
Lowest " " "	1879	44·1
Highest reading "	1901 (July 20th)	89·0
Lowest " "	1881 (Jan. 15th)	4·6

Weight of Vapour in a cubic foot of air (grains).

Greatest monthly mean	1852 and 1927 (July)	5·1
Least " "	†1895 (Feb.).....	1·4

† And in 1855 (Feb.).

ABSOLUTE EXTREMES
FOR THE LAST 87 YEARS—Continued.

Rainfall, in inches.

Greatest Rainfall in one day	1866 (Nov. 16) ..	3·700
Greatest " " month	1870 (Oct.)	13·437
Least " " "	1932 (Feb.)	0·123
Greatest " " year	1923	63·558
Least " " "	1887	31·250
Days on which ·005 in. or more Rain fell :		
Greatest No. in one month	1890 (Jan.)	} 30
	and 1918 (Dec.)	
Least " "	1852 (Mar.)	3
Greatest " year	1872	281
Least " "	1855	135

* *Wind.*

Greatest hourly velocity, in miles	1894 (Dec. 22) ...	72
Greatest No. of miles registered in a		
month	1888 (Nov.)	12813
Least " "	1917 (Feb.)	3160
Greatest Mean No. " "	January	8295
Least " " "	September	6005
Greatest No. " " year..	1868	102395
Least " " " "	1915	70623

* Record dates from 1867 only.

DATES OF OCCASIONAL PHENOMENA.

1884	Frost	Hoar Frost	Snow	Hail	Heavy Rain
January	1, 20, 21, 25, 28-31	20, 25, 28, 29, 31	16, 21	8, 26	15, 16, 18
February	2, 13, 15, 24, 26-28	2, 15	...	25	...
March	1, 3, 9, 14, 19, 22, 23, 27, 28, 30, 31	14, 25, 27, 28	5, 7, 10, 14, 17	5, 6, 7, 17, 18	...
April	1, 4, 6, 7, 9, 20, 22, 25	4	6, 7	24	23
May	...	...	...	14, 16	6, 15, 20
June	...	...	...	...	21
July	...	...	...	...	25
August	...	...	...	...	2, 10, 29
September	...	...	...	...	19
October	31	...	31	4, 9, 15, 23, 27, 28, 29	4, 10, 14, 19, 20
November	1-3, 7, 8, 13, 14, 18	3, 7, 13, 14	1, 8	...	7, 8
December	...	...	...	...	2, 4, 5, 7

1884	Gales of Wind	Fog	Thunder	Lightning	Lunar Halo	Solar Halo	Aurora Borealis
January	11	2, 21, 22, 29, 30	...	...	...	...	...
February	16	2, 3, 12, 14-16	...	...	...	16	...
March	6	24	12, 18, 24	12, 18, 24	...	13	...
April	6	1, 6, 8, 11	7, 8, 28	...	...	24, 27	...
May	...	15, 26	6, 12, 17, 18, 30, 31	12, 18, 30	...	3, 4, 6, 18	...
June	...	...	6, 22, 29, 30	22, 29, 30	...	18, 19	...
July	20	...	1, 4, 15, 17, 18	1, 4, 15, 17	...	...	...
August	...	12	5, 15	5, 15	...	...	...
September	14, 25	1	...	...	...	...	...
October	...	8, 17-23, 27	...	...	...	...	...
November	...	3, 6, 17, 21	...	...	...	...	...
December	8, 9	...	...	...	...	...	...

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1934. Local apparent time	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
January ...	...	...	...	...	1.6	7.0	9.9	12.1	10.7	8.6	6.5	2.1	...	...	...	...	...
February ...	...	...	...	2.7	3.9	6.3	8.1	7.9	8.4	6.5	6.0	4.7	2.0	...	...	...	...
March ...	...	...	0.6	6.1	10.0	11.5	11.2	8.9	8.3	7.3	8.5	8.3	5.3	0.9	...	...	...
April ...	...	0.9	6.5	7.7	10.5	12.6	11.4	13.2	14.2	14.2	14.6	11.7	11.0	5.7	0.8	...	...
May ...	1.6	4.9	6.7	7.1	8.2	9.6	10.8	12.0	12.8	13.9	14.3	16.2	15.1	14.8	9.4	1.1	...
June ...	4.2	8.3	11.5	15.2	17.3	16.7	15.4	14.2	14.1	14.1	16.1	15.9	15.7	14.4	10.0	4.9	...
July ...	2.7	10.8	13.4	16.2	16.1	17.9	16.9	19.1	21.0	19.3	21.1	20.8	19.4	16.0	12.9	3.7	...
August ...	...	2.5	7.9	9.7	11.2	12.1	12.8	12.6	13.4	14.2	11.6	11.5	10.9	9.5	4.6	0.2	...
September ..	...	...	2.7	13.2	15.1	16.4	15.1	14.8	16.2	14.7	14.6	13.4	10.6	5.0	0.1	...	...
October ...	...	...	...	3.4	7.3	8.2	9.2	10.7	8.3	8.6	8.0	6.7	2.8	0.5	...	...	...
November...	...	...	...	0.3	2.8	4.0	5.8	7.0	5.1	6.1	7.6	3.2	...	...	...	...	...
December...	...	...	...	...	...	1.0	2.8	5.3	5.2	2.9	0.9	...	...	...	...	...	...
Sums...	8.5	27.4	49.3	81.6	104.0	123.3	130.6	136.0	136.7	130.4	129.8	114.5	92.8	66.8	37.8	9.9	...

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1934	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January ...	...	...	1.2	...	0.1	...	...	0.4	2.2	...	0.3	4.3	0.1	...	1.2	1.6	0.8
February ...	2.3	...	...	...	3.7	...	...	1.2	...	2.0	2.1	...	7.0	...	6.5	...	2.2
March ..	...	4.8	7.7	0.1	1.3	1.7	7.0	0.2	4.7	...	...	...	0.1	0.1	0.1	4.9	2.9
April ..	3.0	0.3	6.0	4.8	8.8	7.5	9.1	9.4	0.9	5.5	...	0.6	5.8	2.0	0.7	9.2	6.6
May ..	8.3	5.4	0.3	2.1	5.8	...	6.2	...	1.6	3.9	9.1	9.3	5.9	12.5	0.2	1.2	12.0
June ..	13.3	14.5	14.3	10.2	5.4	9.5	3.6	2.4	0.3	7.9	14.0	12.8	6.9	0.2	1.3	5.0	11.4
July ...	8.3	12.9	12.5	12.6	12.6	11.8	12.0	14.4	13.7	11.9	10.9	1.7	0.2	8.6	4.1	5.1	6.3
August ...	2.7	...	6.8	10.3	4.5	0.2	3.7	8.3	1.8	0.1	2.9	2.1	0.9	4.4	2.4	6.5	4.8
September ..	5.4	7.2	9.7	8.3	8.3	1.0	0.3	7.6	5.4	7.6	0.4	8.3	10.0	10.2	7.7	5.0	2.5
October ...	0.5	3.3	0.8	0.7	5.4	...	...	6.6	5.8	...	0.1	2.7	0.4	2.1	4.3	7.7	...
November...	2.0	7.4	...	...	...	5.9	4.7	...	0.1	1.2	1.7	7.1	3.0	5.7	...	...	...
December ...	...	...	...	0.1	...	...	1.7	0.8	...	4.2	0.5	0.5	1.5	...	0.1	1.3	0.5

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY—(continued).

1934	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY	
															Total	Per cent.
January ...	0.2	6.7	5.2	...	5.3	...	5.1	...	4.0	6.6	6.5	1.2	0.1	5.4	58.5	23.6
February ...	1.3	2.2	0.2	...	...	0.3	1.4	5.1	8.6	3.2	7.2	...	...	...	56.5	20.8
March ..	3.8	...	0.1	8.5	0.3	4.4	...	6.2	...	10.8	9.1	1.0	1.2	5.9	86.9	23.7
April ...	0.3	5.4	12.3	8.8	4.0	4.7	4.0	1.2	1.4	0.3	0.6	2.4	7.8	...	133.4	31.8
May ...	...	4.9	0.1	9.4	3.1	7.8	10.7	0.1	8.4	1.2	0.2	6.4	8.3	14.1	158.5	32.2
June ...	10.9	4.2	7.3	...	5.9	2.3	0.1	1.8	4.0	7.2	5.4	14.3	11.6	...	208.0	40.9
July ..	6.9	11.6	0.5	12.2	5.3	10.5	7.8	4.4	5.0	5.5	0.4	7.1	2.3	8.2	247.3	48.6
August ...	1.6	10.4	1.2	2.9	4.8	7.1	11.7	11.3	11.5	7.6	...	1.2	7.5	3.5	144.7	31.7
September..	7.9	0.2	0.1	5.2	...	6.9	2.6	8.6	...	6.3	8.1	...	1.1	...	151.9	40.1
October ...	0.1	0.2	...	...	8.4	3.1	...	...	4.7	0.7	4.7	6.7	2.1	2.6	73.7	22.6
November...	3.1	...	...	...	...	...	...	...	...	...	...	...	...	...	41.9	16.4
December ..	...	2.4	0.1	...	...	...	...	...	2.4	...	...	1.1	...	0.9	18.1	7.8

SUMMARY OF SUNSHINE.

	BRIGHT SUNSHINE RECORDED					
	1934			Mean for the last 54 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentage of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	21	58.5	23.6	14.9	34.1	13.8
February ...	17	56.5	20.8	17.7	56.5	20.6
March ...	24	86.9	23.7	24.5	104.1	28.4
April ...	29	133.4	31.8	26.5	144.2	34.4
May ...	28	158.5	32.2	27.8	181.3	36.8
June ...	29	208.0	40.9	28.1	187.2	36.9
July ...	31	247.3	48.6	28.5	169.0	33.3
August ...	29	144.7	31.7	27.7	148.1	32.4
September ..	27	151.9	40.1	25.6	125.6	33.0
October ...	23	73.7	22.6	23.8	87.1	26.7
November ..	11	41.9	16.4	17.9	47.0	18.4
December ...	15	18.1	7.8	14.0	27.5	11.9
Year ...	284	1379.4	30.9	276.9	1313.5	29.4

SUMMARY OF SUNSHINE—Continued.
EXTREMES FOR THE LAST 54 YEARS.

MONTH	Number of Days				Number of Hours				Percentage of Possible Sunshine			
	on which Sunshine was recorded											
	Greatest		Least		Greatest		Least		Greatest		Least	
Jan.	23	*1933	8	1898	64.2	1881	12.3	1913	25.9	1881	5.0	191
Feb.	24	1895	11	1882	89.3	1887	29.6	1882	32.8	1887	10.9	188
Mar.	30	1929	17	1904	178.9	1929	56.8	1912	48.9	1929	15.5	191
April	30	*1909	22	1920	223.7	1893	80.7	1920	53.4	1893	19.3	192
May	31	1929	22	1886	266.6	1881	79.7	1906	54.1	1881	16.2	190
June	30	*1896	24	*1888	272.5	1887	85.2	1912	53.6	1887	16.8	191
July	31	*1882	24	1920	263.4	1911	98.0	1888	51.7	1911	19.3	188
Aug.	31	*1886	23	1894	235.2	1899	74.1	1912	51.5	1899	16.2	191
Sept.	30	1914	21	1897	204.1	1933	62.9	1896	53.9	1933	16.6	189
Oct.	29	*1933	17	1889	134.9	1899	50.0	1889	41.4	1899	15.3	188
Nov.	24	1925	9	1897	89.9	1925	18.5	1891	33.8	1915	7.2	189
Dec.	20	*1917	6	1882	60.1	1886	7.4	1912	26.0	1886	3.2	191
Year	307	1933	251	1903	1613.7	1887	927.6	1912	36.1	1887	20.7	191

*And in other years.

HORIZONTAL MAGNETIC DIRECTION.

Horizontal Magnetic Direction, West of North (from daily measures of the continuous curves).

1894.	MEANS OF *					Mean for the month *	Mean daily range †	Highest reading of the month	Lowest reading of the month	Monthly range
	Highest readings	Lowest readings	4 a. m. readings	4 p. m. readings	13° +					
	13° +									
January ...	12.8	8.2	10.4	11.2	10.7	9.8	23.4	54.4	29.0	
February ...	12.8	7.0	9.2	10.6	9.9	12.4	21.4	48.4	33.0	
March ...	13.4	4.6	7.4	9.8	8.8	15.5	21.0	42.0	39.0	
April ...	12.2	2.6	5.2	8.4	7.1	13.2	20.0	44.0	36.0	
May ...	9.0	1.2	3.6	7.2	5.3	12.3	25.0	47.0	38.0	
June ...	8.4	-2.0	1.6	6.4	3.6	12.3	14.0	50.0	24.0	
July ...	9.6	-1.4	1.8	7.0	4.3	13.0	23.0	51.0	32.0	
August ...	7.6	-2.2	0.8	4.0	2.6	15.0	12.0	46.0	26.0	
September ...	8.6	-0.6	1.0	3.6	3.2	15.5	14.4	27.4	47.0	
October ...	6.0	-1.0	1.4	2.8	2.3	11.3	12.4	43.4	29.0	
November ...	3.6	-0.8	0.8	2.0	1.4	8.8	13.4	40.4	33.0	
December ...	1.4	-2.4	-0.4	-0.2	-0.4	10.3	8.4	27.4	41.0	
Means ...	8.8	1.1	3.6	6.1	4.9	12.4	17.4	43.4	34.0	

Mean for the year ... 13° 4' 9 W.

* For the 5 quietest days.

† Includes all days.

HORIZONTAL MAGNETIC FORCE.

Horizontal Magnetic Force in C. G. S. Units (from daily measures of the continuous curves).

The figures in the columns are entered to the unit 10^{-5} C.G.S.

1884	MEANS OF *				Mean for the month †	Mean daily range †	Highest reading of the month	Lowest reading of the month	Monthly range
	Highest readings	Lowest readings	4 a.m. readings	4 p.m. readings					
	17000 +								
January ...	196	180	188	188	188	36.0	233	98	135
February ...	189	171	180	183	181	44.1	220	94	126
March ...	197	167	183	184	183	63.0	246	85	161
April ...	185	150	167	176	170	52.7	220	116	104
May ...	184	145	163	167	165	62.1	242	112	130
June ...	170	133	153	159	154	59.0	220	98	122
July ...	167	118	151	152	147	62.1	215	63	152
August ...	167	121	147	150	146	69.8	206	67	139
September ...	165	125	150	150	147	66.2	296	72	224
October ...	162	136	156	152	152	45.0	206	76	130
November ...	172	158	168	170	167	33.8	197	94	103
December ...	170	153	162	161	162	43.7	224	63	161
Means.. ...	177	146	164	166	163	53.1	227	86	141

Mean for the year ... † 17163 C. G. S. Units.

* For the 5 quietest days.

† Includes all days.

ABSOLUTE MEASURES—SUMMARY.

DIRECTION			FORCE.		
1934	Declination Corrected	Inclination	Horizontal	Vertical	Total
	° ' ''	° ' ''	C. G. S. UNITS.		
	13 +	68 +	0·17000 +	0·44000 +	0·47000 +
January ...	10·7	48·5	173	295	507
February ...	10·2	49·6	163	309	516
March ...	8·9	48·9	148	245	452
April	7·3	48·8	156	262	470
May	5·1	48·3	161	255	465
June	3·6	47·3	164	225	438
July	3·9	50·5	170	261	460
August ..	2·3	49·3	175	331	540
September ...	3·0	47·5	166	237	450
October ...	1·7	51·8	166	402	605
November ...	1·9	47·7	152	210	420
December ...	-0·3	49·8	161	312	518
Means ...	° ' '' 13 4·9 W.	° ' '' 68 49·0	0·17163	0·44279	0·47487

DATES OF MAGNETIC DISTURBANCES.

The disturbances are divided generally into three classes, *small*, *moderate*, and *greater*; these are indicated by the initial letters of the classes, and the letter *c* denotes *calm*. Very great disturbances are marked *v.g.* The days are civil days.

1934	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1934
D.													D.
1	g	c	c	m	s	c	c	m	m	s	s	m	1
2	m	m	m	s	m	c	c	s	m	c	c	s	2
3	s	s	s	m	m	c	m	m	m	c	s	m	3
4	c	m	g	m	s	s	c	m	s	s	s	m	4
5	c	s	g	m	s	m	c	s	c	c	s	m	5
6	c	c	s	s	s	s	c	c	s	s	s	c	6
7	c	s	m	c	s	c	c	s	s	s	g	s	7
8	s	c	s	c	c	s	c	s	s	c	m	c	8
9	s	m	s	c	c	s	c	c	c	c	m	c	9
10	s	m	m	c	s	s	c	c	c	s	c	c	10
11	s	m	m	c	g	s	s	c	s	s	s	s	11
12	c	m	c	c	m	m	s	m	s	m	s	c	12
13	c	s	c	c	s	c	c	m	c	m	s	(c)	13
14	m	c	c	s	s	s	s	m	c	c	c	(s)	14
15	m	m	s	s	c	s	s	s	c	m	c	s	15
16	s	g	s	m	c	s	s	s	s	c	c	c	16
17	c	m	s	c	s	s	s	s	m	s	s	c	17
18	m	m	s	c	m	m	c	s	c	s	s	s	18
19	c	c	c	s	m	c	c	s	m	c	c	s	19
20	c	s	c	c	s	s	c	c	c	m	c	c	20
21	c	s	c	c	m	c	c	c	s	s	c	s	21
22	m	s	m	s	s	c	c	s	s	s	c	s	22
23	m	c	m	c	s	c	c	c	c	s	c	c	23
24	s	m	s	c	c	c	c	c	m	m	m	m	24
25	s	s	m	c	s	s	s	c	g	m	s	m	25
26	s	c	s	c	s	c	c	m	m	m	c	s	26
27	c	s	c	s	c	s	c	m	m	s	c	c	27
28	s	s	m	c	c	c	c	m	s	s	m	c	28
29	s		m	c	s	s	s	m	s	c	c	g	29
30	s		s	c	s	s	g	s	m	c	c	g	30
31	s		m		s		s	s		c		m	31
TOTAL	(c	11	7	8	18	7	12	21	9	9	11	14	139
	s	13	11	11	7	17	15	8	12	11	13	11	139
	m	6	9	10	5	6	3	1	10	9	7	4	77
	g	1	1	2	—	1	—	1	—	1	—	1	10
	v.g.	—	—	—	—	—	—	—	—	—	—	—	—
													TOTALS

Note :—Character letters in brackets indicate incomplete records.

DATES OF SOLAR OBSERVATIONS

The Unit is $\frac{1}{5000}$ th of the Disc.

NS—No Spots.

n—Incomplete observation at Stonyhurst.

1934	Jan.	Feb.	March	April	May	June
DAY						
1	NS	0.66		NS	NS	NS
2	NS	0.44	NS	0.17	NS	NS
3	NS	0.26	NS	0.29	NS	NS
4	NS	NS	0.07	0.05	NS	0.03
5	NS	0.14	NS	0.05	0.76	NS
6	NS	0.15	n 0.08	NS	1.48	NS
7	NS	0.50	0.20	NS	1.33	NS
8	NS	0.21	0.41	NS	1.49	NS
9	NS	0.18	0.44	NS	0.99	C NS
10	NS	0.50	0.32	NS	0.64	NS
11	NS	0.60	0.23	NS	0.21	NS
12	0.12	0.71	0.07	NS	NS	NS
13	0.43	0.63	NS	NS	0.99	NS
14	0.56	0.80	NS	0.10	2.32	C NS
15	0.55	0.64	NS	1.39	3.50	0.56
16	1.04	0.45	NS	4.86	n 3.45	1.09
17	0.59	0.25	NS	5.27	4.91	2.00
18		0.28	NS	n 7.30	7.26	2.18
19	NS	0.09	NS	6.25	4.94	2.15
20	NS	NS	NS	6.46	5.17	1.93
21	NS	NS	NS	6.81	3.24	2.48
22	NS	NS	NS	5.40	2.50	1.47
23		NS	NS	4.91	2.49	1.53
24	NS	0.10	NS	4.04	1.72	1.38
25	NS	NS	NS	2.43	1.28	0.85
26	NS	NS	NS	2.26	1.18	0.39
27	NS	NS	NS	1.78	0.81	NS
28	NS	NS	NS	0.85	0.80	NS
29	NS	...	NS	NS	NS	NS
30	n 0.37	...	NS	NS	NS	NS
31	0.56	...	NS	...	NS	...
Mean	0.15	0.27	0.06	2.02	1.72	0.60

AND DISC AREAS OF SPOTS.

Italics indicate Area from copy of Zurich drawing.

C with Italics indicates Catania observation.

July	August	Sept.	October	Nov.	Dec.	1934
NS	NS	NS	0.03	0.73	<i>0.54</i>	DAY 1
NS	<i>NS</i>	0.14	NS	1.16	<i>0.47</i>	2
NS	NS	0.06	<i>NS</i>	<i>1.31</i>	n <i>0.23</i>	3
NS	NS	NS	NS	<i>1.25</i>	n <i>0.59</i>	4
NS	NS	NS	NS	<i>0.92</i>	<i>0.17</i>	5
NS	0.29	NS	<i>NS</i>	0.64	<i>0.21</i>	6
0.60	0.65	<i>NS</i>	<i>NS</i>	0.45	1.04	7
0.87	1.15	NS	NS	<i>0.55</i>	0.52	8
0.93	1.41	NS	NS	0.26	<i>NS</i>	9
1.20	<i>2.20</i>	NS	<i>NS</i>	<i>0.20</i>	NS	10
1.10	1.60	<i>NS</i>	n	0.09	NS	11
1.13	1.95	0.11	0.17	0.05	NS	12
<i>2.26</i>	<i>2.03</i>	0.10	0.15	NS	NS	13
1.28	1.47	NS	0.12	NS	<i>NS</i>	14
n	1.35	0.27	0.12	<i>NS</i>	NS	15
1.40	1.09	<i>0.35</i>	0.09	<i>NS</i>	NS	16
1.16	0.78	NS	<i>0.21</i>	<i>NS</i>	NS	17
0.64	<i>0.30</i>	NS	NS	NS	NS	18
0.36	NS	<i>NS</i>	<i>0.24</i>		NS	19
<i>0.16</i>	<i>NS</i>	<i>NS</i>		<i>NS</i>	<i>0.27</i>	20
0.04	NS	NS	<i>NS</i>	<i>NS</i>	0.99	21
NS	NS	<i>NS</i>	0.05	<i>NS</i>	<i>0.86</i>	22
NS	NS	0.08	0.08	<i>NS</i>		23
NS	NS	NS	<i>NS</i>	<i>NS</i>	<i>0.47</i>	24
NS	NS	NS	<i>0.10</i>	<i>0.11</i>	<i>1.37</i>	25
NS	NS	<i>NS</i>	0.03	<i>0.24</i>	1.71	26
NS	NS	NS	<i>0.14</i>	<i>0.14</i>	<i>1.68</i>	27
<i>0.09</i>	<i>NS</i>	0.11	0.09	<i>0.18</i>	<i>2.20</i>	28
NS	NS	<i>0.16</i>	0.10	<i>0.34</i>	1.35	29
NS	NS	0.31	0.11	<i>0.45</i>	<i>1.82</i>	30
NS	NS	...	0.25	...	0.92	31
0.44	0.52	0.06	0.07	0.31	0.58	Mean

SUN-SPOT STATISTICS, 1934.

The points for which the co-ordinates were measured are indicated as follows :—s—centre of chief spot, g—centre of group, p—centre of preceding, f—centre of following spot. In the last column is entered the day and decimal thereof on which the centre of the spot or group actually passed the central meridian, or would have done so if on the Solar Surface on the day in question. The "Types" are :—

- I.—One or more small spots.
- II.—A double spot or group of some magnitude.
- III.—A train of spots of some magnitude.
- IV.—A single large spot with or without small companions.
- V.—Irregular group of larger spots.

Groups in *Italics* were not observed at Stonyhurst, but are taken from the Zurich drawings.

No. of Group	Date	Mean Latitude	Mean Longitude	Ref. Pt.	Max. Area	Mean Type	Central Meridian
		°	°				
1	Jan. 12—17 ...	+ 4.7	148.7	g	1.04	I	Jan. 12.3
2	" 30—Feb. 3	+29.2	224.5	s	0.66	IV	Feb. 2.9
3	Feb. 5—7 ...	-24.1	147.7	g	0.15	I	" 8.8
4	" 7—8 ...	+27.8	220.7	s	0.35	I	" 3.2
5	" 9—19 ...	+ 6.8	60.7	s	0.73	IV	" 15.4
5 ₁	" 9 ...	+37.4	93.6	s	0.06	I	" 12.9
5 ₂	" 14 ...	-27.6	97.6	s	0.07	I	" 12.6
6	" 24 ...	-28.0	321.5	s	0.10	I	" 22.9
6 ₁	Mar. 4 ...	+31.8	203.5	s	0.07	I	Mar. 3.9
7	" 7—11 ...	- 3.5	127.9	g	0.38	I	" 9.6
7 ₁	" 10 ...	+ 3.7	151.7	s	0.04	I	" 7.8
8	" 6, 8—12	-28.5	85.4	s	0.11	I	" 12.8
9	Apl. 2—5 ...	+27.2	187.9	g	0.29	I	Apl. 1.4
10	" 14, 16—18	+26.5	308.0	s	0.10	I	" 19.5
11	" 15—28 ...	-28.2	279.9	s ₁	7.30	II, IV	" 21.7
		-29.1	272.1	g ₂			" 22.2
11 ₁	" 27—28 ...	+26.8	225.5	g	0.19	I	" 25.8
12	May 5—11 ...	-20.6	90.3	g	1.48	I	May 6.0
12 ₁	" 8 ...	-33.9	124.2	s	0.06	I	" 3.4
12 ₂	" 8, 10 ...	+ 6.7	29.7	g	0.08	I	" 10.6
13	" 13—26 ...	-30.0	268.9	g	5.71	V	" 19.7
14	" 17—28 ...	+25.7	223.7	s	1.81	IV	" 23.1

SUN-SPOT STATISTICS, 1934—Contd.

No. of Group	Date.	Mean Latitude	Mean Longitude	Ref. Pt.	Max. Area	Mean Type	Central Meridian
		°	°				
15	May 22—23 ...	+13.1	199.3	s	0.11	I	May 25.0
15 ₁	„ 28	-0.9	213.6	s	0.07	I	„ 23.9
16	June 4	-24.1	96.0	s	0.03	I	June 1.8
17	„ 15—26 ...	+2.9	206.9	s	2.48	IV	„ 20.6
18	„ 17—19 ...	-28.8	249.2	g	0.43	I	„ 17.4
19	July 7—18 ...	+24.7	272.4	s	1.56	IV	July 12.9
20	„ 10—13 ...	-31.3	240.7	s	0.13	I	„ 15.3
21	„ 11—21 ...	+2.0	211.7	s	0.64	IV	„ 17.4
21 ₁	„ 28	-24.7	73.5	s	0.09	I	„ 27.9
22	Aug. 6—18 ...	-29.1	225.3	s	2.20	IV	Aug. 12.6
23	„ 13—17 ...	+3.6	195.8	g	0.45	I	„ 14.9
23 ₁	„ 18	+4.7	169.4	s	0.07	I	„ 16.9
23 ₂	„ 18	-22.2	163.9	g	0.11	I	„ 17.3
24	Sept. 2	+20.9	258.1	g	0.14	I	Sept. 6.4
25	„ 3	+0.2	260.7	s	0.06	I	„ 6.2
26	„ 12—13, 15	-29.1	173.5	g	0.11	I	„ 12.8
27	„ 15—16 ...	+6.8	197.1	g	0.35	I	„ 11.0
28	„ 23	-22.8	78.7	s	0.08	I	„ 20.0
29	„ 28—Oct. 1	+22.2	329.6	g	0.31	I	„ 28.2
29 ₁	„ 29	-12.6	248.6	s	0.08	I	Oct. 4.4
30	Oct. 12—19 ...	-22.4	75.4	s	0.21	I	„ 17.5
30 ₁	„ 19	-15.6	52.5	g	0.11	I	„ 19.2
31	„ 22—23 ...	+23.6	344.9	s	0.08	I	„ 24.4
32	„ 25—30 ...	+4.0	250.6	s	0.14	I	„ 31.5
33	„ 31—Nov. 12	+22.1	168.2	s	1.31	II, IV	Nov. 6.8
33 ₁	Nov. 25—27 ...	-33.1	266.2	g	0.24	I	„ 26.7
33 ₂	„ 27—Dec. 2	-18.5	262.5	g	0.13	I	„ 26.9
33 ₃	„ 28— „ 1	-19.2	278.5	g	0.14	I	„ 25.7
33 ₄	„ 29— „ 5	-26.3	239.8	g	0.59	I	„ 28.7
34	Dec... 5—8 ...	-22.8	188.0	g	1.04	IV	Dec. 2.6
35	„ 20—28 ...	+25.3	270.2	g	0.90	I	„ 23.7
36	„ 21—25 ...	-23.9	248.1	g	0.14	I	„ 25.4
37	„ 24—26 ...	-25.5	220.2	g	0.18	I	„ 27.5
38	„ 25—Jan. 1	-28.7	204.7	s	1.62	IV	„ 28.6
39	„ 25— „ 4	-22.4	175.3	g	0.68	I	„ 30.9
40	„ 29— „ 1	-27.5	217.2	s	0.37	I	„ 27.7



