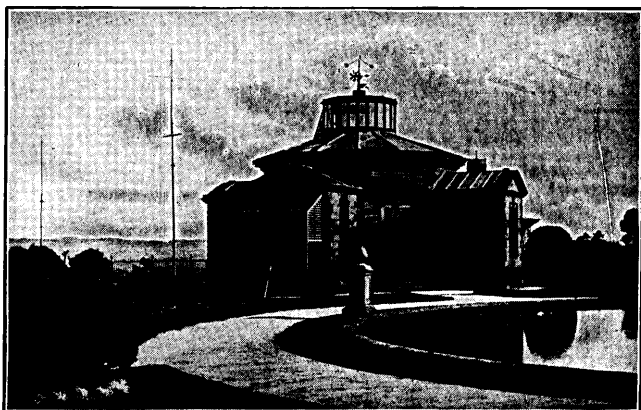


STONYHURST COLLEGE OBSERVATORY.

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.)

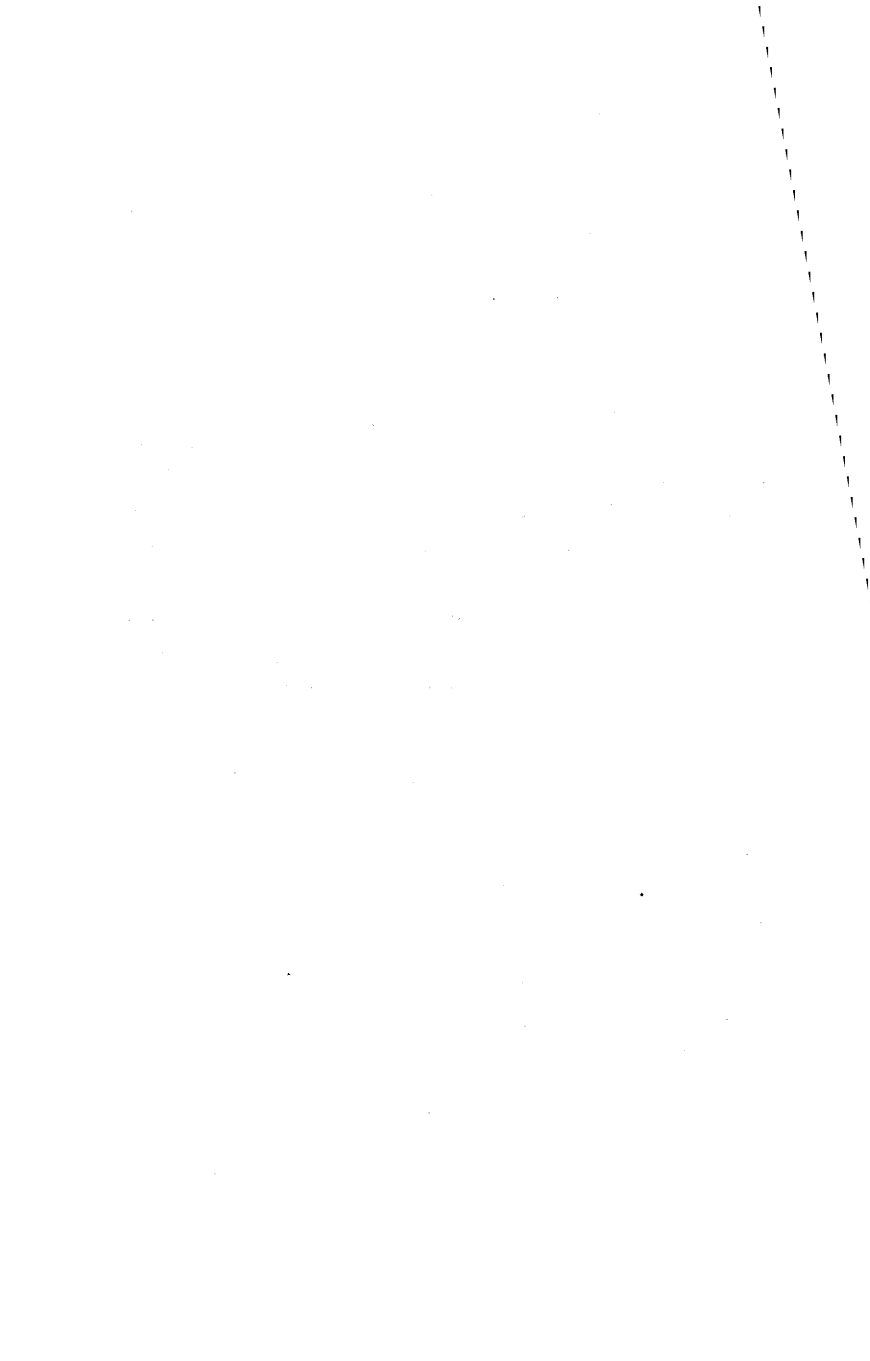
Results of Geophysical and Solar Observations, 1939.

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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CONTENTS.

Report and Notes of the Director	v.
Meteorological	v.
Magnetical	x.
Astronomical Time Service	xv.
Solar Observations	xv.
Seismological	xvi.
Maximum Gusts for each Day of the Year	xviii.
Monthly Meteorological Tables	1
Yearly Meteorological Summary	25
Extreme Readings during 92 Years	27
Dates of Occasional Phenomena	29
Monthly Totals of Recorded Sunshine for each hour	30
Total amount of Sunshine recorded on each day	31
Summary of Sunshine	33
Summary of Sunshine : Monthly extremes during 59 years	34
Magnetic Report :	
1. Horizontal Direction and Force deduced from daily curves	35
2. Absolute Measures—Summary	37
3. Magnetic Disturbances	38
Dates of Solar Observations and Disc Areas of Spots from the Drawings	39



REPORT AND NOTES.

GENERAL.—With the outbreak of war at the beginning of September the Observatory lost the services of Father Macklin, who was withdrawn to take up duties as a military chaplain. We express our thanks to him for the help given in the ten years of his service, from 1929 to 1939, and a previous period from 1921 to 1924. His place has been taken by Rev. K. O'Callaghan, S.J., who joined the Staff as a part-time assistant on October 1st. He and Father J. Lawrence, S.J., B.Sc., M.A. (Oxon.), who are on the teaching staff of the College, give such assistance as their other duties permit, 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.

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 has been suspended.

Notable characteristics of the year's weather were the dryness and calmness of the Autumn, the deficiency of sunshine in the later summer, and the generally mild and quiet winter months.

VI.

The total fall of rain, 43·752 inches, was below the average by approximately 3·5 inches. Notable deficiencies occurred during the months of May, August, September and October. The total for May, almost exactly one inch, was only 36% of the average and was registered on ten days, but the amounts recorded on five of these were less than 0·05 of an inch. From the 18th onwards only 0·053 of an inch was measured, and the dry period which commenced on the 22nd continued without any rain at all until June 10th. August, September and October were all very dry, the total for the period, 5·270 inches, being below normal by 63%, and was registered on 39 days against the average of 54, but only 14 days had fall of rain in excess of 0·1 of an inch. Approximately 75% of the rainfall for August was measured in the first ten days, after which only two days occurred on which there was any notable amount. Of the 1·789 inches registered in September 1·5 inches fell on the 2nd and 10th together, these days having respectively 0·6 and 0·9 of an inch, and from the 11th 15 days were without any measurable quantity. The fall of rain in October was evenly distributed throughout the month, but on the 17 days on which there was precipitation only five had 0·1 of an inch or more. November was the wettest month of the year, its total fall, 7·907 inches, being 176% of the normal. Heavy falls of rain of over 0·5 of an inch were recorded on five days, the heaviest of these, 1·821 inches, occurring on the 25th. 58% of the total amount was registered during the last nine days of the month. The totals for June and July were also in excess of the average by 39% and 70% respectively. Snow occurred most frequently at the beginning of the year, and especially during January, when it

was noted on ten days, the heaviest falls occurring on the 4th, 11th and 25th, when the depth was from one to three inches. A depth of one inch was also registered on December 28th.

The total amount of bright sunshine, 1349·8 hours, was slightly above the average. Only three months of the year, April, June and October, had any notable excess, whilst March, July, September and November were below the average. Very fine and brilliantly sunny weather was experienced from the 28th of May to the 9th of June. 13 hours or more of bright sunshine were recorded on every day during this period, six of them having a total of 15 hours or more. The total for the 13 days was exactly 188 hours, an average of 14·5 hours per day. This fine spell was, however, the only one worthy of note throughout the year. Although the total for June was 32% in excess of the mean, 54% of it was registered in the first nine days. The amounts for July and August and September were all below average, the total for the period being 15% less than normal. July was relatively the dullest month of the year, the amount registered being in defect of the mean by 23%, and only three days were really sunny, the 1st, 25th and 26th, with 12·3, 9·8, and 12·8 hours respectively.

The Adopted Mean Temperatures for the year were generally higher than normal, the most notable excess occurring in November, the Adopted Mean Temperature being 4·1° above the average of 42·0°. July, October and December were the only months in which the Mean Temperature was below the normal, October being relatively the coldest, with a difference

VIII.

from the average of -2.3° . No really severe frost occurred in either January or February, although temperatures of 12° and 15° on the ground were registered on the 5th and 6th of January, and of 18° , 12° , and 21° on February 2nd, 3rd, and 4th, with shade temperatures on the last two days of 15° and 16° . Ground frost was recorded on 19 days in January, but only on nine and ten days in February and March. The most prolonged spell of keen ground frost set in on December 27th. Seven degrees of ground frost or more being registered each night till the end of the month. For the five nights the mean ground temperature was 22° , and in the air 25° . The most notable spell of warm weather occurred from the 3rd to the 7th of June, during which period the maximum air temperature was between 75° and 81° each day, and the highest shade temperature of the summer, 81.2° , was recorded on the 6th. Apart from this maximum, air temperatures for the summer were very normal. July was comparatively cool, the highest maximum temperature in the shade, 72.9° on the 4th, being 5.1° below average, and only on two other days of the month did the temperature reach 70° .

The year on the whole was comparatively calm. In none of the months was the total wind mileage much in excess of the normal, whilst in eight of them it was below average. The greatest deficiencies occurred in May, August, September, October and December. The total mileage for August and September together was approximately 8,200, against an average of 12,000. September was relatively the calmest month of the year, the total mileage being below the normal by 32%. March was relatively the stormiest month, but the

excess of wind was small, 658 miles over the average of 8,200. The mildness of the year was marked by the fact that gale force was recorded on only two occasions, January 15th and March 20th, when velocities of 40 and 39 m.p.h. respectively occurred.

Thunderstorms were noted on 11 occasions during the year, and lightning without thunder was observed on six occasions, whilst distant thunder was heard on nine days.

Heavy falls of rain of one inch or more occurred on June 14th and November 25th. Rainless periods of five days or more occurred as follows :—January 29th—February 3rd ; April 28th—May 3rd ; May 8th—12th ; May 22nd—June 9th ; August 12th—20th ; September 14th—19th ; September 22nd—30th ; December 11th—22nd. A total of eight periods, with an average of nine days each.

Bright sunshine for ten hours or more was recorded on :—April 11th, 12th, 18th, 19th, 20th ; May 1st, 23rd, 24th, 28th, 29th, 30th, 31st ; June 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 19th, 22nd, 26th ; July 1st, 26th ; August 14th, 15th, 18th.

Days on which notably continuous sunshine occurred were :—January 5th ; February 1st, 19th ; March 12th ; April 10th, 11th, 18th, 19th, 20th ; May 23rd, 28th, 29th, 30th, 31st ; June 1st, 2nd, 3rd, 5th, 6th, 7th, 8th, 9th, 19th ; July 26th ; October 4th, 20th ; November 24th ; December 6th.

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	..	·000518	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 dis-
 turbed). 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 passage of two years from sunspot
 maximum, magnetic activity as indicated by the mean
 daily ranges now shows a decline, as indicated in the
 following table, in which are exhibited the variations
 in solar and magnetic activity since 1930.

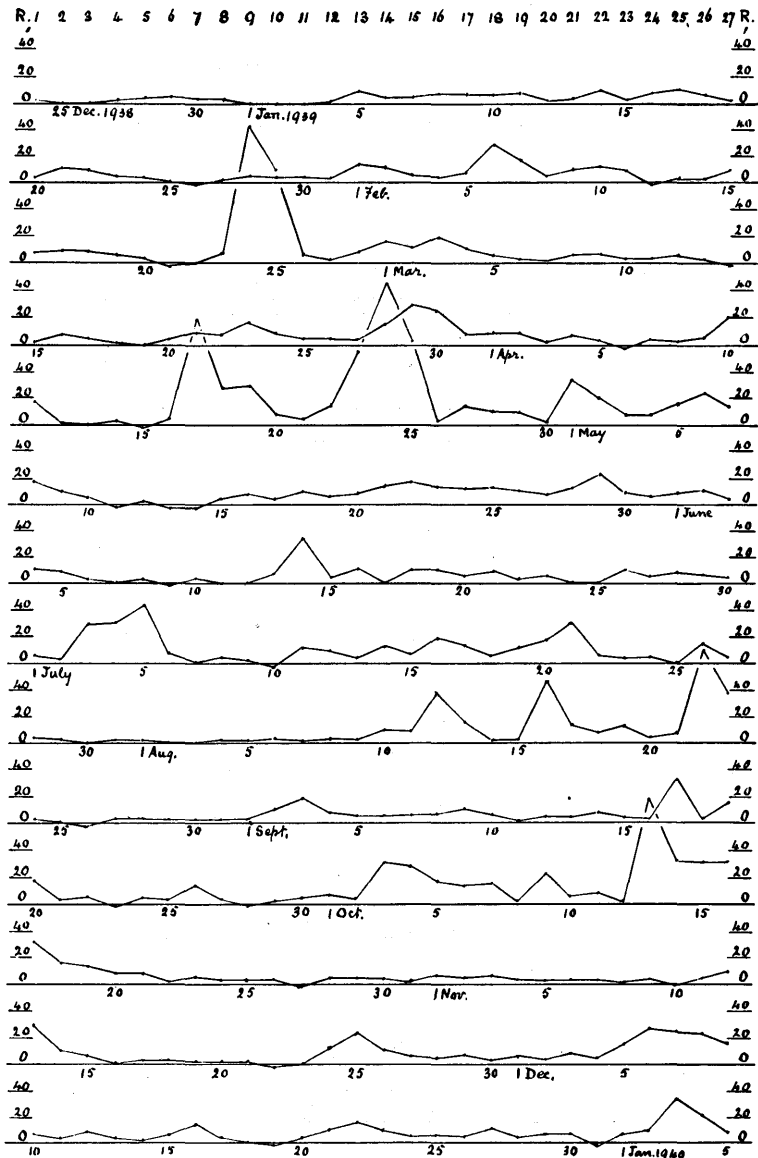
	Solar			Magnetic Mean Daily Range	
	Spotless Days	Mean Area (1/5000 of Disc)	Decln. γ	H.F.	
1930 ...	4 ...	2.44 ...	16.9 ...	88.7	
1931 ...	46 ...	1.26 ...	13.8 ...	59.5	
1932 ...	118 ...	0.81 ...	14.4 ...	62.8	
1933 ...	249 ...	0.41 ...	13.4 ...	58.1	
1934 ...	175 ...	0.58 ..	12.4 ...	53.1	
1935 ...	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	

The decreased magnetic activity shown in the above table is also indicated in the monthly ranges given on p.p 35—36, the mean monthly range in Declination falling from 77'.8 to 51'.4, and in the Horizontal Force from 368 γ to 348 γ . In the table showing the days of different magnetic character on p. 38, there is a small increase in the number of "calm" days at the expense of those of "small" disturbance, and an increase of days of "moderate" disturbance, with a reduction of those of "greater" disturbance from 40 to 32, and of "very great" from 8 to 6.

The Aurora Borealis was observed on six nights, those of February 24th and April 24th being accompanied by the two greatest magnetic storms of the year, and the others all being associated with notable disturbances.

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

DAY OF PERIOD.



1939. DAILY MAGNETIC CHARACTER IN 27-DAY PERIODS.

from which our character letters are determined, as explained on p. xi. Again, as in recent years, there is a lack of sequences of disturbances at approximately 27 days interval.

“ 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.	5—19 53	May	1— 6 42	July	14— 3 48
„	23—13 0	„	1—11 36	„	21— 9 58
Apr.	16—21 30	„	5—20 46	Aug.	22— 0 42
„	17— 1 58	„	27—21 0	Sept.	2—21 42
„	23— 5 46	June	26—20 20	Oct.	2— 7 57
„	24—17 40	July	3— 0 40	„	13— 2 6
„	27—21 0	„	4—14 8		

ASTRONOMICAL TIME SERVICE.—The rhythmic time signals from Rugby at 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 Magnetographs.

SOLAR OBSERVATIONS.—The routine work of solar drawing was normally carried out by the Director, and in his absence by Mr. Brown, and from the beginning of October by Mr. O’Callaghan, who has also carried out the measurements of areas of sun-spots.

Drawings of the sun, showing all spots, were obtained on 242 days, and these were supplemented by 89 drawings kindly supplied by Professor Brunner, of Zurich, to whom copies of the Stonyhurst drawings were supplied for a number of dates when no observation was obtained at Zurich. There remain 34 days on which no observation was possible at either observatory.

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

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

There were again, as last year, no spotless days, and the number of new groups which appeared during the year in the Stonyhurst observations was 332, as against 362 in 1938, and 422 in 1937. The largest group of the year crossed the central meridian in Lat. 15° S. on September 10th. Other large groups crossed the central meridian on the following dates:—April 15th, April 26th, July 8th, August 7th, August 21st, September 1st, September 10th, and October 26th.

SEISMOLOGICAL.—The Milne-Shaw seismograph has been in continuous service throughout the year, the total number of earthquakes recorded being 135, as against 130 last year. They were distributed as follows :

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
10	9	7	7	20	11	11	18	12	12	7	11	135

The greatest of these was the disastrous shock in Anatolia, at about midnight of December 26th—27th, in which the record passed beyond the limits of instrumental registration, indicating a range of ground oscillation at Stonyhurst of over one eighth of an inch though the distance of origin was over 2,000 miles.

Others of note were the following :—

Jan. 25—Chile	June 22—Gold Coast
„ 30—Solomon Is.	Sept. 8—Aleutian Is.
April 18—Chile	„ 22—Asia Minor
„ 30—Solomon Is.	Oct. 10—Near Japan
May 1—Japan	Nov. 21—Arabian Sea
„ 2—Lr. California	Dec. 21—Costa Rica
„ 8—Azores	

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.,

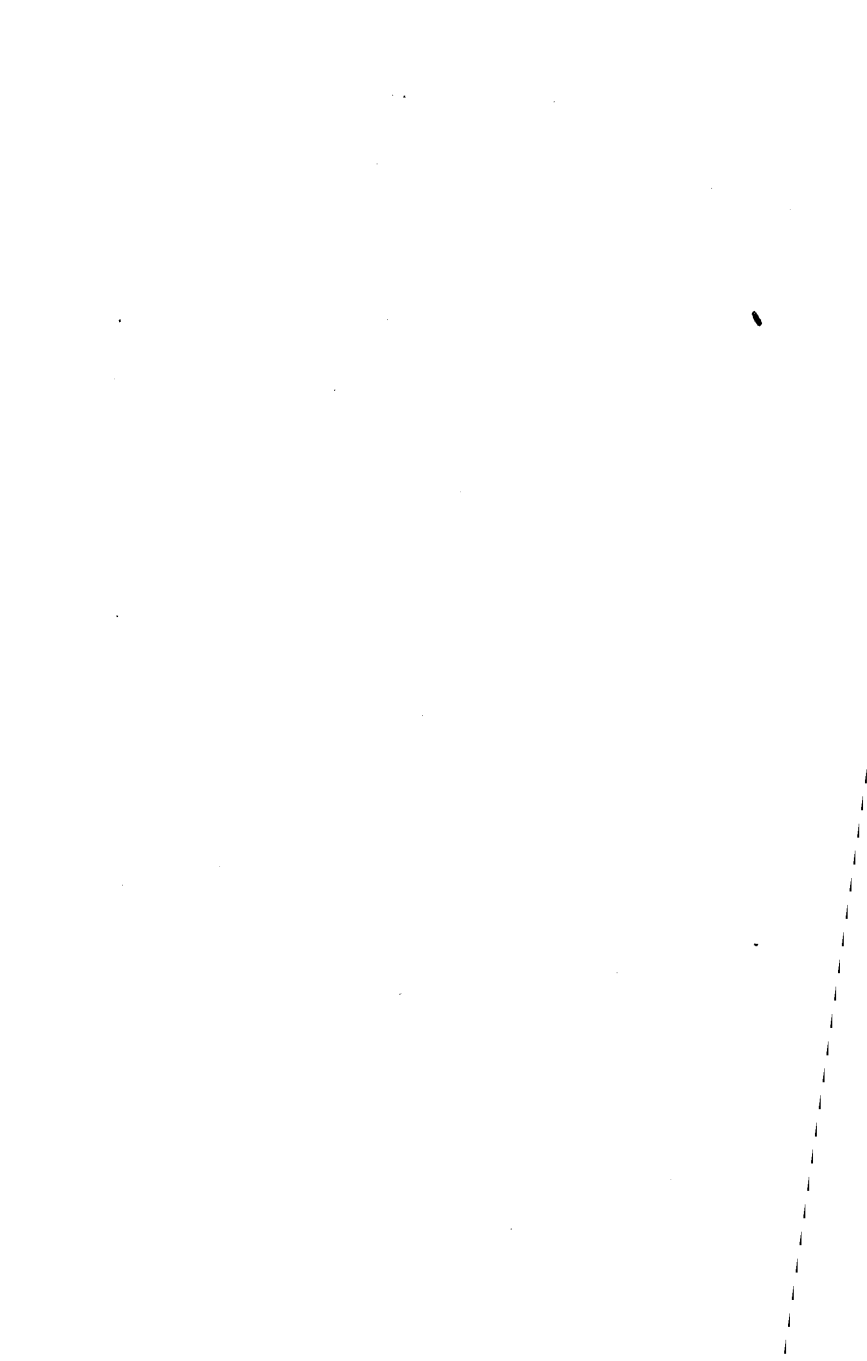
Director.

XVIII.

MAXIMUM GUSTS FOR EACH DAY OF THE YEAR, 1939

RECORDED BY THE DINES TUBE ANEMOGRAPH.

1939	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939
DAY													DAY
1	28	31	32	30	49	35	32	28	20	26	34	42	1
2	40	14	40	25	26	28	41	31	20	32	27	54	2
3	15	15	38	26	18	20	27	29	44	31	25	40	3
4	28	14	35	42	31	17	29	39	21	48	27	35	4
5	20	20	54	23	26	18	33	26	15	36	35	36	5
6	25	29	36	23	18	21	36	26	16	29	44	26	6
7	40	28	45	23	20	22	46	22	22	21	30	27	7
8	49	38	58	27	16	26	34	22	25	32	45	28	8
9	45	47	29	23	18	23	44	39	13	38	40	32	9
10	24	39	10	31	30	34	30	35	46	25	18	35	10
11	46	42	41	24	23	33	27	34	29	19	16	25	11
12	27	52	32	25	30	32	31	34	21	14	14	32	12
13	24	37	26	39	28	23	29	18	27	27	32	20	13
14	28	24	29	32	24	21	27	17	22	43	54	20	14
15	52	42	24	47	36	29	24	19	28	28	43	14	15
16	39	38	32	46	47	34	26	21	21	11	26	37	16
17	34	34	38	55	48	28	24	8	25	26	41	33	17
18	32	29	29	26	20	30	18	12	22	28	40	29	18
19	18	40	40	24	22	36	17	19	26	26	39	27	19
20	22	16	64	30	22	36	25	28	28	19	12	22	20
21	22	45	50	40	22	46	19	29	29	13	18	8	21
22	29	39	45	52	23	45	30	6	28	11	28	11	22
23	38	40	39	35	19	34	37	5	26	30	9	12	23
24	33	25	23	33	21	34	29	17	30	27	23	25	24
25	39	36	40	30	20	23	24	17	13	21	47	22	25
26	51	46	35	26	26	19	24	18	22	50	70	20	26
27	24	40	39	21	42	24	22	16	24	34	46	21	27
28	25	31	40	27	21	40	36	12	27	38	36	14	28
29	55		16	32	18	35	29	23	13	37	45	21	29
30	48		27	47	13	35	38	24	16	35	43	15	30
31	43		32		31		46	20		44		12	31



METEOROLOGICAL REPORT.

JANUARY, 1939.

Results of Observations taken during the Month.		Mean for the last 92 years.							
Mean Reading of the Barometer	inches 29·018	29·476							
Highest „ on the 31st	„ 29·753	30·125							
Lowest „ on the 15th	„ 28·428	28·586							
Range of Barometer Readings	„ 1·325	1·539							
Highest Reading of a Max. Therm. on the 8th & 14th	52·0	51·5							
Lowest Reading of a Min. Therm. on the 5th ...	21·8	22·1							
Range of Thermometer Readings.....	30·2	29·4							
Mean of Highest Daily Readings	42·1	42·6							
Mean of Lowest Daily Readings	33·6	33·4							
Mean Daily Range	8·5	9·2							
Deduced Mean Temp. (from mean of Max. and Min.)	37·7	37·8							
Mean Temperature from Dry Bulb	38·8	38·2							
Adopted Mean Temperature	38·3	38·0							
Mean Temperature of Evaporation	37·3	36·8							
Mean Temperature of Dew Point	35·3	34·7							
Mean elastic force of Vapour	inches 0·207	0·203							
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)	86	87							
Mean weight of a cubic foot of air	grains 542·5	548·8							
Mean amount of Cloud (0—10)	8·1	7·8							
Fall of Rain	inches 5·288	4·455							
Greatest Rainfall in one day (6th)	„ 0·765	0·827							
No. of days on which ·005 in. or more Rain fell...	24	19·9							
Wind:—Direction	N	NE	E	SE	S	SW	W	NW	
No. of days.....	1	8	4	1	3	7	6	1	
Mean Velocity in miles per hr.	15·9	7·5	14·9	5·2	7·3	14·7	7·9	16·9	
Total No. of miles.....	382	1434	1427	124	523	2482	1133	406	
Total No. of miles registered	7911							Mean* 8324	
Greatest hourly velocity (15th, at 1900 G.M.T., Dir. S.)	40							42	

* For the last 72 years.

JANUARY, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.296 in.
Monthly range	„	...	...	—	0.214 in.
Mean of highest daily temperatures	...	...	...	—	0.5°
Mean of lowest	„	„	...	+	0.2°
Mean daily Range	...	...	...	—	0.7°
Adopted mean temperature	...	...	...	+	0.3°
Total rainfall	...	...	...	+	0.833 in.

Ground Frost on the 1st—7th, 10th—14th, 24th—29th, and 31st. Hoar Frost on the 2nd, 3rd, 10th, 13th, and 14th. Snow on the 1st, 3rd, 4th, 6th, 11th, 12th, 13th, 25th, 27th, and 28th. Hail on the 12th. Heavy Rain on the 6th and 14th. Gale of Wind on the 15th. Fog on the 3rd, 4th, 6th, 7th, 12th, 14th, 19th, 22nd, and 25th. Solar Halo on the 10th and 24th.

EXTREME READINGS FOR JANUARY.

During 92 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, 1939.

Results of Observations taken during the Month.										Mean for the last 92 years.	
Mean Reading of the Barometer	inches									29·517	29·497
Highest „	on the 14th	„								30·081	30·107
Lowest „	on the 23rd	„								28·382	28·658
Range of Barometer Readings	„									1·699	1·449
Highest Reading of a Max. Therm. on the 11th ..										54·5	52·1
Lowest Reading of a Min. Therm. on the 3rd ...										15·0	22·8
Range of Thermometer Readings.....										39·5	29·3
Mean of Highest Daily Readings										44·9	43·8
Mean of Lowest Daily Readings										35·4	33·7
Mean Daily Range										9·5	10·1
Deduced Mean Temp. (from mean of Max. and Min.)										39·8	38·2
Mean Temperature from Dry Bulb										40·9	38·6
Adopted Mean Temperature										40·4	38·4
Mean Temperature of Evaporation										39·3	36·9
Mean Temperature of Dew Point										37·3	34·6
Mean elastic force of Vapour	inches									0·222	0·197
Mean weight of Vapour in a cub. ft. of air, grains										2·6	2·4
Mean additional weight required for saturation „										0·4	0·4
Mean degree of Humidity (saturation 100)										86	86
Mean weight of a cubic foot of air	grains									546·4	548·6
Mean amount of Cloud (0—10)										6·9	7·5
Fall of Rain	inches									4·723	3·542
Greatest Rainfall in one day (27th)	„									0·932	0·758
No. of days on which ·005 in. or more Rain fell...										21	16·7
Wind :—Direction	N	NE	E	SE	S	SW	W	NW			
No. of days.....	0	1	1	0	4	6	16	0			
Mean Velocity in miles per hr.	0	4·0	8·1	0	11·5	9·1	13	1	0		
Total No. of miles.....	0	97	195	0	1102	1309	5049	0			
Total No. of miles registered										7752	Mean* 7392
Greatest hourly velocity (9th & 21st, at 0100 and 2200 G.M.T., Dir. S. and S. by E.).....										34		39

* For the last 72 years.

FEBRUARY, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.020 in.
Monthly range	„	„	„	„	+	0.250 in.
Mean of highest daily temperatures	...	...	...	...	+	1.1°
Mean of lowest	„	„	„	„	+	1.7°
Mean daily range	...	...	...	...	—	0.6°
Adopted mean temperature	...	...	...	...	+	2.0°
Total rainfall	...	...	...	...	+	1.181 in.

Ground Frost on the 1st—5th, 14th, 17th, 20th, and 21st.
Hoar Frost on the 1st, 2nd and 14th. Snow on the 15th, 23rd and 26th. Hail on the 15th and 26th. Heavy Rain on the 9th and 27th. Fog on the 2nd, 3rd, 4th, 7th, 8th, 14th and 28th. Thunder on the 26th. Solar Halo on the 19th. Aurora Borealis on the 26th.

EXTREME READINGS FOR FEBRUARY,

During 92 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, 1939.

Results of Observations taken during the Month.	Mean for the last 92 years.							
Mean Reading of the Barometer inches	29·567	29·456						
Highest „ on the 12th „	30·221	30·048						
Lowest „ on the 22nd „	28·935	28·674						
Range of Barometer Readings „	1·286	1·374						
Highest Reading of a Max. Therm. on the 3rd ...	54·3	56·8						
Lowest Reading of a Min. Therm. on the 24th...	29·8	23·8						
Range of Thermometer Readings.....	24·5	33·0						
Mean of Highest Daily Readings	46·4	47·0						
Mean of Lowest Daily Readings	36·5	34·6						
Mean Daily Range	9·9	12·4						
Deduced Mean Temp. (from mean of Max. and Min.)	40·5	39·9						
Mean Temperature from Dry Bulb	42·2	40·6						
Adopted Mean Temperature	41·4	40·3						
Mean Temperature of Evaporation	39·9	38·4						
Mean Temperature of Dew Point	37·1	35·9						
Mean elastic force of Vapour inches	0·221	0·211						
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·5						
Mean additional weight required for saturation „	0·6	0·5						
Mean degree of Humidity (saturation 100)	80	84·5						
Mean weight of a cubic foot of air grains	545·9	545·9						
Mean amount of Cloud (0—10)	7·6	7·5						
Fall of Rain inches	2·276	3·218						
Greatest Rainfall in one day (21st)	0·821	0·734						
No. of days on which ·005 in. or more Rain fell...	19	16·6						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	8	3	0	0	3	3	14	0
Mean Velocity in miles per hr.	7·5	9·7	0	0	20·3	9·5	13·6	0
Total No. of miles.....	1439	701	0	0	1460	682	4576	0
Total No. of miles registered	8858						Mean*	
Greatest hourly velocity (20th, at 1630 G.M.T., Dir. W.N.W.).....	39						8200	
							39	

* For the last 72 years.

MARCH, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.111 in.
Monthly range	„	...	...	—	0.088 in.
Mean of highest daily temperatures	...	...	...	—	0.6°
Mean of lowest	„	„	...	+	1.9°
Mean daily range	...	...	...	—	2.5°
Adopted mean temperature	...	...	...	+	1.1°
Total rainfall	...	...	...	—	0.942 in.

Ground Frost on the 1st, 10th, 12th, 13th, 18th, 20th, 25th, 26th, 27th and 30th. Hoar Frost on the 9th and 10th. Snow on the 22nd, 23rd and 25th. Hail on the 7th, 8th, 21st and 22nd. Heavy Rain on the 21st. Gale of Wind on the 20th. Fog on the 10th—13th, 18th and 29th. Solar Halo on the 1st and 6th.

EXTREME READINGS FOR MARCH,

During 92 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, 1939.

Results of Observations taken during the Month.							Mean for the last 92 years.	
Mean Reading of the Barometer	inches	29.489						29.483
Highest „ on the 19th	„	30.198						29.961
Lowest „ on the 4th	„	28.671						28.810
Range of Barometer Readings	„	1.527						1.151
Highest Reading of a Max. Therm. on 11th		66.2						64.0
Lowest Reading of a Min. Therm. on the 28th...		31.1						28.4
Range of Thermometer Readings.....		35.1						35.6
Mean of Highest Daily Readings		52.3						53.9
Mean of Lowest Daily Readings		39.8						38.0
Mean Daily Range		12.5						15.9
Deduced Mean Temp. (from mean of Max. and Min.)		44.6						43.8
Mean Temperature from Dry Bulb		46.2						44.7
Adopted Mean Temperature		45.4						44.3
Mean Temperature of Evaporation		42.7						41.7
Mean Temperature of Dew Point		38.7						38.2
Mean elastic force of Vapour	inches	0.236						0.234
Mean weight of Vapour in a cub. ft. of air, grains		2.7						2.7
Mean additional weight required for saturation „		0.9						0.7
Mean degree of Humidity (saturation 100)		73						79
Mean weight of a cubic foot of air	grains	540.0						541.9
Mean amount of Cloud (0—10)		6.5						6.8
Fall of Rain	inches	2.233						2.546
Greatest Rainfall in one day (23rd)	„	0.500						0.590
No. of days on which .005 in. or more Rain fell...		16						14.9
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	5	8	2	0	2	4	9	0
Mean Velocity in miles per hr.	6.0	8.0	8.5	0	10.6	13.5	13.2	0
Total No. of miles.....	725	1540	410	0	510	1296	2856	0
Total No. of miles registered						7337		Mean* 7407
Greatest hourly velocity (22nd, at 1030 G.M.T., Dir. W.N.W.)						33		35

* For the last 72 years.

APRIL, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.006 in.
Monthly range	..	..	..	..	+	0.376 in.
Mean of highest daily temperatures	...	...	...	...	—	1.6°
Mean of lowest	..	..	..	..	+	1.8°
Mean daily range	...	...	...	...	—	3.4°
Adopted mean temperature	...	...	...	...	+	1.1°
Total rainfall	...	...	...	...	+	0.313 in.

Ground Frost on the 3rd, 6th, 7th, 18th, 19th, 20th, 27th, 28th and 29th. Hoar Frost on the 6th. Snow on the 5th. Hail on the 24th and 27th. Heavy Rain on the 23rd. Fog on the 2nd, 3rd, 16th and 19th. Solar Halo on the 21st. Aurora Borealis on the 24th.

EXTREME READINGS FOR APRIL, During 92 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, 1939.

Results of Observations taken during the Month.		Mean for the last 92 years.							
Mean Reading of the Barometer	inches	29·672	29·541						
Highest „ on the 28th	„	30·070	29·978						
Lowest „ on the 5th	„	29·023	28·959						
Range of Barometer Readings	„	1·047	1·019						
Highest Reading of a Max. Therm. on the 2nd ...		73·0	71·8						
Lowest Reading of a Min. Therm. on the 8th ...		35·2	32·3						
Range of Thermometer Readings.....		37·8	39·5						
Mean of Highest Daily Readings		59·5	59·2						
Mean of Lowest Daily Readings		44·4	42·8						
Mean Daily Range		15·1	16·4						
Deduced Mean Temp. (from mean of Max. and Min.)		50·2	49·2						
Mean Temperature from Dry Bulb		51·8	50·2						
Adopted Mean Temperature		51·0	49·7						
Mean Temperature of Evaporation		48·1	46·5						
Mean Temperature of Dew Point		44·4	43·1						
Mean elastic force of Vapour	inches	0·293	0·280						
Mean weight of Vapour in a cub. ft. of air, grains		3·3	3·2						
Mean additional weight required for saturation „		1·0	0·8						
Mean degree of Humidity (saturation 100)		74	77						
Mean weight of a cubic foot of air	grains	537·0	536·8						
Mean amount of Cloud (0—10)		6·8	7·0						
Fall of Rain	inches	0·999	2·747						
Greatest Rainfall in one day (14th).....	„	0·376	0·650						
No. of days on which ·005 in. or more Rain fell...		10	14·6						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW	
No. of days.....	5	10	0	2	2	0	12	0	
Mean Velocity in miles per hr.	9·0	7·0	0	6·2	9·7	0	5·7	0	
Total No. of miles.....	1082	1679	0	296	466	0	1636	0	
Total No. of miles registered	5159							Mean* 6797	
Greatest hourly velocity (4th, at 1500 G.M.T., Dir. S.)	26							32	

* For the last 72 years.

MAY, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.131 in.
Monthly range	„	„	„	„	+	0.028 in.
Mean of highest daily temperatures	...	...	...	...	+	0.3°
Mean of lowest	„	„	„	„	+	1.6°
Mean daily range	...	...	...	...	—	1.3°
Adopted mean temperature	...	...	...	...	+	1.3°
Total rainfall	...	...	...	...	—	1.748 in.

Ground Frost on the 2nd. Fog on the 6th, 7th, 8th, 10th, 11th, 23rd, 24th, 25th and 29th. Thunder on the 6th and 7th. Lightning on the 6th and 7th. Solar Halo on the 7th.

EXTREME READINGS FOR MAY,

During 92 Years.

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

* Since 1867 only.

† And in 1848.

JUNE, 1939.

Results of Observations taken during the Month.		Mean for the last 92 years.
Mean Reading of the Barometer	inches 29.593	29.559
Highest „ on the 2nd	„ 30.028	29.938
Lowest „ on the 15th	„ 29.204	29.045
Range of Barometer Readings	„ 0.824	0.893
Highest Reading of a Max. Therm. on the 6th ...	81.2	76.4
Lowest Reading of a Min. Therm. on the 13th ...	38.9	39.3
Range of Thermometer Readings.....	42.3	37.1
Mean of Highest Daily Readings	65.1	64.8
Mean of Lowest Daily Readings	48.2	48.3
Mean Daily Range	16.9	16.5
Deduced Mean Temp. (from mean of Max. and Min.)	54.9	54.8
Mean Temperature from Dry Bulb	56.7	55.4
Adopted Mean Temperature	55.8	55.1
Mean Temperature of Evaporation	51.3	51.8
Mean Temperature of Dew Point	46.3	48.2
Mean elastic force of Vapour	inches 0.315	0.345
Mean weight of Vapour in a cub. ft. of air, grains	3.5	3.8
Mean additional weight required for saturation „	1.6	1.0
Mean degree of Humidity (saturation 100)	67	78
Mean weight of a cubic foot of air	grains 530.3	531.2
Mean amount of Cloud (0—10)	5.5	7.2
Fall of Rain	inches 4.593	3.325
Greatest Rainfall in one day (14th).....	„ 1.524	0.812
No. of days on which .005 in. or more Rain fell...	. 16	15.1
Wind :—Direction	N NE E SE S SW W NW	
No. of days.....	1 9 2 0 3 3 10 2	
Mean Velocity in miles per hr.	6.4 8.4 4.9 0 11.0 11.4 8.3 6.8	
Total No. of miles.....	153 1825 237 0 789 821 1988 328	
		Mean*
Total No. of miles registered	6141	6181
Greatest hourly velocity (28th, at 0900 G.M.T., Dir. S.)	27	29

* For the last 72 years.

JUNE, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.034 in.
Monthly range	..	..	..	..	—	0.069 in.
Mean of highest daily temperatures	...	...	...	...	+	0.3°
Mean of lowest	..	..	..	..	—	0.1°
Mean daily range	...	...	...	...	+	0.4°
Adopted mean temperature	...	...	...	...	+	0.7°
Total rainfall	...	...	...	...	+	1.268 in.

Heavy Rain on the 14th, 15th and 28th. Fog on the 12th.
Thunder on the 11th and 30th. Lightning on the 11th and 30th.

EXTREME READINGS FOR JUNE,

During 92 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 0.05 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, 1939.

Results of Observations taken during the Month.		Mean for the last 92 years.						
Mean Reading of the Barometer	inches 29.381	29.521						
Highest „ on the 10th	„ 29.818	29.899						
Lowest „ on the 16th	„ 29.083	29.007						
Range of Barometer Readings	„ 0.735	0.892						
Highest Reading of a Max. Therm. on 4th	72.9	78.0						
Lowest Reading of a Min. Therm. on the 11th & 25th	46.0	43.1						
Range of Thermometer Readings.....	26.9	34.9						
Mean of Highest Daily Readings	64.7	67.1						
Mean of Lowest Daily Readings	53.0	51.5						
Mean Daily Range	11.7	15.6						
Deduced Mean Temp. (from mean of Max. and Min.)	57.0	57.6						
Mean Temperature from Dry Bulb	58.1	58.2						
Adopted Mean Temperature	57.6	57.9						
Mean Temperature of Evaporation	54.9	54.9						
Mean Temperature of Dew Point	52.2	52.1						
Mean elastic force of Vapour	inches 0.389	0.389						
Mean weight of Vapour in a cub. ft. of air, grains	4.4	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 524.6	527.3						
Mean amount of Cloud (0—10)	7.9	7.4						
Fall of Rain	inches 6.786	4.053						
Greatest Rainfall in one day (29th).....	„ 0.990	0.872						
No. of days on which .005 in. or more Rain fell...	23	17.0						
Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	2	1	3	4	12	8	0
Mean Velocity in miles per hr.	4.6	5.4	5.5	6.7	8.8	10.8	8.1	0
Total No. of miles.....	111	261	133	481	842	3119	1549	0
Total No. of miles registered	6496						Mean* 6314	
Greatest hourly velocity (7th, at 0200 G.M.T., Dir. S.S.W.)	30						28	

* For the last 72 years.

JULY, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.140 in.
Monthly range	„	...	...	—	0.157 in.
Mean of highest daily temperatures	...	...	...	—	2.4°
Mean of lowest	„	„	...	+	1.5°
Mean daily range	...	...	...	—	3.9°
Adopted mean temperature	...	...	...	—	0.3°
Total rainfall	...	...	...	+	2.733 in.

Heavy Rain on the 28th and 29th. Fog on the 11th, 12th, 25th and 26th. Thunder on the 4th, 5th, 6th, 14th, 15th, 19th, 24th and 30th. Lightning on the 5th, 19th, 20th and 23rd. Solar Halo on the 18th and 27th.

EXTREME READINGS FOR JULY,

During 92 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, 1939.

Results of Observations taken during the Month.								Mean for the last 92 years
Mean Reading of the Barometer	inches	29.591						29.499
Highest „ on the 15th	„	29.953						29.901
Lowest „ on the 9th	„	29.187						28.955
Range of Barometer Readings	„	0.766						0.946
Highest Reading of a Max. Therm. on the 18th...		75.3						76.0
Lowest Reading of a Min. Therm. on the 8th ...		47.6						42.2
Range of Thermometer Readings.....		27.7						33.8
Mean of Highest Daily Readings		67.4						66.2
Mean of Lowest Daily Readings		54.0						51.1
Mean Daily Range		13.4						15.1
Deduced Mean Temp. (from mean of Max. and Min.)		59.0						57.0
Mean Temperature from Dry Bulb		60.5						57.9
Adopted Mean Temperature		59.8						57.5
Mean Temperature of Evaporation		57.2						54.6
Mean Temperature of Dew Point		54.4						51.9
Mean elastic force of Vapour	inches	0.423						0.388
Mean weight of Vapour in a cub. ft. of air, grains		4.7						4.3
Mean additional weight required for saturation „		1.2						1.0
Mean degree of Humidity (saturation 100)		81						81
Mean weight of a cubic foot of air	grains	525.7						527.2
Mean amount of Cloud (0—10)		6.9						7.3
Fall of Rain	inches	2.037						4.998
Greatest Rainfall in one day (2nd)	„	0.642						1.053
No. of days on which .005 in. or more Rain fell...		.13						18.4
Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	6	7	1	0	1	7	9	0
Mean Velocity in miles per hr.	5.7	5.1	4.8	0	12.4	5.6	5.1	0
Total No. of miles.....	825	858	115	0	297	945	1118	0
Total No. of miles registered						4158		Mean* 6171
Greatest hourly velocity (9th, at 2130 G.M.T., Dir. S.)						25		30

* For the last 72 years.

AUGUST, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.092 in.
Monthly range	„	...	...	...	—	0.180 in.
Mean of highest daily temperatures	...	...	...	...	+	1.2°
Mean of lowest	„	„	...	...	+	2.9°
Mean daily range	...	...	...	...	—	1.7°
Adopted mean temperature	...	...	...	...	+	2.3°
Total rainfall	...	...	...	...	—	2.961 in.

Heavy Rain on the 2nd. Fog on the 2nd, 7th, 17th, 19th and 24th. Thunder on the 21st, 26th and 27th. Lightning on the 19th, 21st, 26th and 27th. Solar Halo on the 3rd, 13th and 14th.

EXTREME READINGS FOR AUGUST,

During 92 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, 1939.

Results of Observations taken during the Month.								Mean for the last 92 years.
Mean Reading of the Barometer	inches	29·717						29·544
Highest „ on the 18th	„	30·085						30·003
Lowest „ on the 11th	„	29·128						28·894
Range of Barometer Readings	„	0·957						1·109
Highest Reading of a Max. Therm. on the 8th ...		73·4						71·6
Lowest Reading of a Min. Therm. on the 28th...		37·4						36·8
Range of Thermometer Readings.....		36·0						34·8
Mean of Highest Daily Readings		62·6						61·7
Mean of Lowest Daily Readings		50·6						47·6
Mean Daily Range		12·0						14·1
Deduced Mean Temp. (from mean of Max. and Min.)		55·3						53·4
Mean Temperature from Dry Bulb		56·4						54·4
Adopted Mean Temperature		55·9						53·9
Mean Temperature of Evaporation		52·8						51·2
Mean Temperature of Dew Point		49·5						48·4
Mean elastic force of Vapour	inches	0·355						0·340
Mean weight of Vapour in a cub. ft. of air, grains		4·0						3·9
Mean additional weight required for saturation „		1·1						0·9
Mean degree of Humidity (saturation 100)		77						82
Mean weight of a cubic foot of air	grains	532·6						532·3
Mean amount of Cloud (0—10)		6·6						6·7
Fall of Rain	inches	1·789						4·305
Greatest Rainfall in one day (10th).....	„	0·918						0·979
No. of days on which ·005 in. or more Rain fell...		9						16·5
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	12	0	1	5	1	6	2
Mean Velocity in miles per hr.	6·7	6·0	0	4·9	3·8	9·2	4·7	8·1
Total No. of miles.....	479	1714	0	118	453	220	672	387
Total No. of miles registered					4043			
Greatest hourly velocity (3rd, at 1200 G.M.T., Dir. S.)					23			
								Mean*
								5961
								31

* For the last 72 years.

SEPTEMBER, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.173 in.
Monthly range	„	„	„	„	—	0.152 in.
Mean of highest daily temperatures	...	...	...	...	+	0.9°
Mean of lowest	„	„	„	„	+	3.0°
Mean daily range	...	...	...	...	—	2.1°
Adopted mean temperature	...	...	...	...	+	2.0°
Total rainfall	...	...	...	...	—	2.516 in.

Ground Frost on the 28th. Heavy Rain on the 2nd and 10th. Fog on the 5th, 9th and 13th. Thunder on the 2nd. Lightning on the 2nd and 3rd. Lunar Halo on the 26th. Solar Halo on the 7th.

EXTREME READINGS FOR SEPTEMBER,

During 92 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, 1939.

Results of Observations taken during the Month.		Mean for the last 92 years.						
Mean Reading of the Barometer	inches 29·499	29·445						
Highest ,, on the 22nd	,, 30·028	30·017						
Lowest ,, on the 14th	,, 28·945	28·680						
Range of Barometer Readings	,, 1·083	1·337						
Highest Reading of a Max. Therm. on the 11th...	57·8	63·7						
Lowest Reading of a Min. Therm. on the 26th...	30·2	30·0						
Range of Thermometer Readings.....	27·6	33·7						
Mean of Highest Daily Readings	51·8	54·3						
Mean of Lowest Daily Readings	39·7	42·2						
Mean Daily Range	12·1	12·1						
Deduced Mean Temp. (from mean of Max. and Min.)	44·8	47·3						
Mean Temperature from Dry Bulb	45·9	48·1						
Adopted Mean Temperature	45·4	47·7						
Mean Temperature of Evaporation	42·9	45·5						
Mean Temperature of Dew Point	39·5	43·0						
Mean elastic force of Vapour	inches 0·244	0·279						
Mean weight of Vapour in a cub. ft. of air, grains	2·8	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	540·4	537·3						
Mean amount of Cloud (0—10)	5·4	7·2						
Fall of Rain	inches 1·444	5·072						
Greatest Rainfall in one day (23rd)	,, 0·454	0·987						
No. of days on which ·005 in. or more Rain fell...	17	19						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	12	7	1	2	0	4	1
Mean Velocity in miles per hr.	7·8	7·3	11·2	9·0	6·0	0	3·9	9·4
Total No. of miles.....	751	2127	1881	215	287	0	370	226
Total No. of miles registered	5857	Mean*						
Greatest hourly velocity (26th, at 1230 G.M.T., Dir. N.)	26	6865						
		37						

* For the last 72 years.

OCTOBER, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.054 in.
Monthly range	„	...	...	—	0.254 in.
Mean of highest daily temperatures	...	...	...	—	2.5°
Mean of lowest	„	„	...	—	2.5°
Mean daily range	...	...	...		0.0°
Adopted mean temperature	...	...	...	—	2.3°
Total rainfall	...	...	...	—	3.628 in.

Ground Frost on the 16th, 17th, 20th, 21st, and 25th—28th.
Hoar Frost on the 16th, 20th, 26th and 28th. Snow on the 28th.
Fog on the 12th, 21st, 22nd, and 23rd. Lunar Halo on the 28th.
Solar Halo on the 28th. Aurora Borealis on the 3rd, 13th and 16th.

EXTREME READINGS FOR OCTOBER, During 92 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, 1939.

Results of Observations taken during the Month.								Mean for the last 92 years.
Mean Reading of the Barometer	inches	29.319						29.454
Highest ,, on the 21st	,,	30.125						30.063
Lowest ,, on the 27th	,,	28.724						28.568
Range of Barometer Readings	,,	1.401						1.495
Highest Reading of a Max. Therm. on the 14th...		56.0						55.8
Lowest Reading of a Min. Therm. on the 24th...		31.8						25.8
Range of Thermometer Readings.....		24.2						30.0
Mean of Highest Daily Readings		50.1						47.2
Mean of Lowest Daily Readings		41.8						37.0
Mean Daily Range		8.3						10.2
Deduced Mean Temp. (from mean of Max. and Min.)		45.6						41.7
Mean Temperature from Dry Bulb		46.6						42.2
Adopted Mean Temperature		46.1						42.0
Mean Temperature of Evaporation		44.8						40.0
Mean Temperature of Dew Point		42.8						38.3
Mean elastic force of Vapour	inches	0.275						0.233
Mean weight of Vapour in a cub. ft. of air, grains		3.1						2.8
Mean additional weight required for saturation ,,		0.5						0.4
Mean degree of Humidity (saturation 100)		86						87
Mean weight of a cubic foot of air	grains	532.6						544.1
Mean amount of Cloud (0—10)		8.2						7.4
Fall of Rain	inches	7.907						4.492
Greatest Rainfall in one day (25th).....	,,	1.821						0.993
No. of days on which .005 in. or more Rain fell...		26						19.3
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	0	4	0	5	8	12	1
Mean Velocity in miles per hr.	0	0	8.9	0	11.8	11.1	10.3	7.2
Total No. of miles.....	0	0	852	0	1418	2127	2953	172
Total No. of miles registered						7522		
Greatest hourly velocity (26th, at 0530 G.M.T., Dir. W. by S.).....							35	
								Mean* 7045
								40

* For the last 72 years.

NOVEMBER, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.135 in.
Monthly range	„	...	...	—	0.094 in.
Mean of highest daily temperatures	...	...	...	+	2.9°
Mean of lowest	„	„	...	+	4.8°
Mean daily range	...	...	...	—	1.9°
Adopted mean temperature	...	...	...	+	4.1°
Total rainfall	...	...	...	+	3.415 in.

Ground Frost on the 20th, 24th and 25th. Hoar Frost on the 20th and 24th. Hail on the 9th, 26th and 27th. Heavy Rain on the 14th, 18th, 22nd, 25th, 28th and 30th. Fog on the 12th, 21st, 23rd and 24th. Thunder on the 6th and 15th. Lightning on the 8th and 27th. Lunar Halo on the 23rd. Solar Halo on the 28th.

EXTREME READINGS FOR NOVEMBER,

During 92 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, 1939.

Results of Observations taken during the Month		Mean for the last 92 years.
Mean Reading of the Barometer	inches 29·563	29·436
Highest „ on the 17th	„ 29·986	30·077
Lowest „ on the 4th	„ 28·444	28·536
Range of Barometer Readings	„ 1·542	1·541
Highest Reading of a Max. Therm. on the 1st ...	53·4	52·6
Lowest Reading of a Min. Therm. on the 29th...	18·3	22·0
Range of Thermometer Readings.....	35·1	30·6
Mean of Highest Daily Readings	41·1	43·4
Mean of Lowest Daily Readings	33·9	34·0
Mean Daily Range	7·2	9·4
Deduced Mean Temp. (from mean of Max. and Min.)	37·5	38·7
Mean Temperature from Dry Bulb	38·2	39·3
Adopted Mean Temperature	37·9	39·0
Mean Temperature of Evaporation	36·6	37·4
Mean Temperature of Dew Point	34·4	35·5
Mean elastic force of Vapour	inches 0·199	0·209
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)	85	87
Mean weight of a cubic foot of air	grains 550·2	546·8
Mean amount of Cloud (0—10)	8·0	7·7
Fall of Rain	inches 3·677	4·616
Greatest Rainfall in one day (3rd)	„ 0·814	0·828
No. of days on which ·005 in. or more Rain fell...	12	20·0
Wind :—Direction	N NE E SE S SW W NW	
No. of days.....	9 4 1 1 3 3 8 2	
Mean Velocity in miles per hr.	4·9 8·4 9·9 5·7 9·4 13·9 7·1 5·6	
Total No. of miles.....	1053 806 238 136 679 1004 1368 269	
Total No. of miles registered	5553	Mean* 7721
Greatest hourly velocity (2nd, at 0500 G.M.T., Dir. W.)	31	41

* For the last 72 years.

DECEMBER, 1939.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+	0.127 in.
Monthly range	„	...	...	...	+	0.001 in.
Mean of highest daily temperatures	...	...	...	...	—	2.3°
Mean of lowest	„	„	...	...	—	0.1°
Mean daily range	...	...	...	...	—	2.2°
Adopted mean temperature	...	...	...	...	—	1.1°
Total rainfall	...	...	...	...	—	0.939 in.

Ground Frost on the 4th—7th, 15th, 16th, 18th—20th, 22nd, 24th, 25th, and 27th—31st. Hoar Frost on the 6th, 7th and 27th. Snow on the 4th and 28th. Hail on the 2nd, 3rd and 4th. Heavy Rain on the 1st and 3rd. Fog on the 7th, 8th, 13th, 22nd, 23rd, 24th, 25th and 31st. Thunder on the 4th. Lightning on the 4th. Solar Halo on the 29th. Aurora Borealis on the 5th.

EXTREME READINGS FOR DECEMBER,

During 92 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, 1939.

Results of Observations taken during the Year.	Mean for the last 92 Years	
<i>Readings of Barometer in inches.</i>		
Mean of the Year	29·507	29·493
Highest Monthly Mean (September)	29·717	29·751
Lowest " " (January)	29·180	29·221
Highest Reading (March 12th)	30·221	30·299
Lowest " (February 23rd)	28·382	28·219
Range	1·839	2·080
<i>Thermometer, Fahrenheit.</i>		
Highest Monthly Mean Temperature (August) ...	59·8	58·7
Lowest " " " (December)	37·9	35·9
Highest Reading of a Max. Therm. (June 6th) ...	81·2	81·0
Lowest " Min. " (February 3rd)	15·0	16·9
Range of Thermometer Readings	66·2	64·1
Mean of Highest Daily " 	54·0	54·3
Mean of Lowest Daily " 	42·6	41·2
Mean Daily Range	11·4	13·1
Deduced Mean Temp. (from Mean of Max. and Min.)	47·2	46·8
Mean Temperature from Dry Bulb	48·5	47·3
Adopted Mean Temperature of the Year	47·9	47·1
Mean Temperature of Evaporation	45·7	44·7
Mean Temperature of Dew Point	43·7	44·2
Mean elastic force of Vapour inches	0·274	0·275
Mean weight of Vapour in a cub. ft. of air...grns.	3·2	3·2
Mean additional weight required for saturation "	0·7	0·7
Mean degree of Humidity (saturation 100).....	79	84
Mean weight of a cubic foot of air grns.	537·7	538·9
Mean amount of Cloud (0—10)	7·0	7·3
Total fall of Rain	43·752	47·324
Greatest Monthly Rainfall (November)	7·907	7·656
Least " " (May)	0·999	1·212
Greatest Rainfall in one day (November 25th) ...	1·821	1·664
No. of days on which ·005 inch or more Rain fell	206	207·1

SUMMARY OF WIND, 1939.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	43	76	23	9	37	54	114	9
Mean Velocity in miles per hour ...	6.8	7.2	9.9	6.3	10.0	10.8	9.2	8.3
Total No. of miles for each Direction	7000	13042	5488	1370	8826	14005	25268	1788

		Mean for the last 72 years.
Total No. of miles registered	76787	84468
Greatest Monthly Total (March)	8858	9875
Least " " (September)	4043	4847
Greatest recorded hourly velocity (January 15th)...	40	50
Prevailing Direction of Wind	W.	W.

DIFFERENCES, 1939.

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

Mean barometric pressure	... ..	+	0.014 in.
Yearly range	... ..	—	0.241 in.
Mean of highest daily temperatures	... ..	—	0.3°
Mean of lowest " "	... ..	+	1.4°
Mean daily range	... ..	—	1.7°
Adopted mean temperature	... ..	+	1.8°
Total rainfall	... ..	—	3.572 in.

**ABSOLUTE EXTREMES
FOR THE LAST 92 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 92 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.)	12813
Least " " "	...	1917 (Feb.)	3160
Greatest Mean No. " " "	...	January	8324
Least " " " "	...	September	5961
Greatest No. " " year	1868	...	102395
Least " " " "	1915	...	70623

* Record dates from 1867 only.

DATES OF OCCASIONAL PHENOMENA.

1939	Frost	Hoar Frost	Snow	Hail	Heavy Rain
January	1-7, 10-14, 24-29, 31	2, 3, 10, 13, 14	1, 3, 4, 6, 11-13, 25, 27, 28	12	6, 14
February	1-5, 14, 17, 20, 21	1, 2, 14	15, 23, 26	15, 26	9, 27
March	1, 10, 12, 13, 18, 20, 25, 26, 27, 30	9, 10	22, 23, 25	7, 8, 21, 22	21
April	3, 6, 7, 18, 19, 20, 27, 28, 29	6	5	24, 27	23
May	2				
June					14, 15, 28
July					28, 29
August					2
September	28				2, 10
October	16, 17, 20, 21, 25, 26, 27, 28	16, 20, 26, 28	28		
November	20, 24, 25	20, 24		9, 26, 27	14, 18, 22, 25, 28, 30
December	4-7, 15, 16, 18-20, 22, 24, 25, 27-31	6, 7, 27	4, 28	2, 3, 4	1, 3

1939	Gales of Wind	Fog	Thunder	Lightning	Lunar Halo	Solar Halo	Aurora Borealis
January	15	3, 4, 6, 7, 12, 14, 19, 22, 25				10, 24	
February		2, 3, 4, 7, 8, 14, 28	26			19	24
March	20	10, 11, 12, 13, 18, 29				1, 6	
April		2, 3, 16, 19				21	24
May		6, 7, 8, 10, 11, 23, 24, 25, 29	6, 7	6, 7		7	
June		12	11, 30	11, 30			
July		11, 12, 25, 26	4, 5, 6, 14, 15, 19, 24, 30	5, 19, 20, 23		18, 27	
August		2, 7, 17, 19, 24	21, 26, 27	19, 21, 26, 27		3, 13, 14	
September		5, 9, 13	2	2, 3	26	7	
October		12, 21, 22, 23			28	28	3, 13, 16
November		12, 21, 23, 24	6, 15	8, 27	23	28	
December		7, 8, 13, 22, 23, 24, 25, 31	4	4		29	5

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1939. Local apparent time	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
January ...	...	...	...	...	1.6	3.8	6.0	5.1	7.5	5.1	1.9	0.7	...	...	...	...	...
February ...	...	...	...	1.1	5.0	5.4	7.4	7.8	7.4	6.8	6.5	4.2	0.6	...	...	...	...
March ...	...	...	0.9	5.7	9.3	9.7	8.0	7.5	7.8	9.7	8.6	8.8	7.6	1.1	...	...	...
April ...	...	2.7	9.9	12.8	15.4	16.5	16.0	17.5	14.1	14.7	14.0	13.3	11.4	9.3	4.2	...	...
May ...	1.0	8.8	11.1	10.2	13.2	15.1	16.6	15.5	17.4	16.7	15.1	13.9	15.4	13.5	10.8	1.9	...
June ...	6.3	10.8	13.9	17.5	18.5	17.1	17.1	17.0	17.2	17.6	17.6	16.6	16.3	17.4	16.0	8.1	...
July ...	1.5	2.8	3.9	5.8	8.7	11.4	12.8	11.6	10.5	11.4	10.2	9.5	9.7	8.7	6.4	2.9	...
August ...	...	2.1	7.7	9.4	10.2	10.3	12.1	14.8	13.7	14.2	13.0	11.4	10.0	12.0	4.5	0.1	...
September ..	...	0.1	4.5	8.7	10.2	11.2	8.9	12.0	11.5	8.2	6.6	8.3	7.8	5.3	0.2	...	...
October ...	...	...	0.6	5.9	13.4	17.2	15.9	17.6	15.2	14.1	10.1	8.8	4.2	0.2	...	...	...
November...	...	...	...	...	1.9	5.2	4.3	5.7	7.7	7.3	4.4	1.6	...	...	...	...	...
December ...	...	...	...	...	0.6	4.4	5.9	5.7	5.4	5.5	2.3	0.3	...	...	...	...	...
Sums...	8.8	27.3	52.5	77.1	108.0	127.3	131.0	137.8	135.4	131.3	110.3	97.4	83.0	67.5	42.1	13.0	...

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

1939	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY	
															Total	Per cent.
January ...	...	...	1.7	...	...	...	5.2	...	...	0.2	5.2	0.3	2.4	1.7	31.7	12.8
February ...	2.4	7.9	2.5	0.1	2.7	...	4.2	...	3.2	3.2	0.3	...	...	...	52.2	19.2
March ...	...	3.8	2.7	3.3	4.2	7.6	7.7	7.2	5.2	0.7	...	...	1.7	2.2	84.7	23.1
April ...	12.3	12.6	12.9	7.4	8.3	0.1	7.2	5.3	6.0	7.3	3.6	6.9	4.4	...	171.8	41.0
May ...	2.3	2.4	0.5	6.2	9.1	13.9	11.7	2.7	8.7	8.9	13.5	14.1	13.6	14.0	196.2	39.8
June ...	3.2	12.8	1.5	6.5	11.5	8.6	0.9	2.9	12.2	4.8	1.9	8.9	8.9	...	245.0	48.2
July ...	3.8	4.1	3.6	4.2	...	8.3	5.3	9.8	12.5	7.9	...	2.1	7.6	0.4	127.8	25.1
August ...	10.3	6.9	2.7	2.6	0.3	2.5	2.5	0.3	3.7	2.1	1.4	0.6	4.8	2.8	145.5	31.8
September ..	1.1	3.3	0.1	1.4	0.9	3.2	4.2	0.1	1.1	9.6	0.6	...	0.2	...	103.5	27.3
October ...	6.1	5.1	8.4	6.6	0.6	...	4.0	6.7	7.2	5.4	0.2	...	4.1	2.5	123.2	37.8
November...	...	3.1	0.8	...	...	...	7.1	...	0.5	1.0	1.9	0.1	1.8	...	38.1	14.9
December ..	3.6	4.5	...	...	...	...	0.4	1.9	0.7	4.5	0.3	0.4	...	...	30.1	13.0

SUMMARY OF SUNSHINE.

	BRIGHT SUNSHINE RECORDED					
	1939			Mean for the last 59 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentage of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	15	31.7	12.8	15.1	34.1	13.7
February ...	19	52.2	19.2	17.8	56.6	20.6
March ...	23	84.7	23.1	24.4	102.3	29.0
April ...	27	171.8	41.0	26.7	145.1	34.6
May ...	30	196.2	39.8	27.9	183.6	37.3
June ...	28	245.0	48.2	28.0	186.3	36.7
July ...	28	127.8	25.1	28.5	166.8	32.8
August ...	31	145.5	31.8	27.9	151.9	32.9
September ..	28	103.5	27.3	25.7	124.0	32.6
October ...	28	123.2	37.8	23.9	87.1	26.7
November ..	21	38.1	14.9	18.2	47.3	18.5
December ...	14	30.1	13.0	14.3	28.5	12.3
Year ...	292	1349.8	30.2	278.3	1313.2	29.4

SUMMARY OF SUNSHINE—*Continued.*
EXTREMES FOR THE LAST 59 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 *1937	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 *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).

1889.	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° +					
	12° +									
January ...	17.7	13.1	14.7	15.3	15.2	10.4	21.5	57.5	24.0	
February ...	16.7	9.5	12.3	14.5	13.3	19.6	49.5	21.5	88.0	
March ...	18.5	6.7	10.3	14.7	12.6	21.3	33.5	40.5	53.0	
April ...	17.1	3.5	8.3	12.7	10.4	24.9	41.5	31.5	70.0	
May ...	14.3	2.1	5.0	11.8	8.3	20.4	32.5	49.5	43.0	
June ...	13.1	1.3	4.1	11.5	6.9	18.0	21.5	43.5	38.0	
July ...	12.7	- 0.7	2.5	9.1	5.9	18.5	31.5	52.5	39.0	
August ...	12.5	- 1.3	2.5	6.9	5.2	20.5	32.5	25.5	67.0	
September ...	11.1	- 2.3	1.5	7.3	4.4	19.9	25.5	38.5	47.0	
October ...	9.9	- 1.3	2.3	5.5	4.1	22.8	28.5	16.5	72.0	
November ...	6.3	0.5	2.3	4.5	3.5	11.6	14.5	38.5	36.0	
December ...	5.3	- 0.1	1.9	4.3	2.6	14.1	17.5	37.5	40.0	
Means ...	12.8	2.4	5.6	9.8	7.7	18.5	29.2	37.8	51.4	

Mean for the year 12° 7'.7 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.

1889	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 +					
	17000 +									
January ...	195	173	191	180	185	41.4	234	112	122	
February ...	185	158	175	174	173	88.7	497	-180	677	
March ...	190	139	166	161	164	86.5	257	-19	276	
April ...	174	112	145	155	147	158.1	437	-212	649	
May ...	177	115	144	159	149	119.6	317	9	308	
June ...	169	102	142	150	141	104.9	253	-65	318	
July ...	158	101	135	137	133	120.5	249	-28	377	
August ...	149	96	126	124	124	110.4	413	-65	478	
September ...	143	88	120	124	119	82.4	216	23	193	
October ...	158	106	141	139	136	> 113.6	211	< -290	> 501	
November ...	162	136	153	153	151	46.4	211	69	142	
December ...	176	156	166	171	167	51.1	202	64	138	
Means... ..	169	124	150	152	149	> 93.6	300	< -48	> 348	

Mean for the year 17149 C. G. S. Units.

* For the 5 quietest days.

† Includes all days.

ABSOLUTE MEASURES—SUMMARY.

DIRECTION			FORCE.		
1939	Declination Corrected	Inclination	Horizontal	Vertical	Total
	° /	° /	C. G. S. UNITS.		
	12 +	68 +	0·17000+	0·44000+	0·47000+
January ...	13·3	51·1	160	360	563
February ...	11·1	52·4	150	383	582
March ...	11·2	52·2	152	381	581
April	10·6	57·9	132	549	73
May	8·8	50·7	151	322	525
June	7·7	55·0	158	505	698
July	7·8	51·7	142	336	535
August ...	6·0	53·0	154	418	616
September ...	4·3	53·0	153	415	612
October ...	5·3	60·2	142	664	841
November ...	3·5	54·5	151	468	661
December ...	3·1	52·9	146	393	588
Means ...	° / 12 7·7	° / 68 53·7	0·17149	0·44433	0·47628

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.

1939	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939	
D.													D.	
1	c	m	m	m	g	m	s	c	c	s	s	s	1	
2	c	m	m	m	m	m	s	c	m	s	s	s	2	
3	c	s	m	s	s	s	s	c	m	g	s	m	3	
4	c	s	m	s	s	m	g	c	s	g	s	s	4	
5	m	s	s	s	m	u	g	c	s	m	c	m	5	
6	s	g	s	c	g	c	s	c	s	m	s	g	6	
7	s	m	c	s	m	c	c	c	s	m	s	g	7	
8	s	s	s	c	m	c	s	s	s	c	c	g	8	
9	s	m	s	s	m	c	c	c	m	g	s	m	9	
10	s	m	s	m	s	c	c	m	s	s	c	s	10	
11	m	m	s	m	c	c	m	m	c	m	s	s	11	
12	c	c	s	c	c	c	m	g	s	c	m	m	12	
13	s	c	c	c	(e)	s	s	m	s	vg	g	s	13	
14	m	c	c	s	(e)	g	m	c	s	g	m	c	14	
15	s	m	s	c	s	s	s	c	s	g	s	s	15	
16	m	s	m	s	m	m	m	g	c	g	c	m	16	
17	m	m	s	vg	s	c	m	m	g	g	c	s	17	
18	s	m	c	g	m	m	s	s	c	m	c	c	18	
19	c	s	c	g	s	m	m	m	m	m	(c)	c	19	
20	s	s	s	m	s	s	m	s	m	c	c	c	20	
21	m	c	m	s	m	m	g	s	s	m	c	m	21	
22	m	c	(s)	m	m	c	s	vg	s	c	c	m	22	
23	s	s	m	g	m	s	s	g	c	s	c	m	23	
24	s	vg	m	vg	m	c	s	c	(e)	m	s	s	24	
25	c	vg	s	vg	m	c	c	c	s	c	g	s	25	
26	c	s	s	c	m	m	m	c	m	c	m	s	26	
27	c	c	s	m	s	s	s	c	s	c	s	m	27	
28	s	m	g	m	m	m	s	c	c	s	s	s	28	
29	s		g	m	g	s	c	c	c	s	s	s	29	
30	s		g	c	s	s	c	c	c	s	c	s	30	
31	s		m		s		c	c		c		c	31	
TOTAL	{ c s m g vg	9 15 7	6 9 10 1	5 14 9 3	7 8 9 4 3	4 10 14 10 1	11 8 10 10 1	7 12 8 4	18 4 5 3 1	8 15 6 1	9 7 7 1	12 12 4 2	5 14 9 3	TOTALS 101 128 98 32 6

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.

1939	Jan.	Feb.	Mar.	April	May	June
DAY						
1		4.90	4.64	0.34	7.92	6.71
2	5.64	3.72			9.44	5.06
3				3.89	6.86	5.14
4					9.48	3.91
5	6.35			4.60		4.01
6	3.88	2.81	1.08	4.30	9.28	3.66
7			n	4.39	7.18	2.68
8					8.09	2.97
9	3.66	0.83	2.61	3.06	7.48	5.53
10	5.60		2.62	3.36	7.47	
11		2.43		4.39	5.18	3.13
12			1.98	3.04	6.26	3.34
13	3.89	5.19			3.61	3.22
14			2.38	13.02		
15	4.85					
16		5.78	4.46	10.29	3.08	5.74
17	2.66		4.62	6.49		4.18
18				5.73		3.48
19		4.53	4.55	4.24	3.41	3.56
20	1.94	n	4.76	5.49		3.50
21			5.06	10.58	4.16	3.05
22		3.64	4.57	16.89	3.88	2.34
23			3.40		5.84	1.09
24	5.28	5.27	2.80	18.99	6.94	
25			1.70	19.30	8.48	
26		6.20	1.51	16.72	6.63	2.18
27		7.36		14.22	5.14	2.90
28	5.13			11.82	5.46	4.06
29				10.35	6.24	7.62
30	5.90		0.26	8.32	7.02	5.58
31	4.48		0.30		6.95	
Mean	4.56	4.39	2.96	9.33	6.46	3.95

AND DISC AREAS OF SPOTS.

n—Incomplete observation at Stonyhurst.

July	Aug.	Sept.	Oct.	Nov.	Dec.	1939
						DAY
5.94	5.44	21.09	17.08			1
		17.38	14.12	7.09	3.16	2
5.47	10.70	16.94	12.18		2.26	3
8.03	13.15	18.75	9.74			4
11.14		16.06	8.59		0.57	5
13.86	11.19	21.42	5.44	2.63	0.53	6
15.43	9.80	15.07	5.75	1.93	0.74	7
		20.09	4.98	1.44		8
16.53	10.17	24.79		0.90		9
17.77	11.41		4.29	1.08	1.62	10
	12.42	26.15	4.45	2.10		11
13.45	10.73	23.66	3.10			12
	11.63		4.64			13
6.25	10.42	15.24	5.90	4.21		14
6.96	9.12	9.51	4.70	6.97		15
7.67	9.60	3.45	5.83			16
9.98	8.90	2.38	5.67			17
11.74	10.34	4.03	4.65	5.12	4.32	18
14.36	11.43	3.99	3.86	8.89	4.46	19
9.70	11.57		8.02	9.88		20
7.07	11.91	4.23	11.78			21
	11.80	7.04	17.28			22
6.45	7.89	9.19				23
5.84	6.42	14.35	14.17	6.17	2.02	24
4.10		n	14.82		1.78	25
4.39	3.79	20.39	13.68			26
3.67	4.91	19.51	12.34	2.60	1.66	27
	7.15		8.86	1.90		28
	11.47				0.67	29
2.48	12.04		8.56	3.73		30
	15.25		6.32			31
9.06	10.02	14.55	8.60	4.23	1.97	Mean

