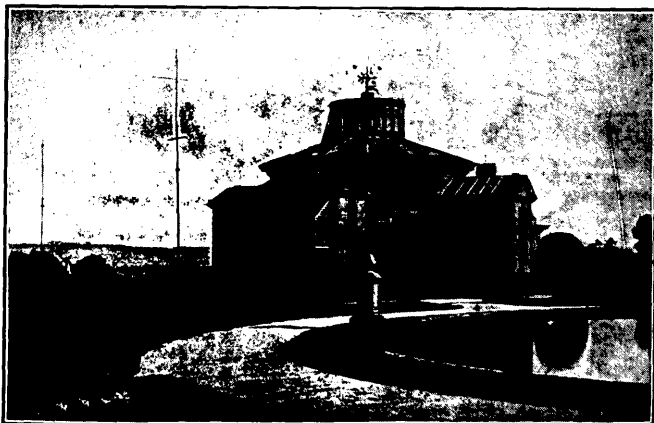




# STONYHURST COLLEGE OBSERVATORY.

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



(FOUNDED 1838.)

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## Results of Geophysical and Solar Observations,

1936.

With Report and Notes of the Director,

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

BLACKBURN:

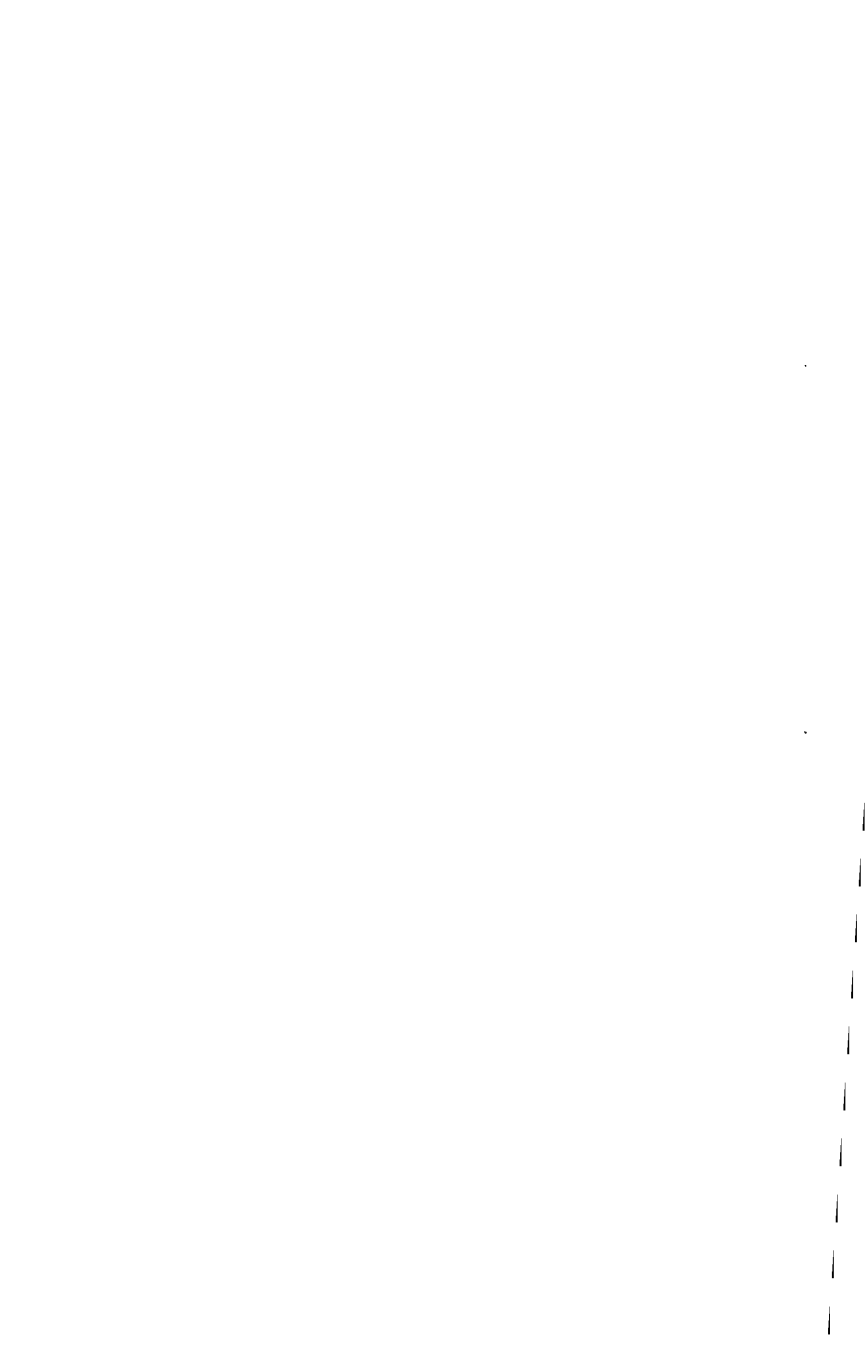
THOMAS BRIGGS (Blackburn) LTD., PRINTERS, 73, NORTHGATE



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## REPORT AND NOTES.

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GENERAL.—The Staff of the Observatory remains as last year. Father H. Macklin, S.J., B.Sc. (Oxon.), and Father J. Lawrence, S.J., B.Sc., M.A. (Oxon.), who are on the teaching staff of the College, continue to give part time service, and Mr. W. Brown, the only full-time assistant, is responsible for the routine meteorological work, the changing of charts on the recording instruments and development of photographic records.

The Director attended the meeting of the British Association at Blackpool in September, having been nominated a Vice-President of Section A. He also attended the meeting of the International Union of Geodesy and Geophysics held in Edinburgh in the same month.

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.

A daily forecast of local weather has been supplied to the *Lancashire Daily Post*, for which purpose a synoptic chart has been prepared each morning from data received by wireless telegraphy, giving the conditions at 0700 G.M.T. at a large number of reporting stations in Western Europe, Iceland and the Azores, and as reported by ships on the North Atlantic. Occasional forecasts have also been supplied to other newspapers, on request.

The character of the year as a whole, as indicated by the totals of rainfall, sunshine and wind mileage, and the mean temperature differed little from the average, though the distribution in the different months was abnormal.

The total rainfall, 46·246 in., was 1·223 in. below the average of the past 89 years, and owing to the first five months all having deficient rainfall, the accumulated total to the end of each month was below average throughout the year. April, with a total of 1·368 in., was the driest month, and December, with 6·477 in., was the wettest month of the year. February, May and August had notable deficiencies, whilst July, September and November were exceptionally wet. The greatest rainfall in one day was 1·350 in., on December 14th, which, following on 1·026 in. on the 13th—a total of 2·376 in. on the two days—caused exceptionally high floods in the rivers Hodder and Ribble. The total rainfall for the four summer months, May to August, 13·808 in., was 1·133 in. below the average for this period.

Sunshine, 1235·4 hours, was 79·1 hours or 6% below the average of the past 56 years. May, though notably less brilliant than last year, with a total of 214·3 hours, was again the sunniest month of the year, the number of hours being 30·6 above average, whilst April, with 180·6 hours, 35·6 hours above average, was the second brightest. March, June and July had notable deficiencies, March with a total of 51·3 hours being the least sunny March in our 56 years records.

No new records of temperature were set up during the year. January and February and the first half of

March were colder than the average, February being the coldest February since 1929. April also, in spite of the excess of sunshine, was a cold month, with a mean daily maximum of  $4^{\circ} \cdot 9$  below average, ground frost on 16 nights, and snow on five days. The summer months had mean temperatures not differing notably from the average, though there was an absence of very high temperatures, the highest reading,  $77^{\circ} \cdot 3$  on June 19th, being  $3^{\circ} \cdot 8$  below average for the past 89 years. The closing months of the year, with the exception of the second half of November, were on the whole mild. Though there was slight ground frost on four nights in October, air temperature never fell to the freezing point during that month, the lowest reading,  $33^{\circ} \cdot 9$  on the 4th, being  $4^{\circ}$  above the average. The lowest reading in November,  $20^{\circ} \cdot 4$  on the 23rd, is  $5^{\circ} \cdot 2$  below average, and only  $2^{\circ} \cdot 9$  above the record November minimum of  $17^{\circ} \cdot 5$  in 1901. Widespread fog prevailed, almost without intermission in many places, for eight or ten days from November 20th.

The total wind mileage, 80590 miles, registered during the year is about 5% below the average of the past 69 years. A notable feature was the absence of Spring equinoctial gales, the mean hourly velocity not reaching gale force of 39 m.p.h. in February, March or April, though gust velocities of 58 m.p.h. in February and 50 m.p.h. in March and April were attained. The gust velocities of 78 m.p.h. attained on January 9th and October 26th were the highest recorded since the installation of the Dines Anemograph in 1928. July, October and December had a recorded wind mileage above the average, the other months all having a deficiency. The excess in December was 28% above average.



Thunderstorms were infrequent, the maximum number in any month being four in July, but lightning was observed on three occasions in December, on one of them, the 19th, accompanied by thunder.

Heavy falls of rain of one inch or more in 24 hours occurred on December 13th and 14th, with totals of 1·026 and 1·350 inches respectively.

Rainless periods of five days or more occurred as follows :—February 6—15, March 10—14, April 3—11, April 29—May 4, May 17—22, June 23—27, August 25—29, September 16—23, September 28—October 3, and November 18—27. A total of ten periods, with an average of 7·0 days each.

Bright sunshine for ten hours or more was recorded on :—April 18, 19, 20, 30 ; May 2, 8, 10, 11, 18, 19, 20, 21, 28 ; June 5, 7, 11, 21, 27 ; July 8, 22 ; August 7, 8, 27, 28, 29. A total of 25 days, with an average of 11·9 hours each day, against a total of 47 days with an average of 12·1 hours each day in 1935.

Days on which notable continuous sunshine occurred were :—January 17 ; February 4, 9 ; March 24 ; April 6, 10, 18, 19, 30 ; June 5 ; July 22 ; August 8, 27, 28, 29 ; September 28 ; October 3, 4 ; November 22 ; December 7.

Six gales of wind of 39 m.p.h. mean hourly velocity, or more, were recorded :—January 9 ; October 26 ; December 13, 14, 15, 16. The two most severe were those of January 9 and December 13, with mean hourly velocities of 54 and 55 m.p.h. respectively. The maximum gust recorded since the installation of the Dines anemograph, 78 m.p.h., accompanied the gale on January 9, and this

record was equalled during the gale of October 26, which however, had a maximum mean hourly velocity of only 39 m.p.h. It is worthy of note that the record gust velocity for December, 67 m.p.h. on the 6th, occurred with an hourly velocity below gale force.

**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 magnets 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.

A doubt having arisen as to the accuracy of the value assigned to the Azimuth of the reference mark used in the absolute determinations of Magnetic Declination, it was decided to make a re-determination from stellar observations with a transit theodolite mounted on the observation pillar in the Magnetic Hut. This was carried out in a series of observations extending from October, 1936, to January, 1937, the reason for the prolonged period of observations being that only stars of not more than  $18^{\circ}$  altitude could be observed owing to restrictions of the window opening, and this belt of sky was rarely free from clouds. The method adopted was to observe the times of transit of a star over the two theodolite wires at a series of angular settings for about twenty minutes before and after meridian passage of the star, each series yielding from six to eight independent reductions for the angular reading of the meridian, and the difference between the mean of these and the angular reading of the mark, read next morning, gave the value of the

Azimuth of the mark. Complete sets of observations in good agreement were obtained on five nights, from the mean value of which it appears that the East Azimuth of the reference mark was 2' less than that which had been attributed to it since it came into use in December, 1908, when a slight change had been made in the position of the Magnetic Hut. As it is not quite clear that the Azimuth of this mark may not have been deduced from that of the previous mark in the older position of observation, from measurements of the Declination trace of the photo-magnetographs, there is some doubt as to whether the correction should be carried further back than 1909, and the matter is still under investigation. The values for the current year are referred to the new value of Azimuth of the reference mark, and hence there is an apparent decrease in the mean value of Declination from the previous year of 14'·9, whereas the true decrease is only 12'·9. The Differential Instruments, or Photo-Magnetographs, 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	.. ..	·000537	C.G.S. „

The Vertical Force Balance has been maintained in service throughout the year, but its performance is not sufficiently reliable for its record to be used for

measurement, and it only serves to indicate increase or decrease in this element.

In Declination and Horizontal Force four daily readings are measured on the curves, the highest, the lowest, and those at the hours of 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 the 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 of 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.

In 1928, in consideration of the low values of the ranges assigned to the higher character letters, the scale was revised and is as follows :—(c) 0–2, (s) 3–7, (m) 8–20, (g) 21–60, (v.g.) over 60.

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 mean excess ranges according to which these character figures have been assigned are as follows :—0, 0–4 ; 1, 5–10 ; 2, over 10. The civil day is used for both the international figures and for our own characteristic letters.

With the approach to the maximum of the sun-spot cycle, magnetic activity as indicated by the mean daily ranges shows a slight increase on last year. The

variations in solar and magnetic activity since 1930 are exhibited in the following table :—

	Solar				Magnetic	
	Spotless Days	Mean Area (1/5000 of Disc)	Decln.	H.F.	$\gamma$	
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		
1935	24	3.12	14.2	59.3		
1936	0	5.40	(16.3)	69.0		

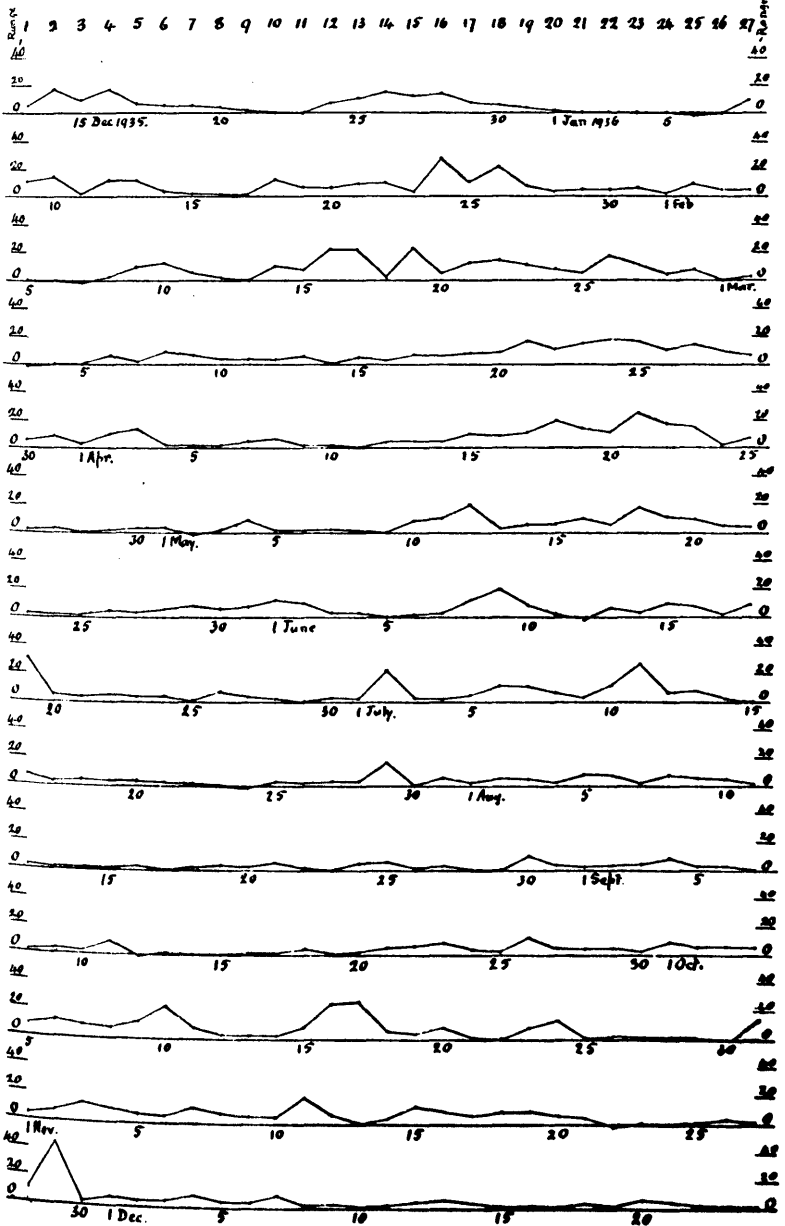
In this table the mean range in Declination for 1936 is bracketed as being somewhat doubtful. It has been corrected from the value 14.5 shown in the table on p. 35 for a slight lack of freedom of the magnet which was not detected till the end of the year, when the magnet mirror was found to be slightly touching the base line mirror owing to stretching of the suspending silk fibres. This defect must have existed from late in 1935, when a sensibility determination in December showed an apparent increase in sensibility of the Horizontal Force instrument, which however must have been due to lack of freedom in the Declination Magnet in the deflection experiment, and not to any real change in sensibility of the Horizontal Force instrument. The latter was however readjusted to give an apparent sensibility of .000509 C.G.S. Units per c.m. of ordinate. A redetermination in March, 1936, showed an apparent slight increase of sensibility to .000500 C.G.S. per c.m., and in December to .000481 per c.m., when it became evident that the apparent change was due to lack of freedom in the Declination

magnet, which was accordingly freed by winding up the supporting head about 1 m.m. Deflections obtained with a deflector magnet at the same distance before and after freeing showed an increase in range of  $12\frac{1}{2}\%$  after freeing, and it has been thought advisable to apply this correction to the mean range of the year. A new sensibility determination gave the sensibility of the H.F. instrument as  $\cdot 000537$  C.G.S. per c.m. of ordinate, and this value has been adopted for the year. It has not been thought advisable to apply a correction to the values in the table on p. 35 as the mean value of the element would not be seriously affected, though the values of the highest and lowest readings and the ranges must be affected by an error of uncertain amount. Finally, on December 29th, 1936, H.F. sensibility was readjusted to  $\cdot 000509$  C.G.S. per c.m. of ordinate for the following year.

The increased magnetic activity shown by the mean ranges is not reflected in the numbers of days of different magnetic character shown in the table on p. 38. This is attributable to the greater average ranges on the five quietest days of the month which are deducted from the daily ranges to obtain the daily magnetic character as explained on pp. XI-XII—an excess which was most notable in the six months from April to September. The number of days classed as "calm" increased from 114 to 123, and there was a slight fall in the numbers of each of the classes of disturbance. There were again no disturbances classed as "very great" or true magnetic storms.

DAY OF PERIOD.

XV



1936. DAILY MAGNETIC CHARACTER IN 27-DAY PERIODS.



The chart on p. xv 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. Again, as last year, there is a lack of sequences of disturbances at 27-day intervals.

“ Sudden Commencements ” were noted on the following dates at the times indicated :—Feb. 2, 15 h. 6 m. (doubtful) ; May 30, 17 h. 30 m. ; June 1, 16 h. 45 m. (very large) ; July 5, 2 h. 30 m. (large) ; July 17, 17 h. 18 m. (doubtful) ; July 29, 6 h. 6 m. (small) ; July 29, 14 h. 2 m. (large) ; Aug. 30, 17 h. 48 m. (large) ; Sept. 17, 21 h. 53 m. (small) ; Oct. 11, 13 h. 32 m. (small) ; Oct. 16, 15 h. 2 m. ; Oct. 31, 1 h. 25 m. ; Nov. 2, 14 h. 22 m. ; Nov. 28, 23 h. 38 m. (large) ; Dec. 26, 3 h. 32 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.

**SOLAR OBSERVATIONS.**—Observation of the Solar Surface was made on 262 days, with the results shown in the table on pp. 39-40. Of the 262 days of observation 257 yielded drawings, of which 226 are complete, and show all spots and faculæ, and of the remaining 36, 31 are complete for spots. Professor Brunner, of Zurich, supplied 101 drawings to fill gaps in our own

observations. There remain eight days for which no statistics are available.

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

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.

With the approach to maximum of the sun spot cycle, solar activity again shows a marked increase on last year. There were no spotless days and the mean daily disc area of spots increased from 3.12 to 5.40, from measurements of all drawings, whilst the number of groups on the Stonyhurst drawings alone increased from 165 to 364. Activity was greatest in the first four and last three months of the year. Three very large groups, visible to the naked eye, crossed the disc at the end of November and early December, two of them passing the central meridian on November 29th, accompanied by a notable magnetic disturbance which started with a "sudden commencement" shortly before 0 h. of November 29th, but was of short duration, lasting only about 14 h.

It is a matter of great regret that, owing to the great increase in the amount of measurement and

reduction required and the limitations imposed by other demands on the time of the staff, it has not been found possible to complete the tables of statistics of individual groups as given in recent years, though the issue of the Report has been delayed in the hope that this might be accomplished. It is hoped it may be found possible to issue these statistics at a later date.

**SEISMOLOGICAL.**—The Milne-Shaw seismograph has been in continuous service throughout the year, the total number of earthquakes recorded being 90, as against 119 last year. They were distributed as follows :

Jan	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
9	5	6	10	7	9	5	7	5	10	9	4	90 ..

Among the more notable were the following :—

Feb. 15—New Guinea	Aug. 23—Nicobar Islands
April 1—Celebes	Sept. 19—Sumatra
„ 19—Solomon Islands	Oct. 5—Celebes
May 27—Himalayas	„ 23—Alaska
June 30—Kamtchatka	Nov. 2—Sea of Japan
July 13—Chile	„ 13—Behring Sea

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.

**XIX.**

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.*

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**ERRATUM.** In 1935 Report pp. 39-40, for  
year 1934 read 1935.

## MAXIMUM GUSTS FOR EACH DAY OF THE YEAR, 1936.

RECORDED BY THE DINES TUBE ANEMOGRAPH.

1936	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1936
DAY													DAY
1	26	21	37	32	16	23	19	21	18	15	36	53	1
2	14	24	40	36	22	32	19	<b>49</b>	22	21	26	53	2
3	14	36	8	41	27	41	22	44	22	30	24	45	3
4	13	16	31	<b>50</b>	34	<b>47</b>	28	43	29	20	23	56	4
5	50	16	41	30	32	35	29	22	39	32	41	48	5
6	46	25	39	27	35	34	20	40	36	23	33	<b>67</b>	6
7	31	31	32	28	<b>42</b>	33	24	24	<b>55</b>	12	48	29	7
8	14	41	21	24	41	29	33	19	46	20	46	25	8
9	<b>78</b>	43	19	37	37	30	26	17	22	33	45	8	9
10	60	<b>58</b>	24	36	27	21	33	22	17	20	46	9	10
11	54	52	20	38	16	25	36	21	26	13	22	23	11
12	15	26	19	46	22	20	27	30	30	28	49	21	12
13	18	30	21	42	23	18	47	19	15	32	33	65	13
14	13	30	20	26	20	28	38	24	14	39	38	66	14
15	14	18	24	28	28	38	34	17	23	42	54	56	15
16	14	22	18	27	34	34	31	13	26	44	37	64	16
17	34	27	14	24	22	26	27	30	30	60	33	45	17
18	44	47	21	40	35	20	38	27	21	56	42	46	18
19	23	38	31	41	32	37	40	26	20	44	24	52	19
20	45	35	29	33	<b>42</b>	39	35	20	32	31	11	51	20
21	37	44	40	33	33	37	29	24	26	32	12	36	21
22	33	29	39	36	22	26	22	24	21	25	15	38	22
23	32	30	40	27	41	22	36	29	17	32	11	17	23
24	30	35	32	34	40	23	<b>50</b>	32	21	46	9	39	24
25	31	36	40	47	29	24	47	26	35	55	14	26	25
26	24	36	<b>50</b>	37	22	16	32	16	22	<b>78</b>	13	16	26
27	40	32	30	32	36	17	32	18	39	71	8	19	27
28	41	37	20	23	26	20	17	17	35	40	11	18	28
29	35	32	38	27	38	23	22	19	15	18	41	27	29
30	29		<b>50</b>	29	36	24	32	35	13	26	<b>57</b>	23	30
31	23		40		27		40	29		22		42	31



# METEOROLOGICAL REPORT.

## JANUARY, 1936.

Results of Observations taken during the Month.		Mean for the last 69 years.						
Mean Reading of the Barometer .....	inches 29·022	29·483						
Highest ,, on the 14th .....	,, 29·919	30·130						
Lowest ,, on the 20th .....	,, 28·167	28·590						
Range of Barometer Readings .....	,, 1·752	1·540						
Highest Reading of a Max. Therm. on the 9th ...	53·6	51·5						
Lowest Reading of a Min. Therm. on the 20th...	18·0	22·0						
Range of Thermometer Readings.....	35·6	29·5						
Mean of Highest Daily Readings .....	40·0	42·6						
Mean of Lowest Daily Readings .....	33·2	33·4						
Mean Daily Range .....	6·8	9·2						
Deduced Mean Temp. (from mean of Max. and Min.)	36·4	37·7						
Mean Temperature from Dry Bulb .....	37·7	38·1						
Adopted Mean Temperature .....	37·1	37·9						
Mean Temperature of Evaporation .....	36·2	36·7						
Mean Temperature of Dew Point .....	34·2	34·6						
Mean elastic force of Vapour .....	inches 0·197	0·202						
Mean weight of Vapour in a cub. ft. of air, grains	2·3	2·4						
Mean additional weight required for saturation ,,	0·4	0·4						
Mean degree of Humidity (saturation 100) .....	86	87						
Mean weight of a cubic foot of air .....	grains 540·6	549·1						
Mean amount of Cloud (0—10) .....	8·1	7·8						
Fall of Rain .....	inches 4·011	4·436						
Greatest Rainfall in one day (27th).....	,, 0·400	0·824						
No. of days on which ·005 in. or more Rain fell...	23	19·7						
Wind :—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	3	3	1	4	10	7	0
Mean Velocity in miles per hr.	7·1	3·9	11·0	2·8	20·2	9·1	9·6	0
Total No. of miles.....	513	281	790	66	1940	2189	1614	0
Total No. of miles registered .....	7393	Mean*						
Greatest hourly velocity (9th, at 2000 G.M.T., Dir. S.W.) .....	54	8267	41					

\* For the last 69 years.

## JANUARY, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.461 in.
Monthly range	„	...	...	+	0.212 in.
Mean of highest daily temperatures	...	...	...	—	2.6°
Mean of lowest	„	„	...	—	0.2°
Mean daily Range	...	...	...	—	2.4°
Adopted mean temperature	...	...	...	—	0.8°
Total rainfall	...	...	...	—	0.425 in.

Ground Frost on the 2nd, 3rd, 4th, 8th, 12th—24th, 27th, and 30th. Hoar Frost on the 12th, 14th and 15th. Snow on the 11th, 15th, 16th, 17th, 19th, 20th, 21st, 22nd, and 23rd. Hail on the 11th and 22nd. Gale of Wind on the 9th. Fog on the 2nd, 3rd, 4th, 8th, 16th, 19th, 24th, and 31st. Lightning on the 9th. Lunar Halo on the 12th. Solar Halo on the 12th, 15th, and 27th.

### EXTREME READINGS FOR JANUARY.

During 89 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, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years.									
Mean Reading of the Barometer .....	inches	29·270	29·497								
Highest „	on the 7th .....	„	30·041	30·111							
Lowest „	on the 18th .....	„	28·452	28·663							
Range of Barometer Readings .....	„	1·589	1·448								
Highest Reading of a Max. Therm. on the 18th...		51·5	52·0								
Lowest Reading of a Min. Therm. on the 13th...		20·0	22·8								
Range of Thermometer Readings.....		31·5	29·2								
Mean of Highest Daily Readings .....		39·9	43·8								
Mean of Lowest Daily Readings .....		30·9	33·6								
Mean Daily Range .....		9·0	10·2								
Deduced Mean Temp. (from mean of Max. and Min.)		35·0	38·2								
Mean Temperature from Dry Bulb .....		35·6	38·5								
Adopted Mean Temperature .....		35·3	38·4								
Mean Temperature of Evaporation .....		33·8	36·8								
Mean Temperature of Dew Point .....		31·1	34·6								
Mean elastic force of Vapour .....	inches	0·175	0·197								
Mean weight of Vapour in a cub. ft. of air, grains		2·0	2·4								
Mean additional weight required for saturation „		0·4	0·4								
Mean degree of Humidity (saturation 100) .....		82	86								
Mean weight of a cubic foot of air .....	grains	547·9	548·7								
Mean amount of Cloud (0—10) .....		7·5	7·5								
Fall of Rain .....	inches	2·076	3·515								
Greatest Rainfall in one day (22nd).....	„	0·414	0·754								
No. of days on which ·005 in. or more Rain fell...		15	16·6								
Wind :—Direction .....		N	NE	E	SE	S	SW	W	NW		
No. of days.....		2	6	6	1	2	3	5	4		
Mean Velocity in miles per hr.		8·7	6·4	12·5	12·2	14·2	7·6	9·1	5·7		
Total No. of miles.....		416	922	1796	292	680	550	1088	551		
Total No. of miles registered .....		6295	Mean*								
Greatest hourly velocity (18th, at 2100 G.M.T., Dir. S.S.W.) .....		35	7341								
			40								

\* For the last 69 years.

## FEBRUARY, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0·227 in.
Monthly range	„	„	„	+	0·141 in.
Mean of highest daily temperatures	...	...	...	—	3·9°
Mean of lowest	„	„	„	—	2·7°
Mean daily range	...	...	...	—	1·2°
Adopted mean temperature	...	...	...	—	3·1°
Total rainfall	...	...	...	—	1·439 in.

Ground Frost on the 3rd—17th, 21st—23rd, and 26th—29th.  
Hoar Frost on the 12th and 13th. Snow on the 2nd, 3rd, 5th, and 23rd. Hail on the 2nd and 3rd. Fog on the 1st, 5th, 12th, 13th, 15th—17th, 24th and 26th. Lightning on the 3rd. Lunar Halo on the 6th. Solar Halo on the 7th, 14th, and 22nd.

### EXTREME READINGS FOR FEBRUARY,

During 89 Years.

Highest reading of Barometer	...	1934 (15th)	...	...	30·515 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, 1936.

Results of Observations taken during the Month.								Mean for the last 89 years.	
Mean Reading of the Barometer .....	inches	29.390						29.455	
Highest „ on the 16th .....	„	29.843						30.045	
Lowest „ on the 1st .....	„	28.793						28.667	
Range of Barometer Readings .....	„	1.050						1.378	
Highest Reading of a Max. Therm. on the 22nd...		60.3						56.8	
Lowest Reading of a Min. Therm. on the 4th ...		25.4						23.6	
Range of Thermometer Readings.....		34.9						33.2	
Mean of Highest Daily Readings .....		48.4						47.0	
Mean of Lowest Daily Readings .....		38.1						34.5	
Mean Daily Range .....		10.3						12.5	
Deduced Mean Temp. (from mean of Max. and Min.)		42.3						39.8	
Mean Temperature from Dry Bulb .....		43.8						40.5	
Adopted Mean Temperature .....		43.1						40.1	
Mean Temperature of Evaporation .....		42.1						38.3	
Mean Temperature of Dew Point .....		40.1						35.9	
Mean elastic force of Vapour .....	inches	0.248						0.210	
Mean weight of Vapour in a cub. ft. of air, grains		2.9						2.4	
Mean additional weight required for saturation „		0.4						0.5	
Mean degree of Humidity (saturation 100) .....		86						85	
Mean weight of a cubic foot of air .....	grains	540.6						546.0	
Mean amount of Cloud (0—10) .....		8.6						7.4	
Fall of Rain .....	inches	2.425						3.238	
Greatest Rainfall in one day (29th).....	„	0.730						0.743	
No. of days on which .005 in. or more Rain fell...		20						16.6	
Wind :—Direction .....		N	NE	E	SE	S	SW	W	NW
No. of days.....		3	2	10	2	5	2	7	0
Mean Velocity in miles per hr.		2.9	6.7	8.6	7.4	10.3	6.7	9.8	0
Total No. of miles.....		710	321	2057	357	1233	321	1648	0
Total No. of miles registered .....						6647			Mean*
Greatest hourly velocity (29th, at 2400 G.M.T., Dir. S.S.W.) .....							30		8205
									39

\* For the last 89 years.

## MARCH, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	—	0.065 in
Monthly range	„	...	...	...	—	0.328 in.
Mean of highest daily temperatures	...	...	...	...	+	1.4°
Mean of lowest	„	„	...	...	+	3.6°
Mean daily range	...	...	...	...	—	2.2°
Adopted mean temperature	...	...	...	...	+	3.0°
Total rainfall	...	...	...	...	—	0.813 in.

Ground Frost on the 1st—4th, 6th, 7th, 15th, and 16th. Hoar Frost on the 4th and 16th. Heavy Rain on the 8th and 29th. Fog on the 4th, 5th, 9th, 10th, 16th, 17th, and 18th. Solar Halo on the 3rd and 22nd.

### EXTREME READINGS FOR MARCH,

During 89 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, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years.						
Mean Reading of the Barometer .....	inches	29·562	29·479					
Highest „ on the 29th .....	„	29·966	29·953					
Lowest „ on the 15th .....	„	29·154	28·805					
Range of Barometer Readings .....	„	0·812	1·148					
Highest Reading of a Max. Therm. on 25th & 30th		57·0	64·1					
Lowest Reading of a Min. Therm. on the 17th...		26·8	28·3					
Range of Thermometer Readings.....		30·2	35·8					
Mean of Highest Daily Readings .....		49·0	53·9					
Mean of Lowest Daily Readings .....		35·7	37·9					
Mean Daily Range .....		13·3	16·0					
Deduced Mean Temp. (from mean of Max. and Min.)		40·9	43·8					
Mean Temperature from Dry Bulb .....		42·9	44·7					
Adopted Mean Temperature .....		41·9	44·3					
Mean Temperature of Evaporation .....		39·1	41·6					
Mean Temperature of Dew Point .....		34·5	38·2					
Mean elastic force of Vapour .....	inches	0·200	0·234					
Mean weight of Vapour in a cub. ft. of air, grains		2·3	2·7					
Mean additional weight required for saturation „		0·9	0·7					
Mean degree of Humidity (saturation 100) .....		68	79					
Mean weight of a cubic foot of air .....	grains	545·0	541·9					
Mean amount of Cloud (0—10) .....		5·7	6·8					
Fall of Rain .....	inches	1·368	2·562					
Greatest Rainfall in one day (1st) .....	„	0·336	0·590					
No. of days on which ·005 in. or more Rain fell...		12	15·0					
<b>Wind :—Direction .....</b>								
	N	NE	E	SE	S	SW	W	NW
No. of days.....	7	8	4	0	1	0	8	2
Mean Velocity in miles per hr.	7·0	8·6	11·2	0	9·1	0	11·8	9·0
Total No. of miles.....	1170	1660	1077	0	218	0	2261	431
							<b>Mean*</b>	
Total No. of miles registered .....	6817						7445	
Greatest hourly velocity (18th, at 1530 G.M.T., Dir. W.) .....	24						36	

\* For the last 89 years.

## APRIL, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.083 in.
Monthly range	"	...	...	—	0.336 in.
Mean of highest daily temperatures	...	...	...	—	4.9°
Mean of lowest	"	"	...	—	2.2°
Mean daily range	...	...	...	—	2.7°
Adopted mean temperature	...	...	...	—	2.4°
Total rainfall	...	...	...	—	1.194 in.

Ground Frost on the 4th, 5th, 7th, 8th, 10th, 12th, 14th—19th, 21st—23rd, and 28th. Hoar Frost on the 17th, 21st, and 23rd. Snow on the 12th, 15th, 16th, 20th, and 22nd. Hail on the 13th, 16th, and 17th. Fog on the 29th. Solar Halo on the 10th, 24th, and 25th.

### EXTREME READINGS FOR APRIL,

During 89 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, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years.								
Mean Reading of the Barometer .....	inches	29.627	29.540							
Highest „ on the 3rd .....	„	29.968	29.978							
Lowest „ on the 30th .....	„	29.251	28.957							
Range of Barometer Readings .....	„	0.717	1.021							
Highest Reading of a Max. Therm. on the 16th...		72.8	71.8							
Lowest Reading of a Min. Therm. on the 31st ...		34.0	32.2							
Range of Thermometer Readings.....		38.8	39.6							
Mean of Highest Daily Readings .....		59.9	59.2							
Mean of Lowest Daily Readings .....		44.2	42.7							
Mean Daily Range .....		15.7	16.5							
Deduced Mean Temp. (from mean of Max. and Min.)		50.4	49.2							
Mean Temperature from Dry Bulb .....		51.2	50.1							
Adopted Mean Temperature .....		50.8	49.7							
Mean Temperature of Evaporation .....		47.9	46.5							
Mean Temperature of Dew Point .....		44.5	43.0							
Mean elastic force of Vapour .....	inches	0.295	0.280							
Mean weight of Vapour in a cub. ft. of air, grains		3.4	3.2							
Mean additional weight required for saturation „		0.9	0.8							
Mean degree of Humidity (saturation 100) .....		77	77							
Mean weight of a cubic foot of air .....	grains	536.8	536.8							
Mean amount of Cloud (0—10) .....		6.0	7.0							
Fall of Rain .....	inches	1.741	2.765							
Greatest Rainfall in one day (29th).....	„	0.670	0.654							
No. of days on which .005 in. or more Rain fell...		11	14.7							
Wind :—Direction .....		N	NE	E	SE	S	SW	W	NW	
No. of days.....		1	13	7	1	1	0	7	1	
Mean Velocity in miles per hr.		10.8	8.7	8.3	5.3	8.5	0	6.6	7.0	
Total No. of miles.....		258	2724	1396	128	204	0	1115	169	
Total No. of miles registered .....		5994							Mean* 6831	
Greatest hourly velocity (15th and 29th, at 1200 G.M.T., Dir. S., and W.N.W.).....		21							32	

\* For the last 89 years.

## MAY, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0·087 in
Monthly range	„	...	...	—	0·304 in.
Mean of highest daily temperatures	...	...	...	+	0·7°
Mean of lowest	„	„	...	+	1·5°
Mean daily range	...	...	...	—	0·8°
Adopted mean temperature	...	...	...	+	1·1°
Total rainfall	...	...	...	—	1·024 in.

Ground Frost on the 28th and 31st. Heavy Rain on the 29th. Fog on the 17th. Thunder on the 6th and 17th. Lightning on the 6th. Solar Halo on the 14th.

### EXTREME READINGS FOR MAY,

During 89 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 1837 only.

† And in 1848.



## JUNE, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years.						
Mean Reading of the Barometer .....	inches 29·564	29·559						
Highest „ on the 18th .....	„ 29·851	29·937						
Lowest „ on the 30th .....	„ 29·228	29·046						
Range of Barometer Readings .....	„ 0·623	0·893						
Highest Reading of a Max. Therm. on the 19th...	77·3	76·5						
Lowest Reading of a Min. Therm. on the 1st ...	38·0	39·2						
Range of Thermometer Readings.....	39·3	37·3						
Mean of Highest Daily Readings .....	64·3	64·9						
Mean of Lowest Daily Readings .....	50·1	48·3						
Mean Daily Range .....	14·2	16·6						
Deduced Mean Temp. (from mean of Max. and Min.)	55·4	54·8						
Mean Temperature from Dry Bulb .....	56·6	55·4						
Adopted Mean Temperature .....	56·0	55·1						
Mean Temperature of Evaporation .....	52·7	51·8						
Mean Temperature of Dew Point .....	49·1	48·3						
Mean elastic force of Vapour .....	inches 0·350	0·345						
Mean weight of Vapour in a cub. ft. of air, grains	4·0	3·8						
Mean additional weight required for saturation „	1·2	1·0						
Mean degree of Humidity (saturation 100) .....	76	78						
Mean weight of a cubic foot of air .....	grains 529·7	531·2						
Mean amount of Cloud (0—10) .....	7·5	7·1						
Fall of Rain .....	inches 3·553	3·296						
Greatest Rainfall in one day (29th).....	„ 0·836	0·794						
No. of days on which ·005 in. or more Rain fell...	17	15·1						
Wind :—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	4	6	0	1	5	10	0
Mean Velocity in miles per hr.	9·6	7·9	6·6	0	8·6	7·8	7·3	0
Total No. of miles.....	921	755	948	0	206	939	1743	0
Total No. of miles registered .....	5512						Mean* 6156	
Greatest hourly velocity (19th, at 2200 G.M.T., Dir. N.) .....	21						29	

\* For the last 89 years.

## JUNE, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.005 in.
Monthly range	„	„	„	„	—	0.270 in.
Mean of highest daily temperatures	...	...	...	...	—	0.6°
Mean of lowest	„	„	„	„	+	1.8°
Mean daily range	...	...	...	...	—	2.4°
Adopted mean temperature	...	...	...	...	+	0.9°
Total rainfall	...	...	...	...	+	0.257 in.

Heavy Rain on the 14th and 29th. Fog on the 14th and 25th. Thunder on the 20th and 30th. Lightning on the 19th, 20th, 21st, 22nd, 23rd, and 30th. Solar Halo on the 1st, 2nd, 6th and 20th.

### EXTREME READINGS FOR JUNE,

During 89 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, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years.						
Mean Reading of the Barometer .....	inches 29.331	29.523						
Highest „ on the 29th .....	„ 29.762	29.902						
Lowest „ on the 15th .....	„ 28.993	29.003						
Range of Barometer Readings .....	„ 0.769	0.899						
Highest Reading of a Max. Therm. on 6th & 17th	69.7	78.1						
Lowest Reading of a Min. Therm. on the 22nd...	45.1	43.1						
Range of Thermometer Readings.....	24.6	35.0						
Mean of Highest Daily Readings .....	63.7	67.2						
Mean of Lowest Daily Readings .....	53.0	51.5						
Mean Daily Range .....	10.7	15.7						
Deduced Mean Temp. (from mean of Max. and Min.)	57.0	57.7						
Mean Temperature from Dry Bulb .....	57.9	58.2						
Adopted Mean Temperature .....	57.5	58.0						
Mean Temperature of Evaporation .....	55.2	54.9						
Mean Temperature of Dew Point .....	52.8	52.0						
Mean elastic force of Vapour .....	inches 0.400	0.389						
Mean weight of Vapour in a cub. ft. of air, grains	4.5	4.4						
Mean additional weight required for saturation „	0.9	1.1						
Mean degree of Humidity (saturation 100) .....	84	81						
Mean weight of a cubic foot of air .....	grains 523.8	527.3						
Mean amount of Cloud (0—10) .....	8.7	7.4						
Fall of Rain .....	inches 5.066	4.037						
Greatest Rainfall in one day (30th).....	„ 0.893	0.876						
No. of days on which .005 in. or more Rain fell...	24	16.8						
Wind :—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	3	0	1	3	4	18	1
Mean Velocity in miles per hr.	4.1	5.0	0	13.5	10.0	13.6	9.5	8.2
Total No. of miles.....	98	361	0	324	718	1309	4118	196
Total No. of miles registered .....	7124						Mean* 6320	
Greatest hourly velocity (24th, at 0630 G.M.T., Dir. S. by W.).....	30						28	

\* For the last 69 years.

## JULY, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.192 in.
Monthly range	„	...	...	—	0.130 in.
Mean of highest daily temperatures	...	...	...	—	3.5°
Mean of lowest	„	„	...	+	1.5°
Mean daily range	...	...	...	—	5.0°
Adopted mean temperature	...	...	...	—	0.5°
Total rainfall	...	...	...	+	1.029 in.

Heavy Rain on the 12th, 23rd, and 30th. Fog on the 3rd, 6th, 12th and 20th. Thunder on the 2nd, 7th, 8th, 10th and 17th. Lightning on the 7th, 8th, 10th and 17th. Solar Halo on the 9th, 10th and 12th.

### EXTREME READINGS FOR JULY,

During 89 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, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years						
Mean Reading of the Barometer .....	inches 29·653	29·495						
Highest „ on the 26th .....	„ 30·010	29·899						
Lowest „ on the 2nd .....	„ 29·070	28·951						
Range of Barometer Readings .....	„ 0·940	0·948						
Highest Reading of a Max. Therm. on the 28th...	73·4	76·0						
Lowest Reading of a Min. Therm. on the 8th ...	47·0	42·1						
Range of Thermometer Readings.....	26·4	33·9						
Mean of Highest Daily Readings .....	65·3	66·1						
Mean of Lowest Daily Readings .....	53·0	51·0						
Mean Daily Range .....	12·3	15·1						
Deduced Mean Temp. (from mean of Max. and Min.)	57·5	56·9						
Mean Temperature from Dry Bulb .....	59·1	57·8						
Adopted Mean Temperature .....	58·3	57·4						
Mean Temperature of Evaporation .....	55·9	54·6						
Mean Temperature of Dew Point .....	53·0	51·8						
Mean elastic force of Vapour .....	inches 0·403	0·387						
Mean weight of Vapour in a cub. ft. of air, grains	4·6	4·3						
Mean additional weight required for saturation „	1·1	1·0						
Mean degree of Humidity (saturation 100) .....	81	81						
Mean weight of a cubic foot of air .....	grains 528·3	527·2						
Mean amount of Cloud (0—10) .....	6·9	7·3						
Fall of Rain .....	inches 3·448	5·067						
Greatest Rainfall in one day (5th) .....	„ 0·898	1·062						
No. of days on which ·005 in. or more Rain fell...	15	18·6						
Wind :—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	1	2	0	2	2	22	0
Mean Velocity in miles per hr.	6·5	3·6	5·6	0	7·9	6·3	7·9	0
Total No. of miles.....	314	87	267	0	381	303	4164	0
Total No. of miles registered .....	5516	Mean*		6243				
Greatest hourly velocity (2nd, at 1500 G.M.T., Dir. W. by S.).....	25			30				

\* For the last 69 years.

## AUGUST, 1936.

## DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.158 in.
Monthly range	..	..	..	..	—	0.008 in.
Mean of highest daily temperatures	...	...	...	...	—	0.8°
Mean of lowest	..	..	..	..	+	2.0°
Mean daily range	...	...	...	...	—	2.8°
Adopted mean temperature	...	...	...	...	+	0.9°
Total rainfall	...	...	...	...	—	1.619 in.

Heavy Rain on the 3rd and 5th. Fog on the 6th, 10th, 19th, 20th and 28th. Thunder on the 10th and 15th. Lunar Halo on the 5th. Solar Halo on the 5th and 7th.

## EXTREME READINGS FOR AUGUST,

During 89 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	..	..	1935	...	1.637 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, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years.						
Mean Reading of the Barometer .....	inches 29·587	29·543						
Highest „ on the 22nd .....	„ 29·969	30·005						
Lowest „ on the 7th .....	„ 28·853	28·890						
Range of Barometer Readings .....	„ 1·116	1·115						
Highest Reading of a Max. Therm. on the 11th...	68·2	71·6						
Lowest Reading of a Min. Therm. on the 29th...	36·4	36·8						
Range of Thermometer Readings.....	31·8	34·8						
Mean of Highest Daily Readings .....	62·1	61·7						
Mean of Lowest Daily Readings .....	51·5	47·5						
Mean Daily Range .....	10·6	14·2						
Deduced Mean Temp. (from mean of Max. and Min.)	55·5	53·4						
Mean Temperature from Dry Bulb .....	57·0	54·3						
Adopted Mean Temperature .....	56·3	53·9						
Mean Temperature of Evaporation .....	54·1	51·1						
Mean Temperature of Dew Point .....	51·4	48·4						
Mean elastic force of Vapour .....	inches 0·380	0·340						
Mean weight of Vapour in a cub. ft. of air, grains	4·2	3·9						
Mean additional weight required for saturation „	1·0	0·9						
Mean degree of Humidity (saturation 100) .....	82	82						
Mean weight of a cubic foot of air .....	grains 529·6	532·4						
Mean amount of Cloud (0—10) .....	7·3	6·7						
Fall of Rain .....	inches 5·461	4·378						
Greatest Rainfall in one day (7th) .....	„ 0·742	0·992						
No. of days on which ·005 in. or more Rain fell...	16	16·5						
Wind:—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	7	2	2	2	2	10	1
Mean Velocity in miles per hr.	6·5	6·1	7·4	7·8	6·0	4·3	8·3	2·5
Total No. of miles.....	621	1019	354	373	287	206	1986	61
Total No. of miles registered .....	4907						Mean*	
Greatest hourly velocity (7th, at 1100 G.M.T., Dir. W.) .....	29						6014	
							31	

\* For the last 89 years.

## SEPTEMBER, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0·044 in.
Monthly range	„	...	...	...	+	0·001 in
Mean of highest daily temperatures	...	...	...	...	+	0·4°
Mean of lowest	„	„	...	...	+	4·0°
Mean daily range	...	...	...	...	—	3·6°
Adopted mean temperature	...	...	...	...	+	2·4°
Total rainfall	...	...	...	...	+	1·083 in.

Ground Frost on the 29th. Heavy Rain on the 4th, 5th, 6th, 7th, 12th and 25th. Fog on the 12th, 13th, 14th, 22nd and 23rd. Thunder on the 3rd and 14th. Lightning on the 14th. Solar Halo on the 9th and 26th.

### EXTREME READINGS FOR SEPTEMBER,

During 89 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, 1936.

Results of Observations taken during the Month.			Mean for the last 89 years.
Mean Reading of the Barometer .....	inches	29·622	29·445
Highest „ on the 11th .....	„	29·926	30·017
Lowest „ on the 26th .....	„	28·786	28·683
Range of Barometer Readings .....	„	1·140	1·334
Highest Reading of a Max. Therm. on the 4th ...		59·2	63·8
Lowest Reading of a Min. Therm. on the 4th ...		33·9	29·9
Range of Thermometer Readings.....		25·3	33·9
Mean of Highest Daily Readings .....		53·8	54·3
Mean of Lowest Daily Readings .....		43·0	42·2
Mean Daily Range .....		10·8	12·1
Deduced Mean Temp. (from mean of Max. and Min.)		47·4	47·3
Mean Temperature from Dry Bulb .....		48·8	48·1
Adopted Mean Temperature .....		48·1	47·8
Mean Temperature of Evaporation .....		45·7	45·5
Mean Temperature of Dew Point .....		42·4	43·0
Mean elastic force of Vapour .....	inches	0·272	0·279
Mean weight of Vapour in a cub. ft. of air, grains		3·1	3·2
Mean additional weight required for saturation „		0·8	0·6
Mean degree of Humidity (saturation 100) .....		77	84
Mean weight of a cubic foot of air .....	grains	539·4	537·3
Mean amount of Cloud (0—10) .....		6·5	7·3
Fall of Rain .....	inches	4·901	5·083
Greatest Rainfall in one day (18th).....	„	0·987	0·994
No. of days on which ·005 in. or more Rain fell...		18	19·0

Wind:—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	5	2	1	1	3	14	2
Mean Velocity in miles per hr.	5·2	4·3	6·4	5·3	11·7	8·9	15·0	9·1
Total No. of miles.....	373	516	307	128	281	641	5040	438

		Mean*
Total No. of miles registered .....	7724	6876
Greatest hourly velocity (26th, at 2230 G.M.T., Dir. W.) .....	39	37

\* For the last 69 years.

## OCTOBER, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0·177 in.
Monthly range	„	...	...	...	—	0·194 in.
Mean of highest daily temperatures	...	...	...	...	—	0·5°
Mean of lowest	„	„	...	...	+	0·8°
Mean daily range	...	...	...	...	—	1·3°
Adopted mean temperature	...	...	...	...	+	0·3°
Total rainfall	...	...	...	...	—	0·182 in.

Ground Frost on the 4th, 7th, 8th and 29th. Hoar Frost on the 4th. Hail on the 25th, 26th and 27th. Heavy Rain on the 17th, 18th and 24th. Gales of Wind on the 26th and 27th. Fog on the 29th and 30th. Thunder on the 25th and 27th. Lightning on the 25th and 27th. Solar Halo on the 20th.

### EXTREME READINGS FOR OCTOBER,

During 89 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, 1936.

Results of Observations taken during the Month.		Mean for the last 89 years.						
Mean Reading of the Barometer .....	inches 29·415	29·456						
Highest ,, on the 20th .....	,, 30·174	30·063						
Lowest ,, on the 7th .....	,, 28·246	28·569						
Range of Barometer Readings .....	,, 1·928	1·494						
Highest Reading of a Max. Therm. on the 4th ...	52·4	55·7						
Lowest Reading of a Min. Therm. on the 23rd...	20·4	25·6						
Range of Thermometer Readings.....	32·0	30·1						
Mean of Highest Daily Readings .....	46·3	47·1						
Mean of Lowest Daily Readings .....	36·6	36·9						
Mean Daily Range .....	9·7	10·2						
Deduced Mean Temp. (from mean of Max. and Min.)	40·9	41·6						
Mean Temperature from Dry Bulb .....	41·8	42·1						
Adopted Mean Temperature .....	41·4	41·9						
Mean Temperature of Evaporation .....	40·1	39·9						
Mean Temperature of Dew Point .....	38·0	38·2						
Mean elastic force of Vapour .....	inches 0·229	0·232						
Mean weight of Vapour in a cub. ft. of air, grains	2·7	2·8						
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 543·4	544·3						
Mean amount of Cloud (0—10) .....	7·1	7·4						
Fall of Rain .....	inches 5·719	4·470						
Greatest Rainfall in one day (16th).....	,, 0·955	0·991						
No. of days on which ·005 in. or more Rain fell...	19	19·2						
Wind :—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	12	1	2	1	1	3	10	0
Mean Velocity in miles per hr.	3·9	13·0	7·5	12·6	22·0	13·1	13·0	0
Total No. of miles.....	1117	312	358	303	528	945	3116	0
Total No. of miles registered .....	6679						Mean* 7049	
Greatest hourly velocity (7th, at 1700 G.M.T., Dir. S. by E.).....	37						40	

\* For the last 89 years.

## NOVEMBER, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.041 in.
Monthly range	„	...	...	+	0.434 in.
Mean of highest daily temperatures	...	...	...	—	0.8°
Mean of lowest	„	„	...	—	0.3°
Mean daily range	...	...	...	—	0.5°
Adopted mean temperature	...	...	...	—	0.5°
Total rainfall	...	...	...	+	1.249 in.

Ground Frost on the 1st, 9th, 19th—25th, 28th and 29th.  
 Hoar Frost on the 19th—24th. Hail on the 5th and 6th. Heavy Rain on the 7th, 10th, and 16th. Gale of Wind on the 7th. Fog on the 2nd, 20th, 23rd, 24th, 25th, 27th, 28th and 29th. Thunder on the 5th. Solar Halo on the 11th.

### EXTREME READINGS FOR NOVEMBER, During 89 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, 1936.

Results of Observations taken during the Month			Mean for the last 89 years.
Mean Reading of the Barometer .....	inches	29·540	29·435
Highest „ on the 23rd .....	„	30·289	30·076
Lowest „ on the 14th .....	„	28·310	28·537
Range of Barometer Readings .....	„	1·979	1·539
Highest Reading of a Max. Therm. on the 17th...		54·9	52·6
Lowest Reading of a Min. Therm. on the 7th ...		24·6	22·0
Range of Thermometer Readings.....		30·3	30·6
Mean of Highest Daily Readings .....		45·7	43·5
Mean of Lowest Daily Readings .....		35·9	34·0
Mean Daily Range .....		9·8	9·5
Deduced Mean Temp. (from mean of Max. and Min.)		40·8	38·8
Mean Temperature from Dry Bulb .....		41·5	39·3
Adopted Mean Temperature .....		41·2	39·1
Mean Temperature of Evaporation .....		39·6	37·5
Mean Temperature of Dew Point .....		37·2	35·5
Mean elastic force of Vapour .....	inches	0·223	0·209
Mean weight of Vapour in a cub. ft. of air, grains		2·6	2·4
Mean additional weight required for saturation „		0·5	0·4
Mean degree of Humidity (saturation 100) .....		83	87
Mean weight of a cubic foot of air .....	grains	546·0	546·9
Mean amount of Cloud (0—10) .....		8·4	7·7
Fall of Rain .....	inches	6·477	4·626
Greatest Rainfall in one day (14th).....	„	1·350	0·827
No. of days on which ·005 in. or more Rain fell...		24	20·2

Wind :—Direction .....	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	2	0	1	5	7	14	2
Mean Velocity in miles per hr.	0	2·0	0	7·1	14·2	17·5	13·2	13·1
Total No. of miles.....	0	98	0	171	1703	2939	4442	629

		Mean*
Total No. of miles registered .....	9982	7781
Greatest hourly velocity (13th, at 2200 G.M.T., Dir. S.) .....	55	42

\* For the last 89 years.

## DECEMBER, 1936.

### DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.105 in.
Monthly range	„	...	...	...	+	0.440 in
Mean of highest daily temperatures	...	...	...	...	+	2.2°
Mean of lowest	„	„	...	...	+	1.9°
Mean daily range	...	...	...	...	+	0.3°
Adopted mean temperature	...	...	...	...	+	2.1°
Total rainfall	...	...	...	...	+	1.851 in.

Ground Frost on the 5th—15th, 23rd, 24th, 28th and 29th.  
 Hoar Frost on the 9th and 10th. Snow on the 5th, 6th, 11th, 12th, and 13th. Hail on the 1st, 4th and 5th. Heavy Rain on the 1st, 4th, 7th, 13th and 14th. Gales of Wind on the 13th, 14th, 15th and 16th. Fog on the 8th, 9th, 10th, 12th, 25th, 26th, 27th and 29th. Thunder on the 19th. Lightning on the 5th, 6th and 19th. Lunar Halo on the 25th.

### EXTREME READINGS FOR DECEMBER,

During 89 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)	...	...	65 mls.
*Greatest No. of miles registered	...	1929	...	...	11493
*Least	„	1933	...	...	4477

\* Since 1867 only.

† And in 1853.

## Summary of Observations, 1936.

Results of Observations taken during the Year.	Mean for the last 89 Years	
<i>Readings of Barometer in inches.</i>		
Mean of the Year .....	29·465	29·493
Highest Monthly Mean (August) .....	29·653	29·751
Lowest     "     "     (January) .....	29·022	29·223
Highest Reading (December 23rd) .....	30·289	30·300
Lowest     "     (January 20th) .....	28·167	28·217
Range .....	2·122	2·083
<i>Thermometer, Fahrenheit.</i>		
Highest Monthly Mean Temperature (August) ...	58·3	58·6
Lowest     "     "     "     (February) .	35·3	35·8
Highest Reading of a Max. Therm. (June 19th)...	77·3	81·1
Lowest     "     Min.     "     (January 20th)	18·0	16·9
Range of Thermometer Readings .....	59·3	64·2
Mean of Highest Daily     "     .....	53·2	54·3
Mean of Lowest Daily     "     .....	42·1	41·2
Mean Daily Range .....	11·1	13·1
Deduced Mean Temp. (from Mean of Max. and Min.)	46·6	46·7
Mean Temperature from Dry Bulb .....	47·8	47·3
Adopted Mean Temperature of the Year .....	47·2	47·0
Mean Temperature of Evaporation .....	45·2	44·7
Mean Temperature of Dew Point .....	42·3	42·2
Mean elastic force of Vapour ..... inches	0·270	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·1	3·2
Mean additional weight required for saturation ..	0·7	0·7
Mean degree of Humidity (saturation 100).....	80	84
Mean weight of a cubic foot of air ..... grns.	537·7	539·0
Mean amount of Cloud (0—10) .....	7·4	7·3
Total fall of Rain .....	46·246	47·469
Greatest Monthly Rainfall (December).....	6·477	7·636
Least     "     "     "     (April).....	1·368	1·210
Greatest Rainfall in one day (December 14th) ...	1·350	1·664
No. of days per Month on which ·005 inch or more Rain fell .....	17·8	17·2

### SUMMARY OF WIND, 1936.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	42	55	44	11	28	41	132	13
Mean Velocity in miles per hour ...	6.5	6.9	8.9	8.1	12.5	10.5	10.2	7.9
Total No. of miles for each Direction	6511	9056	9350	2142	8379	10342	32335	2475

		Mean for the last 69 years.
Total No. of miles registered .....	80590	84622
Greatest Monthly Total (December) .....	9982	9872
Least " " (September) .....	4907	4867
Greatest recorded hourly velocity (December 13th).	55	50
Prevailing Direction of Wind .....	W.	W.

### DIFFERENCES, 1936.

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

Mean barometric pressure ... ..	—	0.048 in.
Yearly range ... ..	+	0.039 in.
Mean of highest daily temperatures ... ..	—	1.1°
Mean of lowest " " ... ..	+	0.9°
Mean daily range ... ..	—	2.0°
Adopted mean temperature ... ..	+	0.2°
Total rainfall ... ..	—	1.223 in.



**ABSOLUTE EXTREMES  
FOR THE LAST 89 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 89 YEARS—Continued.**

*Rainfall, in inches.*

Greatest Rainfall in one day	...	1866 (Nov. 16th)	...	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)	...	65
Greatest No. of miles registered in			
a month	...	1888 (Nov.)	...
Least " " "	...	1917 (Feb.)	...
Greatest Mean No. " " "	...	January	...
Least " " "	...	September	...
Greatest No. " " year	1868	...	102395
Least " " " "	1915	...	70623

\* *Record dates from 1867 only.*

# DATES OF OCCASIONAL PHENOMENA.

1986	Frost	Hoar Frost	Snow	Hail	Heavy Rain		
January	2, 3, 4, 8, 12-14, 27, 30	12, 14, 15	11, 15-17, 19, 20-23	11, 22	...		
February	3-17, 21-23, 26-29	12, 13	2, 3, 5, 23	2, 3	...		
March	1-4, 6, 7, 15, 16	4, 16	...	...	8, 29		
April	4, 5, 7, 8, 10, 12, 14-19, 21-23, 28, 28, 31	17, 21, 23	12, 15, 16, 20, 22	13, 16, 17	...		
May	...	...	...	...	29		
June	...	...	...	...	14, 29		
July	...	...	...	...	12, 23, 30		
August	...	...	...	...	3, 5		
September	... 29	...	...	...	4-7, 12, 25		
October	4, 7, 8, 29	4	...	18, 25, 26, 27	17, 18, 24		
November	1, 9, 19-25, 28, 29	19-24	...	5, 6	7, 10, 16		
December	5-15, 23, 24, 28, 29	9-10	5, 6, 11, 12, 13	1, 4, 5	1, 4, 7, 13, 14		
1986	Gales of Wind	Fog	Thunder	Lightning	Lunar Halo	Solar Halo	Aurora Borealis
January	9	2-4, 8, 16, 19, 24, 31	...	9	12	12, 15, 27	...
February	...	1, 5, 12, 13, 15-17, 24, 26	...	3	6	7, 14, 22	...
March	...	4, 5, 9, 10, 16, 17, 18	...	...	...	3, 22	...
April	...	29	...	...	...	10, 24, 25	...
May	...	17	6, 17	6	...	14	...
June	...	14, 25	20, 30	19-23, 30	...	1, 2, 6, 20	...
July	...	3, 6, 12, 20	2, 7, 8, 10, 17	7, 8, 10, 17	...	9, 10, 12	...
August	...	6, 10, 19, 20, 28	10, 15	...	5	5, 7	...
September	...	12-14, 22-23	3, 14	14	...	9, 26	...
October	26, 27	29, 30	25, 27	25, 27	...	20	...
November	7	2, 20, 23, 24, 25, 27-29	5	5, 6, 19	...	11	...
December	13-16	8-10, 12, 25-27, 29	19	...	25	...	...

## MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1936. 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 ...	...	...	...	...	0.8	4.3	6.0	5.2	5.6	5.4	2.3	0.3	...	...	...	...	...
February ...	...	...	...	...	4.3	7.3	8.8	9.5	9.9	10.0	8.6	5.1	0.3	...	...	...	...
March ...	...	...	0.1	2.3	4.3	4.4	9.8	6.7	6.8	5.4	4.4	4.9	1.8	0.4	...	...	...
April ...	...	3.4	10.3	14.5	16.3	16.8	16.8	17.8	16.5	16.9	15.2	12.9	11.4	7.9	3.9	...	...
May ...	1.5	6.8	13.6	13.8	15.6	18.0	19.2	19.0	15.7	16.0	14.5	17.3	16.8	15.2	8.9	2.4	...
June ...	1.8	5.6	7.6	8.8	10.2	10.1	13.4	15.3	13.4	10.6	9.2	9.2	10.1	9.0	7.1	2.1	...
July ...	1.1	3.2	4.5	6.3	10.1	9.1	10.3	10.4	10.1	8.8	7.2	10.3	10.6	8.8	7.3	2.4	...
August ...	0.1	2.0	6.9	9.0	10.2	11.1	11.3	11.0	10.4	12.2	15.0	14.8	14.1	12.	5.2	...	...
September ...	...	...	1.4	5.0	7.6	10.2	13.5	11.2	11.1	11.1	9.1	8.0	6.2	0.8	...	...	...
October ...	...	...	0.1	6.3	11.7	13.3	13.1	10.5	13.5	9.7	8.7	10.3	2.3	...	...	...	...
November ...	...	...	...	...	2.3	7.3	10.2	10.5	9.9	8.0	5.3	0.9	...	...	...	...	...
December ...	...	...	...	...	0.9	3.3	5.9	7.9	9.0	7.1	2.8	0.1	...	...	...	...	...
Sums...	4.5	21.0	44.5	66.0	94.3	115.2	138.3	135.0	131.9	121.2	102.3	94.1	73.6	54.2	32.4	6.9	...

## TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1936	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January ...	...	0.1	0.7	0.6	...	0.1	...	...	...	0.7	2.6	1.7	0.3	4.3	...	...	6.7
February ...	...	...	5.5	7.0	...	0.9	1.3	4.9	6.7	5.1	2.8	6.0	1.4	1.7	...	0.1	...
March ...	...	4.1	4.8	2.2	3.0	3.1	...	2.2	0.6	1.0	...	...	...	...	1.0	...	...
April ...	...	...	2.8	9.0	1.3	9.2	8.9	5.3	8.4	9.9	6.5	6.8	3.9	...	3.7	3.8	9.2
May ...	7.7	11.2	6.0	8.5	1.5	2.7	8.2	11.9	2.9	11.3	10.8	1.4	3.1	9.5	1.4	5.2	...
June ...	4.6	3.4	...	1.6	13.9	0.4	10.4	8.6	5.4	6.0	11.6	...	...	...	2.6	0.1	6.0
July ...	3.1	4.4	7.2	3.0	9.0	5.0	1.3	12.7	2.4	0.1	1.5	1.6	1.5	4.7	6.5	6.1	0.3
August ...	2.4	1.7	4.4	2.7	3.6	0.1	11.4	13.3	0.9	4.7	9.7	5.2	1.6	...	1.0	1.3	0.5
September ...	...	0.8	...	3.7	2.6	0.9	5.2	3.5	1.5	...	1.8	0.3	6.1	3.1	5.1	4.9	6.8
October ...	1.5	2.0	9.5	9.2	5.5	3.2	5.4	1.8	4.8	3.1	1.4	2.1	4.6	2.3	5.5	2.6	...
November...	1.6	4.4	2.9	1.5	2.2	2.6	...	0.3	0.1	...	...	...	1.9	1.0	0.3	...	0.5
December ...	2.0	0.2	...	3.5	1.3	4.4	6.1	2.4	4.9	...	0.1	...	1.8	...	3.1	1.9	...

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

1936	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY	
															Total	Per cent.
January ...	4.7	...	...	...	0.1	3.1	1.6	...	0.1	0.3	1.7	0.2	0.1	0.2	29.9	12.1
February ...	3.4	2.1	6.9	2.1	...	0.3	2.3	0.5	...	0.3	2.5	...	...	...	63.8	22.6
March ...	0.8	3.5	0.7	4.2	2.8	3.4	7.0	1.1	...	1.7	1.2	0.2	1.4	1.3	51.3	14.0
April ...	11.2	12.7	10.6	3.2	9.2	6.4	6.2	4.3	4.4	5.3	3.7	1.1	13.6	...	180.6	43.1
May ...	12.7	11.0	12.2	12.2	1.8	3.4	...	9.0	8.4	9.3	12.3	5.8	4.7	8.2	214.3	43.5
June ...	8.6	8.3	8.6	11.5	...	3.2	5.7	5.7	1.1	10.8	3.0	...	2.4	...	143.5	28.2
July ...	...	...	4.7	4.1	13.0	1.5	0.5	8.2	3.2	3.6	...	7.7	2.3	1.3	120.5	23.7
August ...	7.2	...	3.6	7.7	7.4	6.6	0.1	7.2	7.0	11.9	10.2	11.6	0.1	0.3	145.4	31.8
September ..	2.9	...	5.9	3.9	6.8	4.5	0.1	...	6.0	4.2	9.7	4.9	...	...	95.2	25.1
October ...	3.9	1.9	1.7	...	...	0.1	3.1	2.9	...	2.6	7.7	...	...	6.1	99.5	30.5
November...	4.5	4.5	4.4	3.9	6.2	3.0	...	0.5	...	...	5.9	...	2.2	...	54.4	21.3
December ..	...	3.3	0.1	0.1	...	0.9	...	...	...	...	...	...	0.9	...	37.0	16.0

## SUMMARY OF SUNSHINE.

	BRIGHT SUNSHINE RECORDED					
	1936			Mean for the last 56 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentage of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	20	29.9	12.1	15.1	34.2	13.8
February ...	21	63.8	22.6	17.7	56.2	20.5
March ...	22	51.3	14.0	24.5	102.9	28.1
April ...	27	180.6	43.1	26.6	145.0	34.6
May ...	29	214.3	43.5	27.8	183.7	37.3
June ...	24	143.5	28.2	28.1	186.3	36.7
July ...	28	120.5	23.7	28.5	168.9	33.3
August ...	29	145.4	31.8	27.8	151.0	32.6
September ..	24	95.2	25.1	25.7	124.9	32.9
October ...	25	99.5	30.5	23.8	86.7	26.6
November ..	21	54.4	21.3	18.0	47.1	18.4
December ...	17	37.0	16.0	14.1	27.9	12.1
Year ...	287	1235.4	27.6	277.6	1314.5	2.4

**SUMMARY OF SUNSHINE—Continued.**  
**EXTREMES FOR THE LAST 56 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	1913
Feb.	24	1895	11	1882	89.3	1887	29.6	1882	32.8	1887	10.9	1882
Mar.	30	1929	17	1904	178.9	1929	51.3	1936	48.9	1929	14.0	1936
April	30	*1935	22	1920	223.7	1893	80.7	1920	53.4	1893	19.3	1920
May	31	*1935	22	1886	280.7	1935	79.7	1906	56.9	1935	16.2	1906
June	30	*1896	24	*1888	272.5	1887	85.2	1912	53.6	1887	16.8	1912
July	31	*1882	24	1920	263.4	1911	98.0	1888	51.7	1911	19.3	1888
Aug.	31	*1886	23	1894	235.2	1899	74.1	1912	51.5	1899	16.2	1912
Sept.	30	1914	21	1897	204.1	1933	62.9	1896	53.9	1933	16.6	1896
Oct.	29	*1933	17	1889	134.9	1899	50.0	1889	41.4	1899	15.3	1889
Nov.	24	1925	9	1897	89.9	1925	18.5	1891	33.8	1915	7.2	1891
Dec.	20	*1935	6	1882	60.1	1886	7.4	1912	26.0	1886	3.2	1912
Year	307	1933	251	1903	1613.7	1887	927.6	1912	36.1	1887	20.7	1912

\* And in other years.



## HORIZONTAL MAGNETIC DIRECTION. †

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

1886.	MEANS OF *					Mean daily range †	Highest reading of the month		Monthly range
	12° +						12° +	12° +	
	Highest readings	Lowest readings	4 a.m. readings	4 p.m. readings	Mean for the month †		Highest reading of the month	Lowest reading of the month	
January ...	46.2	41.6	42.8	45.4	44.0	12.5	57.8	19.8	38.0
February ...	45.6	40.6	42.2	44.0	43.1	14.1	54.8	23.8	31.0
March ...	46.6	38.4	41.0	44.4	42.6	14.7	53.8	24.8	29.0
April ...	46.2	34.0	39.6	43.6	40.9	19.0	54.8	17.8	37.0
May ...	45.6	32.0	36.8	42.2	39.2	16.8	52.8	22.8	30.0
June ...	43.4	31.4	35.6	41.4	38.0	15.9	56.8	25.8	31.0
July ...	42.6	29.8	34.4	39.2	36.4	16.3	54.8	19.8	35.0
August ...	40.0	30.0	32.8	37.4	35.1	13.6	47.8	22.8	25.0
September ...	41.7	31.1	34.7	37.9	36.4	14.3	51.1	24.1	27.0
October ...	38.9	30.9	33.9	36.1	35.0	14.9	51.1	12.1	39.0
November ...	36.9	31.9	33.5	35.7	34.5	13.3	69.1	15.1	54.0
December ...	36.9	31.9	33.5	34.9	34.3	8.6	46.1	20.1	26.0
Means ...	42.6	33.6	36.7	40.2	38.3	14.5	54.2	20.7	33.5

Mean for the year ... .. 12° 38'.3 W.

\* For the 5 quietest days.

† Includes all days.

‡ See Note on pp. XIII-XIV.

## 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<sup>-5</sup> C.G.S.

1936	MEANS OF *					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	Mean for the month *				
	17000 +								
January ...	189	167	177	178	178	47.6	213	75	138
February ...	198	172	188	182	185	54.7	242	80	162
March ...	192	167	183	182	181	52.4	218	80	138
April ...	181	121	162	162	157	85.7	242	51	191
May ...	176	115	156	160	152	93.8	294	66	228
June ...	174	105	143	143	140	103.3	252	-77	329
July ...	162	102	137	146	137	97.6	261	28	233
August ...	159	103	132	136	132	68.1	199	75	124
September ...	152	101	138	128	130	65.7	176	75	101
October ...	150	119	144	138	138	65.2	204	42	162
November ...	163	142	157	156	154	58.5	242	-6	248
December ...	166	148	163	162	160	35.7	194	71	123
Means... ..	172	130	157	156	154	69.0	228	47	181

Mean for the year ... .. 17154 C. G. S. Units.

\* For the 5 quietest days.

† Includes all days.

## ABSOLUTE MEASURES—SUMMARY.

DIRECTION			FORCE.		
1936	Declination Corrected	Inclination	Horizontal	Vertical	Total
	°   '   ''	°   '   ''	C. G. S. UNITS.		
	12 +	68 +	0·17000+	0·44000+	0·47000+
January ...	44·1	49·6	158	300	506
February ...	42·8	50·3	148	299	502
March ...	42·1	50·5	167	355	561
April ... ..	40·9	53·0	145	394	589
May ... ..	39·5	50·6	159	341	544
June ... ..	38·0	50·4	158	335	541
July ... ..	36·8	54·0	161	473	669
August ...	35·2	50·7	154	328	531
September ...	36·4	53·2	147	406	601
October ...	34·9	50·5	139	283	484
November ...	34·6	52·1	158	396	595
December ...	34·3	49·5	153	280	486
Means ...	°   '   '' 12 38·3 W.	°   '   '' 68 51·2	0·17154	0·44349	0·47551

## 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.

1936	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1936	
D.													D.	
1	c	c	c	s	s	m	c	c	c	m	s	s	1	
2	c	m	c	m	c	m	g	s	s	s	s	s	2	
3	c	s	c	m	c	s	c	s	s	s	g	s	3	
4	c	s	c	c	m	s	c	s	m	s	m	m	4	
5	c	c	(c)	c	c	c	s	s	s	m	m	s	5	
6	c	c	s	c	c	c	H	s	s	m	s	s	6	
7	c	c	c	s	c	s	H	c	c	m	m	m	7	
8	m	c	s	s	c	m	s	s	c	m	m	c	8	
9	m	m	s	c	c	m	s	s	s	m	s	s	9	
10	m	m	s	c	s	m	m	s	c	g	s	c	10	
11	c	s	c	c	m	c	g	c	m	m	m	s	11	
12	m	c	c	s	m	c	s	s	c	s	s	s	12	
13	m	c	s	s	s	s	s	c	c	s	c	s	13	
14	s	m	c	s	s	s	c	c	c	s	s	s	14	
15	c	s	s	m	s	m	c	c	c	m	m	c	15	
16	c	g	c	m	m	m	s	c	c	g	m	c	16	
17	c	g	s	m	s	c	s	c	c	g	s	c	17	
18	m	s	s	m	m	m	s	c	s	s	m	c	18	
19	s	g	s	m	m	g	s	s	c	s	m	c	19	
20	s	s	m	m	m	s	s	c	c	m	s	s	20	
21	m	m	m	g	s	s	c	s	s	c	s	s	21	
22	m	m	m	m	s	s	c	c	s	c	c	c	22	
23	g	m	m	m	c	s	c	—	m	m	c	c	23	
24	g	m	m	c	c	c	c	s	s	m	c	c	24	
25	m	s	m	s	c	c	s	s	s	c	c	c	25	
26	g	m	m	c	s	s	c	c	m	c	s	c	26	
27	s	m	m	s	s	s	s	s	s	c	c	m	27	
28	s	s	m	c	s	c	s	c	s	c	m	m	28	
29	s	s	s	c	s	c	m	c	s	c	g	s	29	
30	s		s	c	s	c	c	m	c	c	c	s	30	
31	s		m		s		s	s		m		c	31	
TOTAL	c 9 9 2 —	7 9 10 3 —	10 11 10 —	11 8 10 1 —	10 14 7 —	9 12 8 1 —	11 14 4 2 —	14 15 1 —	13 13 4 —	8 8 12 3 —	7 11 10 2 —	12 15 4 —	123 139 89 14	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.

1936	Jan.	Feb.	Mar.	April	May	June
<b>DAY</b>						
1	7.48	2.59	4.27	7.91	0.78	7.31
2	10.11	2.57	3.55	7.64	0.70	5.27
3	12.01	2.58	3.62	5.36	0.73	3.78
4	13.31	2.00	2.76	5.40	1.44	3.89
5	12.92	4.40	2.15	4.20	1.14	4.47
6	11.59	3.36	5.06	6.63	0.94	2.76
7	8.58	4.16	6.16	7.72	0.53	3.35
8	7.26	7.79	7.70	9.00	1.31	4.83
9	5.25	6.93	6.03	8.93	1.26	3.16
10	2.93	6.53	6.17	7.33	1.63	1.20
11	3.36	6.38	5.53	7.14	3.02	1.06
12	2.18	7.17	4.70	7.88	3.26	1.21
13	2.80	6.56	4.77	6.30	4.26	0.88
14	4.49	6.30	5.71	5.13	5.91	0.41
15	4.97	6.93	3.68	3.56	6.75	0.67
16	7.84	9.39	4.79	n 4.39	5.68	2.03
17	10.38	5.51	5.37	4.43	4.64	2.63
18	10.72	6.39	4.83	3.84	3.23	3.89
19	12.28	4.96	5.86	5.79	2.22	5.17
20	14.56	5.03	6.92	6.07	2.05	5.38
21	16.61	5.90	9.20	5.65	1.45	3.60
22		7.07	7.44	5.59	1.22	4.28
23	14.81	6.72	3.75	6.95	0.83	3.95
24	11.40	8.38	2.84	5.68	1.58	3.99
25	8.45	8.55	1.99	4.90	4.22	4.73
26	6.93			4.01	4.14	5.23
27	4.11	3.53	7.72	2.20	3.26	5.56
28	3.14	5.44	10.53	0.95	2.46	4.96
29		4.41	9.51	0.46	3.43	6.88
30	1.85		6.41	0.20	3.90	5.81
31	2.11		7.75		5.90	
<b>Mean</b>	7.14	5.73	5.52	5.43	2.73	4.04

## AND DISC AREAS OF SPOTS.

n—Incomplete observation at Stonyhurst.

Italics indicate Area from copy of Zurich drawing.

July	Aug.	Sept.	Oct.	Nov.	Dec.	1936
						DAY
4.10	5.60	<i>5.43</i>	<i>6.21</i>	4.51	22.59	1
1.76	7.17	2.87	5.09	4.61		2
1.49	6.24	<i>3.48</i>	8.20	5.41		3
1.40	4.34	<i>2.85</i>	8.34	5.69	16.58	4
1.33	4.97	2.22	11.64	6.91	10.68	5
2.85	<i>5.84</i>	<i>3.66</i>	10.40	9.68	10.15	6
2.26	2.29	2.91	10.89	<i>9.90</i>	6.80	7
2.62	3.10	2.78	8.63	<i>9.18</i>	6.55	8
1.54	n <i>5.66</i>	2.99	6.55	<i>11.09</i>	4.36	9
2.97	4.80	<i>4.23</i>	6.30	<i>12.32</i>	<i>3.12</i>	10
<i>3.17</i>	4.67	4.08	6.46	7.05	2.66	11
3.40	3.92	<i>4.40</i>	5.34	<i>18.46</i>	<i>3.14</i>	12
<i>3.15</i>	3.58	2.47	5.03	13.51	<i>2.01</i>	13
4.79	<i>4.55</i>	3.64	5.67	11.28	<i>2.82</i>	14
4.90	3.41	4.15	6.41	<i>8.64</i>	3.86	15
5.76	n <i>3.47</i>	2.94	5.03	<i>6.07</i>	4.28	16
<i>3.84</i>	<i>3.77</i>	2.96	<i>4.56</i>	4.19	<i>6.34</i>	17
<i>3.62</i>	5.32	1.04	3.14	2.97	<i>5.71</i>	18
<i>2.17</i>	<i>5.42</i>	<i>2.23</i>	2.82	3.88	4.19	19
1.85	3.41	2.44	2.88	3.90	3.52	20
1.12	3.33	3.10	<i>2.81</i>	4.64	<i>4.30</i>	21
1.18	3.76	6.79	<i>2.18</i>	3.78	<i>5.16</i>	22
1.67	3.08	5.48	<i>3.19</i>	8.04	6.77	23
<i>1.96</i>	<i>3.96</i>	n <i>4.86</i>	2.13	<i>7.26</i>	<i>5.78</i>	24
1.40	2.99	<i>4.44</i>	1.89	8.81	<i>9.06</i>	25
<i>2.19</i>	3.16	3.12	<i>3.86</i>	<i>12.59</i>	<i>10.97</i>	26
1.07	4.21	4.22	3.19	17.15	<i>9.42</i>	27
	7.27	5.80	2.86	25.85	<i>7.97</i>	28
1.42	9.08	6.95		<i>25.65</i>	<i>11.19</i>	29
n <i>3.25</i>	<i>8.15</i>	<i>7.48</i>	<i>5.69</i>	29.24	7.97	30
<i>7.02</i>	<i>6.20</i>		4.18		<i>11.02</i>	31
2.40	4.53	3.61	5.80	8.97	7.93	Mean

