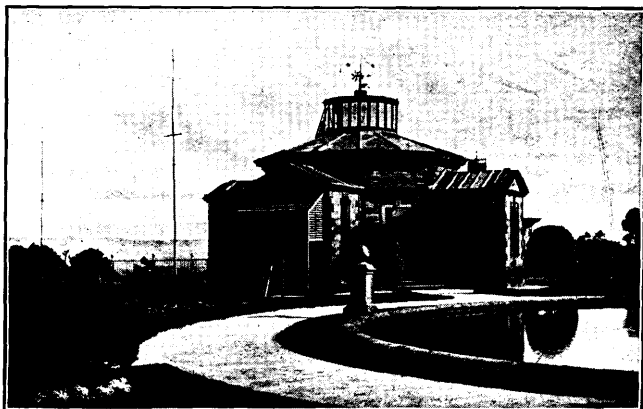


STONYHURST COLLEGE OBSERVATORY.

Lat. $53^{\circ} 50' 40.7''$ N. Long. $9^{\text{m}} 52^{\text{s}}.70$ W.
Height of the Barometer above the Sea, 381 feet.



(ESTABLISHED 1838.)

Results of Geophysical and Solar Observations,

1940.

With Report and Notes of the Director,

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

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REPORT AND NOTES.

GENERAL.—The Observatory has lost the services of Rev. K. O'Callaghan, S.J., who early in October left to pursue his studies in the University of Oxford, and we express our thanks for the assistance he was able to give under difficult conditions. Father Lawrence's duties in the College prevent his devoting time to the Observatory, the routine work of which is maintained by Mr. W. Brown and the Director.

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.

Owing to restrictions necessitated by the war our service of weather forecasts remains suspended.

The more notable features of the year's weather were the severe wintry conditions of January and February, the general deficiency of rainfall except in November and December, and the excess of sunshine most notably in May and June, and for the winter months in January and December.

The adopted mean temperatures of January and February, $30\cdot0^{\circ}$ and $35\cdot2^{\circ}$, were respectively $7\cdot9^{\circ}$ and $3\cdot4^{\circ}$ below average, the January value being the second lowest mean for the month in our 93 years records, the lowest being $29\cdot2^{\circ}$ in 1881. The screen

minimum 7.0° on January 21st was the fourth lowest in our records over the same period, the only lower readings being 5.0° on February 11th, 1902, 4.6° on January 15th, 1881, and 6.7° on December 24th, 1860, whilst the grass minimum 2.2° on the same day is the second lowest in our records, the only lower reading being 0.1° on January 18th, 1918. Precipitation in January and February was approximately only 40% and 58% of average respectively, a considerable proportion of the fall in each month being snow, and there was "snow lying" at the time of the morning observation on 18 days in January and 15 in February, whilst drifts which caused considerable dislocation of traffic both by road and rail, persisted in places till well into March.

Total precipitation for the year 44.336 inches was approximately 3 inches below average, and the accumulated total to the end of each month was below average throughout the year, the deficit at the end of August being as much as 8 inches. May and June with 1.117 inches and 0.906 inch respectively were the driest months, and November and December the wettest. In the four days November 9th—12th, the rainfall amounted to 3.762 inches, which was more than half the total fall for the month.

Bright sunshine for the year 1403.5 hours was 7% above the average, the excess being relatively most notable in January and December which had respectively 174% and 167% of the averages for these months. June with 305.3 hours had an excess of 119 hours or 71% above the average for this month, and the highest total for any month in our 60 years' records exceeding

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the previous records of June, 1887, by 32·8 hours and of May, 1935, by 24·6 hours. The amount registered in this month was 60·1% of that possible. February, March and April were very dull with a deficiency of 95 hours from the average over the three months. July also was dull with a total 26 hours below average.

With the large amount of sunshine in May and June the adopted Mean Temperatures of these months 52·9° and 60·2° were respectively 3·3° and 5·0° above average. The maximum shade temperature was over 65° on eleven days in May, and over 75° on ten days in June. The warmest period was from June 3rd to 10th, for which the mean maximum was 79°, the highest reading of the year, 81·1° being attained on June 7th.

The year was again, as in 1939, relatively calm, the total wind mileage registered being nearly 6000 below normal, each of the first seven months having a deficiency. February, May and June were the calmest months with deficiencies below normal of 20%, 29% and 21% respectively. The mileage for May, 4789 miles, is the least for that month in our 73 years' records. Gale force of mean hourly velocity 39 m.p.h. or more, was attained on only three occasions during the year, *viz*: on October 9th and 30th, and December 6th, the greatest hourly velocity, 46 m.p.h. being attained on the first and last of these dates, and the highest gust velocity 75 m.p.h. occurring during the gale of December 6th.

Thunderstorms were most frequent in May and July. A heavy downpour of rain accompanied the

VIII.

storm of May 28th, 0·44 inch of rain falling in just over 1 hour, and on July 19th three separate storms succeeded each other at short intervals, all fairly severe, and two storms occurred on each of the days July 20th and 27th.

Heavy falls of rain of one inch or more occurred on September 16th, November 9th and 11th, December 10th and 29th. Rainless periods of five days or more occurred as follows:—January 1st—5th, 8th—15th. February 29th—March 7th. May 8th—13th. June 1st—11th, 16th—20th. July 30th—August 5th. September 25th—October 2nd. A total of eight periods with an average of 7 days each.

Bright sunshine for ten hours or more was recorded on:—March 28th. May 5th, 6th, 9th, 16th, 18th, 19th, and 20th. June 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 13th, 14th, 15th, 17th, 18th, 21st, 24th, 27th, and 30th. July 8th, 22nd, 26th, 28th, 31st. August 1st, 2nd, 3rd, 11th, and 31st. September 4th, 8th, 9th, 11th, and 15th.

Days on which notably continuous sunshine occurred were:—January 12th, 17th, and 21st. February 26th. March 1st. May 5th, 18th, and 19th. June 3rd, 4th, 5th, 6th, 7th, 8th, 9th, and 21st. July 26th, 28th, and 31st. September 4th. November 7th, 22nd, and 29th. December 12th.

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. 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 to May 1st		·000518 C.G.S.	„
„ „ after May 1st		·00498	„ „

As owing to the progress of secular variation in Declination the direction of the Horizontal Force magnet had for some time not been accurately at right angles to the Earth's horizontal field it was decided to readjust the alignment of this magnet, and the adjustment was carried out on January 2nd, the torsion head being turned till the magnet was as accurately as could be determined at right angles to the direction of the Declination magnet, the magnet mirror being turned by a corresponding amount in the opposite direction to bring the light back to an appropriate position on the recording drum. A test made on January 3rd showed that the sensibility had not been altered by this process. As however this was somewhat less than the standard value of ·00050 C.G.S. unit per cm. of ordinate a readjustment of sensibility was made on May 1st after which tests gave

the value—000498 C.G.S. unit per cm. which was considered satisfactory. It is of interest to note that the angle through which the magnet was turned on January 2nd, was about 10° , which is approximately the accumulated total of secular variation in Declination since the instruments were erected in 1866, so it appears that no adjustment had been made in the meantime.

Owing to the unsatisfactory performance of the Vertical Force Balance, referred to in previous reports, its record has been discontinued.

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 have been sent to the International Meteorological Organisation at Lausaune, Switzerland, and to the Association of Terrestrial

Magnetism and Electricity, Washington, D.C., U.S.A. 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 further progress of the sunspot cycle from the maximum in 1937, whilst the mean daily area of spots shows a decline, magnetic activity has increased somewhat above that of last year, the mean values being given in the following table in which are exhibited the variations in solar and magnetic activity since 1930.

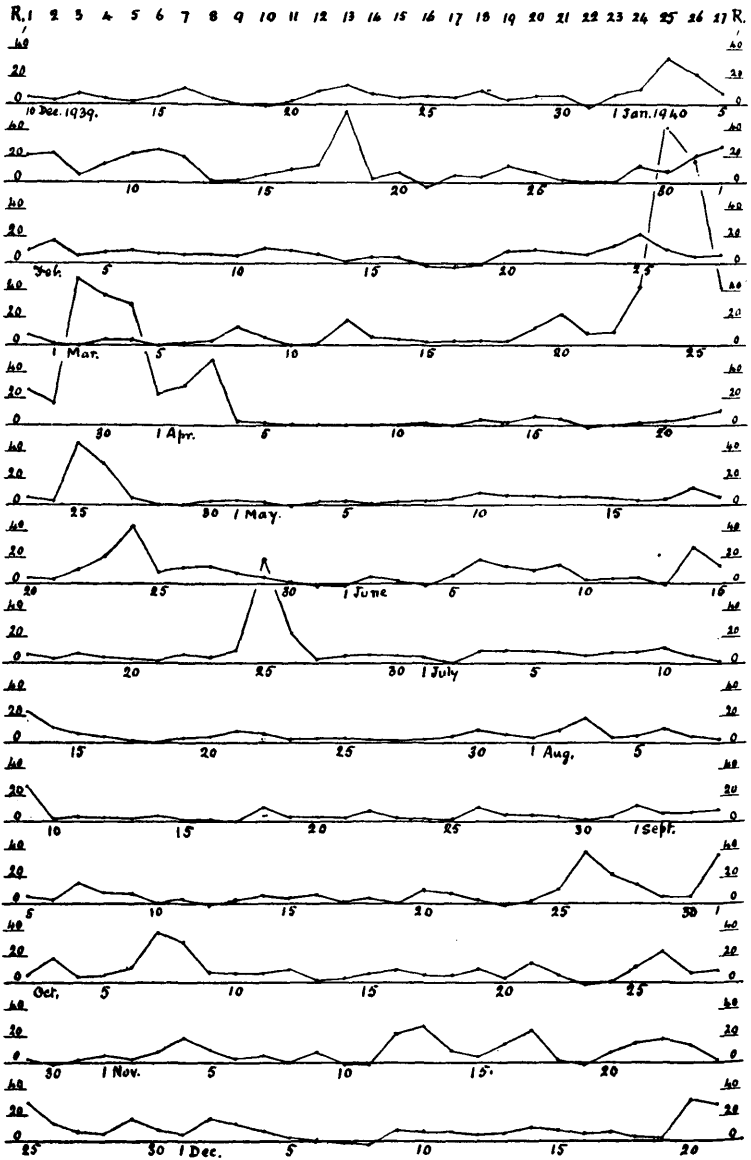
	Solar			Magnetic Mean Daily Range	
	Spotless Days	Mean Area (1/5000 of Disc)		Decln. /	H.F. γ
1930	4	2.44	...	16.9	88.7
1931	46	1.26	...	13.8	59.5
1932	118	0.81	...	14.4	62.8
1933	249	0.41	...	13.4	58.1
1934	175	0.58	...	12.4	53.1
1935	24	3.12	...	14.2	59.3
1936	0	5.40	...	16.3	69.0
1937	0	10.27	...	17.4	84.6
1938	0	8.31	...	>20.3	>94.6
1939	0	6.67	...	18.5	>93.6
1940	0	4.59	...	>19.6	>88.1

It will be noted that whilst there is a slight increase in the mean daily range of Declination there

is a small decrease in that of Horizontal Force. The increase in magnetic activity is more conspicuously shown by the total numbers of days of different magnetic character given on p. 38. Whilst the number of days of "calm" has fallen from 101 to 87, those of "small" disturbance differ little from those of last year, 129 as against 128, but those of "moderate" and "greater" disturbance have increased from 98 to 107 and 32 to 37 respectively, and the days of "very great" disturbance remain the same at 6. The great Magnetic Storm of March 24th with ranges exceeding 170' in D and 759 γ in H.F. is the greatest since October 15th, 1926, when the ranges were over 164 in D and 717 γ in H.F., the actual values being beyond the limits of registration in both storms. A very notable series of magnetic storms followed each other from this great storm of March 24th till April 3rd. after which there was a quite abnormal period of calm conditions till April 25th when another storm occurred at 27 days interval from that of March 29th, and this was followed by another after a further 29 days interval on April 24th, and 27 days after the storm of March 31st. The storm of June 25th accompanied a bright reversal in a spot on the Central Meridian of the sun on the same day.

The Aurora Borealis was observed on six nights, displays accompanying the two great magnetic storms of March 24th and 29th, and the moderate one of April 3rd.

The chart on p. xiv shows the magnetic character of each day of the year, divided into 27-day periods, the ordinates representing the values of diurnal range



1940. DAILY MAGNETIC CHARACTER IN 27-DAY PERIODS.

from which our character letters are determined, as explained on p. xi. Apart from the succession of disturbances from March 29th to May 24th there is again a lack of obvious sequences at 27 days interval, though the series January 3rd, February 1st and March 24th may be considered as approximating to such. It is clear from the chart that conditions were notably more disturbed in the first three and last three months of the year than in the intervening six months.

“ Sudden Commencements ” were noted on the dates and at the times indicated in the following table :

TIME			TIME			TIME		
DATE	H.	M.	DATE	H.	M.	DATE	H.	M.
Feb. 3—	22	5	Mar. 31—	9	41	June 14—	8	0
„ 24—	22	9	Apr. 21—	0	18	„ 25—	2	54
Mar. 23—	6	16	„ 25—	2	4	„ 26—	17	18
„ 29—	16	4	May 23—	17	54	Sept. 26—	17	6

ASTRONOMICAL TIME SERVICE.—The Greenwich rhythmic time signals emitted by Rugby at 0955—1000 G.M.T. have been taken daily throughout the year, and the errors and rates of the mean time and sidereal 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 Magbetographs.

SOLAR OBSERVATIONS.—The routine work of solar drawing was normally carried out by the Director, and in his absence by Mr. Brown, who also completed the measurements of areas of sunspots, a portion of which had been done by Mr. O'Callaghan before he left the staff.

Drawings of the sun, showing all spots, were obtained on 232 days, and incomplete observations were obtained on 4 other days. We greatly regret that, owing to difficulties arising from war conditions, the interchange of services with the Observatory of Zurich has had to be suspended.

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 again, as last year, no spotless days, and the number of new groups which have appeared each year since the maximum of 1937 are as follows :—

	1937		1938		1939		1940
New Groups	422	...	362	...	332	..	281

The largest group of the year crossed the central meridian in Lat. 10°N, on January 5th. Other notable groups crossed the central meridian on March 25th, June 25th, July 16th, Aug. 11th, Aug. 12th, Aug. 16th, Aug. 20th, Sept. 19th, and Oct. 13th.

SEISMOLOGICAL.—The Milne-Shaw seismograph has been in continuous service throughout the year, the total number of earthquakes recorded being 92, as against 135 last year. They were distributed as follows :

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
5	7	8	5	13	8	9	9	8	11	3	6	92

The greatest of these on the instrumental record was in Rumania in the early hours of November 10th.

Others of notable magnitude were as follows:—May 19th—California. May 24th—Peru, and August 1st—N. Japan Two small British Earth Tremors were recorded, the first felt in the Midlands,—Birmingham and Coventry areas—at about 11 p.m. G.M.T. on July 14th, and the second in Caernarvonshire at 9-20 p.m. G.M.T. on December 12th.

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.

XVIII.

MAXIMUM GUSTS FOR EACH DAY OF THE YEAR, 1940.

RECORDED BY THE DINES TUBE ANEMOGRAPH.

1940	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1940
DAY													DAY
1	20	26	26	43	28	22	14	14	25	8	35	17	1
2	20	29	24	20	26	12	25	25	22	12	63	31	2
3	44	34	22	27	24	14	31	16	13	20	33	31	3
4	28	31	37	39	15	19	33	15	24	33	22	66	4
5	16	14	34	26	23	24	18	23	20	46	27	63	5
6	20	16	20	17	25	21	22	24	27	48	26	75	6
7	22	16	12	38	25	14	20	20	35	38	25	46	7
8	21	12	26	28	17	13	26	28	26	36	23	35	8
9	18	40	33	24	21	21	45	32	23	60	34	33	9
10	16	27	16	24	26	25	12	46	36	28	50	44	10
11	12	27	24	27	18	22	23	42	22	19	52	42	11
12	12	30	36	35	21	19	27	20	32	22	57	22	12
13	13	19	25	27	29	26	17	24	44	28	47	30	13
14	11	14	24	53	31	24	11	36	32	26	26	46	14
15	21	12	42	40	27	25	13	25	30	41	33	32	15
16	42	29	23	28	33	26	20	24	29	25	27	43	16
17	22	34	26	26	15	26	34	32	64	21	27	14	17
18	26	18	36	31	20	23	33	27	47	23	30	34	18
19	36	22	40	30	26	23	29	28	39	36	28	31	19
20	19	21	46	24	17	30	44	42	53	34	60	42	20
21	28	23	28	25	26	25	25	45	10	16	54	38	21
22	28	38	23	39	32	25	26	27	27	28	30	48	22
23	10	33	27	35	21	26	15	33	38	44	29	30	23
24	29	34	21	22	26	25	32	32	22	39	30	28	24
25	25	23	18	18	38	35	22	28	20	36	46	10	25
26	26	34	30	12	32	33	26	25	21	25	42	19	26
27	34	32	36	17	31	22	13	25	48	10	42	11	27
28	33	43	38	23	19	26	26	35	27	22	22	24	28
29	40	33	26	19	16	34	26	42	18	35	14	40	29
30	37		25	38	29	18	26	20	8	49	8	43	30
31	41		41		28		21	28		34		33	31



METEOROLOGICAL REPORT.

JANUARY, 1940.

Results of Observations taken during the Month.		Mean for the last 83 years.						
Mean Reading of the Barometer	inches 29·700	29·479						
Highest „ on the 11th	„ 30·270	30·127						
Lowest „ on the 31st	„ 29·088	28·591						
Range of Barometer Readings	„ 1·182	1·536						
Highest Reading of a Max. Therm. on the 7th	46·3	51·5						
Lowest Reading of a Min. Therm. on the 21st ...	7·0	21·9						
Range of Thermometer Readings.....	39·3	29·6						
Mean of Highest Daily Readings	35·0	42·6						
Mean of Lowest Daily Readings	24·3	33·3						
Mean Daily Range	10·7	9·3						
Deduced Mean Temp. (from mean of Max. and Min.)	29·5	37·7						
Mean Temperature from Dry Bulb	30·4	38·1						
Adopted Mean Temperature	30·0	37·9						
Mean Temperature of Evaporation	28·9	36·7						
Mean Temperature of Dew Point	24·6	34·6						
Mean elastic force of Vapour	inches 0·132	0·202						
Mean weight of Vapour in a cub. ft. of air, grains	1·6	2·4						
Mean additional weight required for saturation „	0·5	0·4						
Mean degree of Humidity (saturation 100)	82	87						
Mean weight of a cubic foot of air	grains 562·1	549·0						
Mean amount of Cloud (0—10)	6·0	7·8						
Fall of Rain	inches 1·996	4·428						
Greatest Rainfall in one day (24th).....	„ 0·650	0·826						
No. of days on which ·005 in. or more Rain fell...	10	19·8						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	13	6	5	1	1	2	3	0
Mean Velocity in miles per hr.	5·6	12·0	11·3	13·5	9·8	7·3	4·8	0
Total No. of miles.....	1747	1721	1353	323	235	350	342	0
Total No. of miles registered	6071						Mean* 8293	
Greatest hourly velocity (19th, at 1300 G.M.T., Dir. S.E.)	27						41	

* For the last 73 years.

JANUARY, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.221 in.
Monthly range	„	„	„	„	—	0.354 in.
Mean of highest daily temperatures	...	...	...	...	—	7.6°
Mean of lowest	„	„	„	„	—	9.0°
Mean daily Range	...	...	...	...	+	1.4°
Adopted mean temperature	...	...	...	...	—	7.9°
Total rainfall	...	...	...	...	—	2.432 in.

Ground Frost on the 1st—5th, 9th—24th, and 27th—31st. Hoar Frost on the 2nd, 3rd, 5th, 10th, 11th, 21st, and 23rd. Snow on the 16th, 19th, 24th, 26th, 27th, 28th, 30th, and 31st. Hail on the 26th, and 31st. Heavy Rain on the 24th. Fog on the 5th, 7th—10th, 14th, 15th, 19th, 25th, and 26th. Lunar Halo on the 21st and 23rd. Solar Halo on the 20th.

EXTREME READINGS FOR JANUARY.

During 93 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, 1940.

Results of Observations taken during the Month.	Mean for the last 93 years.							
Mean Reading of the Barometer inches	29.430	29.496						
Highest ,, on the 29th ,,	30.109	30.107						
Lowest ,, on the 4th ,,	28.986	28.661						
Range of Barometer Readings	1.123	1.446						
Highest Reading of a Max. Therm. on the 27th ..	54.2	52.1						
Lowest Reading of a Min. Therm. on the 16th...	19.0	22.8						
Range of Thermometer Readings.....	35.2	29.3						
Mean of Highest Daily Readings	39.0	43.7						
Mean of Lowest Daily Readings	31.0	33.7						
Mean Daily Range	8.0	10.0						
Deduced Mean Temp. (from mean of Max. and Min.)	34.6	38.2						
Mean Temperature from Dry Bulb	35.7	38.6						
Adopted Mean Temperature	35.2	38.4						
Mean Temperature of Evaporation	34.4	36.9						
Mean Temperature of Dew Point	32.4	34.6						
Mean elastic force of Vapour inches	0.185	.0.197						
Mean weight of Vapour in a cub. ft. of air, grains	2.1	2.4						
Mean additional weight required for saturation ,,	0.4	0.4						
Mean degree of Humidity (saturation 100)	87	86						
Mean weight of a cubic foot of air grains	550.7	548.6						
Mean amount of Cloud (0—10)	8.7	7.5						
Fall of Rain	2.130	3.532						
Greatest Rainfall in one day (27th)	0.788	0.758						
No. of days on which .005 in. or more Rain fell...	17	16.7						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	9	7	4	1	5	1	1	1
Mean Velocity in miles per hr.	6.0	8.8	12.1	10.4	7.9	14.7	12.4	5.1
Total No. of miles.....	1303	1484	1160	250	952	352	298	122
Total No. of miles registered	5921						Mean*	
Greatest hourly velocity (22nd, at 2200 G.M.T., Dir. S.)	27						7372	
							39	

* For the last 73 years.

FEBRUARY, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.066 in.
Monthly range	”	...	...	—	0.323 in.
Mean of highest daily temperatures	...	...	...	—	4.7°
Mean of lowest	”	”	...	—	2.7°
Mean daily range	...	...	...	—	2.0°
Adopted mean temperature	...	...	...	—	3.2°
Total rainfall	...	...	...	—	1.402 in.

Ground Frost on the 1st—4th, and 9th—20th. Snow on the 3rd, 11th, 12th, 13th, 14th, 16th, 17th, 18th, 19th 28th, and 29th. Hail on the 1st. Heavy Rain on the 27th. Fog on the 5th, 6th, 7th, 20th, 22nd, 24th, 25th, and 26th. Solar Halo on the 10th.

EXTREME READINGS FOR FEBRUARY,

During 93 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, 1940.

Results of Observations taken during the Month.		Mean for the last 93 years.						
Mean Reading of the Barometer	inches 29·426	29·457						
Highest „ on the 1st	„ 30·218	30·050						
Lowest „ on the 12th	„ 28·502	28·672						
Range of Barometer Readings	„ 1·716	1·378						
Highest Reading of a Max. Therm. on the 18th...	59·0	56·8						
Lowest Reading of a Min. Therm. on the 7th ...	24·0	23·8						
Range of Thermometer Readings.....	35·0	33·0						
Mean of Highest Daily Readings	47·3	47·0						
Mean of Lowest Daily Readings	35·1	34·6						
Mean Daily Range	12·2	12·4						
Deduced Mean Temp. (from mean of Max. and Min.)	40·1	39·9						
Mean Temperature from Dry Bulb	41·9	40·6						
Adopted Mean Temperature	41·0	40·3						
Mean Temperature of Evaporation	39·8	38·4						
Mean Temperature of Dew Point	37·2	36·0						
Mean elastic force of Vapour	inches 0·224	0·211						
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·5						
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 543·6	545·9						
Mean amount of Cloud (0—10)	6·9	7·4						
Fall of Rain	inches 3·815	3·219						
Greatest Rainfall in one day (9th)	„ 0·557	0·737						
No. of days on which ·005 in. or more Rain fell...	18	16·6						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	6	2	0	1	6	7	8	1
Mean Velocity in miles per hr.	7·4	10·3	0	5·9	10·6	11·0	11·4	14·3
Total No. of miles.....	1062	493	0	142	1527	1841	2196	342
								Mean*
Total No. of miles registered	7603						8192	
Greatest hourly velocity (19th and 28th, at 1400 and 1000 G.M.T., Dir. W.S.W. and W.N.W.)	30						39	

* For the last 73 years.

MARCH, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.031 in
Monthly range	„	...	...	+	0.338 in.
Mean of highest daily temperatures	...	...	...	+	0.3°
Mean of lowest	„	„	...	+	0.5°
Mean daily range	...	...	...	—	0.2°
Adopted mean temperature	...	...	...	+	0.7°
Total rainfall	...	...	...	+	0.596 in.

Ground Frost on the 1st—8th, 14th—16th, and 26th—29th.
 Hoar Frost on the 1st, 3rd, 6th, 7th, 28th, and 29th. Snow on the 13th, 14th, 19th, 27th, and 29th. Hail on the 13th, 15th, and 19th.
 Heavy Rain on the 9th and 17th. Fog on the 3rd, 4th, 8th, 10th, 11th, 17th, 22nd, and 29th. Aurora on the 24th and 29th.

EXTREME READINGS FOR MARCH,

During 93 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	1938	...	...	...	...	46.4°
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, 1940.

Results of Observations taken during the Month.		Mean for the last 93 years.						
Mean Reading of the Barometer	inches 29·459	29·482						
Highest „ on the 10th	„ 30·115	29·963						
Lowest „ on the 15th	„ 28·887	28·811						
Range of Barometer Readings	„ 1·228	1·152						
Highest Reading of a Max. Therm. on 27th	62·5	64·0						
Lowest Reading of a Min. Therm. on the 18th...	30·0	28·4						
Range of Thermometer Readings.....	32·5	35·6						
Mean of Highest Daily Readings	51·8	53·8						
Mean of Lowest Daily Readings	39·2	38·0						
Mean Daily Range	12·6	15·8						
Deduced Mean Temp. (from mean of Max. and Min.)	44·0	43·8						
Mean Temperature from Dry Bulb	45·3	44·8						
Adopted Mean Temperature	44·7	44·3						
Mean Temperature of Evaporation	42·4	41·7						
Mean Temperature of Dew Point	39·1	38·2						
Mean elastic force of Vapour	inches 0·239	0·234						
Mean weight of Vapour in a cub. ft. of air, grains	2·8	2·7						
Mean additional weight required for saturation „	0·7	0·7						
Mean degree of Humidity (saturation 100)	77	79						
Mean weight of a cubic foot of air	grains 540·4	541·9						
Mean amount of Cloud (0—10)	8·2	6·8						
Fall of Rain	inches 3·546	2·557						
Greatest Rainfall in one day (1st)	„ 0·539	0·590						
No. of days on which ·005 in. or more Rain fell...	19	15·0						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	9	3	0	0	4	2	11	1
Mean Velocity in miles per hr.	8·7	8·1	0	0	12·9	8·1	11·4	10·3
Total No. of miles.....	1869	583	0	0	1238	391	3013	248
Total No. of miles registered	7342						Mean* 7406	
Greatest hourly velocity (1st, at 1130 G.M.T., Dir. S.)	37						35	

* For the last 73 years.

APRIL, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.023 in.
Monthly range	„	...	...	+	0.076 in.
Mean of highest daily temperatures	...	...	...	—	2.0°
Mean of lowest	„	„	...	+	1.2°
Mean daily range	...	...	...	—	3.2°
Adopted mean temperature	...	...	...	+	0.4°
Total rainfall	...	...	...	+	0.989 in.

Ground Frost on the 6th, 9th—11th, 17th, and 18th. Hoar Frost on the 18th. Snow on the 15th—17th, and 19th. Hail on the 3rd, 15th, 16th, 17th. Heavy Rain on the 1st. Fog on the 11th, 24th, 25th, and 27th. Thunder on the 27th. Lightning on the 27th. Solar Halo on the 2nd and 18th. Aurora on the 3rd and 4th.

EXTREME READINGS FOR APRIL,

During 93 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, 1940.

Results of Observations taken during the Month.		Mean for the last 93 years.						
Mean Reading of the Barometer	inches 29·606	29·542						
Highest .. on the 12th	„ 29·984	29·978						
Lowest .. on the 15th	„ 29·230	28·961						
Range of Barometer Readings	„ 0·754	1·017						
Highest Reading of a Max. Therm. on the 26th...	69·2	71·8						
Lowest Reading of a Min. Therm. on the 7th ...	38·7	32·4						
Range of Thermometer Readings.....	30·5	39·4						
Mean of Highest Daily Readings	62·7	59·2						
Mean of Lowest Daily Readings	45·1	42·8						
Mean Daily Range	17·6	16·4						
Deduced Mean Temp. (from mean of Max. and Min.)	52·2	49·2						
Mean Temperature from Dry Bulb	53·6	50·2						
Adopted Mean Temperature	52·9	49·6						
Mean Temperature of Evaporation	49·4	46·6						
Mean Temperature of Dew Point	45·3	43·1						
Mean elastic force of Vapour	inches 0·302	0·280						
Mean weight of Vapour in a cub. ft. of air, grains	3·4	3·2						
Mean additional weight required for saturation „	1·2	0·8						
Mean degree of Humidity (saturation 100)	73	77						
Mean weight of a cubic foot of air	grains 533·9	536·8						
Mean amount of Cloud (0—10)	6·2	7·0						
Fall of Rain	inches 1·117	2·729						
Greatest Rainfall in one day (28th).....	„ 0·600	0·649						
No. of days on which ·005 in. or more Rain fell...	12	14·6						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	6	6	2	1	0	6	10	0
Mean Velocity in miles per hr.	5·2	7·5	10·4	6·5	0	4·8	6·8	0
Total No. of miles.....	746	1076	498	156	0	691	1622	0
Total No. of miles registered	4789	Mean*		6769				
Greatest hourly velocity (14th, at 1100 G.M.T., Dir. W.S.W.)	19	32						

* For the last 73 years.

MAY, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.064 in.
Monthly range	..	..	..	—	0.263 in.
Mean of highest daily temperatures	...	...	...	+	3.5°
Mean of lowest	..	..	..	+	2.3°
Mean daily range	...	...	...	+	1.2°
Adopted mean temperature	...	...	...	+	3.3°
Total rainfall	...	...	...	—	1.612 in.

Ground Frost on the 20th. Heavy Rain on the 28th. Fog on the 8th, 9th, 10th, and 27th. Thunder on the 15th, 17th, 23rd, 25th, and 28th. Lightning on the 16th, 23rd, 25th, and 28th. Solar Halo on the 6th, 12th, 20th, and 31st.

EXTREME READINGS FOR MAY,

During 93 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	..	..	..	1940	...	4789

* Since 1867 only.

† And in 1848.

JUNE, 1940.

Results of Observations taken during the Month.		Mean for the last 99 years.						
Mean Reading of the Barometer	inches 29.668	29.561						
Highest „ on the 30th	„ 29.996	29.939						
Lowest „ on the 22nd	„ 29.001	29.045						
Range of Barometer Readings	„ 0.995	0.894						
Highest Reading of a Max. Therm. on the 7th ...	81.1	76.5						
Lowest Reading of a Min. Therm. on the 24th ...	43.7	39.4						
Range of Thermometer Readings.....	37.4	37.1						
Mean of Highest Daily Readings	70.3	64.9						
Mean of Lowest Daily Readings	51.5	48.3						
Mean Daily Range	18.8	16.6						
Deduced Mean Temp. (from mean of Max. and Min.)	59.1	54.8						
Mean Temperature from Dry Bulb	61.3	55.5						
Adopted Mean Temperature	60.2	55.2						
Mean Temperature of Evaporation	55.0	51.8						
Mean Temperature of Dew Point	49.6	48.3						
Mean elastic force of Vapour	inches 0.355	0.345						
Mean weight of Vapour in a cub. ft. of air, grains	4.0	3.8						
Mean additional weight required for saturation „	2.1	1.1						
Mean degree of Humidity (saturation 100)	65	77						
Mean weight of a cubic foot of air	grains 526.7	531.2						
Mean amount of Cloud (0—10)	4.6	7.2						
Fall of Rain	inches 0.906	3.329						
Greatest Rainfall in one day (21st).....	„ 0.317	0.807						
No. of days on which .005 in. or more Rain fell...	7	15.0						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	6	2	2	0	3	1	15	1
Mean Velocity in miles per hr.	6.3	7.9	6.9	0	8.1	3.2	7.0	2.7
Total No. of miles.....	906	379	330	0	584	77	2510	65
Total No. of miles registered	4851						Mean* 6163	
Greatest hourly velocity (29th, at 0900 G.M.T., Dir. S.)	22						29	

* For the last 73 years.

JUNE, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.107 in.
Monthly range	..	..	..	..	+	0.101 in.
Mean of highest daily temperatures	...	...	...	...	+	5.4°
Mean of lowest	..	..	..	..	+	3.2°
Mean daily range	...	...	...	...	+	2.2°
Adopted mean temperature	...	...	...	...	+	5.0°
Total rainfall	...	...	...	...	—	2.423 in.

Fog on the 1st, 2nd, 11th, 14th, and 30th. Thunder on the 26th. Lightning on the 26th. Solar Halo on the 23rd and 30th.

EXTREME READINGS FOR JUNE,

During 93 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	...	1940	...	...	...	60.2°
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	...	1938	...	...	...	8422
*Least	..	..	..	1915	...	3967

* Since 1867 only.

† And in 1907.

JULY, 1940.

Results of Observations taken during the Month.		Mean for the last 83 years.						
Mean Reading of the Barometer	inches 29.452	29.520						
Highest ,, on the 1st	,, 29.906	29.899						
Lowest ,, on the 7th	,, 29.125	29.009						
Range of Barometer Readings	,, 0.781	0.890						
Highest Reading of a Max. Therm. on 16th	71.5	77.9						
Lowest Reading of a Min. Therm. on the 28th	44.3	43.2						
Range of Thermometer Readings.....	27.2	34.7						
Mean of Highest Daily Readings	63.6	67.0						
Mean of Lowest Daily Readings	51.3	51.5						
Mean Daily Range	12.3	15.5						
Deduced Mean Temp. (from mean of Max. and Min.)	55.6	57.6						
Mean Temperature from Dry Bulb	57.3	58.2						
Adopted Mean Temperature	56.5	57.9						
Mean Temperature of Evaporation	54.1	54.2						
Mean Temperature of Dew Point	51.2	52.0						
Mean elastic force of Vapour	inches 0.377	0.389						
Mean weight of Vapour in a cub. ft. of air, grains	4.2	4.4						
Mean additional weight required for saturation ,,	1.1	1.1						
Mean degree of Humidity (saturation 100)	80	81						
Mean weight of a cubic foot of air	grains 526.8	527.2						
Mean amount of Cloud (0—10)	7.7	7.5						
Fall of Rain	inches 4.305	4.056						
Greatest Rainfall in one day (9th)	,, 0.804	0.872						
No. of days on which .005 in. or more Rain fell...	24	17.0						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	1	1	0	4	5	16	0
Mean Velocity in miles per hr.	3.8	2.0	13.9	0	7.4	7.9	9.4	0
Total No. of miles.....	360	47	335	0	708	953	3598	0
Total No. of miles registered	6001	Mean*						
Greatest hourly velocity (9th, at 1150 G.M.T., Dir. S.)	32	6310						
		28						

* For the last 73 years.

JULY, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.168 in.
Monthly range	„	...	...	—	0.109 in.
Mean of highest daily temperatures	...	...	...	—	3.4°
Mean of lowest	„	„	...	—	0.2°
Mean daily range	...	...	...	—	3.2°
Adopted mean temperature	...	...	...	—	1.4°
Total rainfall	...	...	...	+	0.249 in.

Heavy Rain on the 9th and 17th. Fog on the 10th and 11th. Thunder on the 7th, 10th, 19th, 20th, and 27th. Lightning on the 19th, 20th, and 27th. Solar Halo on the 1st, 4th, 22nd, 23rd, and 30th.

EXTREME READINGS FOR JULY,

During 93 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, 1940.

Results of Observations taken during the Month.		Mean for the last 93 years						
Mean Reading of the Barometer	inches 29.696	29.501						
Highest „ on the 17th	„ 30.054	29.901						
Lowest „ on the 21st	„ 29.179	28.957						
Range of Barometer Readings	„ 0.875	0.944						
Highest Reading of a Max. Therm. on the 1st ...	76.1	76.0						
Lowest Reading of a Min. Therm. on the 24th...	40.2	42.2						
Range of Thermometer Readings.....	35.9	33.8						
Mean of Highest Daily Readings	64.1	66.1						
Mean of Lowest Daily Readings	51.6	51.1						
Mean Daily Range	12.5	15.0						
Deduced Mean Temp. (from mean of Max. and Min.)	56.2	57.0						
Mean Temperature from Dry Bulb	58.0	57.9						
Adopted Mean Temperature	57.1	57.5						
Mean Temperature of Evaporation	54.2	54.6						
Mean Temperature of Dew Point	50.8	51.9						
Mean elastic force of Vapour	inches 0.372	0.382						
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)	77	81						
Mean weight of a cubic foot of air	grains 530.6	527.2						
Mean amount of Cloud (0—10)	6.6	7.3						
Fall of Rain	inches 3.073	4.988						
Greatest Rainfall in one day (20th).....	„ 0.845	1.050						
No. of days on which .005 in. or more Rain fell...	17	18.4						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	2	0	0	0	6	22	0
Mean Velocity in miles per hr.	4.9	5.1	0	0	0	8.7	9.8	0
Total No. of miles.....	117	246	0	0	0	1254	5199	0
Total No. of miles registered	6816						Mean* 6180	
Greatest hourly velocity (29th, at 0830 G.M.T., Dir. W.N.W.)	30						30	

* For the last 73 years.

AUGUST, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0·195 in.
Monthly range	„	...	...	—	0·069 in.
Mean of highest daily temperatures	...	...	...	—	2·0°
Mean of lowest	„	„	...	+	0·5°
Mean daily range	...	...	...	—	2·5°
Adopted mean temperature	...	...	...	—	0·4°
Total rainfall	...	...	...	—	1·915 in.

Heavy Rain on the 20th. Fog on the 5th, 13th, 15th, and 28th.

EXTREME READINGS FOR AUGUST,

During 93 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, 1940.

Results of Observations taken during the Month.				Mean for the last 93 years.
Mean Reading of the Barometer	inches	29·534		29·544
Highest „ on the 26th	„	30·004		30·003
Lowest „ on the 17th	„	28·924		28·894
Range of Barometer Readings	„	1·080		1·109
Highest Reading of a Max. Therm. on the 4th ...		74·3		71·6
Lowest Reading of a Min. Therm. on the 26th...		39·4		36·8
Range of Thermometer Readings.....		34·9		34·8
Mean of Highest Daily Readings		58·6		61·7
Mean of Lowest Daily Readings		46·9		47·5
Mean Daily Range		11·7		14·2
Deduced Mean Temp. (from mean of Max. and Min.)		50·0		53·3
Mean Temperature from Dry Bulb		53·2		54·4
Adopted Mean Temperature		51·6		53·9
Mean Temperature of Evaporation		49·7		51·1
Mean Temperature of Dew Point		46·0		48·4
Mean elastic force of Vapour	inches	0·313		0·340
Mean weight of Vapour in a cub. ft. of air, grains		3·5		3·9
Mean additional weight required for saturation „		1·0		0·9
Mean degree of Humidity (saturation 100)		77		82
Mean weight of a cubic foot of air	grains	532·8		532·3
Mean amount of Cloud (0—10)		5·9		6·7
Fall of Rain	inches	5·661		4·320
Greatest Rainfall in one day (16th).....	„	1·921		0·989
No. of days on which ·005 in. or more Rain fell...		15		16·5

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	0	0	0	3	3	20	1
Mean Velocity in miles per hr.	5·2	0	0	0	10·3	11·9	9·5	6·3
Total No. of miles.....	374	0	0	0	739	855	4543	150

		Mean*
Total No. of miles registered	6661	5971
Greatest hourly velocity (17th, at 1400 G.M.T., Dir. S.W.)	32	31

* For the last 73 years.

SEPTEMBER, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.010 in.
Monthly range	"	...	...	—	0.029 in.
Mean of highest daily temperatures	...	...	...	—	3.1°
Mean of lowest	"	"	...	—	0.6°
Mean daily range	...	...	...	—	2.5°
Adopted mean temperature	...	...	...	—	2.3°
Total rainfall	...	...	...	+	1.341 in.

Hail on the 13th. Heavy Rain on the 9th, 12th, 13th, and 16th. Fog on the 3rd, 5th, 16th, and 22nd. Thunder on the 19th. Lightning on the 19th.

EXTREME READINGS FOR SEPTEMBER,

During 93 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, 1940.

Results of Observations taken during the Month.		Mean for the last 93 years.
Mean Reading of the Barometer	inches 29·412	29·445
Highest „ on the 1st	„ 29·853	30·016
Lowest „ on the 9th	„ 28·516	28·678
Range of Barometer Readings	„ 1·336	1·338
Highest Reading of a Max. Therm. on the 15th...	59·4	63·7
Lowest Reading of a Min. Therm. on the 28th...	33·3	30·0
Range of Thermometer Readings.....	26·1	33·7
Mean of Highest Daily Readings	53·4	54·3
Mean of Lowest Daily Readings	43·6	42·2
Mean Daily Range	9·8	12·1
Deduced Mean Temp. (from mean of Max. and Min.)	47·5	47·3
Mean Temperature from Dry Bulb	48·7	48·1
Adopted Mean Temperature	48·1	47·7
Mean Temperature of Evaporation	45·9	45·5
Mean Temperature of Dew Point	42·9	43·0
Mean elastic force of Vapour	inches 0·277	0·279
Mean weight of Vapour in a cub. ft. of air, grains	3·2	3·2
Mean additional weight required for saturation „	0·7	0·6
Mean degree of Humidity (saturation 100)	79	84
Mean weight of a cubic foot of air	grains 535·6	537·3
Mean amount of Cloud (0—10)	8·0	7·2
Fall of Rain	inches 4·408	5·065
Greatest Rainfall in one day (5th)	„ 0·828	0·985
No. of days on which ·005 in. or more Rain fell...	17	19·0
Wind :—Direction	N NE E SE S SW W NW	
No. of days.....	8 8 3 2 6 0 4 0	
Mean Velocity in miles per hr.	4·5 8·1 7·7 14·5 14·3 0 12·1 0	
Total No. of miles.....	865 1559 554 698 2063 0 1161 0	
Total No. of miles registered	6900	Mean* 6866
Greatest hourly velocity (9th, at 1200 G.M.T., Dir. S.)	46	37

* For the last 73 years.

OCTOBER, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0·033 in.
Monthly range	„	...	...	—	0·002 in.
Mean of highest daily temperatures	...	...	...	—	0·9°
Mean of lowest	„	„	...	+	1·4°
Mean daily range	...	...	...	—	2·3°
Adopted mean temperature	...	...	...	+	0·4°
Total rainfall	...	...	...	—	0·657 in

Ground Frost on the 12th, 25th, 27th, 28th, and 29th. Hoar Frost on the 12th. Heavy Rain on the 5th, 9th, and 31st. Gales of Wind on the 9th and 30th. Fog on the 4th. Thunder on the 7th and 31st. Lightning on the 7th and 31st. Aurora on the 30th.

EXTREME READINGS FOR OCTOBER, During 93 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, 1940.

Results of Observations taken during the Month.		Mean for the last 93 years.						
Mean Reading of the Barometer	inches 29·241	29·452						
Highest „ on the 29th	„ 30·165	30·064						
Lowest „ on the 12th	„ 28·120	28·563						
Range of Barometer Readings	„ 2·045	1·501						
Highest Reading of a Max. Therm. on the 2nd ...	57·4	55·8						
Lowest Reading of a Min. Therm. on the 30th...	29·0	25·8						
Range of Thermometer Readings.....	28·4	30·0						
Mean of Highest Daily Readings	47·7	47·2						
Mean of Lowest Daily Readings	39·3	37·0						
Mean Daily Range	8·4	10·2						
Deduced Mean Temp. (from mean of Max. and Min.)	43·1	41·7						
Mean Temperature from Dry Bulb	43·9	42·2						
Adopted Mean Temperature	43·5	42·0						
Mean Temperature of Evaporation	41·8	40·0						
Mean Temperature of Dew Point	39·4	38·3						
Mean elastic force of Vapour	inches 0·242	0·233						
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)	83	87						
Mean weight of a cubic foot of air	grains 537·7	544·0						
Mean amount of Cloud (0—10)	7·6	7·4						
Fall of Rain	inches 6·817	4·517						
Greatest Rainfall in one day (9th)	„ 1·298	0·996						
No. of days on which ·005 in. or more Rain fell...	22	19·3						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	6	0	2	1	3	8	10	0
Mean Velocity in miles per hr.	5·8	0	7·5	9·5	13·9	13·2	12·1	0
Total No. of miles.....	830	0	361	229	1003	2525	2905	0
Total No. of miles registered	7853	Mean*		7056				
Greatest hourly velocity (2nd, at 1330 G.M.T., Dir. S.)	38			40				

* For the last 73 years.

NOVEMBER, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.211 in.
Monthly range	..	..	..	+	0.544 in.
Mean of highest daily temperatures	...	...	...	+	0.5°
Mean of lowest	..	..	..	+	2.3°
Mean daily range	...	...	...	—	1.8°
Adopted mean temperature	...	...	...	+	1.5°
Total rainfall	...	...	...	+	2.300 in.

Ground Frost on the 5th, 8th, 14th, 15th, 17th, 19th, 28th, 29th, and 30th. Hoar Frost on the 28th, 29th, and 30th. Hail on the 10th, 13th, and 27th. Heavy Rain on the 9th, 10th, 11th, and 12th. Fog on the 30th. Thunder on the 12th. Lightning on the 12th. Lunar Halo on the 16th. Solar Halo on the 8th. Aurora Borealis on the 22nd.

EXTREME READINGS FOR NOVEMBER,

During 93 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	...	1938	...	...	47.3°
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.

DECEMBER, 1940.

Results of Observations taken during the Month			Mean for the last 93 years.					
Mean Reading of the Barometer	inches	29·651	29·438					
Highest .. on the 17th	„	30·289	30·079					
Lowest .. on the 6th	„	28·399	28·535					
Range of Barometer Readings	„	1·890	1·544					
Highest Reading of a Max. Therm. on the 16th...		53·9	52·6					
Lowest Reading of a Min. Therm. on the 27th...		28·9	22·0					
Range of Thermometer Readings.....		25·0	30·6					
Mean of Highest Daily Readings		43·1	43·4					
Mean of Lowest Daily Readings		34·8	34·0					
Mean Daily Range		8·3	9·4					
Deduced Mean Temp. (from mean of Max. and Min.)		39·0	38·7					
Mean Temperature from Dry Bulb		38·3	39·3					
Adopted Mean Temperature		38·7	39·0					
Mean Temperature of Evaporation		37·0	37·4					
Mean Temperature of Dew Point		35·2	35·5					
Mean elastic force of Vapour	inches	0·205	0·209					
Mean weight of Vapour in a cub. ft. of air, grains		2·4	2·4					
Mean additional weight required for saturation „		0·4	0·4					
Mean degree of Humidity (saturation 100)		88	87					
Mean weight of a cubic foot of air	grains	551·8	546·9					
Mean amount of Cloud (0—10)		7·4	7·7					
Fall of Rain	inches	6·562	4·627					
Greatest Rainfall in one day (29th).....	„	1·527	0·831					
No. of days on which ·005 in. or more Rain fell...		18	20·1					
Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	5	1	2	3	3	14	0
Mean Velocity in miles per hr.	4·5	8·5	19·8	10·9	11·8	10·3	11·3	0
Total No. of miles.....	324	1021	475	523	848	743	3811	0
Total No. of miles registered					7745			Mean* 7722
Greatest hourly velocity (6th, at 0730 G.M.T., Dir. W. by S.)					46			42

* For the last 73 years.

DECEMBER, 1940.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.213 in.
Monthly range	..	..	..	..	+	0.346 in.
Mean of highest daily temperatures	...	...	...	...	—	0.3°
Mean of lowest	..	..	..	..	+	0.8°
Mean daily range	...	...	...	...	—	1.1°
Adopted mean temperature	...	...	...	...	—	0.3°
Total rainfall	...	...	...	...	+	1.935 in.

Ground Frost on the 3rd, 5th, 8th, 9th, 11th—13th, 15th, 17th—19th, 21st—24th, 26th—28th, and 31st. Hoar Frost on the 12th, 13th, 19th, and 27th. Snow on the 10th. Hail on the 6th and 19th. Heavy Rain on the 10th and 29th. Gales of Wind on the 6th. Fog on the 1st, 2nd, 4th, and 17th. Thunder on the 10th. Lightning on the 10th. Lunar Halo on the 17th. Solar Halo on the 5th.

EXTREME READINGS FOR DECEMBER,

During 93 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, 1940.

Results of Observations taken during the Year.	Mean for the last 93 Years	
<i>Readings of Barometer in inches.</i>		
Mean of the Year	29·523	29·493
Highest Monthly Mean (January)	29·700	29·751
Lowest " " (November)	29·241	29·221
Highest Reading (December 17th)	30·289	30·299
Lowest " (November 12th)	28·120	28·218
Range	2·169	2·081
<i>Thermometer, Fahrenheit.</i>		
Highest Monthly Mean Temperature (June)	60·2	58·3
Lowest " " " (January) ...	30·0	35·8
Highest Reading of a Max. Therm. (June 7th) ...	81·1	81·0
Lowest " Min. " (January 21st)	7·0	16·8
Range of Thermometer Readings	74·1	64·2
Mean of Highest Daily "	53·1	54·3
Mean of Lowest Daily "	41·1	41·2
Mean Daily Range	12·0	13·1
Deduced Mean Temp. (from Mean of Max. and Min.)	45·9	46·8
Mean Temperature from Dry Bulb	47·3	47·3
Adopted Mean Temperature of the Year	46·6	47·1
Mean Temperature of Evaporation	44·4	44·7
Mean Temperature of Dew Point	41·2	44·2
Mean elastic force of Vapour	0·259	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·0	3·2
Mean additional weight required for saturation "	0·7	0·7
Mean degree of Humidity (saturation 100).....	78	84
Mean weight of a cubic foot of air	539·2	538·9
Mean amount of Cloud (0—10)	7·0	7·3
Total fall of Rain	44·336	47·292
Greatest Monthly Rainfall (November)	6·817	7·647
Least " " (June)	0·906	1·209
Greatest Rainfall in one day (September 16th) ...	1·921	1·666
No. of days on which ·005 inch or more Rain fell	196	207·2

SUMMARY OF WIND, 1940.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	74	42	20	9	38	44	134	5
Mean Velocity in miles per hour ...	5.9	8.5	10.6	10.7	10.8	9.5	9.7	7.7
Total No. of miles for each Direction	10503	8609	5066	2321	9897	10032	31198	927

		Mean for the last 73 years.
Total No. of miles registered	78553	84387
Greatest Monthly Total (November)	7853	9847
Least " " (May)	4789	4845
Greatest recorded hourly velocity (October 9th and December 6th)	46	50
Prevailing Direction of Wind	W.	W.

DIFFERENCES, 1940.

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

Mean barometric pressure	+	0.030 in.
Yearly range	+	0.088 in.
Mean of highest daily temperatures	—	1.2°
Mean of lowest " "	—	0.1°
Mean daily range	—	1.1°
Adopted mean temperature	—	0.5°
Total rainfall	—	2.956 in.

**ABSOLUTE EXTREMES
FOR THE LAST 93 YEARS.**

Readings of Barometer, in inches.

Highest monthly mean	...	...	1932 (Feb.)	...	30·082
Lowest	„	„	1868 (Dec.)	...	28·084
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 93 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.

1940	Frost	Hear Frost	Snow	Hail	Heavy Rain
January	1-5, 9-24, 27-31, ...	2, 3, 5, 10, 11, 21, 23 ...	16, 19, 24, 26-28, 30, 31 ...	... 26, 31 ...	... 24, ...
February	1-4, 9-20 ...	... 1, 3, 6, 7, 28, 29 ...	3, 11-14, 16-19, 28, 29 ...	... 1 ...	... 27 ...
March	1-8, 14-16, 26-29 ...	... 18 ...	... 13, 14, 19, 27, 29 ...	... 13, 15, 19 ...	... 9, 17 ...
April	6, 9, 10, 11, 17, 18 ...	... 18 ...	... 15, 16, 17, 19 ...	... 3, 15, 16, 17 ...	... 1 ...
May	... 20 ...	... ..	... ..	... ..	... 28 ...
June	... ..	... ..	... ..	... ..	... ..
July	... ..	... ..	... ..	... ..	... 9, 17 ...
August	... ..	... ..	... ..	... ..	... 20 ...
September	... ..	... ..	... ..	... 13 ...	... 9, 12, 13, 16 ...
October	12, 25, 27, 28, 29 ...	... 12 ...	... ..	... ..	... 5, 9, 31 ...
November	5, 8, 14, 15, 17, 19, 28, 29, 30 ...	... 28, 29, 30 ...	... ..	... 10, 13, 27 ...	... 9, 10, 11, 12 ...
December	3, 5, 8, 9, 11-13, 16, 17-19, 21, 24, 26-28, 31 ...	... 12, 13, 19, 27 ...	... 10 ...	... 6, 10 ...	... 10, 27 ...

1940	Gales of Wind	Fog	Thunder	Lightning	Lunar Halo	Solar Halo	Aurora Borealis
January	5, 7-10, 14, 15, 19, 23, 25, 26 ...	... ..	... ..	... 21, 23 ...	... 20 ...	... ..
February 5-7, 20, 22, 24, 25, 26 ...	... ..	... ..	... ..	... 10 ...	... ..
March 3, 4, 8, 10, 11, 17, 22, 29 ...	... ..	... ..	... ..	... ..	... 24, 29 ...
April 11, 24, 25, 27 ...	... 27 ...	... 27 ...	... ..	... 2, 18 ...	... 3, 4 ...
May 8, 9, 10, 27 ...	... 15, 17, 23, 25, 28 ...	... 16, 23, 25, 28 ...	... ..	... 6, 12, 20, 31 ...	... ..
June 1, 2, 11, 14, 30 ...	... 26 ...	... 26 ...	... ..	... 23, 30 ...	... ..
July 10, 11 ...	... 7, 10, 19, 20, 27 ...	... 19, 20, 27 ...	... ..	... 1, 4, 22, 23, 30 ...	... ..
August 5, 13, 15, 28 ...	... 19 ...	... ..	... ..	... ..	... ..
September 3, 5, 16, 22 ...	... 7, 31 ...	... 7, 31 ...	... ..	... ..	... 25 ...
October	9, 30 ...	... 4 ...	... 12 ...	... 12 ...	... 16 ...	... 8 ...	... 22 ...
November 30 ...	... ..	... ..	... 10 ...	... 5 ...	... ..
December	6 ...	1, 2, 4, 14, 17 ...	... ..	... ..	... ..	... ..	... ..

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1940. 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 ...	...	...	...	...	1-1	7-9	11-6	11-0	12-0	10-5	4-8	1-0	0-1	...	...	...	...
February ...	...	...	...	...	3-9	4-9	3-9	5-6	5-7	5-4	3-7	1-4	0-7	...	...	...	...
March ...	...	...	2-9	7-8	10-1	10-5	12-0	12-1	10-7	8-1	5-8	6-9	4-6	1-4	...	...	...
April ...	...	0-8	5-0	7-0	6-6	10-3	8-3	9-6	11-7	10-3	11-8	9-1	4-8	3-2	1-2	...	...
May ...	1-1	6-7	12-3	12-2	13-6	14-5	16-9	15-9	16-6	15-8	16-3	16-8	18-2	14-9	8-3	1-7	...
June ...	5-8	14-6	19-3	20-2	21-6	22-1	19-6	21-2	20-8	21-8	21-7	23-0	22-1	21-8	20-3	9-4	...
July ...	1-8	4-2	9-0	10-3	9-6	11-1	9-5	8-7	11-1	11-5	11-7	12-6	10-3	9-5	6-6	2-5	...
August ...	...	2-0	6-4	8-1	11-2	11-6	12-9	12-5	14-7	16-0	15-5	15-1	12-9	11-0	4-8	0-2	...
September ..	...	...	4-7	10-2	13-8	14-4	14-4	14-3	12-1	14-1	12-4	12-4	12-2	5-7	0-1	...	...
October ...	...	...	...	1-9	8-5	11-1	11-4	10-8	11-6	9-4	6-3	5-2	1-7	...	...	...	...
November...	...	...	...	...	2-1	5-2	6-9	8-1	9-4	6-6	5-2	2-8	0-4	...	...	...	...
December ...	...	...	...	...	0-8	4-6	6-9	9-9	10-4	10-5	4-8	0-4	...	...	...	...	...
Sums ...	8-7	28-3	59-6	77-7	102-9	128-2	134-3	139-7	146-8	140-0	120-0	106-7	88-0	67-5	41-3	13-8	...

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY. •

1940	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January ...	4.1	3.6	2.0	4.2	...	1.3	...	...	...	0.5	4.7	5.7	4.9	3.2	...	2.2	5.8
February ...	...	0.6	...	...	...	...	...	3.8	0.3	3.6	1.1	5.5	1.5	1.1	0.2	3.1	1.6
March ...	9.4	1.1	6.0	1.0	8.9	8.4	1.8	...	...	...	...	...	...	7.8	3.2	3.8	...
April ...	2.7	4.4	2.7	4.4	5.4	0.1	2.0	3.8	6.7	8.0	0.9	5.7	0.3	0.5	9.1	3.7	8.6
May ...	0.3	9.6	8.1	8.3	11.7	10.7	1.5	3.8	10.0	4.9	4.4	5.6	9.2	5.3	0.3	11.6	7.8
June ...	5.0	8.1	13.2	14.8	15.4	15.0	15.2	14.6	15.5	13.7	6.8	4.2	14.9	12.7	12.0	1.3	13.4
July ...	0.5	3.5	7.6	7.1	0.3	5.1	6.4	11.8	0.6	...	0.4	1.9	2.6	...	5.2	5.0	...
August ...	10.3	13.1	10.3	4.7	6.3	5.6	3.6	0.2	...	0.3	10.0	4.7	...	0.1	6.8	1.7	9.7
September	2.4	4.9	1.7	11.1	4.1	5.5	...	10.7	10.7	4.3	10.8	...	3.0	3.8	10.6	...	2.7
October ...	...	...	0.1	...	4.5	0.5	4.9	2.5	0.7	6.1	7.7	7.5	5.7	0.3	3.4	0.1	0.1
November...	1.1	...	...	...	...	...	7.7	...	...	0.6	...	...	1.2	2.5	3.2	2.3	...
December ...	0.1	3.2	...	0.1	...	...	4.6	4.9	...	0.4	4.4	6.2	...	...	...	...	4.1

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

1940	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY	
															Total	Per cent.
January ...	2.8	...	...	6.6	5.2	0.4	...	...	...	...	...	...	2.8	...	60.0	24.2
February ...	...	...	...	3.1	0.2	0.8	...	0.3	6.3	0.9	...	1.2	...	...	35.2	12.5
March ...	0.4	1.4	...	0.1	0.1	1.5	3.3	4.1	5.1	8.8	10.3	...	6.2	0.2	92.9	25.4
April ...	6.1	0.9	6.4	1.7	2.9	0.4	...	3.6	0.2	2.1	5.4	0.1	0.9	...	99.7	23.8
May ...	14.3	14.9	10.1	9.8	0.8	6.4	4.8	0.1	3.7	8.0	4.7	2.7	2.6	5.8	201.8	40.9
June ...	12.2	9.9	7.0	13.8	...	8.1	10.4	9.1	7.3	11.0	1.6	6.7	12.4	...	305.3	60.1
July ...	...	3.8	5.8	6.5	10.8	6.9	6.2	2.0	10.2	2.1	12.9	1.7	0.9	12.2	140.0	27.5
August ...	...	6.0	...	2.4	9.4	4.5	3.9	0.9	0.7	9.1	6.7	9.3	4.3	10.3	154.9	33.9
September ..	5.5	5.7	5.6	3.4	2.4	7.0	3.8	9.2	0.2	0.1	7.6	3.9	0.1	...	140.8	37.2
October ...	4.4	...	4.7	1.5	6.2	0.5	2.9	4.7	...	5.1	1.9	1.9	...	...	77.9	23.9
November...	0.6	0.8	1.6	...	6.8	0.3	...	0.1	2.5	2.2	6.3	6.9	...	...	46.7	18.2
December ..	...	4.8	2.8	5.0	0.9	1.7	...	...	3.9	0.1	...	...	...	1.1	48.3	20.9

SUMMARY OF SUNSHINE.

	BRIGHT SUNSHINE RECORDED					
	1940			Mean for the last 60 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentag- of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	17	60.0	24.2	15.2	34.5	13.9
February ...	18	35.2	12.5	17.8	56.3	20.4
March ...	22	92.9	25.4	24.4	102.2	27.9
April ...	29	99.7	23.8	26.7	144.4	34.5
May ...	31	201.8	40.9	27.9	183.9	37.3
June ...	29	305.3	60.1	28.0	186.3	36.7
July ...	27	140.0	27.5	28.5	166.3	32.8
August ...	27	154.9	33.9	27.9	151.9	32.9
September ..	27	140.8	37.2	25.7	124.2	32.7
October ...	24	77.9	23.9	23.9	86.9	26.7
November ..	17	46.7	18.2	18.2	47.3	18.5
December ...	17	48.3	20.9	14.4	28.8	12.5
Year ...	285	1403.5	31.4	278.4	1314.7	29.4

SUMMARY OF SUNSHINE—Continued.
EXTREMES FOR THE LAST 60 YEARS

Month	Number of Days				Number of Hours				Percentage of Possible Sunshine			
	on which Sunshine was recorded								Greatest		Least	
	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	*1938	22	1920	223.7	1893	80.7	1920	53.4	1893	19.3	1920
May	31	*1940	22	1886	280.7	1935	79.7	1906	56.9	1935	16.2	1906
June	30	*1896	24	*1888	305.3	1940	85.2	1912	60.1	1940	16.8	1912
July	31	*1882	24	1920	263.4	1911	98.0	1888	51.7	1911	19.3	1888
Aug.	31	*1939	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	*1938	9	1897	89.9	1925	18.5	1891	35.1	1925	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).

1910.	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			12° +	11° +			
	11° +										
January ...	66.8	61.0	63.2	64.2	63.8	19.5	29.4	21.4	29.4	21.4	68.0
February ...	65.6	59.8	62.2	64.2	63.0	15.3	20.4	40.4	20.4	40.4	40.0
March ...	67.4	58.6	60.6	63.6	62.5	> 35.1	> 83.4	< 26.6	> 83.4	< 26.6	> 170.0
April ...	67.8	54.8	58.6	63.4	61.2	20.7	36.4	21.4	36.4	21.4	75.0
May ...	65.6	53.0	56.6	62.6	59.5	17.4	22.4	37.4	22.4	37.4	45.0
June ...	64.4	50.8	55.4	61.0	57.9	19.4	34.4	21.4	34.4	21.4	73.0
July ...	62.6	50.0	53.6	60.6	56.7	16.6	14.4	42.4	14.4	42.4	32.0
August ...	64.0	49.8	53.2	59.4	56.6	17.0	11.4	38.4	11.4	38.4	33.0
September ...	61.8	50.2	53.2	58.2	55.9	19.1	13.4	23.4	13.4	23.4	50.0
October ...	60.0	51.4	53.6	56.8	55.5	19.5	12.4	21.4	12.4	21.4	51.0
November ...	58.8	51.2	55.6	57.2	55.7	18.3	20.4	27.4	20.4	27.4	53.0
December ...	57.8	50.6	55.2	55.8	55.4	16.7	6.4	23.4	6.4	23.4	43.0
Means ...	63.6	53.4	56.8	60.6	58.6	> 19.6	> 25.4	< 24.3	> 25.4	< 24.3	> 61.1

Mean for the year ... 11° 58'.6 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.

1940	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 ...	158	132	147	148	147	74.5	248	- 46	294
February ...	162	136	151	161	150	57.5	221	55	166
March ...	153	119	140	137	137	> 162.4	> 446	< -313	> 759
April ...	188	132	166	169	164	95.2	299	- 60	369
May ...	178	131	155	163	157	85.7	278	- 87	365
June ...	167	117	145	161	145	108.8	> 476	6	> 470
July ...	173	119	145	159	149	89.0	266	54	202
August ...	165	110	139	145	140	86.2	256	41	215
September ...	165	114	146	143	142	82.2	266	45	211
October ...	173	134	167	156	167	76.6	225	- 3	228
November ...	187	154	177	173	173	75.2	238	54	184
December ...	183	165	177	181	177	63.4	252	71	181
Means... ..	171	130	155	166	153	> 88.1	> 288	< -15	> 303

Mean for the year 17153 C. G. S. Units.

* For the 5 quietest days. † Includes all days.

ABSOLUTE MEASURES—SUMMARY.

DIRECTION			FORCE.		
1940	Declination Corrected	Inclination	Horizontal	Vertical	Total
	° ' "	° ' "	C. G. S. UNITS.		
	11 +	68 +	0·17000+	0·44000+	0·47000+
January ...	62·5	56·2	154	541	730
February ...	61·3	53·4	145	410	605
March ...	61·3	53·5	165	464	662
April	60·6	54·7	134	430	619
May	58·7	54·0	148	440	764
June	57·6	53·4	167	466	665
July	57·5	56·4	162	569	758
August ...	58·5	54·8	163	523	718
September ...	57·0	55·3	159	518	711
October ...	56·4	54·3	149	454	647
November ...	56·5	52·1	149	370	569
December ...	55·8	55·9	141	496	684
Means ...	11 58·6	68 54·5	0·17153	·44473	·47678

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.

1940	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939	
D.													D.	
1	s	g	c	g	s	c	s	s	m	g	c	s	1	
2	m	m	c	g	c	s	c	m	s	s	c	m	2	
3	g	m	s	g	c	c	m	m	m	m	m	m	3	
4	g	s	s	c	c	c	m	s	m	s	m	m	4	
5	m	m	c	c	c	s	m	s	s	s	m	s	5	
6	g	m	c	c	c	m	m	m	s	m	s	c	6	
7	g	s	s	c	c	m	s	s	m	g	s	c	7	
8	s	s	m	c	c	m	m	s	m	g	c	c	8	
9	m	s	s	c	c	m	m	g	m	s	m	m	9	
10	g	s	c	c	m	c	m	c	c	s	c	s	10	
11	g	m	c	c	s	s	s	s	s	s	c	m	11	
12	m	m	m	c	s	s	c	c	c	m	g	s	12	
13	c	m	s	s	s	c	g	c	c	c	g	s	13	
14	c	c	s	c	s	g	m	s	s	s	m	m	14	
15	s	s	c	s	s	m	m	c	s	s	s	m	15	
16	m	s	s	s	s	s	s	c	s	m	m	s	16	
17	m	c	s	c	s	s	c	c	c	s	g	m	17	
18	g	c	c	c	m	s	c	m	s	s	c	s	18	
19	c	c	m	c	s	s	s	s	c	m	c	c	19	
20	s	m	g	s	s	s	s	s	m	s	m	g	20	
21	c	m	m	s	m	c	m	s	m	m	m	g	21	
22	s	m	m	m	s	s	m	m	s	s	m	m	22	
23	s	s	g	s	m	s	s	s	c	c	m	m	23	
24	m	m	vg	s	g	m	s	c	c	c	s	s	24	
25	m	g	vg	g	m	vg	s	c	m	m	g	s	25	
26	c	m	g	g	m	g	c	m	g	g	m	m	26	
27	c	s	g	s	m	g	c	s	g	s	s	s	27	
28	c	s	m	c	m	s	c	s	m	m	s	m	28	
29	m	m	vg	c	s	s	s	s	s	c	m	m	29	
30	m		vg	s	c	s	m	c	s	c	m	g	30	
31	g		vg		c	c	s	s		c	m	m	31	
Total	c	7	4	8	14	9	6	8	7	6	7	4	TOTALS	
	m	6	10	8	10	13	15	16	11	13	6	10		87
	g	10	13	6	1	8	6	6	10	8	13	14		129
	vg	8	2	4	5	1	2	1	2	4	4	3		37
	—	—	5	—	—	1	—	—	—	—	—	—	6	

DATES OF SOLAR OBSERVATIONS

The Unit is $\frac{1}{1000}$ th of the Disc.

NS—No Spots.

1940	Jan.	Feb.	Mar.	April	May	June
DAY						
1	0.82	10.21	7.53	4.80	0.35	1.84
2	1.76		8.65	4.19	0.44	1.91
3	3.36		6.75	3.15	0.26	3.07
4	7.55		n	4.18	0.19	2.76
5			8.72	4.51	0.33	2.67
6	22.38		6.34		0.79	1.84
7			3.71	3.16	0.39	6.48
8	14.42	2.07		2.37	0.63	6.35
9	9.90			1.76	0.31	7.24
10	5.04	2.68		1.63	1.08	4.85
11	2.50	2.05		1.18	1.89	5.51
12	0.72	3.21		0.94	3.50	
13	1.36	3.59			4.60	6.98
14	2.13		1.55		4.84	5.93
15		4.17	1.85	4.11		3.55
16	1.95	3.46	2.04	2.88	5.74	3.15
17	3.00	3.89		2.13	5.75	2.16
18	3.76			2.04	3.79	3.58
19			1.84	3.03	4.58	3.79
20	2.88			2.67	2.97	7.24
21	2.04	1.89		2.69	3.69	7.91
22	1.78	1.90		2.88	4.65	
23	1.81	3.31	10.79		4.53	6.04
24			13.16		2.70	7.76
25			13.94	1.94		11.33
26		2.49	16.16		3.53	10.18
27		4.34	16.64	1.80	4.29	10.28
28			12.78	1.97	1.68	11.94
29				0.67	4.05	6.45
30	9.64		13.58		1.93	5.56
31					3.82	
Mean	4.94	3.52	8.59	2.64	2.67	5.66

AND DISC AREAS OF SPOTS.

n—Incomplete observation at Stonyhurst.

July	Aug.	Sept.	Oct.	Nov.	Dec.	1940
						DAY
	3.56			0.61		1
2.58	4.29				1.62	2
1.54	3.38					3
0.71	4.37					4
	6.55		1.37			5
1.32	7.45	4.62				6
1.82	9.88		2.61	1.70	5.66	7
2.72		2.81	5.17	1.13	3.50	8
		1.68	n			9
		1.40	8.24		10.72	10
	15.88	1.63	9.45		8.27	11
	17.67		11.34		7.47	12
9.29		0.86	9.46			13
		0.98	8.22	3.35		14
7.85	11.59	0.58		6.41		15
6.09				5.81		16
	14.50	1.37			3.33	17
		3.61	6.58	4.77		18
1.46	14.18	11.34		1.81	1.44	19
1.69		10.04	6.42	1.18	1.41	20
0.72	11.07	7.06	7.95		1.16	21
0.65	9.53	6.39	5.54	0.38		22
0.68	3.62	6.37	n		3.05	23
1.08	5.32	5.45	n			24
1.56	3.96	4.49	4.42	1.94		25
2.01				1.68	1.78	26
1.91	2.59		1.53	2.47		27
2.39		2.99	1.81	2.42		28
2.46		3.22	1.24	1.90		29
					1.19	30
						31
2.61	8.30	4.05	5.71	2.50	3.89	Mean

